

**PROFESSIONAL COMMUNICATION OF POST GRADUATE
MEDICAL STUDENTS IN GOVERNMENT MEDICAL
COLLEGES IN KERALA**

*Thesis submitted to the
University of Calicut in partial fulfilment of
the requirement for the award of the degree of*

**DOCTOR OF PHILOSOPHY
in
LIBRARY AND INFORMATION SCIENCE**

By

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DECLARATION

I, Linsha. M, do hereby declare that this study “Professional Communication of Post Graduate Medical Students in Government Medical Colleges in Kerala” has not been previously formed the basis for the award of a Degree, Diploma, Title or Recognition before.

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CERTIFICATE

I, Dr. M. Bavakutty, do hereby certify that this thesis **Professional Communication of Post Graduate Medical Students in Government Medical Colleges in Kerala** submitted to the University of Calicut, is a record of bonafide study and research carried out by Linsha. M, under my supervision and guidance. The report has not been previously formed the basis for the award of a degree, Diploma, Title or recognition before.

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ABBREVIATIONS

3G	Third Generation
ASCOMI	Arts and Science of Clinical Medicine
BDS	Bachelor of Dental Surgery
BP	Blood Pressure
BSc	Bachelor of Science
CD	Compact Disc
CHC	Community Health Centre
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CME	Continuing Medical Education Programme
CNK	Nursing College, Kottayam
DEM	Dermatology
DIT	Department of Information Technology
DM	Doctorate of Medicine
DVD	Digital Video Disc
EBM	Evidence Based Medicine
ED	Emergency Department
eHLs	Electronic Health Libraries
EMBASE	Excerpta Medica dataBASE
EMR	Electronic Medical Records
ESI	Employees' State Insurance
GB	Giga Bite
GP	General Practitioners
GPS	Global Positioning System
HIMS	Health Information Management System
HIT	Health Information Technology
ICH	Institute of Child Health
ICT	Information and Communication Technology

IM	Instant Message
IOM	Institute of Medicine
ISRO	Indian Space Research Organization
IT	Information Technology
LCD	Liquid Crystal Display
LIS	Library and Information Science
LISA	Library and Information Science Abstract
LRC	Learning Resource Centre
MB	Mega Bite
MBBS	Bachelor of Medicine and Bachelor of Surgery
Mch	Magister Chirurgiae
MCH	Medical College Hospital
MCI	Medical Council of India
MD	Doctor of Medicine
MeSH	Medical Subject Headings
M-Health	Mobile Health
MMS	Multi Media Message Service
MP3	Moving Pictures Expert Group Audio Layer 3
MS	Master of Surgery
N	Number
NGO	Non-Government Organization
NRHM	National Rural Health Mission
NRTN	National Rural Telemedicine Network
PCP	Primary Care Physician
PERN	Practice Based Research Network
PG	Post Graduate
PHC	Primary Health Centre
SAARC	South Asian Association of Regional Cooperation
SD	Standard Deviation
SDH	Sub District Hospital

SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis
TCIL	Telecommunication Consultants India
TD	Thirumala Devaswom
UCH	University College Hospital
UID	Unique Identification
UK	United Kingdom
US	United States
USA	United States of America
UTH	University Teaching Hospital
WHO	World Health Organization
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network

INTRODUCTION

-
- 1.1 Introduction*
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1.1 Introduction

Communication is an essential and important human need in day to day life. Individual, group, communities, institutions/organizations cannot exist without having proper communication. Communication helps to exchange ideas, thoughts, and opinions to others. Proper communication enables us to better understand and connect with the people around us. It allows us to build respect and trust, resolve differences and foster environments where problem solving, caring, affection and creative ideas can thrive. Lack of proper communication leads conflict and frustration in both professional and personal relationships (“Importance of Effective Communication”, 2016). It is seen that effective communication is the building block of success of any organization. In an organization communication facilitates the flow of information and understanding between different people and departments, through different media using different channels and networks. This flow of information is vital for managerial effectiveness and decision making. The importance of communication in an organization can be summarized as follows:

1. Communication is a source of information to the organizational members for decision making process as it helps identifying and assembling alternative course of action
2. It plays a crucial role in alerting individual’s attitudes ie; a well-informed individual will have better attitude than a less informed individual.
3. Communication promotes motivation by informing and clarifying the tasks to be done there by improving the performance.

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4. Communication helps in socializing and it helps to coordinate the efforts of various people at work in the organization (“Importance of Communication”, 2016).

Since effective communication plays a vital role in the successful running of an organization, the process of communication should be done in a careful way. So to have effective communication certain principles are to be followed.

Communicating with clarity can prevent misunderstandings and keep things running smoothly and peaceably. The principle of clarity means the communication should be such a language which is easy to understand. The words used should be understood by the receiver unambiguously. The language should not create any confusion or misunderstanding. The communication must carefully take into account that the information to be communicated should be complete and adequate in all respect. Inadequate and incomplete message creates confusion and delays the action to be taken. The adequate information must be consistent with the objectives, plans policies and procedures. The principle of integration portrays that through communication the efforts of human resources of the organization should be integrated towards achievement of corporate objectives. The very aim of the communication is to achieve the set target. The communication should aim at coordinating the activities of the people at work to attain the corporate goals. The unnecessary use of communication system will add to cost. The system of communication must be used efficiently and timely ie; at the appropriate time and when it is necessary. The purpose of communication will be defeated if feedback is not taken from the receiver. The confirmation of the message in its right perspective from its receiver fulfills the aim of communication. The route through which communication passes from sender or communicator to its receiver refers to communication network. For

effective communication this channel is necessary (“Communication Importance and Principles”, 2017).

1.2 Professional Communication in Government Medical Colleges

Webster’s Dictionary defines communication as “imparting or interchange of thoughts, opinions, or information by speech, writing, or signs” (“Communication”, 2017). In health sector professional communication is the health care professional’s relationship with each other and exchange of knowledge and skills for making wise clinical decisions for the better patient care. (Shahrzad & Masoumeh, 2015)

Collaboration in health care is defined as health care professionals assuming complementary roles and cooperatively working together, sharing responsibility for problem-solving and making decisions to formulate and carry out plans for patient care (Fagin, 1992). Collaboration between physicians, nurses, and other health care professionals increases team members’ awareness of each other’s type of knowledge and skills, leading to continued improvement in decision making (Christensen, 1993). Today’s healthcare delivery system involves various interfaces and patient handoffs among several health care professionals with different levels of educational and occupational training. Thus effective clinical practice involves many instances where critical information must be accurately communicated, without the proper communication of health care professionals, patient safety is at risk for many reasons: lack of critical information, misinterpretation of information, unclear orders over the telephone and overlooked change in status (Daniel, 2008). Medical errors caused by lack of communication are a persistent problem in today’s health care organizations. Patient’s perceptions of quality of the service they received are highly dependent on the quality of their interactions with their health care clinicians and team (“Impact of Communication in Healthcare”, 2016).

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Effective communication among healthcare professionals is challenging due to a number of related dynamics; healthcare is considered to be a complex and unpredictable system where health professionals are dispersed over various locations which create spatial gaps with limited opportunities for regular synchronous interaction. Coordination of various disciplines at various time make it complex. It is noted that care providers often have their own disciplinary view of what the patient needs, with each provider prioritizing the activities in which he or she acts independently (Reeves, 2002). Hospitals have complex organizational structure. This hierarchical structure of the hospitals results distances between physicians and other health professionals which leads to a culture of inhibition and restraint in communication, rather than a sense of open and safe communication. The differences in educational background of health professionals have a role in communication effectiveness. Different communication styles and methods of health care professionals make the scenario complicated and rather communication ineffective. Another factor that affects the communication is that the educational curricula for most health professions focus primarily on individual technical skills, neglecting teamwork and communication skills which is crucial for safe patient care (Dingley, 2017).

In medical practice communication skills play an important role. It helps to build relationships between both healthcare professionals and patient also health care professionals and their associates. Communication skills in a healthcare setting include the way use to:

1. Explaining diagnosis, investigation and treatment.
2. Involving patient in the decision making
3. Communicating with relatives
4. Communicating with other healthcare professionals

5. Breaking bad news
6. Seeking informed consent/classification for an invasive procedure
7. Dealing with anxious patients or relatives
8. Giving instructions on discharge
9. Giving advice on lifestyle, health promotion or risk factor (“Communication skills”,2017)

1.3 Components of Effective Professional Communication

For the effective running of hospital a good professional communication and team collaboration is needed. The components of a successful teamwork which includes; open communication, non-punitive environment, clear direction, clear and known roles and tasks for team members, respectful atmosphere, shared responsibility for team success, appropriate balance of member participation for the tasks at hand, acknowledgment and processing of conflict, clear specifications regarding authority and accountability, clear and known decision making procedures, regular and routine communication and information sharing, enabling environment including access to needed resources, mechanism to evaluate outcomes and adjust accordingly (Daniel, 2008). There are five components to any communication and a sixth that is the overall environment of the workplace in which the communication takes place. The components of an effective communication are:

- The individual sending the message: The message should be clear with enough detail
- The context for the message: The context is how the message is delivered by the sender of the message. It involves non-verbal

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communication such as gestures, body language, facial expressions and elements such as tone of voice.

- The person receiving the message: The receiver must listen carefully and intently, ask questions for clarity, and paraphrase to ascertain that the receiver shares meaning with the sender. If the receiver trusts the sender, the chances for effective communication increase.
- The delivery method you choose: The delivery method should be selected based on the medium most effective to convey the meaning of the message. Since communication methods are so diverse since the dawn of computers and mobile devices, decisions about the delivery method have become more complex. The delivery method must suit the Communication needs of both the sender and the receiver. Communication methods include verbal communication, instant messages (IM), email, letters, signs, posters, videos, screenshots, telephones, notes, forms, written documents, and more.
- The content of the message: The content of the message should be clear and presented and described in enough detail to obtain understanding from the receiver. If the message content resonates and connects, on some level, with the already-held beliefs of the receiver, it is most effective. (“Effective communication”, 2016)

1.4 An Overview of Health Service System of the State

The health care system is the first and foremost factor for attaining the high level of health status in Kerala. Health care provision was one of the government’s top priorities. Historically, Kerala made a small beginning to provide infrastructural facilities for a primary healthcare system. After the re-organization of the State, it has reached a fairly high level of standard and soundness. The availability of facilities for primary health care, their

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accessibility, the very high degree of awareness and acceptability among the people has made Kerala model an almost perfect one. What is needed at present is to sustain these by the personnel involved with the active participation and co-operation of the people (“Health services”, 2018). The medical institutions in the government sector are organized in a hierarchical order. The structure of government provision of health facilities in the modern (allopathic) system of medicine is as follows: At the top of the hierarchy are the Medical College hospitals; at the district level are the district hospitals/general hospitals and at the sub-district level are Taluk hospitals. The medical colleges in the state provide not only medical education facilitates through the hospitals attached to them; they also provide the most modern medical care(“Healthcare sector, Kerala”, 2018)

Tertiary care in government service is provided through medical college hospitals. These hospitals would be equipped for managing cases in all specialties and super specialties. Coupled with a revamped primary care system, referral linkages between secondary and teaching hospitals and an ICT enabled networking of care; the medical college hospital can be positioned as the manager of the health care needs of the entire district, including capacity building, quality and research. But to achieve this capacity and standards in teaching of medical colleges will have to be substantially improved and better organizational arrangements should be made. Diagnostics and treatments will have to be standardized at all levels and referral linkages should be established between hospitals at different levels. It will also mean creating closer links between institutions under the health and medical education department.

General/District hospitals Women and children’s hospitals and Taluk head quarter’s hospitals are the secondary care institutions. Since Kerala has good road connectivity and patients expect a minimum level of sophistication,

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government's efforts will be to strengthen these hospitals with specialties and attendant services such as trauma care dialysis center, counseling services, de-addiction centers and physical rehabilitation centers.

Primary Health centers were set up for health promotion activities including prevention of communicable and non-communicable diseases, disease surveillance, and implementation of the maternal and child health programmes comprising antenatal care, immunization, post natal care, adolescent health and implementation of other national health programmes. But the system was designed to address reproductive and child health issues and communicable diseases, has not been reconfigured to meet the needs of a population that is well on the way through a demographic and epidemiological transition. The role and responsibilities of sub centers and primary health centers has come down markedly due to changes in pattern of utilization of health services. There is a need to better recognize the functioning of the sub centers ("Medical education in Kerala," 2017)

1.5 Government Medical Colleges in Kerala

Medical schools in India are usually called medical colleges which are controlled by the central regulatory authority, the Medical Council of India. The Medical Council of India was established in 1934 under the Indian Medical Council Act, 1933. In 1956 Medical Council Act was repealed and a new one was enacted. This one was further modified in 1964, 1993 and 2001. The objectives of council are as follows:

- Maintenance of uniform standards of medical education, both undergraduate and post graduate.
- Recommendation for recognition/de-recognition of medical qualification of medical institutions of India or foreign countries.

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- Permanent registration/ provisional registration of doctors with recognized medical qualifications.
- Reciprocity with foreign countries in the matter of mutual recognition of medical qualifications. (“Medical Council of India,” 2017)

In Kerala medical education started in 1951 with the establishment of the first medical college in Trivandrum. The Directorate of Medical Education was established in 1983. Since then Kerala poses a high health status compared to other Indian states. A prime reason for this has been the stewardship role that successive governments, before and after independence have played. Even before independence the expenditure for health by the Maharaja of Travancore was significant. As early as in the 1860s the government of Travancore allotted a little over 1 % of its expenditure to health sector and the proportion increased to 2% by the close of the century. The unswerving governmental support for the welfare sectors till the mid 1980s served as a catalyst for the development of health services in Kerala. This was also reflected in the expansion of health infrastructure. Health sector investments continued till the 1980s but thereafter the pace of growth of public health care system slowed. The shortage was made good by the private sector.

1.5.1 Medical Education

Till 2000 almost all institutions of medical education was under Government control. When entry of private sector was allowed growth of the private sector was rapid and in decade there were 18 private medical colleges as against 5 in Government. Entry of private sector has increased the supply of medical professionals though it could be argued that there has been a dilution of quality. It is also pointed by health educational professionals that the quality of teaching even in government colleges have dropped below

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desired levels. The Kerala University of Health Sciences has had a salutary influence in maintaining the quality of institutions and instructions("Health policy Kerala", 2013).

1.5.1.1 Government Medical College, Thiruvananthapuram

Thiruvananthapuram Government Medical College is situated in the capital of Kerala. It was founded in 1951 and was inaugurated by Jawaharlal Nehru, the first prime minister of India. Thiruvananthapuram Government Medical College is the oldest and most prestigious medical college in Kerala. The medical college campus houses several hospitals and institutions other than the medical college hospital including the College of Nursing, College of Pharmaceutical Sciences, Regional Cancer Centre and Dental College, Sree Chithirathirunnal Institute of Medical Sciences and Technology, Priyadarshini Institute of Pramedical Sciences and Sree Avitom Thirunnal Hospital for Women and Children. Regional Institute of Ophthalmology is a part of medical college and is being upgraded to the status of National level independent institute. The School of Optometry is located inside the campus.

The Thiruvananthapuram Government Medical College is financed and administrated by Health and Family Welfare Department. Medical College is affiliated to Kerala University of Health Science.

1.5.1.1.1 Departments

Initially the hospital started with departments of Anatomy, Physiology, Biochemistry and Bacteriology. Department of Bacteriology consisted of Micro biology, Pathology and Hygiene initially. Department of Community Medicine established in 1953 was the first of its kind in India. Department of Forensic Medicine was first attached to Department of Community Medicine and became separated in 1966. The clinical department of Medicine and surgery were started along with the medical college hospital in 1952. The

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Department of Pediatrics has the highest number of patients in Kerala. The Obstetrics and Gynecology departments were started in 1954 and later added to the Family Planning Clinic Contraception testing unit, WHO training Centre and Infertility Clinic. The Department of Physical Medicine and Rehabilitation established in 1968. The super specialty departments were established in 1965. Department of Cardiology was established in 1972 Nephrology in 1981. Medical and Surgical Gastroenterology units were established in 1972 and 1975 respectively.

College Central Library is housed at the blocks containing administrative offices including the Principal's office. The Learning Resource Centre (LRC) is located within the library and contains internet enabled computers that students and staff can use for a nominal fee. The LRC also subscribes to online medical journals. With the contribution of alumni of the college an information center was established in the hospital which provides all information regarding the facilities available in the hospital as well as clears any doubts regarding prescriptions or drugs("Government Medical College Thiruvananthapuram",2017)

1.5.1.2 Government Medical College, Kozhikode

Government Medical College Kozhikode is a premier medical college located in the city of Kozhikode in Kerala. It was established in 1957 as the second medical college in Kerala. Since then the institution has grown into a premier centre of medical education in the state. The Medical College is affiliated to Kerala University of Health Sciences. The main hospital was commissioned in 1966 and later supplemented by the Institute of Maternal and Child Health in 1975. A super specialty complex, a new block for the Institute of Maternal and Child Health, an artificial limb center, the College of Nursing, The College of Pharmacy, Causality complex, Samrakshanakendram and Vishrama kendram were later added to the main institution.

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The annual intake of undergraduate students in Kozhikode Medical College is 250. The consolidation of undergraduate medical education was achieved in the 1960s. The 1970 witnesses the establishment and expansion of post graduate medical education in various branches. Now the college provides post-graduation in 28 disciplines. With the establishment of training programmes in super specialties, the institution further widened its academic horizon. Now this college has super specialties. Last decade almost all modern specialty services in medical care have been developed in the institution including kidney transplantation. A well-equipped cardiac catheterization lab and Tele Cobalt Therapy are already there in the hospital. A well-equipped MCI recognized center for medical education technology is functioning and it caters to 12 medical colleges. The medical library and almost all of the departments and offices of the college and hospitals are provided with computer facilities. Action is being taken for among the hospitals, departments and offices.

The latest additions to the collegiate hospital are the multistoried super specialty complex, new block for Institute of Maternal and Child Health and the Institute of sports medicine. The modern hospital unit was started with outpatient. Clinics of the super specialties exclusively. Later the inpatient wards also started functioning. Three new departments were added to feather of this college which will have long lasting percussions in the day to day functioning of this college. These are Department of Neonatology, Department of Emergency and Critical care medicine and Department of family medicine. Department of family medicine is started for the first time in Government Medical Colleges in the country and Department of Emergency and Critical care medicine is started for the first time in Government Medical Colleges in Kerala. Lecture theater complex, Geriatric block, Women's hostel, Flats for junior residents and flat for faculty are the new projects under construction(“Calicut Medical College”, 2017).

1.5.1.3 Government Medical College, Kottayam

Government Medical College, Kottayam is a prominent Government Medical College in Kerala, India. The college started functioning in December 1962 as the third Government run Medical College in Kerala. The college which initially functioned in the District Hospital Kottayam from 1962 to 1970 was shifted to Arpookara in April 1970. In 1975, all clinical departments were shifted to the newly constructed campus at Arpookara, now named Gandhinagar. The same year, the nearby ESI hospital was taken over to start the children's hospital: Institute of Child Health. A new administrative B block was started in 1985; in 1996 the C block was added which houses the department of pharmacology, pathology, microbiology and the central library.

The project for establishing a medical college at Kottayam was included in the third five year plan in 1960. The District Hospital at Kottayam was brought under the college and used as teaching hospital from January 1963 onwards. Post graduate courses in M.S Surgery and M.D Medicine started from 1973/74. College of Nursing, Kottayam started functioning from 1982 May, and in 2001 Dental College started functioning in the campus. The major collegiate institutions attached to medical college Kottayam are Medical College Hospital (MCH), Institute of Child Health (ICH) AND Nursing College, Kottayam (CNK). The present facilities in the medical college include: round the clock availability, casualty service, blood bank facility, modern lab and imaging services, color Doppler, haemodialysis endoscopic and laparoscopic procedures, open heart surgery, specialized pain clinic under anaesthesiology, computerized pulmonary function lab under the chest and TB department, Cardiac rehabilitation centre under cardiology department, specialized trauma care centre, advanced intensive care units for surgery medicine, cardiac services, neuro surgery and plastic surgery. The house surgeoncy program has been acknowledged as a rigorous one with

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multiple training opportunities not readily available in some other teaching institutions ensuring the graduates are well prepared for higher training. In fact, a major of graduates go on to pursue PG courses, very commendable given the few seats available for such higher training in the country.

Main courses offered include MBBS, post graduate training in basic specialties (M.D, M.S and diploma courses and super specialties (DM&Mch), BDS, BSc Nursing and other paramedical courses (“Governemnt Medidla College, Kottayam”, 2017).

1.5.1.4 Government Medical College, Thrissur

Government Medical College Thrissur, established in 1982 is one of the leading centers in medical education in Kerala, India. Kerala University of Health Sciences began functioning in the campus in 2009. The college was inaugurated on 1st April 1982 by the Governor of Kerala, Jyothi Vecatachellum. The clinical departments started functioning on 22 October 1983 in the erst while District Hospital and Maternity Hospital buildings in Thrissur city. The college was granted permanent recognition by IMC in 1991 and by WHO in 1993. In 2005 December the clinical departments were shifted from District Hospital to the new Medical College Hospital complex in Mulagunnathkavu. The college has been offering quality education in the field of medical science, since its inception and it has a lot of contribution in the health department of the district as well. It offers a number of courses in a variety of disciplines of medical sciences. The medical college offers courses at both the undergraduate and post graduate levels(“Government Medical College, Thrissur”, 2017).

1.5.1.5 Government Medical College, Alappuzha

T.D Medical College is the first medical college in the state which was started under private management. This medical college is situated in the

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suburban area of Vandanam. The initials T.D stands for Thirumala Devaswom, which in Sanskrit means belonging to the Lord of Thirumala, since this medical college was started in 1963 under the patronage of the T. D Temple at Anantha Narayanapuram of Alappuzha.

The first batch of MBBS classes was started in August 1963 for 50 students. The Kerala government had agreed to upgrade the district headquarters hospital at Alappuzha and handed it over to the medical college management to be used as teaching and Government order no. G.O (MS) .263/73/Hd at 23rd October 1973 was issued accordingly. Thus this became the 4th Government Medical College in the state. T.D Medical College is a rapidly growing medical college in the state as a centre of excellence in every field of modern medicine. This is the only medical college in the state which would have the medical college and college hospital on the side of national highway (“T.D Medical College”, 2017)

Main courses offered in T.D Medical College include: MBBS, post graduate training in basic specialties (M.D, M.S and diploma courses) and super specialties (DM AND Mch), BDS, BSC Nursing, MSc Nursing in four specialties Maternal and Child Health Nursing, Medical surgical nursing, Child Health Nursing and other paramedical courses(“Alappuzha Medical College”, 2017).

1.6 Need and Significance of the study

Communication in health care is the most important tool that defines patient satisfaction. “ More than a quarter of hospital readmissions could be avoided with better communication among health care teams and between providers and patients”(Kelly, 2016) . The Institute of Medicine (IOM) report on Health Professions and Training has identified that doctors and other health professionals lack adequate training in providing high quality health

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care to patients. (Knebel & Greiner 2003). Patient satisfaction increases when healthcare team members explain information clearly, and tries to understand the patient's experience besides these, communications among health care professionals influences the working relationships, job satisfaction and profound impacts patient safety. Proper communication about tasks and responsibilities improves the quality of services in hospitals. There is a strong positive relationship between a healthcare professional's communication skills and a patient's capacity to follow through with medical recommendations. Clinician's ability to explain, listen and empathize can have a profound effect on health outcomes. In healthcare system even simpler communication services like email or voice mail is still not popular among health professionals.

There exist enormous gaps in our perspective of the role of communication services in health care delivery. So it is necessary to know the present communication scenario in Government Medical Colleges in Kerala. Government Medical Colleges are assumed to be superior to the private Medical Colleges in case of faculty and students and are expected to have the highest levels of academic excellence. Medical students must cope with heavy academic requirements, time pressure and stress related to clinical work.

Hence it is necessary to conduct a study on the professional communication processes of Medical PG students which helps in imparting good quality services in medical profession. The significance of the study is based on the importance of information to medical doctors. Role of information in health care is crucial and it should be communicated properly with patient and other health professionals. This study will help to determine the communication processes of PG Medical students, use of ICT in communication process and challenges faced by Medical College students in communicating information in the Government Medical Colleges in Kerala,

there by create a good working environment in Government Medical Colleges in Kerala.

1.7 Statement of the Problem

The title of the study is “Professional Communication of Post Graduate Medical Students in Government Medical Colleges in Kerala”

1.8 Definition of Key Terms

The key terms used in the study are defined and given below:

Professional Communication

The various forms of speaking, listening, writing and responding carried out both in and beyond the work place, whether in place or electronically are defined as professional communication (“Professional communication”, 2014). It is also defined as the healthcare professional’s relationship with each other and exchange of knowledge and skills for making wise clinical decision for the better patient care (Shahrzad & Masoumeh, 2015). Role of communication in health sector is very important. When health care professionals are not communicating effectively, patient safety is at risk for several reasons: lack of critical information, misinterpretation of information, unclear orders over telephone, and overlooked changes in status.

Post Graduate Medical Students

The definition of postgraduate is a students who is studying a subject beyond the college level when he already has a college degree. Post graduate medical students are who study an academic programe that occurs after the degree in medicine(“Post Graduate”,2018).

Government Medical College

Government Medical College is an education institution under Government that provides medical education.

Kerala

Kerala is an Indian state in South India on the Malabar Coast. It was formed on 1 November 1956 following the States Reorganization Act by combining Malayalam speaking regions. It is bordered by Karnataka to the north and northeast, Tamil Nadu to the east and south, and the Lakshadweep Sea to the west. Kerala is the thirteenth-largest Indian state by population. It is divided into 14 districts with the capital and the largest city being Thiruvananthapuram. (“Kerala”, 2018)

1.9 Limitations of the Study

The present study tries to investigate the professional communication activities of Post Graduate Students in Government Medical Colleges in Kerala. The Researcher selected five Government Medical Colleges namely, Government Medical College Thiruvananthapuram, Government Medical College Kozhikode, Government Medical College Thrissur, Government Medical College Alappuzha, Government Medical College Kottayam. The Government Medical Colleges in Manjeri, Wayand, Iduki, Ernakulam are excluded from the study since they are new Medical Colleges and are not fully functioning. The population of the study is limited to the Post Graduate Medical students in five Medical Colleges in Kerala. The study covered the population of the Post Graduate Medical students for a particular period (September 2016 to March 2017). The study covers the professional communication processes of Medical PG students with patients and other health professionals in Government Medical Colleges in Kerala. The first and most significant limitation of the study is that it is confined to five

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Government Medical Colleges only. Second limitation is that the study includes PG Medical students only, Medical College teachers and other health professionals are excluded from the study. This study was focused on PG Medical students, because this group of personnel is the potential users and managers of health information in Medical Colleges. The study is limited to the state of Kerala and the study is confined to allopathic Government Medical Colleges only.

1.10 Organization of the Thesis

The thesis is organized under six chapters as follows:

Chapter 1: Introduction

This chapter includes the brief description about the components of effective professional communication, need and significance of the study, statement of the problem and definition of key terms and limitations of the study.

Chapter 2: Professional Communication

The role of professional communication in hospitals, types of communication activities, recent developments in communication technologies and barriers in communication activities are described in this chapter.

Chapter 3: Review of Related Studies

This chapter provides the review of related studies on the professional communication activities in healthcare settings. The study is arranged under the headings: Communication among doctors, Communication among doctors and other health professionals, Communication among doctors and patients and Communication in health sector using ICT equipments.

Chapter 4: **Methodology**

This chapter describes the research aim and objectives, hypotheses of the study, data collection methods, population of the study and data analysis techniques.

Chapter 5: **Analysis and Interpretation**

This chapter furnishes a statistical analysis and description of the data collected from Post Graduate Medical Students in the five Government Medical Colleges in Kerala through structured questionnaire.

Chapter 6: **Summary of Findings and Conclusion**

This chapter summarizes the overall results of the analysis followed by tenability of hypotheses, suggestions and conclusion.

Bibliography: APA style is used for citation purpose.

Appendix: Questionnaire to Post Graduate Medical Students

1.11 Conclusion

The present study mainly focuses on the professional communication processes of PG medical students in Government Medical Colleges in Kerala. Effective communication and collaboration of health professionals ensure the patient safety and reduces the medical errors. ICT mediated communication technologies provide new tools for accessing and sharing information in the health sector. Proper communication and exchange of information can be ensured by the application of Information and Communication Technology in health sector.

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By this study an insight into the communication processes taken by Post Graduate Medical Students and the ICTs use in communication, challenges faced in communication processes etc are expected to be investigated.

The next chapter describes the role of professional communication in hospitals, types of communication activities, recent developments in communication technologies and barriers in communication activities.

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PROFESSIONAL COMMUNICATION

2.1 Introduction

2.2. Types of Communication in Health Care

2.3 Channels of Communication

2.4 Professional Communication in Medical Field

2.5 Technology in Medical Field

2.6 Application of ICT in Health Sector in Kerala

2.7 Communication Barriers

2.8 Conclusion

2.1 Introduction

Good communication plays an important role in various issues in day to day life. Confusions and misunderstandings in communication are capable of producing conflicts or even public disorder. After all communication is a form of interaction between two or more persons to convey messages of different kinds. Messages can be structured to inform, convince and can even function as a medium for people to form bands and judge other individuals. Thus having effective communication is important to attain those goals and create good reputations. Generally, professional communication is the assemblage of written, oral, visual and digital communication within a workplace. It is the discipline that focuses on the study of information and the ways it is created, managed, distributed and consumed. In health sector, professional communication is the health care professional's relationship with each other and exchange of knowledge and skills for making wise clinical decisions for the better patient care.

There exist a strong relationship between healthcare professional's communication skills and patient capacity to follow through with the medical recommendations. Research output shows that the clinician's ability to explain, listen and emphasize can have a profound effect on biological and functional health outcomes as well as patient satisfaction and experience of care ("Healthcare communication", 2017). Patient's perceptions of the quality of the healthcare they received are highly dependent on the quality of their interactions with their healthcare clinician and team. (Clark, 2003), (Wanzer, et.al, 2004). Communication among health professionals also influences the quality of working relationships, job satisfaction and patient safety. Effective communication among health care professionals and patients results overall satisfaction and better health outcomes. How well a patient understands the

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information provided can also have an impact on healthcare decisions they might make in future. If a patient does not understand the information they receive, there may be an increased risk of instructions being followed incorrectly, or an adverse event occurring. Most common communication complaints received by the office of health ombudsman are in relation to:

- Poor attitude or manners
- Providing inadequate information
- Providing incorrect or misleading information
- Not accommodating special needs

To make communication effectively as possible health practitioners should recognize that most people will unfamiliar with healthcare information and address each patient's level of understanding and should adopt a range of communication strategies to provide adequate information to patients in a compassionate manner. Health professionals should confirm that the patient has understood all the information provided and they must encourage patients to ask questions and have to undertake educations to improve health literacy skills when communicating to patient ("Effective Communication", 2017). Technology plays an important role in enhancing communication by improving connectivity and facilitating information flow. Electronic health records and health information exchanges etc provides consistent access to patient information (Denald, 2015). Even though communication plays an important role in patient care, it has received less attention in training or educational process.

2.2 Types of Communication in Health Care

Communication is an important component in the healthcare field. Doctors, Nurses, Paramedical Staffs, Patients have to take part in communication regarding medical procedures. In broad terms, two areas of health communication can be identified;

1. Health Care focused communication research which is based on the influence of communication on enhancing the quality, accuracy and effectiveness of diagnoses, treatment decision making, and treatment follow up etc.
2. Health promotion focused communication research which is based mainly on the design and evaluation of health education and promotion campaigns through analysis of message design, communication channels and other campaign strategies and practices. (Gary, 2015)

In health sector, intra personal, inter personal, group organizational and societal levels of communication perform central roles in promoting health across the continuum of care. Here we discuss Doctor –Patient communication, Doctor - Doctor Communication and communication between Doctors – other Health professionals.

2.2.1 Communication among Doctors

Delays in transmission are a threat to efficiency in healthcare. It is identified that novel technologies can be successfully used to improve urgent doctor – doctor communication. Without effective and timely communication between physicians, both quantity of care and the patient experience can suffer. (Diane, 2012) It is also recommended that break down in doctor – doctor communication are complex and cannot be solved through the implementation of devices or technologically advanced systems alone

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(Nguyen, 2015). Even though ICT facilitates better communication among doctors, lack of structured training and computer access etc. leads to the poor knowledge and utilization of these technologies. (Bello et.al, 2004)

A report by American College of Physician Foundation (2003), made some recommendations to make effective communication, which includes train all the staff in the organization to recognize and respond appropriately to patients with literacy and language needs, create patient of clear communication in all interactions from the reception desk to discharge planning, use well trained medical interpreters for patients with low health literacy etc.

Communication among doctors can improve by fostering organizational cultural change, building a supportive infrastructure and supporting initiatives to standardize communication across their organization.

2.2.2 Communication among Doctors and Patients

Effective doctor – patient communication is a central clinical function in building a therapeutic doctor – patient relationship. (Jennifer et.al, 2010). Irrespective of the educational level, patients desire a more open communication with doctors. Even though doctors possess higher degrees, the communication competencies are seemed to be lower in the group of professionally active physicians. The reasons of lack of communication competency of doctors are due to the following factors;

- a) Acceptance of a patient
- b) Knowledge of assertiveness
- c) Knowledge of the role of feedback information in communication
- d) Tolerance with respect to patients and their significant others

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- e) Skills of solving conflicts with patients and their significant others (Wloszczak-Szubzba, 2013)

It is identified that educational qualification of patient and physician has a positive effect on the health outcomes of the patient. Curriculum development in the area of communication at all levels of medical education is needed to improve the communication skills of doctors, at the same time patient education with regard to communication should be done to attain a successful doctor- patient communication. Provision of information packages, waiting room training sessions etc. is proven to be successful in many cases. (Stewart, 1995)

2.2.3 Communication among Doctors and other Health Professionals

Inter-professional communication is important since it has a vital role in medical practice, patient safety and medical errors (Grewal, 2008). There are many challenges associated with the effective inter –professional communication. Some communication criteria that will help to effective communication are listed below;

- a) Communicating clearly
- b) Provide adequate information
- c) Offering timely information
- d) Notifying appropriate health professionals about the patient’s condition
- e) Being well mannered and respectful
- f) Responding to other health professionals
- g) Reviewing notes from nurses and other health professionals

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- h) Using specific communication tools eg: Surgical safety checklist (“Interprofessional communication”, 2017)

Communication is the one of the organizational functions that helps to stay effective and productive. One of the most important forms of organizational communication is inter-departmental communication. The importance of communication between different departments in an organization becomes most evident when that communication breaks down. Implementing policies to strengthen inter-departmental communication help to underscore its importance and maintain an efficient flow of information. Almost all of the current telemedical research is focused on the interfaces between hospitals and community services or the home. Very little work has been done to understand the internal communication dynamics and requirements of hospitals. Yet it should be apparent that any hospital is a complex organization, and that good communication processes must be fundamental to its operation. These types of communication can be broadly grouped into two categories; Inter Hospital communication and Intra Hospital communication

I. Inter Hospital Communication

Advanced communication systems and services favored the inter hospital communication. By using telemedical facilities like video conferencing remote consultation become possible. Services of expertise can be distributed to a wide range. Factors that have to consider at the time of implementing a communication system include:

- The size of the population served
- The utilization of rates of services that are being augmented by the communication option

- The distances workers or patients might otherwise need to travel
- The effectiveness of local services in comparison to the telemedical options. (Coiera, 2006)

II. Intra Hospital Communication

For the effective functioning of the hospitals good communication processes are unavoidable. Hospital is a complex organization in which medical staffs have to communicate frequently. Telephones and pagers are used for communication purpose for the urgent needs. Since these are interruptive mode of communication channels, medical staffs get distracted from their work. To overcome the barriers of these interruptive channels asynchronous communication channels like email, voice mail are used in many organizations. For the effective working, hospitals should provide sufficient computers, wireless network and devices that can access hospital computer network.

Communication among students, teachers, research scholars, administrative staffs are necessary for the well-functioning of the hospital. Communication with each other gives best possible experience to everyone. Health information must be communicated to public in such a way that it can be interpreted by individuals and society. Effective use of information is necessary for the maintenance of public health. In order to address the public health and patient care many health information sources are available such as electronic health records, health information exchanges, public health databases etc.

2.3 Channels of Communication

Communication channels refer to the way through which information flow within the organization and with other organizations. There exist

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different communication channels from face to face communication to telecommunication channels like telephone or email etc. they are of two types; synchronous communication channels and asynchronous communication channels. When two parties exchange information across a channel at the same time, this is known as synchronous communication. Telephone is an example of two-way synchronous channel. Synchronous communication channels are interruptive in nature. Whereas asynchronous channels support individuals separated in time. Letters, electronic messaging systems etc are examples of asynchronous communication channels. They are not interruptive in nature. A busy clinician may get distracted while carrying out a task when synchronous communication is taking place. So it is better to use asynchronous channels for communication if the communication is not urgent. The information generated by a communicator is communicated to other through different channels. There exist two types of communication channels- Formal and Informal communication channels. Informal communication is based on informal relations, thus there is no organizational structure in informal communication. Comments, suggestions, movements of head etc are includes in this type of communication. Informal communication is also known as grape wine communication since there is no definite channel of communication. Informal channels are used to disseminate information to a restricted population. This population may be a group of workers in the same field. Informal channels include both oral and written communication. Informal channels are usually used when work is in progress. The dissemination of information through informal channel is faster than formal communication channels. Informal channels are flexible in nature. They allow people to come with ideas and plans. Informal communications are basically inter-personal face-to-face communication by the people with common interests. They does not follow any organized structure, thus the origin of the message is difficult to trace. Some examples of informal channels are;

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professional societies, research associations, invisible colleges etc. They should not have any prescribed structure. Formal channels are intended to reach a large audience. All paper based and electronic communications are considered as formal communication. That is formal communication includes document. They helped to disseminate information for the past and for future.

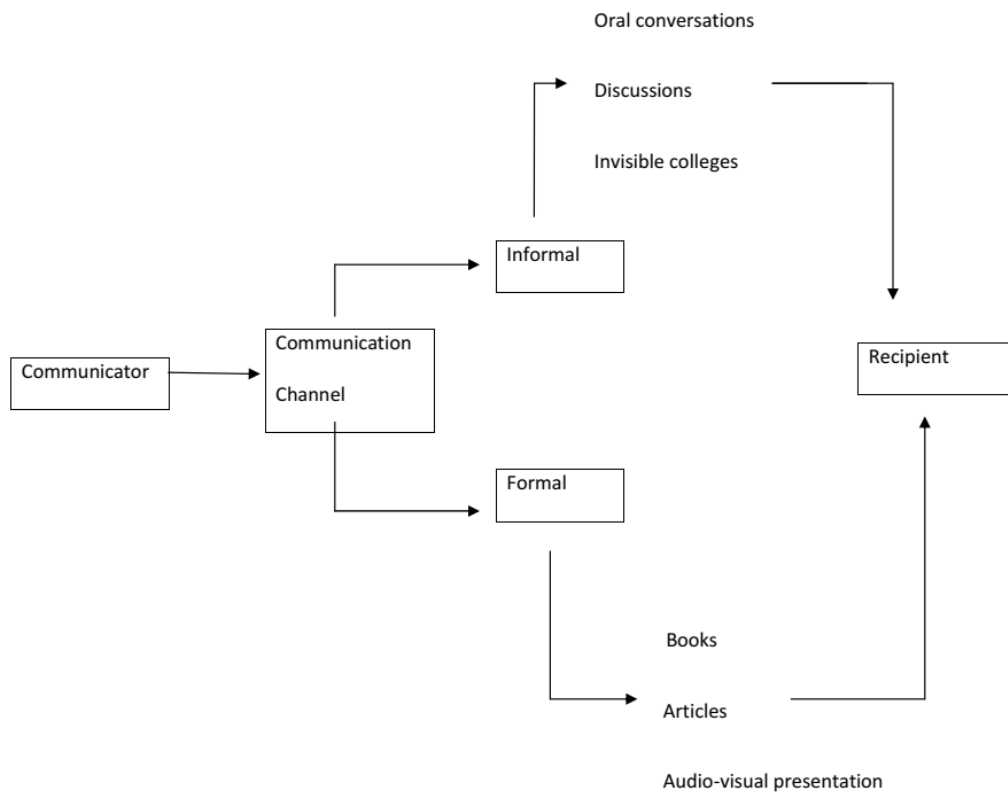


Figure 2.1 Categories of Communication Channels

Communication channels are the way through which people communicate. Use of inappropriate channel can lead to negative consequences. Face to face communication, broadcast media, mobile, electronic, written communication are the few commonly used communication channels.

2.4 Professional Communication in Medical Field

Professional communication has a vital role in the medical field. Everything that goes on within hospitals involves communication. All forms

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of communication are used in medical field such as: written, non-verbal and verbal communication. Technology is also used to make easier communication.

2.4.1 Written Communication in Medical Field

Written communication is one of the most important means of professional communication used in the medical field. This form of communication provides information to people without medical personal having to be face to face in order to communicate. It is very helpful since it is not practical to relay on face to face communication in the extremely busy hospitals. Written communication includes different kinds of signs used to provide information about illness or medications. Information about upcoming events and signs about being healthy and preventing the spread of disease are given by sign boards in hospitals. Additionally, medical records which contains detailed track of the care and history of patient is a kind of written communication. Medical professionals use these records to understand what is going on with patients. Another form of written communication used is the sign board in patient's room which includes things such as the date, the doctor's name, the diagnosis of a patient etc is marked. It is a helpful method since it is always there and can be referenced at any time. Besides these referrals, discharge letters, self-help books, prescriptions, informed consent, written records of discussions, professional journal, newspapers, and magazines are the ways where written communication is used in health care. Characteristics of effective written communication are listed below;

2.4.1.1 Letters

Letters are used by medical professionals to give accurate information to patients on investigations, results of the tests, diagnosis, treatment, follow up care, change of appointment etc. it is also used to inform another health

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professional of the experience that have had with a patient. Factors that have to be considered while preparing letters to patients are listed below;

- Correct grammar and spelling
- Correct name of patient
- Clear-obvious statement of purpose
- Logical-moves from one topic to another in a comprehensively way
- Relative information
- Accurate-represents treatment/interview/appointments/ follow up
- Results-clearly stated and unambiguous
- Specific versus general advice
- Avoids jargon or explain all medical terminology
- Indicates action for patient
- Clear contact information
- “proof” that you were listening to the patient
- Summary
- Provides an opportunity for patient to respond
- Respectful
- Legible
- Print in a suitable font size
- Letters to doctors and other health professionals should remain non-judgmental about people. Brevity, clarity and logical order should be maintained
- Organize material in meaningful categories such as; identifying data, patient profile and reason for visit, course and reliability, present illness, past medical history, social history, systems review, physical

examination, laboratory works, hospital course assessment, plan(action under taken)

- Avoid specialists jargon, neologisms, initials
- Make available the summarized record subsequently
- Provide relevant medical and other information especially diagnosis
- Clearly specify reason for referral
- Highlight main points
- Clearly state recommendations.

2.4.1.2 Medical Records

Medical record constitutes accurate record/account of what observed, concluded and did for the patient. It is considered as the primary source of communication between healthcare professionals. It allows information to be preserved. It enables clinicians to organize and remember information about patients; develop clinical skills, reflect on diagnosis and management; and plan continuous care. it facilitates continuity of care. When questions of medical negligence or malpractice arise it works as a source document. Medical records are also used by administrators for assessing debility, mental competency, and eligibility for insurance billing. These can be used for clinical research as well as research into the process of care. Completeness, accuracy, legibility, clarity, meeting the purpose makes these types of communication effective. Usage of electronic records, typed or at minimum neater writing, indexed or summarized noted, color coded, page dividers, names and signatures and other identifiers of clinicians make it improved.

2.4.1.3 Sign Boards

Sign boards are the most useful communication tool in hospital setting. Sign boards should draw attention and communicate clearly. Signs are used

when there exist a need to inform visitors, employees and patients on what to do in case of emergencies. It conveys image about a community, a company, a healthcare facility etc. quality signs that are attractive and also effectively communicate the message clearly. (“Signboards”, 2018). Sign boards are considered to be the efficient and popular method of provision of information to patients. Following are the certain advantages of pictorial signs;

- Ease of interpretation
- Visual appeal
- Better memory retention
- Universally applicable
- Leaves a long lasting impression(Malhotra, 2015)

2.4.2 Non Verbal Communication

Non-verbal communication is the communication without words, it includes facial expressions, touching, tone of voice, dress code, poster etc. even though verbal communication can be turned off non-verbal communication cannot stop, even silence speaks; including material object objects, physical space and time. In medical field non-verbal communication involves a medical professional’s or patients looks, moves, reactions, expressions etc. to understand what is going on with a patient medical professional has to be able to read a patient’s non-verbal cues. If medical professionals are unable to understand the nonverbal cues of patients well-being would be at risk. Non-verbal communication is used to express and communicate thoughts, feeling and emotions to established and maintain relationships and to influence others.(Ambady, 2017). It is identified that non-verbal behavior has an impact on patients. It is demonstrated that the non-verbal expression of affiliativeness through behaviors such as looking at the patients, nodding or forward learning has a positive impact on patient

satisfaction. (“The role of nonverbal communication in medical interactions: Empirical results, Theoretical bases and methodological issues,” 2013)

2.4.2.1 Channels of Non Verbal Communication

Communication channels are the means through which an idea or a message is transferred from one person to another. Non-verbal communication channels include facial expressions, eye gaze, body movements, gestures and vocal cues etc. Important medium of non-verbal communications are described below;

2.4.2.1.1 Faces

Face to face communication is an important medium of non-verbal communication. Through people exchange their ideas and opinions. In order to express emotions face is considered to be the most expressive channels of communication for their purpose. Mouth, eyebrows, cheek and eye muscles, pupil dilation, gaze etc are used. Facial expressions are used to convey emotions like happiness, anger, fear, sadness, surprises, determination and contempt.

2.4.2.1.2 Body

Bodily expressions occur through arm and gesturing positioning of the trunk, positioning of the arms and legs, posture and the angle of the body (Ambady, 2017). Body movements can be used to reinforce or emphasize what a person is saying and also offer information about the emotions and attitudes of a person. In medical consultation body is fundamental and is used as an instrument for both doctors and the patient to express themselves and interpret the other person.

2.4.2.1.3 Gestures

Gestures tell a lot about our nature. Gestures can be subdivided into five categories; Emblems, Illustrators, Regulators, Adaptors, Postures and Voice. Emblems are those which have a direct verbal translation such as a wave, hello. They serve the same function as a word. Eg: the signals that mean ok, come here or the hand movement used when hitch hiking. Gestures which accompany words to illustrate a verbal message are known as illustrators. For example the common circular hand movement which accompanies the phrase ‘over and over again’, or nodding head in a particular direction when saying ‘over there’. Gestures used to give feedback when conversing are called regulators. It includes head nods, short sounds such as; mm-mm, and expressions of interest or boredom. Regulations allow the other person to adapt his or her speech to reflect the level of interest or agreement. Without receiving feedback, many people find it difficult to maintain a conversation. Again however, they may vary in different cultural contexts. Adaptors are non-verbal behaviors which either satisfies some physical need. These include actions such as scratching or adjusting uncomfortable glasses, or represent a psychological need such as biting fingernails when nervous. Adaptors are more likely to be restrained in public places than in the private world of individuals where they are less likely to be noticed. Adaptive behaviors often accompany feelings. Posture can reflect emotions, attitudes and intentions. Two types of posters exist: open and closed which reflect the degree of confidence, status.(“Postures”, 2018). Voice is a paralinguistic channel of communication which expresses feelings and emotions through pitch, intonation, speed, rhythm, pitch range and volume.

2.4.3 Verbal Communication

Verbal communication is the most common form of communication. In hospitals verbal communication includes talking to patients, co- workers,

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families of patients, other departments in the hospitals etc. hospital would crumble if proper talking and interactions with patients doesn't happen. Patients are concerned with their health and respond to emotion more than factual information. Since patients care is solely based on the family's decisions it is necessary to provide honest information to families. Doctors have to communicate with nurses and other co-workers to elaborate information and to rule out any chances of mass communication. Communication keeps the hospital flowing and keeps patients alive. It is important to give clear attention to what we say to patients. It is necessary to ensure the clarity, accuracy, honesty and appropriateness of the interaction. Verbal communication in health care includes discussions, meetings, suggestions, advice, announcements, talks between co-workers, staff conferences, social gathering etc. since there exist different types of communication in healthcare, and there are many factors that influence communication. The factors influencing communication are listed below:

- Gender
- Socio cultural differences
- Roles and responsibilities
- Space and territoriality
- Physical, mental and emotional state
- Values
- Environment.

Usage of information and communication is crucial to communicate doctor to doctor and doctor to other health professionals without having to be in the same place at the same time. At the same time non-verbal communication skills are necessary to understand problems that haven't been verbalized. Like non-verbal communication, verbal communication helps to

make patients and patient families feel comfortable. Without proper communication well-being of patients would be at risk. Hence communication makes the medical field as successful as possible.

2.5 Technology in Medical Field

Technology is the main reason behind the effective and efficient running of hospitals today. Technology plays an important role in the medical field. For day to day activities hospital and staffs use a wide variety of ICT equipments such as computers, mobile phones, pagers etc. These equipments and technology allow health professionals to communicate through each other and the different wings of the hospital via text, email, medical record and verbal communications. Technology made easy flow of hospital works. Among these ICT equipments computers would be the most common tool used by doctors and other health professionals to communicate with each other, since email is the most commonly used channel of communication. Email is found to be more convenient to pass information since it allows applying attachments such as medical records and patient observations. Timely communication is necessary for the better patient outcome; otherwise it could lead to patient's symptoms or diseases getting worse("Technology in Medical Field", 2018).

2.5.1 ICT in Healthcare

In healthcare delivery system information gathering, processing, communication and management are very essential. It is seen that the investments in information and communication technologies in health sector is far behind (Department of Commerce, 1999). Technological investments were made in administrative level rather than on clinical care. Thus the progress in meeting the information needs of patients, providers, hospitals, clinics were very little. Knowledge and acceptance of ICT in health sector is

varying remarkably among public and medical professionals. For the development, implementation and further creation of novel health care technologies, the wide use of ICT in healthcare is essential. Thus the knowledge and acceptance of ICT in health care by public and medical professionals need to be strengthened. Acquiring, analyzing and protecting both digital and traditional health information is vital to providing quality patient care which can be provided through a good health information management system.

2.5.1.1 Health Information Management System (HIMS)

Health Information Management System is information management applied to health and healthcare. It includes acquiring analyzing and protecting digital and tradition medical information, which optimizes the practice of managing health records by hospitals, health departments, physicians, health insurance companies and other institutions that offer healthcare services. HIMS automates all the procedures like patient registration, billing, financial management, laboratory and pharmacy data integration etc. This data is then centralized for utilization across various departments of the hospital. HIMS records all he patient data from their first visit itself. Thus this helps to maintain medical record management. Since there is no requirement to keep files because of the EMR system a lot of space is saved in physical terms and information retrieval become easy since information stored in digital format is relatively easy to retrieve as compared to any information stored in physical format. Patient data and records are available and accessible at anytime and anywhere due to the EMR system. Through Unique Identification (UID) given to the patient tracing of patient details is easy which pave way for better health care delivery. Because of data centralization, tracking of patient became possible. If a patient is visiting different hospitals, the recorded data will help in understanding and providing the best possible treatment and consultation he/she has been receiving in

different hospitals. HIMS enables patient accounting and smoothens the whole process, as the data is recorded in the electronic format.(“ICT in healthcare”, 2018)

2.5.2 Telemedicine

Telemedicine is the utilization of medical information exchanged from one site to another, via electronic communication tools for improving a patient’s clinical health status. Telemedicine includes a wide variety of applications and services like email, smart phones, wireless tools and other forms of telecommunication technology for treating patients in remote areas; also expediting the medical education and training of doctors and paramedical staff present in remote locations across the country.

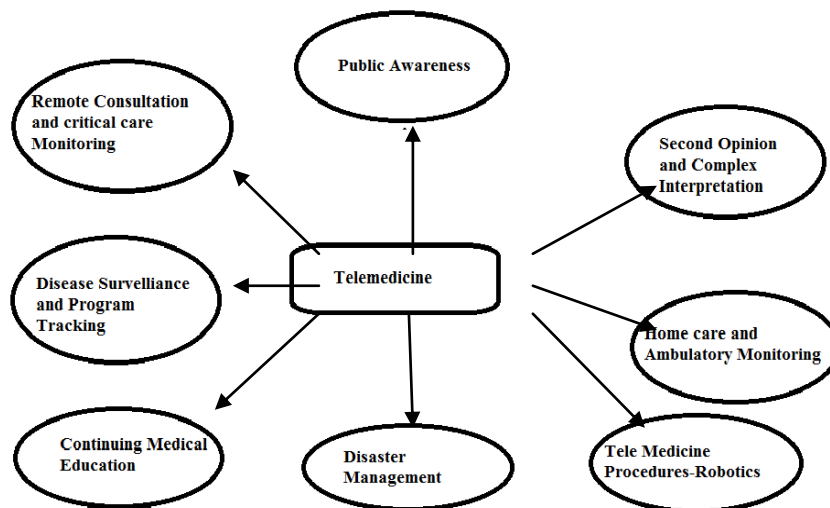


Figure 2.2 Areas of Telemedicine

Majority of the telemedicine platforms, both in public and private health sector in India are being launched as startup projects supported by Indian Space Research Organization (ISRO), Department of Information Technology (DIT), Ministry of Communication and IT and The Government of India in partnership with state government.(“Telemedicine”, 2017)

2.5.2.1 Telemedicine: Extending Healthcare

Telemedicine allows lowering healthcare costs, providing patients better access to healthcare services. The concept of telemedicine arrived in 20th century with telephone and radio, today diverse advanced technologies including video telephone; latest telemedical devices, mobile cooperation technology, diagnostic methods, distributed client or server applications etc have upgraded the quality and extent of telemedicine services. Telemedicine offers patients simple, on- demand care. Telemedicine is convenient to patients who live in remote areas or to those who cannot take off time from work can access care virtually. Teleconsultation, tele-ophthalmology, tele-pathology etc services save time and cost on travelling. Telemedicine reduces unnecessary visits and eliminates transportation expenses. More over remote analysis and monitoring services and digital data storage reduces healthcare service costs, saving money.

Telemedicine is usually provided in collaboration with multispecialty hospitals/medical colleges which excel in best treatment and best medical professionals. Telemedicine does not require 'person in visit' hence in telemedicine system expert can give advice to general physicians and nurses in rural areas.

2.5.2.2 Telemedicine Initiatives

In India, there is no provision of primary medical care in rural areas. Secondary and tertiary medical care is not uniformly available even in suburban and urban areas. Healthcare providers are now looking at Telemedicine to overcome this issue. It is easier to set up an excellent telecommunication infrastructure in suburban and rural places than to place hundreds of medical specialists in these places (Grigsby, 1999). Major Telemedicine initiatives by Government of India are discussed below:

 ISRO & DIT

Telemedicine is one of the unique applications of space technology for societal benefit. ISRO Telemedicine programme started in 2001 has been connecting remote/rural/medical college hospitals and mobile units through the Indian satellites to major specialty hospitals in cities and towns. ISRO Telemedicine network covers various states / regions including Jammu & Kashmir, Ladakh, Andaman & Nicobar Islands, Lakshadweep Islands, North Eastern states and other mainland states. Many tribal districts of Kerala, Karnataka, Chhattisgarh, Punjab, West Bengal, Orissa, Andhra Pradesh, Maharashtra, Jharkhand and Rajasthan are covered under Telemedicine programme.

Presently the Telemedicine network of ISRO covers about 384 hospitals with 60 specialty hospitals connected to 306 remote/ rural/district/ medical college hospitals and 18 mobile Telemedicine units. The mobile Telemedicine units covers diverse areas of ophthalmology, cardiology, radiology, diabetology, mammography, general medicine, women and child healthcare.

While ISRO provides Telemedicine systems software, hardware and communication equipment as well as satellite bandwidth, state governments and the specialty hospitals have to allocate funds for their part of infrastructure, manpower and facility support. In this regard technology development standards and cost effective systems have been evolved in association with various state governments, NGOs, specialty hospitals and industry. (“Telemedicine initiatives”, 2018)

 Pan – African e-network Project

The Ministry of External Affairs, Government of India will implements this project with the assistance of Telecommunication

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Consultants India Ltd (TCIL). The project will involve establishment of VSAT based Tele-medicine and Tele- Education infrastructure for African countries. Any doctors from any of the remote locations can refer the patient's medical records to any of the super specialty hospital and have a Tele-medicine video by the doctors on a scheduled time in association with the provider super specialty hospital and the receiver and the remote Tele-medicine centre. ("E network project", 2018)

SAARC Telemedicine Network Project

The South Asian Association of Regional Cooperation (SAARC), creates as an expression of the region's collective decisions to evolve a regional cooperative frame work, incorporated the initial preparatory work for a pilot project connecting one/two hospitals in each of the SAARC countries with 3-4 super specialty hospitals in India. ("SAARC project", 2018)

National Medical College Network

The first phase of National Telemedicine network project, it is proposed to connect district hospital with SDH/PHC/CHC at remote/rural consultation. ("National Medical College Network,"). The project is set up by the Union Ministry of Health and Family Welfare. It aims to establish networking of medical colleges. Few tertiary care academic medical institutes from different regions of the country will be identified as medical knowledge resource centers (Regional hub). Each of which will be connected to medical colleges (nodes) in that region. One of these regional hubs will be identified as the central hub which will be responsible for coordinating with the national network apart from providing the infrastructure for central content development centre. ("Medical college network", 2018)

 National Rural Telemedicine Network (NRTN)

National Rural Telemedicine Network Project under National Rural Health Mission (NRHM) is under planning phase. Four Regional workshops for NRTN are planned in four different regions of the country to educate the state functionaries and finalize the state project proposals.

 National OncoNET Project

Under National Cancer Control Program 27 Regional cancer centers will be linked with 100 peripheral centers for primary prevention, early detection, treatment and rehabilitation of cancer patients.

2.5.3 Mobile Health (M-Health)

M-Health is the delivery of healthcare services or information with a mobile phone. Information service is the lowest tier of M-Health. It generally offers one-way communication or message –board style question and answer service. Enabling services in M-Health provides basic platform for two way information flow between patients and healthcare professionals. There are numerous partnerships between healthcare and telecom providers including: Airtel and Fortis hospitals, Idea with Apollo hospitals. These partnerships provide services such as teleconsultation, video consultation over 3G, appointment scheduling, and triaging and SMS prescription services.

Several mobile apps are available in the hospital settings. Maestros; Medline systems have an application for Blackberry phones which allows physicians remote access to patients ECG and heart performance reports on their Blackberry smart phones. TeleDoc provided handheld mobile phone devices to village health workers in India, permitting them to communicate with doctors. Narayana Hrudalaya uses mobile technology to enable early disease detection thus creating a win-win situation for patients, hospitals and

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even insurance and wireless companies. My Medisupport powered by Mcure, lets health users pinpoint physicians and healthcare service providers by location, view physician profile, qualifications and consultation timing. The user can then request appointment by a simple touch screen button and the doctor gets an automated request for appointment via email. Ucheck, a Smartphone app for analyzing the urine up to 10 markers covering 25 different medical conditions. The app clicks the chemical strips dipped in a sample of urine and then compares them to a color-coded map and within a few seconds reports the results, showing levels of glucose, bilirubin, proteins, ketones, leukocytes and up to 5 other parameters in a chart. The app is currently undergoing testing in a Mumbai hospital.

Major barrier identified across M-Health is the network coverage. Other major problems include- security and privacy of healthcare information and the complex nature of mobile apps. Other than these hindrances M-Health is found to be better in saving in terms of time and money and fewer in person visits.

One of the major benefits of M-Health is that it bridges the gap between existing and required health care services. Facilities such as remote monitoring of patients, online appointment scheduling, online prescription renewal, consultation etc are bridging the gap between the consumer expectation and the services available. M-Health services such as telephone-based appointment scheduling and prescription refill save plenty of time. With the help of M-Health it is able to cut down on co-pays and time spent in waiting rooms. Through M-Health it is possible to check glucose monitoring, BP/heart beat monitoring, and urine analysis etc. The results can be forwarded to physician online. The online consultation provides quality care to patients. Video calling and online consultation helps the people in rural areas to access for healthcare services. It is necessary to provide dispensing high quality,

locally relevant information from a reliable source to ensure the success of ICT components such as M-Health. Effective partnership between private parties such as telecom operators, local NGOs and health care providers and well branched out data collection network and a team of doctors will provide a better scenario in this field. More over government must increase its spending on the healthcare for promoting the infrastructure development. Like National Health Portal, more health information repositories/databases should be created for better dissemination of healthcare information. (“Benefits of M-Health”, 2018)

2.6 Application of ICT in Health Sector in Kerala

Kerala, one of the federal states of India is well known for its high levels of achievements in health care, education and social justice. Kerala’s achievements in health sector are considered as a model for the country since the state is maintaining quality from primary health centre to the medical college level. Historically, Kerala made a small beginning for a primary healthcare system. The availability of facilities for primary healthcare, their accessibility, the very high degree of awareness and acceptability among the people has made in Kerala model an almost perfect one. To provide quality services at all health levels Government of Kerala implemented a patient friendly mission called ‘AARDRAM’. Mission ‘AARDRAM’ aims at creating ‘people friendly’ health delivery system in the state. It envisages transforming all primary health centers into family health centers as first level health delivery point based on the state of the art investigation and intervention protocols. The mission envisages ensuring quality care at primary health centers. All high footfall hospital will be transformed to patient friendly out patient service providers. The service includes web based appointment system, virtual queues, patient reception at registration centers,

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waiting rooms with Wi-Fi facilities and so on. The objectives of the mission are;

- Primary health centers become family health centers
- Avail best services of the best doctors and paramedical staff
- Reform out patient management services with state of the art facilities.
- Hygienic and spacious wards, rooms, beds and toilets
- Lifesaving medicines from the hospital concerned on moderate rates.

Government aims at making public health care institutions especially government hospitals at primary, secondary and tertiary care sector people friendly by improving their basic infrastructure. The focus would be on ensuring availability of medical check-up and other investigations at the outpatient and in-patient wings. The activities of the mission would cover three major sector in state's health care delivery system; Government medical college hospitals, district hospitals, taluk hospitals and alternative systems covering Ayurveda and Homeo hospitals and primary health centers.

Current Scenario	You can Make the Difference
<ul style="list-style-type: none">• Overcrowded medical college hospitals• Unavailability of electronic health records for future reference• Unhygienic atmosphere in hospital wards• Inadequate infrastructures	<ul style="list-style-type: none">• Sponsor waiting rooms• Provide computers and accessories, sponsor digitalization of O.P• Adopt a hospital ward of cleaning• Donate one life saving equipment

(“AARDRAM”, 2017)

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AARDRAM aims to transform the primary care providers into family health teams that will proactively address the health needs of families assigned to them. They will develop the knowledge and skills needed to manage current health challenges and focus on preventive aspects of health so as to reduce the morbidity burden and referrals to higher centers. Curriculum to train the primary care providers on the needed capacity has been developed. This will be administered in part through mass open online courses hosted on the SWAYAM platform of Central Government in hospitals. (“Kerala IT Mission”, 2018)

2.6.1 ICT Equipments for Communication

ICT facilitated healthcare which is also known as e-health is well recognized for the collaboration and involvement of patients and medical professionals in the prevention and treatment of diseases. ICT provides better and efficient healthcare services. ICT can potentially transform the current medical scene. It can be applied broadly in four areas; education, research, referral and management of data (“ICT Mediated Communication”, 2018). Through e-health doctors get better and faster access to patient information, medical records, and laboratory results etc. ICT also facilitates better communication in health sector. There exist different types of communication tools that can be used in health care sector for the better communication scenario. These ICT mediated communication tools allow efficient and fast communication among health professionals. Following are the major ICT equipments that can be used in health sectors;

2.6.1.1 Mobile phones

Mobile phone is a portable telephone that can make and receive calls at radio frequency links while the user is moving within the telephone service area. It offers full duplex communication and transfer the link when the user

moves from one cell to another. Mobile phone is mainly designed for voice communication. In addition to this it supports text messaging, email, internet, gaming, Bluetooth, camera, recorder and MMS for sending and receiving photos and video, MP3 player, radio and GPS. Mobile phones offering only these capabilities are known as feature phones; mobile phones which offer greatly advanced capabilities are referred to as smart phones.

The introduction of mobile devices has a great impact on many fields including medicine. Mobile devices have become commonplace in healthcare settings. Variety of apps is used by healthcare professionals to do tasks such as: information and time management; health record maintenance and access; communications and consulting; reference and information gathering; patient management and monitoring; clinical decision making; and medical education and training. (Ventola, 2014)

2.6.1.2 Computer and Laptop

Computers are important in communication and are the centerpiece of information technology. Through computers and internet email, websites, blogs, social networking, video chat etc became common. On the other hand laptops enable users to take the online world with them. Laptops allow the organization to work wherever they may be to remain productive. Computers play a big role in communications by facilitating email, fax, videoconferencing and more. Computers have been used in healthcare mostly for administrative functions. Now a days computers are used in medical carts, nurse stations, laboratories and operating rooms. Usage of computers in communication adds efficiency and simplicity in jobs. Through real time chat important information is relayed when needed. The telemedicine facility allows health professionals to communicate via computers and smart phones with colleagues and patients all over the world. Patients in rural area can get the diagnosis without travelling to hospital. Another service offered through

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computers is email. Email is one of the widely used communication tools in health sector. It allows health professionals to communicate each other at a low cost. Since it is an asynchronous communication channel, it does not interrupt the duties of the professionals. In a study conducted by Ye, et al. it is identified that majority of email contents from patients were for non acute issues, including medical questions, medical conditions/ consultation/ medical updates, medical information and subspecialty evaluation. Besides these administrative issues and lab results etc can also be transferred though email. (Ye, et al., 2010). Websites are another communication tool that can be used for disseminating information to a large audience. Health professionals are now embracing the internet to the extent that they direct patients to appropriate private websites. (William, 2003). It is identified that health professionals are making active use of internet for professional tasks and communication (Rehman & Ramzy, 2004). By developing websites it is possible to distribute information to peers regarding meetings and all via reports, contact information and giving links to other sites etc. (Suzanne, 2002) These are the most commonly used communication tools in health sector to provide efficient and better communication environment.

2.6.1.3 LCD Projector

LCD projector is a kind of video projector for displaying video, images or computer data on a screen or other plane surface. It is a modern counterpart of the slide projector or overhead projector. LCD projectors are used in smart class rooms where integration of information and communication technology with teaching learning process makes the class room transaction more vibrant and lively. People understand more when they see it. Likewise LCD projector allows visualizing matter whether in a boardroom, meeting room, seminar room, large auditorium, waiting room etc. providing the highest quality healthcare is increasingly about the management, allocation and accessibility

of information to care providers, patients and their families. It offers hospitals the flexibility of using images, video or relevant news feeds to interact with patients and visitors. It ensures efficient traffic flow and emergency information broadcasting, enhancing the total healthcare.

2.6.1.4 CD/DVD

Compact Disc (CD) was originally developed to store and play sound recordings but was later adapted for storage of data. It has high storage capacity with instant random access and resistance of degradation of media and stored data over time. Its compact size makes it ease of use and distribution. With storage capacity of 650 MB CD is the most efficient and most affordable storage media. Digital Video Disc (DVD) is the medium that can store any kind of digital data and is widely used for software and other computer files as well as video programs watched using DVD players. DVDs offer higher storage capacity than CDs while having the same dimensions. DVDs hold 25 times more information and is 9 times faster than CDs. It has up to 4.7 GB capacity per layer and 8.5 GB per side maximum.

2.6.1.5 Video Technology

Video technology enables a live visual connection between people residing in different locations for the purpose of communication. It enables transmission of images, text, video and audio between two locations. Videoconferencing technology is used in health sector for conducting meeting among professionals; it has been used in tele- medicine and tele- consulting areas also. Remote prescription, preparation, verification and drug administration are the areas where telemedicine is applied (Pranthosh, 2014) Online communication, image processing system and interactive information design, patient history over review, physical examination, psychiatric evaluation and ophthalmological assessment with face to face etc

become easy and smart with interactive computing and information system support (Paul, 2013). Nowadays video conferencing is widely used in healthcare industry. It offers benefits to patients, doctors and hospitals in many aspects. One of the biggest benefits of video conferencing in healthcare is that it helps doctors save time and cost, since through video conferencing doctors can meet directly with patients and observe, give prescription to them. Since doctors can take care of patient online it is possible to treat more patients who are not natives or who have no easy access to hospital because they live in remote. Medical training become easier through video conferencing since doctors can take part in online medical training. It is possible to listen instructions, discuss about serious diseases, and treatments and also can record the whole medical training process. Video conference breaks the geographical restrictions and gives the opportunity to interact with medical specialists online anytime anywhere, with less expense. Video conferencing also enables the doctors to watch operation, communicate with main surgeon and even make instruction in time. All together videoconferencing empower to create a harmonious, healthy and reliable relationship between doctors and patients, leading to productivity improvement of healthcare (Paul, 2014).

2.6.1.6 Scanners, Cameras and Printers

Scanner is an input device that captures images from photographic prints, posters, magazines and similar sources for computer editing and display. Cameras and imaging technologies have improved hospital environment. Video surveillance is an effective tool for increasing security and for controlling costs. It protects hospital employees and patients from security breaches and provides valuable visual evidence. The output device printer accepts text and graphic output from a computer and transfers the information to paper. The rapid update of internet email through the 1990s

and into the 2000s has largely displaced the need for printing as a means of moving documents, and a wide variety of reliable storage systems means that a "physical backup" is of little benefit today. Even the desire for printed output for "offline reading" while on mass transit or aircraft has been displaced by e-book readers and tablet computers. Today, traditional printers are being used more for special purposes, like printing photographs or artwork, and are no longer a must-have peripheral. ("Printers", 2018)

2.6.1.7 Telephone

Telephone is the most common ICT tool used for communication in workplaces. It can be used for several purposes. Telephone consultation can be conducted by physicians; it is very useful for the patients who can't travel a long way or for those living in rural areas. Telephone consultation increased access to already overstretched service; reduce control over work load of the physicians. Even though it is seems to be useful technical difficulties with getting through on the phone to doctors, hearing problem, problem in getting preferred doctors etc were noted (Mckintry, 2009). Teleconferences can also conduct in health sector by allowing a toll free service so that medical professionals can participate in meetings through teleconference from home or from their mobiles. This allows communication of health professionals from different location at a same time.

2.6.1.8 Fax

Fax machine is a devise that is used to send documents electronically over telephone network. The transmissions it sends are called "faxes" and these can be between two fax machines, or between a fax machine and computer or online fax service that is equipped to send and receive faxes. Before email was invented, the fax machine was the main way of quickly

communication. Healthcare professionals still uses fax machines for sending important documents such as patient records and prescription orders.

2.7 Communication Barriers

There exist multiple barriers that hinder professional communication in an organization. Health professionals tend to work autonomously, even though they may speak of being part of a team (Coler, 1995). Efforts to improve healthcare safety and quality are often jeopardized by the communication and collaboration barriers that exist between clinical staff. Some common barriers in inter professional collaboration is listed below;

1. Personal values and expectation
2. Personality differences
3. Hierarchy
4. Disruptive behavior
5. Culture and ethnicity
6. Generational differences
7. Gender
8. Historical inter professional and intra professional rival varies
9. Difference in languages and jargons
10. Differences in schedules and professional routines
11. Varying levels of preparation, qualifications and status
12. Differences in requirements and regulations and norms of professional education
13. Fears of diluted professional identity
14. Differences in accountability, payment and rewards
15. Concerns regarding clinical responsibility
16. Complexity of care

17. Emphasis on rapid decision making.

These barriers notably occur between physicians and residents surgeons and anesthesiologist and nurses (Daniel, 2005) (Gaba & Fish, 2001), (Daniel, 2005). In a study conducted by (Maria, 2011)organizational management barriers have been grouped into five main categories: Each individual category, along with its subcategories is discussed below;

1. Structure of healthcare organizational systems: Structure of an organization gives a picture of how team members are organized and how they coordinate and work together. In health care seniority is often based on clinical experience. Senior health professionals claim that health organizational systems with strong hierarchical traditions are likely to expect their generation to conform to the culture rather than embrace new changes. Thus the hierarchy tends to be a barrier in organizational communication. Team work and cooperation among different tiers of the healthcare organizational system i.e.; primary, secondary, tertiary and community care providers. Application Health Information Technology helps to overcome the barriers in team work and collaboration. Another issue is autonomy, to avoid autonomy issues cooperation with other health professionals need to be organized adequately.
2. Tasks: Tasks represents the way in which the work is organized. Hospitals are patient centered, for that it is necessary to coordinate the work of many care team members. The transition to HIT that supports value-added patient centered care tasks has profound implication for workload, workflows and work processes. In a study conducted by Coiera and co-workers (Westbrook, 2004), (Yu, 2004), (Coiera, 2009) noted that technologies profoundly transform healthcare and the importance of roles, tasks and workflow and how technologies should

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be designed to adapt to these. Another study by (Brokel & Harrison, 2009) emphasis the need to change work tasks from process oriented approach to a patient -oriented process. Face to face interaction between the patient and the health care professionals were the traditional healthcare delivery method. Clinicians have expressed fears to use health information technologies since it leads to the depersonalization of healthcare(Shortliffe, 2005)

3. **People Policies:** People policies vary in terms of how accountable each individual is made to be for his/her actions. Clinicians require specific training according to their specialties. With regard to health information technology skills, the lack of training and IT/HIT literacy acts as a barrier. Lack of legal frame work is the other issue. The main concerns for data sharing arise from current legal framework. Lack of legal framework for liability issues on email communication results in physician's concerns that they will be held responsible for patients who misuse email for time sensitive matters and who are unaware of the asynchronous nature of email communication(Sands, 2004). For providing effective patient care it is necessary for healthcare professionals to work as a team and to share information. Team members may suffer a three-way split between their autonomous professional commitment to their patient, their loyalty to the team, and their format accountability to their employer. Thus shared care brings further complexity in many cases(Rigby, 1998),(Protti et al., 2007).. Physicians are concerned that policy makers, insurers and administrators influence, restrict or dictate how medicine is practiced. Thus their act as a threat to physician's autonomy results in lack of information sharing(Eric, 2009) Another factor that determines organizational structure is the centre of gravity. It serves as an additional determinant of the reward and career systems within organizations. A shift downstream requires a corresponding shift in the

power base of the organization, away from the dominance of the top and middle management.

4. Incentives: incentives include direct monetary compensation, benefit packages and associated perquisites, bonus incentive plans, promotion and career development opportunities, managerial praise noted and recognition. Many studies noted the resistance of health care professionals with lack of incentives, arguing that adequate funding and a review of current payment system would result in faster adoption and potentially in data sharing(OECD, 2010), (Dobren, 2008), (Taylor, 2005)
5. Information and decision process: It is necessary to share information among health professionals to cooperate and work as a team. Thus the lack of information flow among healthcare acts as a barrier in communication and patient safety. It is seen that barriers within different categories and subcategories are interrelated.

2.8 Conclusion

Clear and assertive communication, teamwork and vigil are the keys in preventing errors in the medication management process, which involves several professionals with physician, pharmacist, and nurses being the major players in the hospital setting (Arun, 2012). ICT mediated communication technologies provides new tools for accessing and sharing information in health sector. Proper communication and exchange of information can be ensured by the application of Information and Communication Technology in health sector. A successful healthcare system makes use of information and communication technologies to improve patient care reduce costs.

The next chapter gives the review of studies related to the Professional Communication of Post Graduate Medical Students in Kerala.

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REVIEW OF RELATED STUDIES

3.1 Introduction

3.2 Communication among Doctors

3.3 Communication among Doctors and other Health Professionals

3.4 Communication among Doctors and Patients

3.5 Communication in Health Sector using ICT Equipments

3.6 Conclusion

3.1 Introduction

Literature review is a summary of previous studies on a topic. It provides a description, summary and critical evaluation of each source. It identifies the gaps or controversies in the topics. In this chapter the investigator made an attempt to review studies conducted on professional communication of post graduate medical students and its related aspects, with a view to justify the need and relevance of the present study. Literature search was conducted during the period 2014-2017. Related studies were collected from databases like Emerald, J-store, PubMed etc and medical journals like BMJ, Journal of Medical Internet Research etc were also used. Review of related studies helped the researcher to attain a better understanding of the subject. Review of related studies is discussed under the following sub headings:

Communication among doctors, Communication among doctors and other health professionals, Communication among doctors and patients, Communication in health sector using ICT equipments

3.2 Communication among Doctors

Effective communication among doctors is very important in healthcare settings. Lack of effective and timely communication among doctors affects both quality of care and patient experience. Lack of communication among doctors leads to patient harm, delays in patient receiving the assessment and treatment etc. There is a need to understand the communication activities among doctors in their daily professional lives.

Long and Atkins (1974) carried out a study to understand the communication patterns between the consultants and general practitioners in four hospitals in South East England and in the catchment areas of these hospitals. Study also finds out doctors attitude to present forms of

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communication between the hospital and general practitioner. Results of the study show that face to face contact between consultants and general practitioners was limited. A few consultants had a considerable amount of contact with general practitioners because of clinical meetings and lectures. They most frequently met at a domiciliary visit. Majority of doctors considered it is desirable to meet informally. Majority of the consultants and general practitioners opined that, there is a need for communication between consultants and general practitioners while the patient is in hospital. At the same time they emphasized that contact was not essential but sometimes desirable, which would benefit their patients. However only a very few consultants and general practitioners communicate each other by letter, telephone or personally. Study noted that the main method of communication between consultants and general practitioners is the letter of referral and discharge. Lack of information about the patient in the letter is found as the main complaint against this type of communication. Majority of the general practitioners and half of the consultants reported that they are satisfied with the communication. Study concluded that the relationship between each other is not important in the communication process.

Coiera and Tombs (1998) conducted a study to identify the communication patterns among hospital based healthcare workers. Non participatory qualitative observational study was carried out for the purpose. From the study it is noted that consultants were involved in almost no call events. Junior medical staff bore the burden of calls received; the nurses sent a similar number of calls. It is noted that there is a well-recognized flow of communication events from nursing to medical staff. Study indicated that medical and nursing staffs were net generators of communication traffic in the hospital. Main purpose of communication is to know the specific patient details and questions of diagnosis and treatment. At the same time for some information formal sources like patient notes/laboratory results are consulted.

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Study noted that medical staffs seemed almost to favor interruptive communication mechanism like face to face discussions, paging or telephone over less interruptive methods. This is because of the lack of asynchronous communication techniques like voice mail, email in hospital setting. Study concludes that hospital staff may need instruction in appropriate use of communication facilities and the some communication technologies like voice mail and email with acknowledgement etc.

American college of physician's Foundation (2003) submitted a paper in which the joint commission's accreditation standards underscore the fundamental right and need for patients to receive information both orally and written about their care in a way in which they can understand this information. This paper is based on the round table discussion, the recommendations in this study offer the opportunity to improve health literacy and reduce communications related errors. Report identified that effective communication is necessary for the patient safety. Some solutions are recommended to make effective communication which includes: train all staff in the organization to recognize and respond appropriately to patients with literacy and language needs. Create patient centered environments that stress the use of clear communication in all interactions from the reception desk to discharge planning, use well trained medical interpreters for patients with low literacy.

Darell et al. (2005) examined some general principles and pitfalls observed in the physician to physician communication and barriers of physician to physician communication and put forward recommendations for the better patient handoff process. Study identified different handoff process takes place at different hospitals. To record patient's information like name, record number, age, race, location, code status, admitting diagnosis, problem list, allergies and active medications etc. many hospitals use handoff forms as

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a part of its computer system. It is found that institutions in metropolitan area utilize Personal Digital Assistants to document handoffs. Study also identified the major barriers in handoff process. The physical settings in which communication takes place should be reasonably quiet and it is noted that status differences and interpersonal power and conflict also affect the communication. Face –to – face hand offs are preferable medium of communication. Study recommended that standardizing the patient handoff process and teaching medical students about the proper hand off methods to reduce the hand offs errors (Satcliffe et al., 2004).

Coiera (2006) reviewed the role of communication in providing effective and quality services in healthcare. A study by (Covell et al.,1985) found that clinician prefers colleagues rather than document sources to meet their information needs. (Safran et al.,1998) noted that 50 per cent of information transactions in a hospital occurred through face to face communication between colleagues, followed by email, voice mail. Study also reported that communication errors are found to be the leading cause than errors due to inadequate clinical skills in a hospital. (Doolittle & Allen, 1996) reported new technologies like telemedicine facilities via video conferencing are able to share expertise of clinicians beyond the hospitals. According to Coiera, critical examination of the characteristics of the hospital can identify the areas where there is a need for improvement exists; two such areas are mobility of health workers and asynchronous messaging. Introduction of asynchronous communication systems such as emails, voice mails will help to reduce the interruptions occurring in synchronous systems like telephone and pager systems. Study concluded that communication enhancement is the cheapest and most cost effective interventions available to improve the quality and safety of the clinical services.

Review of Related Studies

Davies (2007) found that scholarly knowledge continues to be one of the sources used by clinicians. The other communication methods like face to face communication, hard copy and telephone calls still prevail in the clinical setting. Study suggested that adoption and uptake of new technologies within the clinical setting may influence this in near future. It also suggested that use of evidence based medicine needs to be championed by librarians. In his study he reviewed that a study in a clinical setting in UK found that handheld technology is an effective tool to aid evidence based medicine, as the device held sufficient information to be relevant, accessible and effective at the point of care. Two third of the studies ranked text sources first, in most of the studies 'human' is the second choice. Two third of the studies mentioned that lack of time and lack of limited search skills as a barrier in searching information. In identifying studies SCOPUS, MEDLINE (1996-2006) and LISA, are used.

Mandana (2007) reviewed the factors that influence people's understanding of health information and how miscommunication of health information can affect people's health. Literature review was conducted in the scholarly portal including MEDLINE, Nursing and Health Sciences (SAGE), Psycho Info and Social Science Abstract between 1965 and 2005 from US, Canada and Europe. From the literatures it is noted that poor/limited health literacy is a major obstacle to the effective health communication. The healthcare professionals are suggested to educate about the problem of low literacy and take this into account in their communication with the public. Avoiding medical jargons during both verbal and written communication by health professionals may benefit people. Another issue that affects health communication is the impact of format presentation of risk information and decision formation. There is no universally accepted format for the presentation of probabilistic information, which is readily understood. This review has pointed out that effective communication of health information

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requires careful consideration of a plethora of factors extending from the individual's cognitive ability and biases of the content and format presentation of information. It is recommended that health information should be communicated in clear, simple, direct, personal, conversational style and at a level that could be understood by the majority of the population. Healthcare professionals should ensure that their target audience understands their messages by allowing more time to assess and verify their patient's comprehension.

Maria et al. (2007) carried out an observational non experimental study in inner city hospital Emergency Department (ED) in London, where nurses in charge of ED observed to identify the level of communication, interruptions and simultaneous events; the channel and purpose of communication and interaction types. To carry out observation a microphone was attached to the nurse that connected to a small tape recorder which was placed in nurse's pocket. Besides observation nurses were additionally asked whether there is any unresolved communications, problems in communication etc. study has identified 8 major communication channels which includes- face to face, telephone, computer, white board, pager, patient records, and paper sources. Among these face to face communication and telephone communication which belongs to synchronous communication channels were found to be mostly used in ED. Study identified 8 distinct purposes of communications also. They are; patient management, staff management, ward management, administration, equipment, social, study and education. Among this communication concerned with patient management was higher than the rest. The study showed that nurses in charge of ED have to deal with high levels of information exchange and synchronous type of communication were mostly used by staff and were majority relating to patient management. Study concluded that improving communication between health care staff by reducing the levels of interruptions and minimizing the unnecessary

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information exchange could result better communication which is important in patient care and plays an essential part of teamwork and patient safety.

Hewett (2009) studied the impact of communication on the quality of care in a university teaching hospital. An explorative qualitative inquiry was conducted. Study was conducted to know how are professionals identify and intergroup relations manifest in doctors communication about and with each other and to know how are inter specialty relations reflected through the use of accommodative and counter accommodative behaviors and strategies, and also how does intergroup communication affect the quality of patient care. Snowball sampling was used to augment the sample during the interview process. Analysis was done by using automated lexical analysis, a text mining software package which performs an automatic analysis. Hospital doctors had a strong sense of their disciplinary and professional membership, they spoke about themselves and other doctors using specialty department labels such as “Gastro”, “DEM” etc. participants opined that the impact of intergroup conflict compounded by heavy workloads on the tendency for doctors to adopt an intergroup orientation towards other specialists. Interpersonal control was a dominant communication strategy between specialty group members. It is found that intergroup climate and subsequent inter specialty conflict adversely affected patient care. Study suggests that strategies to resolve hospital conflicts must address structural issues contributing to an intergroup climate and quality of patient care must be addressed through intergroup means.

Dousari (2009) studied the information needs and seeking behavior of doctors in Kuwait Government hospitals. The study investigates the information needs of doctors and how doctors seek information, do they seek information sources outside the hospitals for medical practice, the criteria used by doctors in choosing clinical information for medical practice and it

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also investigates the internal and external information sources used by doctors. Study identified that besides interpersonal communication (eg. Asking patients, colleagues, nurse) and patient files other information sources like printed and electronic materials, hospital libraries, personal and department collection, telephone, communication with other hospitals, seminars, lectures, meetings are also used. Among these most of the respondents depends personal collection for required information. Respondents revealed that they always look for precise, organized and clinical based evidence and information. When they consult colleagues, they chose experienced colleagues. Information satisfaction with current information resources and services were also studied, regarding communication with patient respondents have different opinion. Most of them reported that wards were a good place to communicate, more investigations may be done and so there is a possibility of a different diagnosis. Participants showed their dissatisfaction with services provided by the libraries, some participants were dissatisfied with the working hour of the library. Some shown dissatisfaction with the service provided by the medical record department. They were disappointed with the filing system's problems such as missing files and incomplete information. Participants indicated that inaccessibility of the internet was a big problem and the hospital internet is only available at some places also they do not have subscription to journals through the internet. Study suggested to enhancing the communication with other hospitals by providing intranet connection. They need hospital libraries and research centers and services to improve communication with their colleagues by providing mobiles and e-mails from the ministry of health, also suggested to develop a proper infrastructure for the digital health information system. Study found that most of the respondents are unhappy with other departments; uncooperative staff and delay in sending results are the mentioned reasons.

Review of Related Studies

Aspinall et al. (2009) conducted an evidence-based feasibility study to determine the best approach for implementing area wide electronic Health Libraries (eHLs) that would serve all health professionals in Minnesota. The criteria included in the study stated that, the resource provided by the vendors must represent the needs of a broad range of health professionals, provide access to the following categories of resources: evidence based medicine and evidence based nursing point-of –care products, clinical drug references, full text medical and nursing electronic journals, books, general medical and nursing bibliographical databases and the Cochrane library etc. The evidence-based feasibility study showed the importance of integrating sustainability planning into an eHL project in order to support long term success.

Rutebemberwa et al. (2009) investigates how community members give and receive information from the hospital management and administration. Interviews were conducted with superintendents of the hospitals, and focus group discussions were conducted with health workers and communities around the hospitals to understand how hospitals communicated with the communities around them. Study found that there is a lack of effective communication between the communities and the hospitals that serve them in Uganda. Suggestion boxes and radios are identified as the available communication channels. Mass media like radio, television are reported too general to be addressed by higher authorities above the hospital and the suggestion boxes are found more difficult to communicate since they were more of individual needs rather than community concerns. It is evident that there is a lack of direct two-way communication between the communities and management committees or the communities and hospital administration.

Joly (2012) conducted a study to examine the perceptions of knowledge transfer of foreign African doctors practicing in South African

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provincial hospitals. The influence of inter personal relationship, language and communication and organization culture and demographic variables on knowledge transfer were assessed. Findings of the study indicated that inter personal relationships, language and communication as well as organizational culture influenced knowledge transfer. Study forwarded few recommendations to improve the knowledge transfer by creating communities of practice to share information about a common problem or issue, mentoring programmes, best practice studies or meetings etc.

Norbert and Lowogg (2012) studied the information seeking behavior of physicians in Tanzania. It is found that physicians need specific medical information to enhance their knowledge on a daily basis; particularly they need information on patient care rather than information for research and further education purposes. To meet their needs they prefer formal sources like textbooks, electronic resources and printed journals. It was found that frequent power cuts and lack of time were the major barriers that inhibited physicians to seek information. A case study research was used in this study and it was conducted at Muhimbili National Hospital in Dar es Salaam. Questionnaires were personally distributed to all physicians for data collection.

Edwards et al. (2012) carried out the study to explore the communication channels used within hospitals to communicate with healthcare workers and to propose practical recommendations. Study proceeds by critically reviewing main communication channels used within acute healthcare to communicate information to healthcare workers and analysis of their impact on practice. Study found that healthcare workers prefer direct communications (face to face, telephone) than indirect communication (computer systems or policies). Study noted the evolution of electronic messaging as a means of communication. Email is one among

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them. It reaches at mass audiences within hospitals easily via group messages. But it is considered to be less valued since healthcare workers are busy with ward based activities and they reluctant to perform many computer based tasks. Study makes a critical evaluation of communication channels with healthcare workers; key points are noted below:

1. Verbal communication relies heavily on interrupting colleagues, which creates a culture of disruption, contributing to a stressful work environment that can compromise patient safety.
2. Electronic communication reaches at larger audiences but it lacks social interactions.
3. Education and training does not reliably change practice.
4. Marketing and imagery is often used to promote compliance with infection control practices.

Study also put forwarded some recommendations to improve the efficacy of information relay to healthcare workers within the acute hospitals. Which includes: perform ward based assessments prior to education initiatives, develop communications with an increased understanding of target audiences and their communication preferences, develop communication with actionable messages involve healthcare workers in the development and dissemination of information, engage ward staff in communicating hospital priorities etc.

Prakashan (2013) conducted a study on the information needs and use of health care professionals. The main objectives of his study were to search, identify, collect and evaluate scholarly papers related to information needs and use of health related professionals. This literature review shows that health care professionals especially faculty members, general practitioners,

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nursing professionals, clinicians, health workers etc need training and faculty development programme, information regarding drugs, drug therapy, health administration etc to serve the society. Study also found that professionals are using information sources and systems like colleagues, print and e-journals, MEDLINE, Practice Based Research Network (PERN), Electronic Medical Records (EMR), Index Medicus and MeSHs.

Vermeir et al. (2015) aimed at reviewing the literature on the healthcare communication, the impact of communication inefficiencies and recommendations to improve the quality of communication in healthcare. Literature search was carried out on databases PubMed, Web of Science and Cochrane library. Study revealed that although the face to face communication is recommended, written communication remains the most usual means of communication between healthcare professionals. In hospital settings referral and discharge letters are the most used forms of written communication. The written communication has many advantages like it can be used as a reference letter and it can be simultaneously distributed to required number of healthcare providers. There exist disadvantages too. Study identified that a good number of discharge letters was missing important information. Some specialists and general practitioners are dissatisfied about their own letters because of the time constraints. Study also pointed out the reasons for the poor written communication which includes lack of time to create notes, do not make full assessment of the problem, different point of view of health caregivers etc. Communication problems were responsible for inadequate skill levels of practitioners and inadequate resources. To improve the quality of written communication structured letters are recommended by the authors. Study also suggests that the use of telephone for urgent and essential communication and conferences for online multidisciplinary assessments.

Review of Related Studies

Seventeen studies are reviewed in this section on the same or related topics. Among these sixteen studies were conducted in foreign countries and one related to India. The review of these studies reveals that face to face communication and scholarly knowledge are channels used to share information among doctors. Even though these direct methods prevail in the clinical setting many of the studies suggested that adoption and uptake of new technologies within the clinical setting may influence this in near future. Thus the review indicated that there is a need for further study in this area to know the current scenario in health sector.

3.3 Communication among Doctors and other Health Professionals

Effective communication among doctors and health professionals including nurses, other medical staffs is essential for the patient care. Poor communication among care providers leads to animosity, frustration and distrust that results inferior care and a greater risk of error. Problems regarding communication and teamwork are well-known to patient safety. Doctors and other health professionals are equally capable of engaging in excellent and effective communication. This section reviews the communication practice among doctors and other health professionals in a clinical setting.

To conduct the project the Canadian city hospital is alienated into 5 major sectors by the researcher (Jabin, 1976) – nursing, administration, administrative services, medical staff and paramedical services. Questionnaire, interview guide, critical incident recording sheet were used for data gathering. The sections included in the questionnaire were; downward communication, upward communication, sources of information, quality of information from key sources, channels of communication, communication relationships, and organizational outcomes, physical communication constraints, perceived roles etc. It was analyzed that how satisfied employees

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are with information they received from management on certain topic. More than half of the employees reported that they are most satisfied with information they receive. More than half of the employees also reported that they are most satisfied with their opportunity to send management requests to their jobs. Satisfaction regarding various sources from which they receive information was asked. Low satisfaction was reported in case of top management. Newsletter was the source of information they consulted in many cases. Employees reported low satisfaction in public system, tape recordings and video tape presentations as a means of communication channels. At the same time they were highly satisfied in face to face, written and telephone communication. The section related with the extent to which employees maintain effective or ineffective communication relationship with others in hospital shows that, influence on hospital activities, feedback received about work, encouraging differences of opinion, different department sharing information, following organizational chart are rated in terms of ineffective relationships. Employees are reported low satisfaction on-hospital's attempts to keep them informed about chances for getting ahead in the hospital, hospital's overall communication efforts. At the same time they were highly satisfied with their work and relationship with people in their department, relationship with their boss. Employees reported that physical constraints such as distances, timing facilities to be a great problem in communication. Study recognized that hospital does an effective job of communicating information downward and upward to employees that they need to do their immediate jobs. Study says that a continuous program of appraisal is needed in order to maintain and develop the communication system in this hospital. It's the task of hospitals to evaluate the communication practices and to design appropriate plans for a continuous communication audit.

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Gregson et al. (1992) carried out a study to develop indices of the degree of collaboration between district nurses, general practitioners and health visitors in England. Study focused only on three most numerous professionals working in the community, ie; general practitioners, district nurses and health visitors. Structured interview was conducted for data collection. Questions regarding inter professional consultation and referral pattern were included in the interview. Study revealed that only a few general practitioners and district nurses are collaborating with each other. The factors that affect the communication are attitude, general method of working and current processes. Study found that collaboration exists between general practitioners and district nurses and between general practitioners and health visitors but it is not widespread.

Ogbimi and Adebamowo (2006) discusses the factors that affect nurse-doctor working relationships in University Teaching Hospitals (UTH) in Southern Nigeria. Questionnaire survey of doctors and nurses working in four UTH in Southern Nigeria was carried out for the study. Study results shown that there were no significant differences between doctors and nurses who considered the working relationship between nurses and doctors as cordial. They opined that inadequate development of interpersonal skill plays a role in their working relationship. Other factors such as perception of respect and communication gaps do not have much significance. With respect to staff related factors, staff shortage is a reason of poor doctor-nurse working relationships. Other work related factors such as inadequate drug administration, dictating how work should be done, provision of inadequate information, poor work attitude, failure to respond call duty, inadequate attention to patients, uncooperative attention at work were reported as the significant factors in doctor-patient relationship. Study identifies that staff shortage, lack of appreciation, activist unionism and government policies are perceived to be factors that aid a good doctor-nurse relation. It is suggested

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that more training and improvement in nurse's working condition will reduce the missing staff shortage and lead to better and more efficient healthcare delivery and improved patient outcomes. Creation of better working environment, use of alternative methods of conflict resolution and balanced hospital management and government policies will lead to efficient healthcare delivery in hospitals.

In the report titled communication during patient handovers (2007) says that communication breakdown was the main cause of sentinel events reported to the Joint Commission in the United States of America between 1995 and 2006. Report noted that there are no best practices for improving hand-over communication, however precise, unambiguous, face to face communication was considered as the best way to ensure effective handovers. Streamlining and standardizing change of shift reporting collaborative rounds are being used effectively to improve communication and hand-over of important information relating to the patient's care. Low health literacy of patients sometimes affects proper communication. To overcome this teach-back technique is used by caregivers to ensure that the patient has understood the information provided. The technique involved is asking the patient to describe what he or she has just heard to assess their comprehension. WHO put forwards some strategies to enhance communication in hospitals. Following are the suggested actions:

1. Ensure that healthcare organizations implement a standardized approach to hand over communication between staff, change of shift and between different patient care units in the course of a patient transfer.
2. Ensure that healthcare organizations implement systems which ensure at the time of hospital discharge that the patient and the next healthcare

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provider are given key information regarding discharge diagnoses, treatment plans, medications and test results.

3. Incorporate training on effective handover communication into the education curricula and continuing professional development for health care professionals.
4. Encourage communication between organizations that are providing care to the same patient in parallel. Report also looks forward the use of electronic medical records, electronic prescribing systems and automated medication reconciliation to streamline information access and exchange. Resistance of caregivers to change behaviors, time pressure, training and time cost of implementing new handover process, lack of financing resources and staffing shortage, lack of IT infrastructure are the potential barriers encountered in communication.

O'Leary et al. (2010) carried out a study to understand the nurse – physician communication and their agreement on patients plan of care. Interview method was used to conduct the particular study. Patients, nurses and physicians were included in the interview. While nurses correctly identified patient's physicians most of the time, physicians failed most of the time. It is revealed that physicians and nurses did not reliably communicate with one another. Face-to-face communication is the mostly used type of communication followed by telephone followed by text page.

Kaap (2012) conducted a study focused on the inter organizational communication about near incidents in the health care chain. Semi structured interview was used to collect information on how the information transfer between different organizations took place. Study found that only ambulance service has a formal feedback system that allows professionals from other links to communicate with the ambulance service. Study also found that

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although some incidental communication and learning between links take place, there is no formal communication between links about near incidents. In order to create a shared 'health care chain culture', to create a chain that learns from near incidents, professionals have to communicate beyond the walls of their own organization.

Nagpal et al. (2012) tried to explore the communication and information transfer failures across the entire surgical pathway. Semi-structured interviews were conducted among multidisciplinary team which includes surgeons, anesthetists and nurses in an acute National Health Service trust. Transmission failures were most common as per clinicians. All surgeons reported the lack of interdisciplinary and intra disciplinary communication. They also opined that multiple forms of information transfer (letters, personal conversations, telephone communications) lead to information loss. Poor handover from the ward to the operating theatre was the main problem identified in this phase. Incomplete information, information overload, unstructured information are also mentioned as barrier in effective communication. All participants were in the opinion that ICT failures can directly or indirectly lead to patient harm. Work environment, lack of protocols, and primitive forms of information transfer were reported as the most common cause of failures. Healthcare professionals strongly recommended for the standardization and systematization of communication processes for the improvement of patient safety.

Meenakshi (2014) discusses the importance of interpersonal communication in organizations like hospitals. Chief executive officers and other administrators of hospitals are required to have problem solving skills, decision making skills, and emotional intelligence above all common skills. This paper discusses the facets of interpersonal communication and the communication need in hospitals. Study also tried to find out how

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interpersonal communication can become an essential tool for creating a strong bond within and outside the hospitals. Study states that email, instant messaging, telephone, discussion forums...are used for developing relationship through interpersonal communication. In the opinion of Meenakshi both verbal and non-verbal skills are important for the successful interpersonal communication. The language used by administrators, managers and other workforce in hospitals should be clear and appropriate. (Simpson et al, 1991) commented that patient anxiety and dissatisfaction is related to uncertainty and lack of information, explanation and feedback from the doctor. The functions of hospital administrators can be divided into executive; clinical and service activities. All of them include in interpersonal communication for better outcomes. Study also suggests some strategies to be adopted by hospital administrators for effective interpersonal communication, which includes providing an open communication climate, do not ignore grapevine communication, understand the need for nonstop communication, sharpen listening skills, employ more than one channel for communication, respect everybody in the hospital etc. Study concluded that hospital administrators are responsible for success or failure of the hospital, it is their duty to build effective interpersonal communication.

Linebarger (2014) carried out a study to increase communication between the nurses and doctors on an acute medical unit by increasing nurse attendance and participation at physician rounds. Survey was conducted to collect information. Majority of the nurses responded that they do not attend physician rounds on assigned shifts. Majority reported that they didn't know physician was rounding. Team rounds were implemented to increase the communication. Post implementing survey showed that communication has improved since team rounds have been implemented. Attendance and communication has increased by nurse- doctor team rounds.

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Wert (2014) analyzed the communication between nurse and physician, the way the nurses and physicians communicate. Barriers to effective communication and interventions to improve communication are presented and analyzed in the study. Study found that when communication takes place between nurses and physicians it was followed by telephone and text page. Study reported that plan of care is not communicated between nurses and physician team members as often as is assumed or expected by patients. Study also says that interdisciplinary (nursing, medicine, nutrition, pharmacy etc) rounds have positive impact on interdisciplinary communication. Factors that affect nurse-physician communication include the dominance of physician over nurse, differences in gender/education, workplace differences, and changes in forms of communication. Many strategies have been introduced to improve communication which includes interdisciplinary education, interdisciplinary rounding, rounding worksheets and team work training.

Pun et al. (2015) in his study identifies the clinician's views on clinician-patient and clinician-clinician communication, also study tries to find out the factors that affect effective communication in a large, high pressured trilingual emergency department in Hong Kong. Interview method was adopted to conduct the study, interviews were recorded. Samples were taken from doctors and nurses in emergency department(ED). Study identifies 3 main motifs which belong to different types of communication problems in the ED. They are;

1. The experimental parameter (ie; medical procedures)
 - Inadequate transfer of medical knowledge and information
 - Difference between information given to doctors and to nurses

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2. The interpersonal parameter (is; clinician's engagements with patients and other clinicians)
 - Lack of focus on developing empathy and rapport with the patient
 - Barriers across the clinician's disciplines and levels of seniority.
3. Contextual factors (patient and staffing members, patient expectations)
 - Time pressures (ie; high number of patients, staff shortages and long working hours)
 - High patient expectations

Study results shows that communication is a highly complex, challenging task in Emergency Department. More than half of the patients express their anxiety and confusion about their condition. Yet clinicians argued that it is difficult to communicate with patient at length to explain their dialogues and all due to the enormous pressure to perform their clinical task. Regarding experimental parameter, inadequate transfer of medical information was found as the major problem in communication. Omission and inconsistencies in medical records and inadequacies in triage and handover practices affects the patient satisfaction and safety. Study also noted that compartmentalization of responsibilities between doctors and nurses leads to problems in the transfer of information. Hospital hierarchy was also reported as a factor that affects effective communication. The most significant contextual variable mentioned by clinicians was time. Study analyzed the key healthcare communication issues raised by doctors and nurses working in a trilingual ED. Within the experimental parameter, clinicians reported that the medical information transferred at key points could be incomplete/ under due to inconsistent record keeping and inadequate handover procedures. Organizational cultural factors also results ineffective communication. Within

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interpersonal parameter, clinicians reported their inability in developing empathy and rapport. Also they receive minimal training in communication. In terms of contextual factors, time pressures were seen as paramount. Study proposed some solutions to overcome the inefficient communication in the hospital settings. The standardization of medical record keeping, via electronic system should be a benefit to overcome the experiential factors in the hospital settings. With regards to the transfer of information between different disciplines and levels of seniority, the development of a documentation system/method of instruction on medication, test and treatments would be a great advantage. In terms of interpersonal parameter it is suggested to train medical staffs on the need of interpersonal communication. In terms of contextual factors avoiding staff shortage, ensuring more doctors and nurses on duty, educational programmes for general public would help to reduce the communication barriers in the hospitals.

There are eleven studies reviewed in this section on the same or related topics. The reviews confirmed that more training and improvement in the working condition will lead to better and more efficient healthcare delivery and improved patient outcomes. Creation of better working environment, use of alternative methods of conflict resolution and balanced hospital management and government policies will lead to efficient healthcare delivery in hospitals.

3.4 Communication among Doctors and Patients

Effective doctor – patient communication is very important in the delivery of the high quality health care. Much patient dissatisfaction and many complaints are due to interruption in the doctor-patient relationship. Understanding the need and importance of communication among doctors and

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patient is an important factor in quality patient care service. This section review the studies related to communication among doctors and patients.

Ong et al. (1995) reviews the literature on doctor-patient communication to understand the importance of doctor- patient communication, purposes of clinical communication, analysis of doctor-patient communication, specific communicative behaviors displayed during consultations and influence of communicative behaviors. The study identified that the purposes of medical communication includes creating a good inter personal relationship, exchanging information and medical decision making. Face –to-face communication is found as effective content carrying communication method in many studies. Results also showed that physicians who have partnership with patients have more satisfied patients compared to physicians who have more authoritative relationship.

Hewart (1995) analyses whether the quality of physician – patient communication makes a significant differences to patient’s health outcomes. Literature review was conducted in MEDLINE database for articles published from 1983 to 1993. Study focused on patient characteristics, clinical settings, element of communication assessed, patient outcomes, direction and significance of any association found between aspects of communication and patient outcomes. Results of the study pointed out that educational qualification of physician and patient have a positive effect on the health outcome. Physician education was demonstrated to affect the patient’s emotional status; whereas patient education was demonstrated to affect physical health. It is found that there is a significant correlation between communication interventions or variables and patient health outcomes. Thus it is stated that patient health outcomes can be improved with good physician patient communication. For the successful outcome patient should feel he is an active participant in care and their problem has been discussed fully. The

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quality of communication both in the history taking segment and discussion of the management plan was influencing patient outcomes. Curriculum development in the area of communication at all levels of medical education is warranted on the basis of this study. Patient education with regard to communication has been shown to be highly effective and deserves much more attention in clinical settings. The provision of information packages and of waiting room training sessions are two strategies that were proven to be successful in the studies reviewed.

McLool and Morris (1999) conducted a study in New Zealand to describe the verbal interactions between doctors and patients treated surgically for colorectal cancer during follow-up consultations. Tape records were set up in each consultation room. Orbital sound microphone equipment was used to avoid disturbance to the recorded sound quality. Tape recorded consultations were transcribed by a professional typist. Patients were of two category; 1. Patients who had undergone surgery 12 months or less (short term) 2. Patients who had undergone surgery 12 months or more. It was found that number of exchanges were higher in short term than long term group. Most consultations were brief. Shorter consultations were in the long term group. The main focus of consultation was on biomedical statuses like reviewing and confirming the physical health status of each patient. Communications were started by doctors in most cases in the form of closed ended questions. The points included were; patient's medical history, examination, treatment, diagnosis and prognosis and current symptoms.

Ohtaki et al. (2003) conducted the study to examine communication patterns of doctor-patient consultations in two different cultures and to elucidate linguistic differences and similarities in communication. This cross sectional study used a quantitative discourse analysis from linguistics to compare doctor patient consultations in the U S A and Japan. In each phase of

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the encounter, number of categorized speech acts, distribution of question types and frequencies of back-channel responses and interruptions were determined. Study results shown that US physicians spent more time on treatment and follow-up talk and social talk than Japanese doctors whereas longer physical examinations and diagnosis/ consideration talks were carried out by Japanese doctors than US doctors. The doctor- patient ratios of total speech acts were similar. Physicians in both countries controlled communication during encounters by asking more questions to the patients. Japanese physicians and patients used back channel responses and interruptions more often than those in the US. Cultural differences and professional specificity is the reason for differences and similarity encountered among physicians in two countries. Awareness of these could be used to educate clinicians about the best approaches to patient from particular cultural backgrounds.

Bensing et al. (2006) investigates the shifts in General Practitioners (GP) and patient communication patterns between 1986 and 2002. Observational study was conducted in 2 distinct periods in Netherlands. Consultations of patients with hypertension were taken for the study. No differences were noted in age, gender or primary health problem between 2 study samples. Results shown that the visit length slight, but not significantly longer in recent consultation ie; no differences emerged in time spent on physical examination, and no difference was in the amount of talk by doctors. But compared to 1986 wave patients did talk less in recent consultations. Patients asked fewer medical questions, showed less concerns or worrier. The reason behind this was physician spent more time on computerized work which results a silence. In 2002 GPs showed a greater amount of information giving behavior. But they were less engaged in partnership building, asking patient's opinions, asking for clarification etc. they also expressed less often concerns for the patient's medical condition. Overall findings of the study

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stated that Dutch GPs had a more task-oriented communication style in 2002 compared to 1986. The existence of a more equal relationship in GP with patients as active and critical consumers is not reflected in this study. This is due to the shift towards a more businesslike, task-oriented GP communication pattern. The entering of computer in the consultation room also plays a role in this scenario.

Claramita et al. (2012) conducted the study to understand the doctor-patient communication in Southeast Asia. Purposeful sampling of 20 doctors and 20 patients were done for the study. In depth interview was conducted for the data collection. Study found that Southeast Asian culture affects doctor-patient communication in several ways. Lack of role models of the desired doctor-patient communication, lack of participation in patient care and traditional agrarian behavior patterns are the three conditions identified that are inherent to the clinical setting of a Southeast Asian teaching hospital. The study revealed that patients, irrespective of educational level, desired a more open communication with their doctors. Social gap between people of perceived lower and higher social level constitutes main barrier in communication between doctors and patients. All patients in this study positively responded to the participative consultation style.

King and Hoppe (2013) aims to summarize the work that has been conducted in physician-patient communication that support the efficacy of good communication skills. Study results shows that there is impressive evidence supporting positive associations between physician communication behavior and positive patient outcomes such as patient recall, patient understanding and patient adherence to therapy. In the light of the review of literature study suggests that 'fostering the relationship, gathering information, providing information, making decision, responding to emotions and enabling disease and treatment related behavior constitute the best

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practices for physician communication in medical encounters. It is opined that effort to enhance teaching of communication skills to medical trainees likely will require significant changes in instructions at undergraduate and graduate levels, as well as changes in assessing the developing communication skills for physician.

Wloszczak and Mirosław (2013) conducted the study to understand the level of communication competencies of physicians and determination of the factors on which this level depends. The study also intended to analyze the needs and educational possibilities within the existing models of education in the area of interpersonal communication provided in medical universities in Poland. The methods used to understand the communication level included analysis of documentation/standards, education schedule, curricula and syllabuses etc. Survey included professional communication competences of physicians and testing of professional self-evaluation from the physicians aspects. Analysis of documentation showed that medical students should possess knowledge and practical communication skills in this area of communication with patients and their families, taking patient's medical history, learning skills of corporation with others and managing teams. The communication competences of physicians and students in the area of motivation are seemed to be not statistically significant. But the knowledge and skill indices are found to be lower in the group of occupationally active physician than in the group of students. Study also analyzed the comparison of shortcomings in communication competences between physicians and medical students and the reasons of shortages in communication were due to the following competences:

- Acceptance of a patient
- Knowledge of assertiveness

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- Knowledge of the role of feedback information in communication
- Tolerance with respect to patients and their significant others
- Skills of solving conflicts with patients and their significant others.

By the analysis of documentation with respect to educational curricula indicated that the scope of education in the professional medical communication is very narrow. There were no courses dedicated directly to communication. The results of the present study showed that there exists insufficiency in communication competences in all aspects. This is due to inadequate educational model and lack of training in professional medical communication. Study poses the following postulates:

- In educational curricula separate educational content should be included in the area of professional communication competences
- Practical communication skills of the students of medicine should be based on training of skills systematically prepared.
- There is a necessity of evaluation of communication competences and diagnosing educational needs of physicians.

Thomson (2014) assessed the patient's understanding of the jargons used by cardiologists during consultation. Two cooperate hospitals were selected from Hyderabad for the study purpose and literate patients aged from 18 year and above were included in the study. The researcher identified 11 medical jargons that were used usually by doctors and the schedule was distributed to the sample. Responses were analyzed to find out the extent of awareness among patients about the medical jargons used by cardiologists during the process of consultation. It was identified that out of 11 words majority of patients were familiarized with only 5 words. It is understood that understanding of cardiac jargons among participants in the 18-45 years age

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group was consistently low for every jargon, means a poorer understanding in contrast to those of the older age groups. Over all findings of the study indicated that, patients had a less understanding of cardiac jargons and the youngest age group patients were at the risk of ignorance about essential concepts related to cardiac health. Study states that patient friendly communication not only positively impacts upon knowledge but additionally influences patient's prognosis and satisfaction. Study identified that cardiologist's communication involving jargons is, thus not adequately reading patients, young adults in particular.

Negri et al. (2014) discussed the significance of inter personal communication as a tool for improving health care outcomes in developing countries and explains techniques for enhancing communication skills, since client satisfaction, compliance and health outcome depends on effective inter personal communication between health care providers and clients. Here the researchers developed a set of guidelines and norms for health care providers. They defined three types of inter personal communication – caring/ socio emotional communication, diagnostic communication, counseling. The training activities included participatory plenary sessions that employ brainstorming and question and answer sessions that allows participants to discover and tailor new inter personal communication skills, dynamic role playing which illustrates various communication strategies and allows participants to test the degree of difficulty of individual inter personal communication skills and to develop methods to master them. Video tapes on non verbal communication skills are used as instructional tools. Case studies have been conducted in three countries- Honduras, Trinidad and Tobago and Egypt. As a result of inter personal interventions; the research resulted in improvements in practices and in documented satisfaction of providers. Perspective about the relevance and activity of training were evaluated through a set of self-administered questionnaire. Training took place during

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five workshops. At a later date the survey was administered again and an evaluative discussion was held. Result showed that communication of trained health providers has increased and more extensive use of practices that enhance the effectiveness of communication. Patient satisfaction rating was higher for providers who had received training. Survey found that greatest obstacle in communicating with their patients is ignorance and low level of education. External interruptions and the lack of privacy were also believed that a reorganization of the outpatient clinic would help them to improve their services. Better equipment and facilities ranked second. Trained doctors suggested that the training course be given to more hospital personnel and that it is to the university curriculum of medical students to allow them to provide better care.

Sabina (2015) examined the doctor-patient communication among Australian urological cancer patients. It was conducted at the Crown Princess Mary Cancer Centre, Westmead. Urological cancer patients were selected for the study, a questionnaire containing socio-demographic information followed by questions on medical characteristics and awareness, cancer-specific distress, social communication issues, satisfaction with medical team etc was distributed. Results revealed that majority of the cancer patients are male and female cancer patients are very few in number. Study results shown that majority of the patients spoke English well enough to communicate with the medical practitioners. The rest of the patients needed professional translators to communicate with doctors. Majority of patients had good knowledge of their illness. From the interview it is revealed that even though patients can communicate with their doctor without stereotyped or judged, they do not understand important information, which means they are not communicating effectively. Most of the patients expressed satisfaction with the level and types of support they are getting from medical staff. The time constraints results only a routine follow-up protocol to be administered,

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acknowledgement of psychological issues and concerns is unfamiliar for many consultants. Thus the study opined that outpatient consultation plays a minimal role in either detecting or addressing psychological morbidity amongst colorectal cancer patients in the post-surgical period.

Elena and Richard (2015) examined how patient assessment of primary care physician (PCP) communication is related to patient satisfaction with the PCP, patient perception of PCP professional competence, patient assessment of the relationship with the doctor and patient demographic characteristics using a segmentation approach. Study was conducted in two primary care clinics at a large urban university healthcare system in the southern U S A. Survey carried out among adult patients waiting for appointments with their PCPs. Overall satisfaction with the PCP, inter personal relationship between the patient and the PCP, patient assessment of physician competence etc. were measured in the study. Study identified that majority of the total sample assessed their PCP communication as excellent. They were in opinion that primary care doctors showed genuine interest in their health problems and provided comprehensive and clear descriptions of diseases. One third of the patients in the sample were highly dissatisfied with the PCP communication. This shows that patients not only expect clear explanations and instructions but would also like their PCPs to show genuine interest and concern about their patient's health and life. Findings of the study also identified that only a few patients have personal relationship with PCPs and it was not essential for being satisfied with the doctors and the care they receive. Study suggests that patient age, education and socio-economic status may facilitate further understanding of patient needs and preferences for communication but this information should not be used by itself to make decisions about how to communicate with patients.

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Twelve studies on the topic related to communication among doctors and patients are reviewed in this section. The reviews of these studies show that encouraging the relationship, gathering information, providing information, making decision, responding to emotions and enabling disease and treatment related behavior constitute the best practices for physician communication in medical encounters.

3.5 Communication in Health Sector using ICT Equipments

Information and Communication Technologies (ICT) plays a vital role in improving health care system. By providing new and efficient ways of accessing, communicating, and storing information, ICTs can help bridge the information divides that exists in the health sector. In order to understand the role of ICT in health sector it is necessary to study the techniques and methods that are used and implemented in hospitals. This section reviews the use of ICT equipments in communication processes in health care system.

Asah (2000) investigated the application of ICT in the management of health information by medical professionals in six selected government hospitals in Yaounde, Cameroon. Data was collected from six government hospitals through a self-administered questionnaire given to nurses and medical doctors. The findings of the study revealed that medical professionals are dissatisfied with the major method of information exchange activities that is face-to-face interaction with colleagues. In addition, the study found that health information is captured, processed and stored manually. Study also revealed the non-availability of ICTs and internet resources and lack of basic computer skills, consequently there is low utilization of ICTs by medical professionals and limited information needs are being satisfied. Study suggested that medical professionals must create a free flow of information and constant communication outlet to exchange and disseminate local health

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information. Physicians mentioned three principal areas where mobile computer is used to get information

- Medical knowledge access (during patient consultation)
- Patient data access
- General information access (telephone books, physician address books etc).

On- call services, night duty and emergencies listed the top most useful situations where mobile communication can be used. A synchronous integration of mobile computer to health information system is possible only when there exist WLAN connectivity in the hospital. Study stresses that mobile tools will play a fundamental role in health care information processing in the future.

Nicholas et al. (2001) conducted a study to provide context and understandings for the kiosk log data that was being gathered in copious amounts, and to explore the benefits and problems inherent in providing health information online, and to assess the impact of digital information for patients on the work of the medical practitioners. Besides computer logs, questionnaire, interviews observations are used. From the study it can be understood that Kiosk are preferred by senior practitioners. Enhanced information provision, improved information provision, intrinsic benefits are the identified benefits of kiosk. Kiosk was principally provided for use by the general public rather than health professionals. Kiosk was highly used by children, this is because older age people lack IT skill and cultural barriers may there. Healthcare professionals saw many health related benefits in referring patients to the Kiosk since it contains details like national and local health services, medical conditions, surgical operations, support groups, healthy travel and living topics etc.

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Linda et al. (2002) conducted Fax surveying to determine the internet medical information seeking and online continuity education use patterns by physicians in US. Study found that majority physicians use internet more than five years, and majority of them reported that they are currently using internet for medical information including literature searching, accessing online journals, general searching for medical information, searching for specific patient information. Majority physicians use internet daily to find medical education. Personal use and e-mail were the most frequent users of the internet. Credibility of the source, quick access, ease of searching was reported as the most important variables in seeking information on the internet. A good number of physicians found internet as for particular patient management problem, majority gets information they wanted from internet and majority reported that they have sufficient search skills. The barriers found while using internet was mainly the presence of abundance of information, inability to find the required information also reported as a barrier to internet use, followed by inadequate searching skills and slowness of loading information. Majority of the physicians accessed Continuing Medical Education (CME) rarely. Respondent who use internet for online CME reported that ease of program use of validity of content as most important in using online CME. Study also found that there were no significant differences between male and female physicians in finding and using information on internet.

William et al. (2003) conducted a study to identify the reason behind people's decisions both on look for health information and to consult the internet for this purpose, how they use the internet with regard to health, possible impacts on dealing with the doctors as a result of finding and using information acquired from the internet, their perception of information in terms of quality, authority, trustworthiness. An open questionnaire survey was adopted. Several reasons were put forward by respondents for using internet

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for health information. The most perceived advantage was its convenience, currency of information also attracted users. Health professionals are now embracing the internet to the extent that they direct patients to appropriate websites. The major issue reported while using internet information is the information quality and accuracy. Respondents use internet for alternative medicine, to know what works and what doesn't etc. many reported that they use internet as complementary information service to that of the medical professionals.

Fahey et al. (2003) aimed to develop a consensus understanding of the term 'public health network' and understand its support and functional requirements. Study investigates whether public health professionals felt that communication over the network would be predominantly electronic and tries to identify what functions public health professionals could most like the network to provide. A cross sectional survey of sixty public health professionals working in England was performed to conduct the study. Most of the health professionals spent about half of the time on the internet. Most of them reported that public health network maximizing scarce resources and sharing information. In the opinion of majority of the respondents, the commonest functions desired are; 1. Identify expertise and maximize scarce resources 2. Continuing professional development/education/ training of those in public health. 3. Efficient information/ knowledge management. A greater proportion of health professionals agreed that communication would be predominantly electronic compared with personal communication. Study results shown that many of them were not in favor of individual websites. The reason behind this was they could not see the value/justification. However individual websites have its own benefits- it provides a snapshot of what we are doing, what are our skills etc. The findings of the study identified that there is a need to allocate time in a public health professional's week to devote to the public health network and need to train public health

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professionals in the use of IT and techniques of computer mediated communication.

Baker et al. (2003) carried out the study to understand the use of internet and e-mail to obtain health information and to find out the effects of internet on healthcare. For the study national representative sample of US population aged 21 years or older was selected. Surveys of individuals from the panel are conducted using the internet. It was reported that individuals aged 75 years or older were much less likely to use of the internet for health than younger individuals. Study found a strong relationship between higher education level and internet use for health, whereas no strong relationship was found between income and internet use for health. Regarding the use of internet for prescription of drugs only a few reported that they used the internet for prescriptions from physician or from online physician whom they had never seen. A good number of participants reported that they had used internet or e-mail to know more about a prescription of a drug. Study found that internet use for health information is relatively infrequent. Study suggests that one way to make internet and e-mail a major information source is by enhancing the provision of information. This might improve patient's ability to interact effectively and productively with healthcare professionals. Majority reported that internet had no effect on either physician visit or a telephone contact, i.e; internet has much less influence on health care utilization. Results of the study suggest that there still exist need for improvement. Study stresses the importance of internet in the dissemination of information which leads better health care delivery and outcome. But there exist continuing efforts to maximize the usage of internet in the future era.

Bello et al. (2004) assesses the knowledge and utilization pattern of information technology among health care professionals and medical students in a university teaching hospital in Nigeria. Self-structured questionnaire was

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distributed among the healthcare professionals and medical students. Half the respondents reported that they received some form of computer training. Only a few respondents opined that they have a good knowledge about computer usage. More than half of the respondents opined they possess an average knowledge. A few showed poor knowledge of computer. A good percentage of respondents had good attitude and utilization habits. The knowledge scores were not significantly different between medical students and health records officers or between medical students and the doctors. The results of the study showed that computer possession and utilization among healthcare professionals and students in a major university teaching hospital in Nigeria were very low. Lack of structured training and computer accessibility may have contributed to the poor knowledge and utilization patterns observed, followed by limited access to the internet and the relatively expensive nature of internet cafes. Study suggests use of medicine; CD-ROMS and interactive software packages would enhance dissemination of medical information, knowledge and teaching among health care professionals. It is identified that IT has numerous applications ranging from storage and retrieval of patient clinical and socio demographic information to patient management, particularly in cardiology, neurology, pediatric etc. The availability of email, websites, chat rooms, multimedia presentations and occasional opportunities for communication via internet, phones, video conferencing etc have rejuvenated medical education and teaching, patient care and collegial support.

Goldner (2006) examines the impact of internet and email on health status and also investigates whether people are more likely to access the internet or conduct online health searches and exchange emails regarding health issues. The study uses data from a daily tracking survey by the Pew Internet and American Life Project between November 25 and December 22, 2002. Results of the study shows that health status has an impact on internet

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access; online health searches and health exchanges via email. Sick patients are visiting online sites and exchanging emails with friends and physicians frequently, even though they have less internet access. The healthy people are less likely to say the conduct online health searches because they have a health concerns or they are satisfied with other health sources. Thus the study suggests that practitioners should take efforts to educate these patients about the uneven quality of online health information.

Ajuwon (2006), assesses the physician's use of the internet for health information for patient care. Study was conducted at the university college hospital (UCH) Ibdan, Nigeria. Questionnaire method was adopted for the study. Findings of the study revealed that most of the physicians are computer literate and a very few were computer illiterate; lack of time to learn, no access to computer, no interest were the reason behind being not computer literate. More than half of the respondents own personal computer. Approximately one third of the respondents have internet access and communication by email tops the list of reasons for using internet. Most of the respondents opined that they obtained health information from the internet for patient care. A good number of respondents used databases for health information; MEDLINE/Pub Med was the most searched database by the respondents. Physician reported confidence in doing internet related tasks such as retrieve and download free medical books from the internet, search internet to find out how a particular clinical procedure is carried out, search the internet for the most current diagnostic test or therapy for a disease condition, retrieve and download full text articles from online journals, find the most current available evidence to answer a clinical question relating to patient condition, find information on the diagnosis etc. Findings of the study revealed that internet as a medium of communication is useful in medicine; it has become an important means of patient care. Email is the fast and reliable means of communication compared to surface mail/ postal services in

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Nigeria. Awareness and training in the use of Evidence Based Medicine (EBM) resources for patient care is needed in Nigeria. It is suggested that introduction of EBM into the existing curriculum would enhance the ability of physicians to acquire, appraise and use EBM resources to solve patients' health problems.

Hansen (2006) examined nursing students' attitude towards the use of technology. Another objective was to determine if participant's demographic characteristics and self-reported formal education in IT have any significant effect on nursing student's attitude towards technology. The study was conducted at 21 universities. Most of the respondents were in a view that it is important to know about technology for a future career. A good number of respondents reported that they had instruction in e-mail clients and internet browsers. A considerably good number of respondents reported that they have education in the use of word processing, computer software and hardware as well as databases. Very few are efficient in web site design and use of hand held devices. There were no significant differences for mean attitude towards technology and education in IT except level of confidence in learning about technology where male dominance is showed. Compared to undergraduates, graduate students reported higher score and confidence level in ability to learn about technology. The overall study reveals nursing student's attitude towards technology is positive. However formal education in technology is low. It is suggested that an introductory course to nursing/healthcare informatics should be required by each students.

Podichetty et al. (2006) discusses the extent of internet use among healthcare professionals and examine it's effects on clinical practice. Data was collected using questionnaire. Use of internet, perceived effects and the role of medical websites in clinical practice were assessed in the study. Majority of the respondents reported that they have internet access. Internet

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was used for medical or professional updating. Respondents were ready to take web based Continuing Medical Education courses and are reported that they would permit patients to access their information through a website. Study found that a few physicians own personal practice websites which is used as a channel of communication which contains list of diagnosis, drugs, preventive services and offering appointment reminders. Study pointed out that online communication and internet based interactive websites lay a strong foundation for patient care. Study shown that internet use and web based medical information is widely popular among healthcare professionals.

Nerida et al. (2009) carried out a study to understand the communication networks in the emergency departments in an Australian metropolitan teaching hospital. A social network survey was administered to all emergency department staff working in the hospital. In order to identify the interactions between staff, a comprehensive network approach was taken. Questions regarding from whom they sought help to solve work related problems, from whom they sought advice for medication decisions and tasks, with whom they socialized at work are included. Study found that individuals were more closely connected to colleagues from within their respective professional groups. Study found that less experienced medical staff seems to relay on each other than ask more senior staff for help to solve work related problems. Study revealed a high level of work task support within professional groups as well as strong cross professional support for solving work related problems.

Mckintry et al. (2009) conducted a study to understand the patient and healthcare staff perspectives on how telephone consulting differs from face to face consulting in terms of content, quality and safety. Study also investigates how it can be most appropriately incorporated into routine healthcare. For the study separate focus groups of general practitioners, nurses, administrative

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staffs and patient were conducted. Focus groups were conducted in both urban and rural regions of Scotland. Questionnaire method was used for data collection. Questions included them like: safety and quality of care, access to care, impact on work load, and content of telephone consulting and technical/organizational issues. Problems with language/ hearing problems, technical difficulties with getting through on the phone to doctors were noted in the study. Telephone consulting was seen as necessary compromise to achieve and access targets in urban areas. Many of the general practitioners opined that telephone consultation increased access to an already over stretched service, reduced control over their workload. Patients reported that they perceive problem in getting preferred doctors through telephone consultation. But general practitioners reported that clinicians appeared to provide access to telephone consultation more readily than to face to face appointments. In rural areas, both patient and staff found telephone a useful tool to overcome distance. From the study it is understood that general practitioners use telephone consulting frequently, among this majority consultation was to give brief advices and half of them were follow-up consultations. More than half of the general practitioners and patients opined that clinicians would be go wrong diagnosis in telephone consultation rather than face to face consultation. But most participants agreed that if they knew each other, this would ease their concern. Study concluded that appropriate telephone consulting enhances access to healthcare, aids continuity and saves time and travelling for patients. Study suggests that to avoid risk, patients should be informed of the suitability and availability of telephone consulting. These changes must save time and reduce the pressure on appointments. Medical educators need to include specific strategies for compensating for the limitations of telephone consulting in training programs.

Liang and Tsai (2009) investigated medical student's information commitments towards web medical information. Study also investigates

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whether gender difference affects the information commitments and the role of medical student's internet experiences in their information commitments. Medical university students with internet experience from six medical universities in Taiwan were selected for the study. They were categorized in three groups namely-medical groups, nursing group and the health care group. The students responses were grouped into six factors: multiple sources, authority, content, technical, elaboration and match. Analysis of the study shown that medical students scored highest on 'content' which is followed by elaboration, multiple sources, authority and technical factors. The lowest was 'match'. It was identified that compared to the female medical students, the male medical students were more oriented towards using "multiple sources", authority, technical standards and elaboration to seek information through the internet. Results of the study revealed that the medical students internet experience played an important role in their use of the multiple source, authority , content, and technical standards to judge online information and utilize the elaboration searching strategy while they were oriented to imply quite "mixed" standard for judging online information. Study showed that medical students gained significantly lower scores than university students in general for two of the three advanced information commitments (content and elaboration). Results of the study suggested that medical school students need additional training including how to critically assess the accuracy of online information and to develop better strategies for using web resources to seek medical information. Study also suggest that professionals should be engaged as major participants in developing proper criteria for healthcare or medical information sites for lay people, medical students and clinicians.

Ye et al. (2010) systematically review the role of emails in patient-provider communication in terms of e-mail content, and perspectives of providers and patients on e-mail communication in health care. Systematic search was conducted in computerized databases like PunMed/ MEDLINE,

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ProQuest and PsycINFO. For this terms like: e-mail, electronic communication, patient- doctor communication, doctor- patient communication, physician –patient communication, primary care, health care, family medicine, internal medicine etc categories were used. Studies published between 2000 and 2008 were analyzed. Study identified that majority of e-mail contents from patients were for non acute issues, including medical questions, medical condition/ consultation/ medical update, medical information and subspecialty evaluation. A smaller number of emails enquired administrative issues and lab testing results. In majority studies it is found that only a low percentage of patients had ever communicated via, email/ with their providers, even though many patients expressed interests. Use of e-mails by care providers varied substantially across studies. Commonly expressed barriers were workload and time demands, confidentiality and security lack of reimbursement and inappropriate use of e-mail by patients. Study recognized that e-mail is transforming the relationship between patients and providers. The rigorous exploration of advantages and disadvantages of electronic interaction in health care settings will help to make e-mail communication a more powerful, mutually beneficial health care provision tool. Study recommends that the development of an electronic communication system for the clinical practice should address a range of concerns. Efforts are need to educate patients and providers to appropriately and effectively use e-mail for communication.

Baikady and Mudhol (2011) assess the overall web resources used by faculties and MD students, it also examines the influence of factors gender, age, specialties and experience (teaching and learning) that influence the perception of web resources. Convenience sampling was used and directly administered questionnaire method was adopted for the data collection. Study found that majority of respondents do enjoy using web as a learning resource, and they do prefer accessing web than traditional library. They perceived that

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knowledge and skills of computer are essential for accessing web resource. Graduate students disagreed with the statement 'web resources are more useful than print resources'. Study also indicated that there is no significant difference between faculty members and post graduate students in perceiving the web as a learning resource. This study marks the need to make a deliberate effort to encourage medical faculty members and post graduate students to make use of web resources as part of their learning, clinical practice and other assignments/seminars/publications etc, as these provide a truly staggering amount of useful and up to date medical information.

Higgins et al. (2011) In the technical report by Insight into Health Communication a number of literature were used to find the health information seeking behavior on the web in health consumer and health professionals perspective. It found that physician's preference for online information sources may vary according to physician specialty and task specificity. Study found that internet based health information is accessed from a variety of sources, including websites own by organisations, home pages owned by individual doctors, online support groups where people actively exchange health information and blogs authored by health advocates, care givers or those pursuing self help.

Butali et al. (2011) aimed to understand the use of information and technology amongst dental students, dental nursing students and resident doctors in training at the university of dental surgery, University of Lagos. Questionnaire method was adopted for the study. Analysis of the study showed that majority of the students have adequate access to computers and most of them have basic skills required to use the computer and they attained the skill through personal efforts. Most of the respondents have access to internet and they are satisfied with the availability and its ease of use. A significant difference was observed between resident doctors and dental

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nursing students in the duration of exposure to the use of computer, use of multimedia and medicine search. This is due to the difference in their level of training and academic requirements. It is identified that dental students and resident doctors in training have the requisite knowledge to operate the computer for use in their study and personal activities. In order to support learning, research and training of future doctors and all study recommends a computer resource centre in the university which will lead to a best academic frame work to improve delivery.

Robert et al. (2011) discussed how smart phones were adopted for clinical communication within general internal medical wards and determine their impact on team effectiveness and communication. Clinician's interviews and ethnographic observations of clinical communication interactions were carried out for the study. Nurses and allied health professionals were in the view that smart phones resulted faster response and increased accessibility to physician. They experienced that emails helped to convey their patient's status quickly and efficiently to doctors. To the residents smart phones made it easier to coordinate activities within the team through email or telephone calls. At the same time doctors and nurses opined that the new system reduced opportunities for face –to-face interactions, which reduced opportunities for nurses to have direct educational experiences with the residents. It is also found that even though the smart phone system provides various options to contact residents, the array of choices often created confusion and a mismatch of responses among clinicians. Study findings shown that routine adoption of smart phones by residents appeared to improve efficiency over the use of pagers for physicians, nurses and allied health professionals. Same time there is issues like increased interruptions, a gap in perceived urgency, weakened inter professional relationships and unprofessional behavior.

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While and Dewsbury (2011) discussed the development of ICT within healthcare emergence of telehealth as a key component of modern healthcare delivery as, healthcare moves from the ‘face to face age’ to the ‘information age’. Study noted that the United States (US) National Broad band plan has recognized the importance of ICT in improving health and healthcare through enhancing care delivery and coordination and engagement with patients (FCC, 2010). Study states that ICT adoption has changed the traditional nursing practice related to assessment, health promotion clinical interventions and service organizations. Study points out the need for health portals which stores patient data and other health information that can be accessed by information seekers. Nurses can virtually visit patients and other health professionals simultaneously through this portal. Study also stressed the benefits of mobile apps which will suggest contacting a doctor automatically. They identified following potential applications of ICT to nursing practice.

O’Leary et al. (2012) aimed to provide a systematic review of the literature to identify, describe and assess interventions of ICT on the processes of communication and associated patient care. Literature search was done in MEDLINE, CNAHL and EMBASE databases; focus was on clinician-clinician communication, communication devices, evaluation of interventions to improve communication. Study found that many studies examined several types of interventions including alphanumeric paging systems, hand free communication devices, mobile phones, smart phones, task management systems and display based paging systems. Most studies were focused on usage, user satisfaction or impact of interventions on communications. Issues with communication interventions like loss of control, reliability and confidentiality. Study also found that some evidence that perceive improvements with communication interventions.

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Coleman et al. (2012) carried out the study in the North West province of South Africa. Ten community hospitals in the North West province of South Africa were purposefully selected. Data was collected using semi-structured open ended interviews. This study tries to investigate how doctors in remote community hospitals in South Africa use computer mediated tools to communicate with experienced and specialist doctors for professional advice and based on the findings proposed a service oriented architectural frame work to promote asynchronous and real time communication to improve performance of doctors who are in remote rural areas. Findings of the study revealed that hospitals had ICT equipments like computers, fax machines, telephones, scanners and internet connections. Computers were used in outpatient department and in the accounts department. There were no computers in the doctor's consulting rooms. Computers were used by administrative staffs for entering patients' demographic information and revenue collection. Doctors are used to consult patients by face-to-face methods. Study recognized that consultation is also done through telephonic means, SMS, or e-mails which are computer mediated. There were no computer mediated tools like e-consultation, e-referrals, e-prescriptions and e-patient record to assist the doctors in their clinical duties. The only computer mediated tool available is the e-mail. But it is reported that transmission of information through e-mail is very slow due to poor internet connectivity and constant interruption and cut of electricity supply. Doctors expressed their dissatisfaction about the use of computer mediated tools and slow transmission speed of the internet and down turn of internet connectivity and sending images of x-rays for expert opinion were difficult because of poor and slow internet connectivity and lack of software applications. Study suggests that allowing time by the doctors to review spelling of the message improves the structure of the message and makes communication more precise and efficient. Based on the study findings researcher proposed a

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synchronous and asynchronous consultation (storage and discussion centric system) based on cloud computing architecture for the hospitals.

Bala and Gupta (2012) identified the type of communication channels used, and view of users about the feasibility of providing mobile library and information services. Study also assessed the awareness among doctors about the availability of such library services and compared the perceptions of doctors and medical students about the mobile services. Study was based on the survey conducted through a structured close questionnaire distributed among medical professionals and MBBS students of Government hospitals in Chandigarh. Study found that doctors were using mobile devices mainly for making phone calls, transferring data and for education purposes in contrast to students whom the main purpose was mainly making phone calls and listening music. Emails, SMS and data files were the preferable communication channels among doctors. A good number of doctors thought that LIS services like new arrivals, e-journals and articles, book renewal, book reservation, library timings and library news can be provided on mobile devices.

Dhanavandan (2012) analyzed that use of e-resources among faculty members of medical colleges has increased. Mainly they depend on electronic resources for research /study purpose and for communication. Most of the faculties acquire necessary skill to use e-resources from the guidance of others. It has been shown that they depends on e-resource to access current information, too much information retrieval is found as a problem in searching e-resources, from the study it is cleared that majority of the faculty members of medical colleges visit college library daily and maximum number of respondents spent half an hour to one hour. The respondents visited up to two libraries for their information needs and also they want to use internet almost every day.

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Antheuni et al. (2013) gives an account of patient's and health professional's motives and use of social media for health related reasons and barriers and expectations for health related social media use. In recent years the use of social media by hospitals and health professionals has increased significantly. Descriptive and online survey was conducted in patients and health professionals. Descriptive statistics were used for data analysis. Results showed that almost all the patients use one or more of the social media. The main motives for professionals to use LinkedIn and other social media are it facilitates communication with colleagues and marketing. The main reason for patients for not using social media is that patients are concerned about their privacy and because of unreliability of information. The reason behind the no use of social media by health professionals is that they think it is insufficient and followed by lack of skills. This study gives insights in the motives behind the use and non use of social media in health care.

Lindber et al. (2013) carried a literature search on the usage of ICT in home care for communication between patients, family members and health care professionals. It also described the benefits and drawbacks of the use of ICT in home care. A systematic review was conducted for the study. Study revealed that ICT applications were used in health care for a wide range of different condition through the life span. In the majority of studies, the technology was developed specifically for supporting people with chronicle illness living at home. A mix of more than one ICT applications was used in several studies, ie; video technology, text messages and health monitoring. The most frequent line of communication in the studies was between patients and nurses or other health professionals. Studies were predominated by positive response in the use of ICT applications in home care. Study concluded that use of ICT cannot replace the face-to-face encounter but can be used as a competent.

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Andurkar and Lata (2013) A cross sectional descriptive study was carried out in Government Medical College Aurangabad to understand the extend and purpose of internet use among intern doctors and its impact on their daily, academic and social routine. Majority of the respondents agreed that internet has a positive impact on academic performance. Getting information was the main purpose of use of internet followed by media for communication. By the cross sectional study it is identified that adults are heavy users of internet. It is integrated into their daily communication habit. Study findings showed that internet has become the world's biggest library where retrieval of scientific resources can be done easily. The increased usage of e-mail communication and internet usage are evidence for the above statement.

Odini (2014) investigated the use of ICT by medical professionals in accessing information for health care delivery at MOI teaching and referral hospital (MTRH) in Eldoret, Kenya. The objectives of the study were to determine the type of ICTs medical professional's use to access health information, establish the challenges that medical professionals face in accessing information through ICT in the hospital and suggest ways for improvement. Study employed both quantitative and qualitative research methods. Findings showed those medical professionals were not accessing appropriate and timely information through the available ICTs due to inadequate ICT infrastructure, including internet connectivity and lack of a formal ICT policy to support information access.

Khan and Siddiqui (2014) conducted a study to assess the technological awareness and attitude of medical students in Sanjay Gandhi Post Graduate Institute of Medical Sciences and to know the user requirement from the library, and to identify the problems faced by the medical students in the exhaustive usage of IT based sources and services. Structured

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questionnaire was distributed among medical students. From the findings of the study it is identified that library is used optimally on a daily basis by medical students. The highest usage was OPAC and majority of the medical students were aware of the electronic resources and services available to them. Students had positive attitude towards IT, they opined that locating sources is easier and fast with the help of IT. Students are in favor of library automation since they agreed that IT has improved library services. Unavailability of campus- wide network, insufficient e – journals, shortage of technical staffs is the major problems in using IT by the medical students. They recommended that library should increase number of journals and should be fully automatic; library should be networked with other medical libraries and medical associations. Besides these, library website and supporting technical staff were needs of medical students.

Haluza and Junwirth (2014) aimed to identify the specifications and perceptions of different interest groups regarding future demands of ICT supported doctor-patient communication in Austria. Delphi survey and questionnaire method was used for data collection. Participants included general practitioners, patient advocates and administrative personnel. Regarding the ICT assisted medical counseling; experts anticipated doctor-patient relationship, patient knowledge and quality of social healthcare as the three most improved factors of presented scenarios. Thus it's suggested that use of ICT in healthcare may foster a change of paradigm towards empowerment, autonomy and self asserting processes of consumers. Doctors were less optimistic concerning the benefits of the future scenario; study noted the possible reason could be because of hampering factors for ICT such as data security and privacy aspects. Pale lists expected the future ICT supported doctor-patient dialogue to especially improve doctor-patient relationship, patient's knowledge and quality of social healthcare. Lack of

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acceptance by doctors, data security and monetary aspects were the barriers encountered in ICT implementation.

Pranathosh (2013) tried to find out the basic features benefits and dimension of telemedicine and it also learn about the advanced technologies and computing related to medical services, study also tries to understand the cloud computing and its benefits in the field of medical services. Study noted the wide range use of telemedicine in doctor patient interaction and consultancy during 1980s and 1990s. Remote prescription, preparation, verification and drug administration are found to the areas where telemedicine can be applied. Online communication, image processing system and interactive information design, patient history review, physical examination, psychiatric evaluation and ophthalmological assessment with face to face became easy and smart with interactive computing and information system support (Pranathosh, 2013), (Pranathosh , 2013). Cloud computing provides a number of opportunities in medical informatics. Content and audio-video delivery used to promote telemedicine which will help to reduce the cost of nursing and also help to receive consultancy provided by senior nurses. Continuing medical education through interactive sessions, seminars and conferences are supported by cloud based architecture. A cloud-computing based web system is helpful for information transfer and information seeking and for gaining knowledge. Study noted the influence of telemedicine in telepharmacy sector, which allow direct interaction with pharmacist, drug therapy, patient counseling, prior authorization and refill and video conferencing, also became easy with cloud platform. Study stresses the importance of telemedicine in promoting medical services to boost remote healthcare services. Many developing countries like India and South Africa etc also initiated healthcare reforms projects where telemedicine is included.

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Khan et al. (2015) assesses an intervention that linked village doctors to formal doctors through call centers from the perspective of the village doctors who participated in the intervention. Data were collected from the four unions where the mhealth intervention took place. In depth face to face interviews were conducted with village doctors. Doctors described various benefits and challenges around using mhealth program, their experience revolved around benefits to their practice, personal benefits and barriers they faced in using mhealth. Majority of the respondents reported that their practice was benefited from participating in the mhealth project. Through this village doctors could remote access to qualified doctors. Calling and receiving prescriptions, SMS based prescriptions were accessible for them. The village doctors opined that the support of call centers allowed them to increase the breadth of their services. Patient records were another benefit of the program. It gives medical history and general information of patients. The barriers faced by village doctors in using call center service is technical problems, charging consultation fees and trusting unfamiliar doctors in the call centers. Village doctors found many personal and business benefits from the intervention and they suggested some improvements that would make it more acceptable, ie; advertising to create awareness, solving the technical problems, provisions for the poor (consultation fee). Study findings shown that village doctors found being contacted with qualified doctors through call centers improved both their personal capacity and their business.

Bahattacharya and Anandhi (2015) were conducted a study to identify if Healthcare Information Technology (HIT) has any role in the professional scenario, if so propose a probable retention model that incorporates implementation and use of HIT as a strategy. S cross sectional survey consisted of doctors, nurses, paramedics and hospital administrators from twenty hospitals from urban areas of India was conducted. Among the respondents majority of doctors, nurses and administrative staff had basic

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computer awareness and usage. It is identified that a good number of doctors, nurses and administrative staffs use it for work via email, Video Conferencing etc. IT usage was found more in age bracket of 26-35 years than other age groups. Implementation of HIT for improving quality of services was reported by majority of the respondents. Ease of use and technology acceptance is the reason behind this keen interest. All respondents opined on the necessity of providing training in basic technology and HT applications. Study recognized a relatively medium level of job satisfaction among the health professionals in the urban area. It was found to be one among the factors that can possibly influence their job satisfaction and intention to stay.

Anyaoku et al. (2015) carried out a study to determine the pattern of use of internet by the medical students of Nuamdi Azikiwi University. Survey research method was used for the study. It was conducted in the faculty of medicine, college of Health Science, Nuamdi Azikiwe Univesity. Study findings shown that majority of medical students access internet through Smartphone. There were no accesses to internet from the faculty and library. Majority students rated their internet search skills as proficient. Regarding most satisfactory information resources used internet rated first followed by print books and journals. Internet is regularly used by medical students for searching medical information and social media communication. Online databases, e-book downloading, e-journal access were less among medical students. The three main websites consulted by medical students were Wikipedia, Medscape/Emedicine and PubMed respectively. It is identified that most downloaded subjects by the students are internal medicine, pathology, pharmacology. Easy access to information, faster access to information, access to current information and access to wider range of information are the benefits of the internet to their academic work. Lack of internet access, restriction of important information for payment, and too many results returned for search are the main barriers reported by the medical students.

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Results of the study showed that even though the medical students use the internet highly to access medical and research information, there is low use of quality information resources such as online subject databases, e-books, e-journals and library websites. Study recommended that medical librarians have a significant role in improving student's use of educational resources on the internet through an extensive and curriculum based information literacy program

Nguyen et al. (2015) reviews the literature examining the role of devices and technology in facilitating urgent clinician- clinician communication to identify critical areas for future research. Literature search was conducted in PubMed using the terms health communication, interdisciplinary communication. Articles included were categorized into three groups: Alphanumeric pagers, cellular and smart phones and novel uses of technology. Study demonstrated that although the use of alphanumeric pagers has increased information transmission and provided new information routes to staff members, clinicians generally regard them disruptive. Delays in transmission are a threat to efficiency in urgent situations. Study suggests that web based alphanumeric paging may reduce interruptions in patient care and improve physician work efficiency within a hospital and the use of automated alerts allows team members to retrieve information simultaneously. Regarding the use of smart phones it is noted that use of smart phones reduces the time required to send urgent messages. At the same time it is noted that older physicians may be reluctant to abandon traditional pager devices and the transition from paging to phone- based systems may temporarily increase the rate of non-urgent interruptions. It is identified that novel technologies can be successfully used to improve urgent clinician-clinician communication and ultimately with patient care. It enhanced real time fast-paced information and reduced potentially harmful breakdowns during patient care. Study identified the merits and demerits of each technology and it is recommended that

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breakdowns in clinician-clinician communication complex and cannot be solved through the implementation of devices or technologically advanced systems alone. It is essential to understand the correlation between emerging technologies, a demanding work load and clinician-clinician interaction.

Olok et al. (2015) tries to find out the attitude of doctors towards the use of e-health since it an essential requirement for success in health care management and delivery worldwide (Eley et.al, 2009), (Ahmed et al, 2014). A cross sectional survey is used to collect data. 68 medical doctors in Government hospitals and 4 private hospitals in Northern Uganda participated in the study. Study revealed that healthcare professionals had moderate to strong positive attitude towards e-health. Mobile phones, Microsoft power point, internet, flash disk/ memory sticks and e-mail are found as the mostly used ICT tools. Study noted that more female doctors access computer and internet facilities than male doctors. Access to computer and internet facilities by doctors aged more than 50 years was higher. It is also found that ICT skills were better in commonly available ICT tools and applications in hospitals, internet, e-mail, word processor, power points are listed as the commonly used ICT tools by health professionals. Healthcare professionals also reported poor ICT skills in using body scanners, computerized sensor and fax machine. The author recognized the reason behind poor ICT skills in some devices may be because of lack of such tools in hospitals, inadequate skills in operating them, specialized nature of equipment and tools etc.

Rehman and Ramzy (2004) analyses the patterns of internet use, the internet skills of health professionals, the impact of internet on their personal and professional conduct and the difficulties faced by them. The survey method based on mailed questionnaire was used for the study. Questionnaire was distributed to full time professionals in the three teaching faculties of medicine, dentistry and pharmacy. The population covered both clinician

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professionals and non-clinical professionals. Results of the study showed that internet use is not confined to specific venues. Majority reported that they use internet from their office and home. A good number of respondents use internet from medical college library. An overwhelming majority of respondents has been using internet for years and they are expected to be proficient, comfortable and experienced users of the system and most of them use it daily. Regarding the perceived importance of internet most of them highly value the use of internet. It was asked the purpose of using internet and the study identified that health professionals are making active use of internet for professional tasks and communication. They were also asked to indicate how they received internet training. Majority of them reported that they learnt to use internet through self-instruction. Online help, library guides and brochures also found useful for them to learn. Majority of the respondents expressed a need to improve their internet use capabilities. Regarding the impact of internet on their personal and professional life majority of respondents opined that the internet provided better access to information and through internet they had better professional contacts with distant colleagues and organizations and a good number of them opined that with the use of internet they were able to use different channels of communication. A significant number of the respondents observed that internet had given them the capacity to carry out tasks that were previously done by librarians and secretaries. Slow access speed, lack of time, lack of training is the major problems faced by the professionals in using internet. Professionals were quite forthcoming in pointing out their preferences for formal training at Health Sciences Centre library.

Simmons et al. (2005) discussed the experience with the development of the ASCMI (Arts and Science of Clinical Medicine) website and details the challenges and motivators inherent in the production of a web-based, multi media medical education tool at a large Canadian medical school. Interviews

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and focus groups were conducted with the development team to discover the factors that affected the development process. ASCMI website is an interactive multimedia online resource for both student education and faculty development in clinical skills training. The advantages of this web based platform were wide availability to students and tutors at home, school and hospital, on-demand and round the clock access, increasing popularity, expanding interactive and multimedia capabilities, ability to accommodate many learning styles and ease of website updates and expansions. The website contains two sections, ie ; history home page and physical examination home page. The history section contains-video interview with a standardized patient, eight interactive modules outlining key components of medical history taking, case report, assignment modules to improve case report writing skills and activity modules to improve verbal and nonverbal communication skills and to increase student comfort with patient visitation on the wards. The physician examination section contains ten modules for the physical skills. The interviews with participants involved in the development of ASCMI showed their motivation for joining in the project. Many of the medical students said that they wanted to improve the course and they felt that the university was lagging behind in terms of using internet computing. Physician found it as a new way of teaching. The project was initially hindered by lack of IT infrastructures. Results of the study recognized that effective development of a multimedia education tool required a multidisciplinary team with diverse skills and creative talents. The effective use of technical non-experts and technical experts are necessary for a project like this.

Study noted that ICT can be also applied in following clinical interventions;

- Remote consultations
- Remote titration of therapy including prescriptions

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- Remote psychological therapies
- Remote career support

Another study noted the benefits of telemonitoring such as improved treatment adherence, disease knowledge and reduced hospital admissions. Nurses have to be aware of ICT to meet the patient's needs in 24*7 hours, (Bowles et.al 2009), (Dang et al.2009), (Dansky & Vasey 2009)

Thirty eight studies are reviewed in this section. The reviews indicated that health professionals are well favored to ICT equipments. The availability of email, websites, chat rooms, multimedia presentations and occasional opportunities for communication via internet, phones, video conferencing etc have rejuvenated medical education and teaching, patient care and collegial support. The reviews show that an advanced information workspace with new interaction methods is desired for health professionals.

3.6 Conclusion

A total of 77 studies are reviewed in this chapter. The reviews of related studies show that majority of the studies were conducted in foreign countries. There are only a few studies conducted in the topic related to professional communication activities in medical colleges. In India, particularly in Kerala no in depth studies has been conducted in this area. The studies reviewed in this chapter were mainly focused on the communication channels used in hospitals and the relationship between health professionals. No other studies were done in the area of communication practices taking place in medical colleges and the communication satisfaction in medical colleges. Also there were no studies that investigate the use of Information and Communication Technology in Government Medical Colleges in Kerala. In healthcare effective communication ensures the great patient care and patient satisfaction. Communication among doctors, communication among

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doctors and patients, use and dissemination of information by doctors, effect of educational conferences designed to sharpen the communication etc have immense importance in healthcare. This study investigates overall communication activities by Post Graduate Medical Students in Government Medical Colleges in Kerala. Taking into account the development in the new communication technologies, it is necessary to understand the current communication practices in the hospital settings. So there is a need for studying the current practices in Government Medical Colleges which will help to provide better and quality patient care.

Having discussed the review of related studies here, next chapter discusses the research objectives, hypothesis of the study, research design and data analysis techniques.

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METHODOLOGY

4.1 Introduction

4.2 Research Objectives

4.3 Hypotheses

4.4 Research Design

4.5 Conclusion

4.1 Introduction

This chapter describes the research aim and objectives, hypotheses of the study, data collection methods, population of the study and data analysis techniques. The present study tries to understand the Professional Communication activities of Post Graduate Medical Students in Government Medical Colleges in Kerala. This study will help to determine the communication processes of PG Medical Students, use of ICT in communication process and challenges faced by Medical College students in communicating information in the Government Medical Colleges in Kerala, there by create a good working environment in Government Medical Colleges in Kerala. The professional communication activities of respondents may be different depending upon their personal attributes and environment. Therefore an attempt was carried out to study the Professional Communication activities of Post Graduate Medical Students in Government Medical Colleges in five Government Medical Colleges in Kerala.

4.2 Research Objectives

The aim of this research is to understand the Professional Communication activities of Post Graduate Medical Students in Government Medical Colleges in Kerala. The other objectives of the study are:

1. To identify the professional communication activities of Post Graduate Medical Students in Government Medical colleges in Kerala.
2. To investigate the communication channels used in professional communication activities by the Post Graduate Medical Students in Government Medical Colleges in Kerala.

Methodology

3. To understand the frequency of participation in Continuing Medical Education programmes by the Post Graduate Medical Students in Kerala.
4. To assess whether the socio economic background of the patients is useful in the clinical decision making.
5. To investigate the gender difference in the use of ICT in professional communication activities by the Post Graduate Medical Students in Government Medical Colleges in Kerala.
6. To identify whether there is any difference in the factors that hinder the flow of professional communication in Government Medical Colleges in Kerala with respect to discipline.
7. To understand the gender difference in the communication satisfaction by the Post Graduate Medical Students in Government Medical Colleges in Kerala.

4.3 Hypotheses

The hypotheses of the study are:

1. Post Graduate Medical Students in Government Medical Colleges in Kerala regularly take part in communication activities.
2. Informal communication methods are mainly used to exchange health information in Government Medical Colleges in Kerala.
3. Post Graduate Medical Students in Government Medical Colleges in Kerala regularly participate in Continuing Medical Education Programmes.
4. Socio economic background of the patients is not found useful in the clinical decision making.

5. There is a significant gender as well as departmental difference in the use of ICT equipments by the Post Graduate Medical Students in Government Medical Colleges in Kerala.
6. There is no significant difference in the factors that hinder the flow of professional communication in Government Medical Colleges in Kerala with respect to discipline.
7. There is a significant gender difference in the communication satisfaction by the Post Graduate Medical Students in Government Medical Colleges in Kerala.

4.4 Research Design

The present study is intended to find out the Professional Communication activities of Post Graduate Medical Students in five Government Medical Colleges in Kerala. The principal method used to collect the data was a questionnaire survey.

4.4.1 Data Collection Methods

To meet the objectives of the present study, the main methods employed in data collection were: extensive literature review of related studies along with a questionnaire survey of Post Graduate Medical Students in Government Medical Colleges in Kerala.

4.4.1.1 Review of Related studies

Literature search was carried out to get an idea about the similar studies conducted in the present research area. For this primary journals, online journals, online databases were consulted. This helped the researcher to get a better understanding of the complexity and diversity of the subject.

4.4.1.2 Questionnaire Survey

To solicit information about the Professional Communication activities of Post Graduate Medical Students in five Government Medical Colleges in Kerala, a pre tested questionnaire was administered to the post graduate medical students (Appendix). The questionnaire has seven parts.

Part 1 is to collect the general information of the post graduate medical students. It covers items such as name of the medical college, department, age and gender.

Part 2 is related to the participation in communication activities by post graduate medical students. Here the respondents have to indicate how often they take part in communication with colleagues, with other health professionals, with patients and their relatives, with teachers, research scholars, administrative staff and interdisciplinary communications, with other hospitals and with general public. Respondents also asked to indicate the communication channels used for communication with colleagues, with other health professionals, with patients and their relatives, with teachers, research scholars, administrative people, and interdisciplinary communication, with other hospitals and with general public. For assessing the frequency of purpose of involvement in communication activities a response category of always, often, sometimes, rarely, never is given.

Part 3 deals with the communication with patients. It consists of questions related to frequency of patient's follow up after discharge and methods used to follow up by the patients. The respondents were also asked to indicate the barriers faced during the communication with patients, for this a response category of always, often, sometimes, rarely, never is given.

Methodology

Part 4 is related to the continuing medical education programs. This includes frequency of participation in CME programs, forms of CME programs and questions on communication channels used to publish their research findings.

Part 5 deals with information and communication in general. Respondents were asked to indicate the frequency of use of the information resources to get details of patients and their diseases, for this response category of always, often, sometimes, rarely, never is given. They were asked to rank purpose for which they need information. The respondents also have to indicate frequency of use of information resources for getting information you needed for patient care, for this also a response category of always, often, sometimes, rarely, never is given

Part 6 is related to Information and Communication Technology. Here respondents have to indicate the type of ICT equipments they possess, place, method time used to access internet. They also asked to indicate the frequency for using ICT equipments, for this a response category of always, often, sometimes, rarely, never is given. They were asked to point out the strategies that their college put forward to facilitate better communication and to specify their agreement with the influence of ICT equipment in establishing efficient communication for this a category of disagree, neutral, agree is given.

Part 7 deals with barriers in communication. It consists of questions related to the factors that act as a barrier/hindrance to your professional communication to analyze this category of extreme, moderate, none is given. Respondents were also asked to point out factors that hinder the use of ICT equipment in their hospital. It also includes questions on opinion of respondents asking how the communication in their hospital can be improved, opinion to improve the use of ICT in their institution and the rate of satisfaction in communication and satisfaction with the current ICT provision in their institutions.

4.4.2 Population of the Study

The present study attempts to identify the Professional Communication activities of Post Graduate Medical Students in five Government Medical Colleges in Kerala. The population of the study is the Post Graduate Medical Students in the departments of five Government Medical Colleges in Kerala, and the medical colleges selected for the study are Government Medical College, Thiruvananthapuram, Government Medical College, Kozhikode, Government Medical College, Kottayam, Government Medical College, Thrissur, Government Medical College, Alappuzha. The Medical Colleges were selected on the basis of Post Graduate courses that fully and effectively functioning. The actual number of Post Graduate Medical students in these colleges was obtained from the college websites over the period of 2014 to 2016. It was found that the number of post graduate medical students in the departments of five Government Medical Colleges is 1607. It was decided to take a sample from this number of students. The sample size was decided by utilizing US National Education Association table as expressed by Krejcie and Morgan (1970). This method is used to decide the sample size in social science studies. As per Morgan's table sample size for population up to 1700 is 313. The investigator selected a representative sample from the population by using two stage stratified random sampling method. Researcher first considered college wise strata for taking the sample and distinguished the discipline wise categories of the PG Students, which has taken probability proportional to size from two disciplines (Clinical and Non-clinical) making the sample 350. Sample size taken from the Medical Colleges is demonstrated in table 4.1.

Table 4. 1
Population and Sample of the Study

Govt. Medical Colleges	Population	Sample Size
Thiruvananthapuram	543	118
Kozhikode	436	95
Alappuzha	136	30
Kottayam	287	62
Thrissur	205	45
Total	1607	350

The total number of PG Medical students in five Government Medical College was 1607. A total 350 questionnaires were distributed to the students of Government Medical College, Thiruvananthapuram (118), Government Medical College, Kozhikode (95), Government Medical College, Alappuzha (30), Government Medical College, Kottayam (62), Government Medical College, Thrissur (45). Out of which 330 questionnaires were returned.

General profile of the respondents is given in Table 4.2. Out of 330 respondents 212 were female and 118 were male respondents. Out of 330 respondents 257 belongs to clinical department and 73 belongs to non-clinical department.

Table 4.2
General Profile of the Respondents (n=330)

Variable	Category	Frequency
Gender	Male	118
	Female	212
Discipline	Clinic	257
	Non – Clinic	73

Methodology

A pilot study was conducted among Post Graduate Medical Students in Government Medical College, Kozhikode. The pilot study confirmed the reliability of data collection method. The data collection was carried out in the departments of Government Medical College, Thiruvananthapuram, Government Medical College, Kozhikode, Government Medical College, kottayam, Government Medical College, Thrissur, Government Medical College, Alappuzha over six months(October 2016 to February 2017). The Post Graduate Medical Students in five Medical Colleges in Kerala were approached individually and questionnaires were administered and they were requested to respond. A total of 350 questionnaires were distributed, among which 330 were received back.

4.4.3 Data Analysis Technique

The data collected were analyzed properly by using SPSS. The data were analyzed discipline wise and gender wise using descriptive and inferential statistics. The descriptive statistics including percentages and graphical representations are used to provide a general picture of the professional communication activities of the Post Graduate Medical Students. The inferential statistics used are intended to point out whether there is difference in the use of ICT in professional communication activities by the Post Graduate Medical students in Government Medical Colleges in Kerala with respect to gender and the factors that hinder the use of ICT equipments, the factors that hinder the flow of professional communication, the communication satisfaction by the Post Graduate Students in Government Medical Colleges in Kerala. The statistical techniques used for the analysis are;

- Simple percentage method – It is used to express the relative frequency of survey responses and other data.

Methodology

- Chi-square – This method is used when the sampling method is simple random sampling. This test is used to determine whether there is significant relationship between two categorical variables. It is an inferential statistical test that compares the observed data to a model that distributes the data according to the expectation that the variables are independent. If the Chi square value is larger it means larger the discrepancy and more likely the two variables are related. If the Chi square value is less than the table value it is accepted that the difference in actual and observed frequencies is due to chance of variation and can be ignored.
- T-test – A t-test is an inferential statistic which is used to determine if there is a significant difference between the means of two groups which may be related in certain features. T test is used as a hypothesis testing tool, which allows testing of an assumption applicable to a population. A t-test looks at the t-statistic, the t- distribution values and the degrees of freedom to determine the probability of difference between two sets of data. To conduct a t-test with three or more variables, one must use an analysis of variance (Student, 1908).
- Ranking - A ranking is a relationship between a set of items such that, for any two items, the first is either 'ranked higher than', 'ranked lower than' or 'ranked equal to' the second. In mathematics, this is known as a weak order or total preorder of objects. By reducing detailed measures to a sequence of ordinal numbers, rankings make it possible to evaluate complex information according to certain criteria (“Ranking”, 2018).

4.5 Conclusion

This chapter has summarized the methodology adopted in the present study including the tools and procedure for data collection and the statistical techniques for data analysis. The next chapter furnishes the analysis and interpretation of the data.

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ANALYSIS AND INTERPRETATIONS

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 - 5.10 Factors hindering the Communication with Patients/Patient relatives*
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 - 5.14 Presentations in CME Programmes*
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 - 5.19 Purpose for which PG Medical Students need Information*
 - 5.20 Frequency of Use of Resources for Patient Care*
 - 5.21 Ownership of ICT Equipments*
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- 5.22 *Use of ICT for Communication Purpose*
 - 5.23 *Usage of Internet*
 - 5.24 *Time spent in search of Information and Communication*
 - 5.25 *Place of accessing Internet*
 - 5.26 *Methods of accessing Internet*
 - 5.27 *Devices used to access Internet*
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 - 5.32 *Use of Social Networking Sites*
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 - 5.35 *Influence of ICT on Professional Communication*
 - 5.36 *Barriers in Professional Communication*
 - 5.37 *Factors hinder the use of ICT Equipment*
 - 5.38 *Suggestions to improve Professional Communication*
 - 5.39 *Suggestions to improve the Use of ICT*
 - 5.40 *Communication Satisfaction*
 - 5.41 *Satisfaction with ICT Provision*
 - 5.42 *Conclusion*

5.1 Introduction

In this chapter the data collected from Post Graduate Medical Students in Government Medical Colleges have been analyzed and interpreted. Data were collected using questionnaire from the five Government Medical Colleges in Kerala. The data is analyzed based on the objectives of the study, using SPSS and presented in tables and graphs along with necessary explanations.

Part 1

5.2 General Information

The general information about the Post Graduate Medical Students in Government Medical Colleges, such as gender, age, and department are analyzed in this subsection.

5.2.1 Gender wise distribution of Post Graduate Medical Students

Table 5.1 depicts the gender wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala. Analysis shows that female post graduates dominates in number under students compared to male post graduate students.

Table 5.1

Gender wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala

Gender	Sample size	Percentage (%)
Male	118	35.76
Female	212	64.24
Total	330	100

Analysis

The analysis reveals that majority (64.24 per cent) of the post graduate medical students in Government Medical Colleges in Kerala are female and nearly two fifth (35.76 per cent) of the post graduate medical students are male.

Graphical representation of gender wise distribution of the Post Graduate Medical students in Government Medical Colleges in Kerala is shown below:

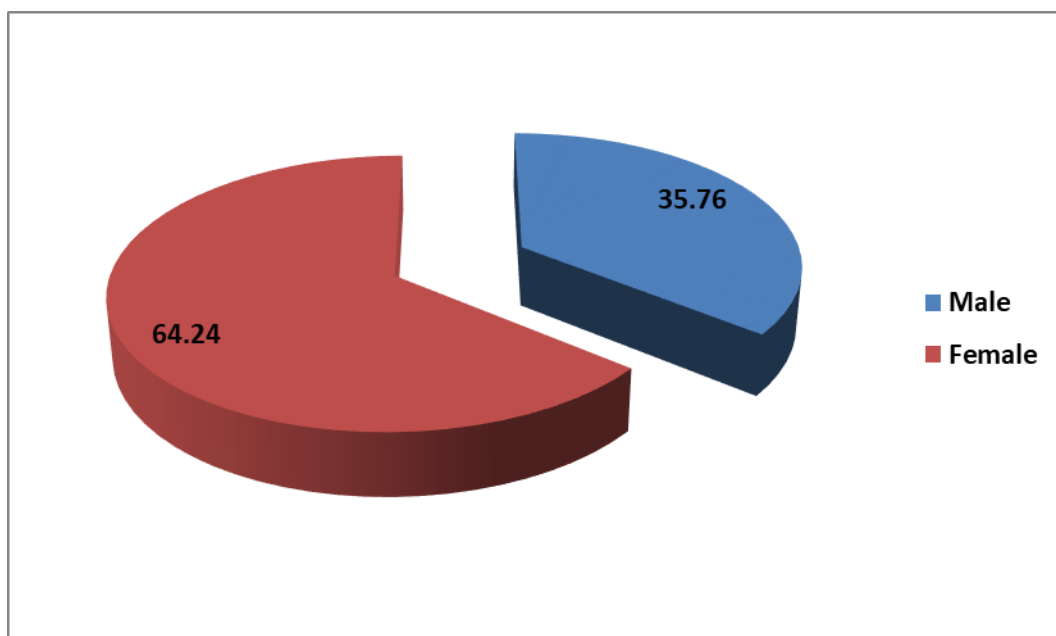


Figure 5.1 Gender wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala

From the figure it is clear that majority (64.24 per cent) of the post graduate medical students in Government Medical Colleges in Kerala are female and nearly two fifth (35.76 per cent) of the post graduate medical students are male.

5.2.2 Age wise distribution of Post Graduate Medical Students

Table 5.2 depicts the age wise distribution of Post Graduate Medical Students in Government Medical Colleges in Kerala. Analysis shows that the majority (86.06) of the Post Graduate Medical Students in Government Medical Colleges in Kerala are within the age group of 25-30. About 10.61 per cent of them are within the age group 30-35 and a very few of Post Graduate Medical students are below the age 25 and above the age 35.

Table 5.2
Age wise distribution of the Post Graduate
Medical Students in Government Medical Colleges in Kerala

Age Range	Sample size	Percentage (%)
Below 25	7	2.12
25-30	284	86.06
30-35	35	10.61
Above 35	4	1.21
Total	330	100

It is found that majority of the Post Graduate Medical Students in Kerala are between 25-30 years of age. A few Post Graduate Medical Students are below 25 years and only a very few of them are above 35 years of age.

Graphical representation of age wise distribution of the Post Graduate Medical students in Government Medical Colleges in Kerala is shown below:

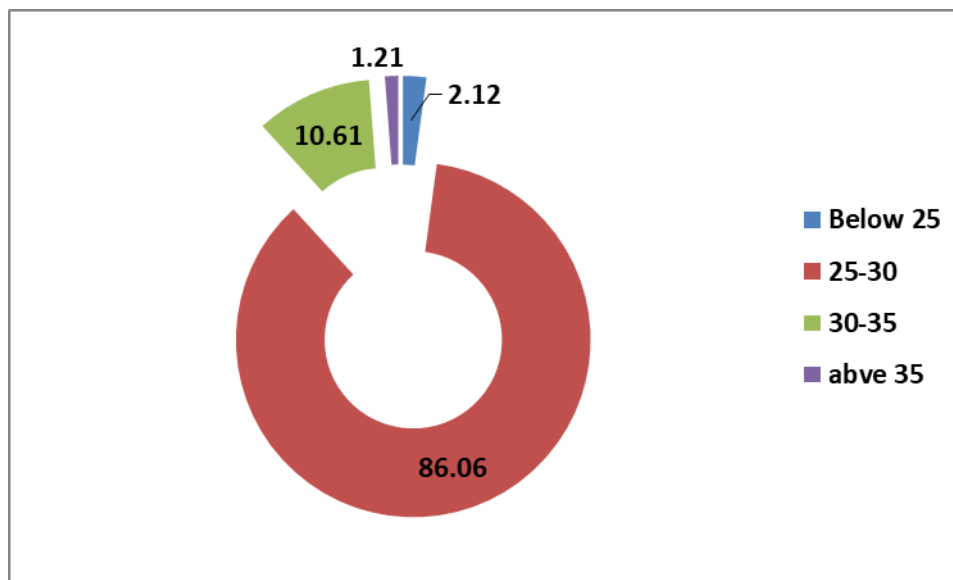


Figure 5.2 Age wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala

It is clear that majority of the Post Graduate Medical Students (86.06 per cent) in Kerala are between 25-30 years of age. About 10.61 per cent of the students are in between the age group 30-35. A few Post Graduate Medical Students (2.12 per cent) are below 25 years and only a very few of them (1.21 per cent) are above 35 years of age.

5.2.3 Department wise distribution of Post Graduate Medical Students

The clinical departments include Anesthesiology, General surgery, Obstetrics and Gynecology, Pediatric surgery, Plastic and Reconstructive surgery, Dermatology, ENT etc. Clinical departments give more emphasis on practice. It focuses on healing patients directly through diagnosis, treatment, surgery and so on.

The non-clinical departments include Community Medicine, Microbiology, Physical Medicine, Physiology, Physical Education, Internal Medicine etc. Non-clinical departments give focus on studying the laws of human life and disease phenomena and thus provide necessary theoretical support for clinical practice as part of the efforts to care patients.

Analysis

The department wise distribution of Post Graduate Medical Students in Kerala is given in the Table 5.3. Table shows that the majority (77.88 per cent) of the Post Graduate Medical Students belongs to clinical departments and a few of them (22.12 per cent) belongs to non - clinical department.

Table 5.3

Department wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala

Department	Sample size	Percentage (%)
Clinical	257	77.88
Non-clinical	73	22.12
Total	330	100

It is seen that majority (77.88 per cent) of the Post Graduate Medical Students in Kerala belongs to clinical departments and nearly quarter of them (22.12 per cent) belongs to non - clinical departments.

Graphical representation of department wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala is shown below:

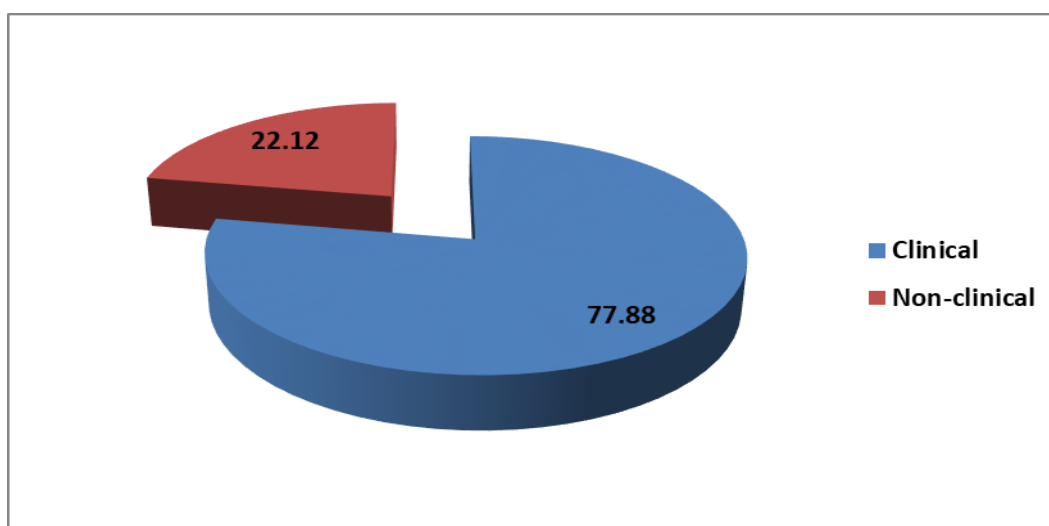


Figure 5.3 Department wise distribution of the Post Graduate Medical Students in Government Medical Colleges in Kerala

From the figure it is seen that majority (77.88 per cent) of the Post Graduate Medical Students in Kerala belongs to clinical departments and nearly quarter of them (22.12 per cent) belongs to non - clinical departments.

Part 2 Professional Communication Activities

5.3 Frequency of Professional Communication activities of PG Medical Students

Communication activities in medicine includes interaction between doctor and patient, between colleagues and with other health professionals etc. Communication among healthcare team members influences the quality of working relationships, job satisfaction and profound impacts on patient safety (“Team strategies and tools to enhance performance and patient safety, 2018). Research evidences also indicated that the quality of healthcare received by the patient is highly dependent on their interactions with their healthcare clinician and team(Clark, 2003).

Here the Post Graduate Medical Student’s responses regarding the professional communication activities in medical colleges in Kerala are summarized in Table 5.4. Analysis shows that the most of the respondents (78.78 per cent) always communicate with their colleagues. Most of the PG Medical students reported that they often (65.45 per cent) communicate with other health professionals. Nearly half of the PG Medical students (45.75 per cent) always communicate with the patients and their relatives regarding the health issues. More than half of the PG Medical students (54.24 per cent) often share information and ideas with teachers/research scholars / administrative people etc. Only a very few (1.81 per cent) of PG Medical students always take part in interdisciplinary communication. A good number of respondents opined that they sometimes take part in Communication with other hospitals/organizations (48.78 per cent) and communication with general public (37.27 per cent).

Table 5.4

Frequency of Professional Communication activities

Professional Communication Activities	Always	Often	Sometimes	Rarely	Never
Communication with colleague	260 (78.78%)	70 (21.21%)	-	-	-
Communication with other health professionals	61 (18.48%)	216 (65.45%)	53 (16.06%)	2 (0.60%)	1 (0.30%)
Communication with Patients/Patient's relatives	151 (45.75%)	106 (32.12%)	57 (17.27%)	14 (4.24%)	2 (0.60%)
Communication with teachers/research scholars / administrative people etc	101 (30.60%)	179 (54.24%)	50 (15.15%)	-	-
Interdisciplinary communication	6 (1.81%)	149 (45.15%)	148 (44.84%)	26 (7.87%)	1 (0.30%)
Communication with other hospitals/organisations	1 (0.30%)	24 (7.27%)	161 (48.78%)	123 (37.27%)	21 (6.36%)
Communication with general public	32 (9.69%)	96 (29.09%)	123 (37.27%)	65 (19.69%)	14 (4.24%)

It is found that majority of the respondents are frequently communicate with their colleagues. Nearly half of the respondents reported that they always take part in communication with patients and their relatives. It is seen that interdisciplinary communication and communication with other hospitals and organizations and with general public are not considered to be as a frequent communication activity by the PG Medical students.

5.3.1 Frequency of Professional Communication activities of PG Medical Students with respect to Gender

The relationship between professional communication activities of PG Medical students and their gender is analyzed using t test in the Table 5.5

Table 5.5

Relation between Professional Communication activities and Gender

Professional Communication Activities	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	3.8402	.33577	212	3.7049	.44562	2.875	.004

Analysis of the Table 5.5 shows that p value (0.004) of the result is less than 0.05 that means there is significant difference between professional communication activities and gender of the PG Medical Student. That is the frequency of taking part in communication activities varies with the gender of the PG Medical Students.

5.3.2 Frequency of Professional Communication activities of PG Medical Students with respect to Department

The relationship between professional communication activities of PG Medical students and their department is analyzed using t test in the Table 5.6

Table 5.6

Relation between Professional Communication activities and Department

Professional Communication Activities	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	3.7893	.37776	73	3.6262	.50599	3.004	.003

Analysis of the Table 5.6 shows that p value (0.003) of the result is less than 0.05 that means there is significant difference between professional communication activities and the department of the PG Medical student. That is the frequency of taking part in communication activities depends on the department of the PG Medical students.

Overall analysis reveals that majority of the respondents are frequently communicate with their colleagues. Most of the respondents are reported that they always take part in communication with patients and their relatives. It is seen that interdisciplinary communication and communication with other hospitals and organizations and with general public are not considered to be as a frequent communication activity by PG Medical students and the results of t test shows that there is significant difference between professional communication activities and gender of the PG Medical student. That is the frequency of taking part in communication activities depends on the gender of the PG Medical Students and it is also seen that there is significant difference between Professional Communication activities and the department of the PG Medical students. That is the frequency of taking part in communication activities also depends on the department of the PG Medical students.

5.4 Communication Channels used by the PG Medical Students

There exists a range of communication channels that influence the communication in health care and they include written patient records, telephones and electronic written communication like e-mails and text messages. In a study by (Abbas, 2016) it is established that students preferred to use face- to- face communication to share messages followed by mobile phone communication.

The PG Medical students' responses regarding the use of communication channels in professional communication activities with different categories are summarized in Table 5.6. Analysis shows that majority of the PG Medical students depends on face-to-face communication in order to communicate with colleagues (99.09 per cent), with other health professionals (77.87 per cent), with patients and patients' relatives (96.06 per cent), with Teachers/research scholars/administrative people (83.03 per cent), with interdisciplinary communication (67.87 per cent), with general public(63.63 per cent). It is identified that in order communicate with other hospitals and organizations more than half (58.78 per cent) of the PG Medical students use mobile phones. It is seen that posters are the second most used (34.54 per cent) communication channels used by the PG Medical students to communicate with general public. Mobile phones are reported as the second most used communication channels to communicate with colleagues (62.72 per cent), with other health professionals (58.18 per cent), with patients and relatives (26.96 per cent), and with teachers/research scholars /administrative people (54.54 per cent), in interdisciplinary communication (53.03 per cent). It is seen that nearly half of the PG Medical students (47.57 per cent) communicate through social media, followed by email (36.66 per cent) and discussion groups (32.42 per cent). Also a considerably good number of PG Medical students (37.57 per cent) use email to communicate with other health

Analysis

professionals. Nearly half of the PG Medical students (49.69 per cent) use email service to make communication with teachers/research scholars/administrative people etc. From the analysis it is seen that a considerably good number of (23.93 per cent) PG Medical students communicate with general public through announcement. Personal websites and video conference are the least used communication channels by majority of the PG Medical students.

It is revealed that majority of the PG Medical students depends on face-to-face communication in order to communicate with their colleagues, other health professionals, patients' and their relatives, teachers and administrative people, for interdisciplinary communication and to communicate with general public. Communication with other hospitals is made possible through mobile phones by more than half of the PG Medical students. Mobile phone and email are the other most used communication channels by PG Medical students. Personal websites and video conference are reported as the least used communication channels by majority of the PG Medical students. Even though mobile phones, email, video conferencing allow easy way to communicate face to face communication ensures the effectiveness of a communication in a workplace. In this study it is found that majority of the PG Medical students depends on face-to-face communication which is considered as the most effective way of communication.

Table 5.7
Communication Channels used by the PG Medical Students

Communication Channels	Professional Communication activities with						
	Colleagues	Other health professionals	Patients/ Patient's relatives	Teachers/research scholars/administrative people etc	Interdisciplinary communication	hospitals/organisations	General public
Face to face	327 (99.09%)	257 (77.87%)	317 (96.06%)	274 (83.03%)	224 (67.87%)	51 (15.45%)	210 (63.63%)
Letter	3 (0.90%)	30 (9.09%)	-	58 (17.57%)	60 (18.18%)	89 (26.96%)	15 (4.54%)
Posters	15 (4.54%)	12 (3.63%)	19 (5.75%)	6 (1.81%)	19 (5.75%)	21 (6.36%)	114 (34.54%)
Announcement	7 (2.12%)	13 (3.93%)	33 (10%)	5 (1.51%)	32 (9.69%)	11 (3.33%)	79 (23.93%)
Mobile phone	207 (62.72%)	192 (58.18%)	89 (26.96%)	180 (54.54%)	175 (53.03%)	194 (58.78%)	63 (19.09%)
Telephone	67 (20.30%)	70 (21.21%)	32 (9.69%)	47 (14.24%)	68 (20.60%)	94 (28.48%)	39 (11.81%)
Email	121 (36.66%)	124 (37.57%)	5 (1.51%)	164 (49.69%)	66 (20%)	94 (28.48%)	10 (3.03%)
Social media	157 (47.57%)	103 (31.21%)	6 (1.81%)	44 (13.33%)	59 (17.87%)	30 (9.09%)	46 (13.93%)
Discussion groups	107 (32.42%)	38 (11.51%)	9 (2.72%)	119 (36.06%)	68 (20.60%)	24 (7.27%)	23 (6.96%)
Personal website	48 (14.54%)	18 (5.45%)	6 (1.81%)	12 (3.63%)	31 (9.39%)	9 (2.72%)	4 (1.21%)
Video conference	45 (13.63%)	13 (3.93%)	5 (1.51%)	23 (6.96%)	7 (2.12%)	22 (6.66%)	4 (1.21%)

5.5 Purpose of Professional Communication by the PG Medical Students

Health professionals communicate with each other in order to support continuity and transparency within the patient care team. Effective communication encourages collaboration, team work and helps to prevent medical errors.

Analysis

The PG Medical students' responses regarding the purpose of taking part in professional communication activities are analyzed gender wise and given in Table 5.6 Analysis revealed that majority of the male PG Medical students (72.03 per cent) always take part in professional communication for the purpose of sharing professional knowledge. A good number of female PG Medical students (43.4 per cent) also always sharing professional knowledge. It is seen that only 29.66 per cent male PG Medical students discuss patient cases where as majority of the female PG Medical students discuss patient cases. A considerable number of male (38.14 per cent) and female (33.02 per cent) PG Medical students always take part in professional communication activities in case of admitting discharging matters. Nearly half of the male PG Medical students (46.61 per cent) often ask/give second opinion. Whereas only 36.79 per cent female PG Medical students often ask/give second opinion. It is noted that a very few female PG Medical students (8.49 per cent) reported that they rarely share professional knowledge and a very few female PG Medical students (9.43 per cent) reported that they rarely take part in professional communication activities in case of admitting discharging matters. A negligible number of female PG Medical students opined that they never discuss patient cases (0.94 per cent), consult for admitting/discharging (1.89 per cent), give/ask for second opinion (0.94 per cent).

5.5.1 Purpose of Professional Communication by the PG Medical Students with respect to Gender

Purpose of professional communication by PG Medical students with respect to gender is given in the Table 5.8

Table 5.8
Purpose of Professional Communication
by the PG Medical Students with respect to Gender

Gender	Frequency	Gender wise Purpose of Professional Communication			
		Sharing professional knowledge	Discuss patient cases	Consult for admitting /discharging	To ask/give second opinion
Male	Always	85 (72.03%)	35 (29.66%)	45 (38.14%)	15 (12.71%)
	Often	26 (22.03%)	44 (37.29%)	33 (27.97%)	55 (46.61%)
	Sometimes	7 (5.93%)	38 (32.2%)	35 (29.66%)	45 (38.14%)
	Rarely	-	1 (0.85%)	5 (4.24%)	3 (2.54%)
	Never	-	-	-	-
Female	Always	92 (43.40%)	90 (42.45%)	70 (33.02%)	75 (35.38%)
	Often	80 (37.74%)	90 (42.45%)	53 (25%)	78 (36.79%)
	Sometimes	22 (10.38%)	26 (12.26%)	65 (30.66%)	48 (22.64%)
	Rarely	18 (8.49%)	4 (1.89%)	20 (9.43%)	9 (4.25%)
	Never	-	2 (0.94%)	4 (1.89%)	2 (0.94%)

It is found that a majority of the male PG Medical students (72.03 per cent) and a good number of female PG Medical students (43.40 per cent) always share professional knowledge. A considerably good number of male PG students (37.29 per cent) often discuss patient cases and a good number of female PG students (42.45 per cent) always discuss patient cases. A considerable number of male (38.14 per cent) and female PG Medical

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students (33.02 per cent) always take part in professional communication activities in case of admitting discharging matters. Nearly half of the male PG Medical students (46.61 per cent) and a considerably good number of female PG Medical students (36.79 per cent) often ask/give second opinion.

t test for analyzing relation between purpose of communication with respect to gender is given in the Table 5.9

Table 5.9
Relation between Purpose of Professional Communication by the PG Medical students and Gender

Purpose of Communication	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	4.0784	.57522	212	4.0472	.62965	.445	.657

Analysis shows that p value (0.647) is greater than 0.05, hence there is no significant difference between purpose of communication and gender of post graduate medical students. That is whether it is male or female it does not affect the purpose for which they take part in professional communication.

The PG Medical students' responses regarding the purpose of taking part in professional communication activities are analyzed department wise and given in Table 5.10

5.5.2 Relation between Purpose of Professional Communication by the PG Medical Students with respect to Department

Purpose of professional communication by PG Medical students with respect to department is given in the Table 5.10

Table 5.10
Purpose of Professional Communication
by the PG Medical Students with respect to Department

Department	Frequency	Department Wise Purpose of Professional Communication			
		Sharing professional knowledge	Discuss patient cases	Consult for admitting /discharging	To ask/give second opinion
Clinic	Always	149 (57.98%)	110 (42.80%)	103 (40.08%)	81 (31.52%)
	Often	74 (28.79%)	94 (36.58%)	62 (24.12%)	114 (44.36%)
	Sometimes	19 (7.39%)	52 (20.23%)	80 (31.13%)	55 (21.40%)
	Rarely	15 (5.84%)	1 (0.39%)	12 (4.67%)	7 (2.72%)
	Never	-	-	-	-
Non-Clinic	Always	28 (38.36%)	15 (20.55%)	12 (16.44%)	9 (12.33%)
	Often	32 (43.84%)	40 (54.79%)	24 (32.88%)	19 (26.03%)
	Sometimes	10 (13.70%)	12 (16.44%)	20 (27.40%)	38 (52.05%)
	Rarely	3 (4.11%)	4 (5.48%)	13 (17.81%)	5 (6.85%)
	Never	-	2 (2.74%)	4 (5.48%)	2 (2.74%)

Analysis revealed that more than half of the clinical PG Medical Students (57.98 per cent) always share professional knowledge. Whereas only 38.36 per cent of the PG Medical Students in non-clinical department always share professional knowledge. A considerably good number of PG Medical students in non-clinical department (43.84 per cent) often share professional knowledge. It is seen that a considerably good number of clinical PG Medical

Analysis

students (42.80 per cent) always discuss patient cases and in case of non-clinical PG Medical Students, more than half of them (54.79 per cent) often discuss patient cases. It is seen that a considerably good number of clinical PG Medical students (40.08 per cent) always take part in communication activities in order to consult for admitting/discharging cases. In case of non-clinical PG Medical students only 32.88 per cent of them often take part in communication activities in order to consult for admitting/discharging cases. A good number of clinical PG Medical students (44.36 per cent) reported that they often ask/give second opinion. More than half of the non-clinical PG Medical students (52.05 per cent) reported that they sometimes ask/give second opinion. A very few non-clinical PG Medical students opined that they never discuss patient cases (2.74 per cent), consult for admitting/discharging (5.48 per cent) and to ask/give second opinion (2.74 per cent).

For analyzing relation between purposes of communication with respect to department t test is carried out and the result is given in the Table 5.11

Table 5.11

Relation between Purpose of Professional Communication by the PG Medical Students and Department

Purpose of Communication	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	4.1625	.54943	73	3.6918	.67253	6.132	.000

Result shows that p value (0.000) is less than 0.05, hence there exist a significant difference between purpose of professional communication and department. That is purpose of taking part in professional communication varies on the basis of department of the PG Medical students.

Analysis

The overall analysis shows that PG Medical students always share professional knowledge. It is also seen that a considerable number of PG Medical students always take part in professional communication activities in case of admitting discharging matters. From the t test analysis it is revealed that there is no significant difference between purpose of communication and gender of post graduate medical students. That is whether it is male or female it does not affect the purpose for which they take part in professional communication. Analysis also revealed that more than half of the clinical PG Medical Students always share professional knowledge. Whereas only 38.36 per cent of the PG Medical students in non-clinical department always share professional knowledge and the t test shows that there exist a significant difference between purpose of professional communication and the department. That is purpose of taking part in professional communication varies on the basis of the department of the PG Medical students.

Part 3 Communication with Patients

5.6 Enquiry of Socio-economic background of the Patients

Good health care has been shown to ease socioeconomic disparities in healthcare utilization, is associated with better and more equitable health outcomes, and fosters greater patient satisfaction (The World Health Organisation: The world health report, 2008). In a study conducted by (James et al., 2004) Patient Socio-economic background of the patient was not associated with a physician's decision to follow up. In their study of medical students, patient socio-economic background was not significantly associated with the decision to refer to a specialist. Some other studies show that lower socio economic status is an independent risk factor for lower compliance and follow-up attendance. (Kalichman and Catz, 1999), (Amonkar, 2002). In this study the PG Medical students were asked to mention whether they enquire about the socio-economic background of the patients or not.

5.6.1 Enquiry of Socio-economic background of the Patients with respect to Gender

Analysis of Table 5.12 shows whether the PG Medical students enquire about the socio-economic background of the patients or not.

Table 5.12
Enquiry of Socio-economic background of the Patients with respect to Gender

Gender	Communication with patients		
	Yes	No	Total
Male	15 (12.71%)	103 (87.29%)	118 (100%)
Female	13 (6.13%)	199 (93.87%)	212 (100%)
Chi-square= 4.23 df=1 p=0.040			

Analysis shows that a very good number of the male (87.29 per cent) and majority of female (93.87 per cent) PG Medical students do not enquire the socio-economic background of the patients. Only a few male (12.71 per cent) and female (6.13 per cent) PG Medical students reported that they seek socio-economic background of the patients. The chi-square test shows that the p- value (0.040) is less than 0.05. It shows that there is a significant association at 0.05 level between the gender and enquiry of socio economic background of the patients.

It is found that a very good number of the male and majority of female PG Medical students do not enquire the socio-economic background of the patients. Only a few male and female PG Medical students reported that they seek socio-economic background of the patients. There is a significant association at 0.05 level between the gender and enquiry of socio economic

Analysis

background of the patients. Chi square test establishes that whether the PG Medical students enquire about the socio-economic background of the patients depends on the gender of the PG Medical students. Since socio economic status is linked with many health problems and accessibility of good treatment physicians should take initiatives to enquire the background of the patient to provide better patient care.

5.6.2 Enquiry of Socio-economic background of the Patients with respect to Department

Analysis of Table 5.13 shows whether the PG Medical Students enquire about the socio-economic background of the patients or not.

Table 5.13

Enquiry of Socio-economic background of the Patients with respect to Department

Department	Communication with patients		
	Yes	No	Total
Clinic	25 (9.73%)	232 (90.27%)	257 (100%)
Non-Clinic	3 (4.11%)	70 (95.89%)	73 (100%)
Chi-square=2.311 df=1 p=0.128			

Result shows that majority of the clinical (90.27 per cent) and non-clinical (95.89 per cent) PG Medical students do not enquire the socio-economic background of the patients. Only a few clinical (9.73 per cent) and female (4.11 per cent) PG Medical students reported that they seek socio-economic background of the patients. However chi-square test shows that p value (0.128) is more than 0.05, hence there is no significant association at

0.05 levels between the department and enquiry of socio economic background of the patients.

It is found that majority of the PG Medical students irrespective of their department do not enquire the socio-economic background of the patients. Only a few PG Medical students reported that they never seek socio-economic background of the patients. There is no significant association at 0.05 levels between the department and enquiry of socio economic background of the patients. That is the tendency to ask socio economic background about the patients do not depend on the department of PG Medical students.

5.7 The Usefulness of Socio-economic background of the Patients

Physician perception of patient's socio-economic background has been shown to affect clinical decision making and health care delivery. Health care disparities can be reduced through the better understanding of the impact of socio economic background of patient on the patient provider relationship. (Nicholas et al. 2017). In a study conducted by (Susannah et al., 2008) indicated that the socio economic background of the patients affect their clinical decisions. To make care more reasonable to patients as a result of income or insurance restrictions, for instance, physicians described using less-expensive medications, avoiding specialist referrals, trying to accomplish more in a single visit, and postponing testing. To make care more comprehensible, physicians described taking more time to communicate fewer pieces of information or incorporating family members into discussions because of concerns about patients' limited literacy. Study also noted the role of socio economic factors in clinical decision making may be an important contribution in the development of quality standards to ensure high quality care.

5.7.1 The Usefulness of Socio-economic background of the Patients with respect to Gender

The PG Medical students were asked to report their opinion on the usefulness of the socio-economic background of the patients. Table 5.14 depicts the usefulness of the socio-economic background of the patients in diagnosis.

Table 5.14
The Usefulness of Socio-economic background of the Patients with respect to Gender

Gender	The Usefulness of Socio-economic background of the Patients			
	Very Much Useful	Moderately Useful	Not Useful	Total
Male	22 (18.64%)	62 (52.54%)	34 (28.81%)	118 (100%)
Female	24 (11.32%)	100 (47.16%)	88 (41.50%)	212 (100%)

The analysis shows that more than half of the male (52.54 per cent) PG Medical students found enquiring socio-economic background of the patients moderately useful in diagnosis. Nearly half of the female (47.16 per cent) of the PG Medical Students also opined that socio-economic background of the patients moderately useful in diagnosis. A considerably good number of male (28.81per cent) and female (41.50 per cent) PG Medical students opined that socio-economic background of the patients are not useful in diagnosis process. The table also shows that a few female (11.32 per cent) and few male (18.64 per cent) reported that enquiry of socio-economic background of the patients is very much useful in diagnosis.

Analysis

It is revealed that more than half of the male and nearly half of the female of the PG Medical Students found enquiring the socio-economic background of the patients moderately useful in diagnosis.

5.7.2 The Usefulness of Socio-economic background of the Patients with respect to Department

The PG Medical students were asked to report their opinion on the usefulness of the socio-economic background of the patients. Table 5.15 depicts the usefulness of the socio-economic background of the patients in diagnosis.

Table 5.15
The Usefulness of Socio-economic background of the Patients with respect to Department

Department	The Usefulness of Socio-economic Background of the Patients			
	Very Much Useful	Moderately Useful	Not Useful	Total
Clinic	30 (11.67%)	134 (52.14%)	93 (36.18%)	257 (100%)
Non-Clinic	16 (21.91%)	28 (38.35%)	29 (39.72%)	73 (100%)

The analysis of the Table 5.15 shows that more than half of the clinical (52.14 per cent) PG Medical students found enquiring socio-economic background of the patients moderately useful in diagnosis. A good number of non - clinical (38.35 per cent) PG Medical students also opined that socio-economic background of the patients is moderately helpful in diagnosis. A few clinical (11.67 per cent) and non- clinical (21.91per cent) PG Medical students opined that socio-economic background of the patients are very much useful in diagnosis process. The table also shows that a good number of clinical (36.18 per cent) and non-clinical (39.72 per cent) reported that

enquiry of socio-economic background of the patients does not make any usefulness in diagnosis.

It is revealed that more than half of the PG Medical students in clinical and a good number of non -clinical departments found enquiring the socio-economic background of the patients moderately useful in diagnosis.

5.8 Frequency of Follow-Up after Discharge

Timely outpatient follow-up has been promoted as a key policy to decrease hospital readmissions, though one-half of patients readmitted within 30 days of hospital discharge do not have follow-up before the readmission.(Jackson et al.,2013) This eventually results increase in workloads to doctors. Readmission to the hospital within a short period following hospital discharge is a common and costly phenomenon (Weinberger & Oddone, 1996),(Douglas et al., 2007) Most of these readmissions are the result of inadequate post discharge care, which is a primary factor associated with preventable readmissions.(Patricia et al., 2011)

5.8.1 Frequency of Follow-Up after Discharge with respect to Gender

Analysis of Table 5.16 depicts the frequency of follow-up done by PG Medical Students in Government Medical Colleges in Kerala.

Table 5.16

Frequency of Follow-Up after Discharge with respect to Gender

Gender	Frequency of Follow-Up				
	Regularly	Occasionally	Rarely	Never	Total
Male	1 (0.85%)	4 (3.39%)	55 (46.61%)	58 (49.15%)	118 (100%)
Female	2 (0.94%)	14 (6.60%)	108 (50.94%)	88 (41.51%)	212 (100%)
Chi-square=2.732 df=3 p=0.435					

Analysis

Result from the Table 5.16 it can be seen that half of the female (50.09 per cent) and nearly half of the male (46.61 per cent) reported that they rarely follow-up patients after discharging. Nearly half of the male (49.15 per cent) PG Medical students never follow-up the patients after discharge. Whereas only a few male (3.39 per cent) and female (6.60 per cent) PG Medical Students occasionally follow-up the patients after discharge. A very few male (0.85 per cent) and female (0.94 per cent) PG Medical Students reported that they regularly follow-up the patients after discharge. Here the chi square test indicates that p value is 0.435 which is more than 0.05, hence there is no significant association at 0.05 levels between the gender and frequency of follow up after discharge.

It is shown that nearly half of the male PG Medical students and half of the female PG Medical students rarely follow-up patients after discharge. Only a very few male and female PG Medical students reported that they occasionally follow-up the patients after discharge. There is no significant association at 0.05 levels between the gender and frequency of follow up after discharge. The chi square test establishes that frequency of follow up after discharge does not depends on the gender of the PG Medical students.

5.8.2 Frequency of Follow-Up after Discharge with respect to Department

Analysis of Table 5.17 depicts the frequency of follow-up done by PG Medical Students in Government Medical Colleges in Kerala.

Table 5.17

Frequency of Follow-Up after Discharge with respect to Department

Department	Frequency of Follow-Up				
	Regularly	Occasionally	Rarely	Never	Total
Clinic	-	3 (1.17%)	129 (50.19%)	125 (48.64%)	257 (100%)
Non-Clinic	3 (4.11%)	15 (20.55%)	34 (46.58%)	21 (28.77%)	73 (100%)
Chi-square=54.935 df=3 p=0.000					

From the Table 5.17 it can be seen that nearly half of the clinical (48.64 per cent) PG Medical students never follow-up the patients after discharge. Whereas half of the clinical (50.19 per cent) and nearly half of the non-clinical (46.58 per cent) PG Medical students reported that they rarely follow-up patients after discharging. Only a few clinical (1.17 per cent) PG Medical Students reported that they occasionally follow-up the patients after discharge. A considerable number of non-clinical PG Medical students (20.55 per cent) reported that they occasionally follow-up the patients after discharge. A very few non-clinical (4.11 per cent) PG Medical students reported that they regularly follow-up the patients after discharge. However the chi square test indicates that p value is 0.000 which is less than 0.05, hence there is a significant association at 0.05 levels between the department and frequency of follow up after discharge.

It is shown that half of the non -clinical PG Medical students and nearly half of the clinical PG Medical students rarely follow-up patients after discharging. There is a significant association at 0.05 levels between the department and frequency of follow up after discharge. Chi square test

Analysis

establishes that the frequency of follow up after discharge depends on the department of the PG Medical students.

The graphical representation of frequency of follow-up after discharge is given below.

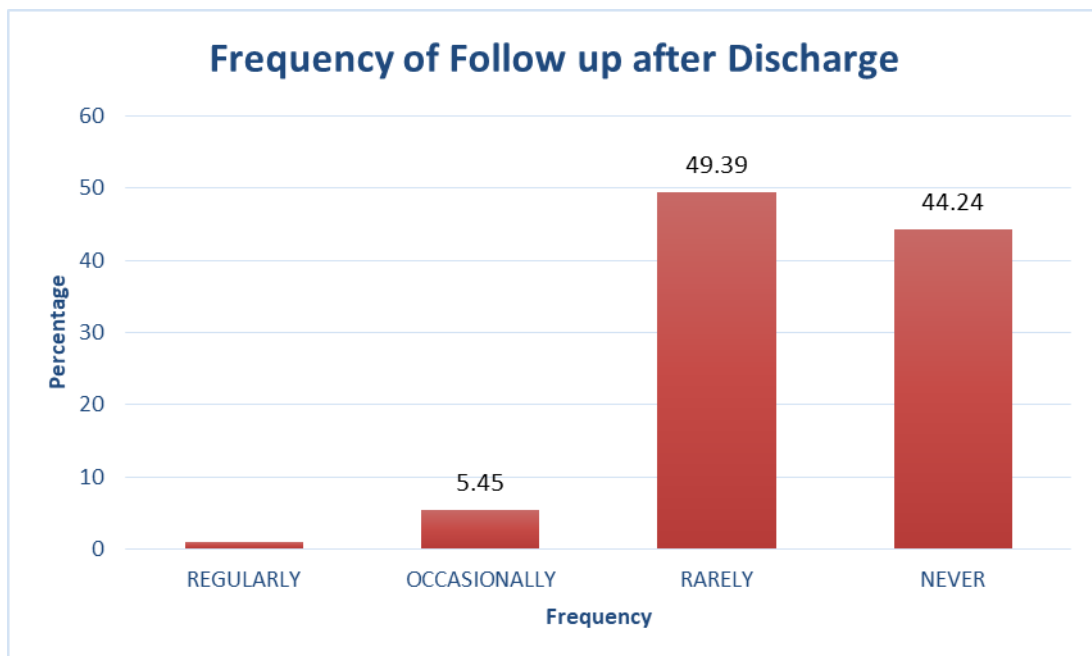


Figure 5.4 Frequency of follow-up after Discharge

From the Figure 5.4 it is seen that nearly half of the (49.39 per cent) PG Medical students rarely follow up after discharge. A good number of PG Medical students (44.24 per cent) reported that they never follow up after discharge. Only a few (5.45 per cent) PG medical students reported that they occasionally follow up after discharge.

From the analysis it is seen that nearly half of the PG Medical students rarely follow up after discharge. Since follow up gives chance to check on patient's progress it will help to clear the misunderstandings and can make further assessment and treatment. Here nearly half of the PG Medical students

reported that they rarely follow up after discharge, which will negatively affect the better patient outcome.

5.9 The Methods Prefer to Follow-Up by the PG Medical Students

Doctors use various types of follow-up methods in order to follow-up patients after discharge. It is important to follow all the encounters with patients. Follow up by phone, electronic communication and other forms of informal follow up methods are used for tracking. According to a study published in the journal Investigative Ophthalmology & Visual Science (IOVS), nearly all patients identify the importance of follow-up care, but do not always attend these appointments. Factors such as low health literacy and the inability to obtain transportation to appointments were strongly correlated with low follow-up appointment attendance (Atalie et al., 2015).

5.9.1 The Methods prefer to Follow-Up by the PG Medical Students with respect to Gender

Table 5.18 summarizes the different follow-up methods prefer by PG Medical Students with respect to gender.

Table 5.18

**The Methods prefer to Follow-Up
by the PG Medical Students with respect to Gender**

Gender	Methods prefer to Follow-Up				
	Direct meet	Letter	Phone calls	e-mail	Patient portal system
Male	115 (97.46%)	-	78 (66.10%)	2 (1.69%)	-
Female	183 (86.32%)	-	77 (36.32%)	6 (2.83%)	-

Analysis

Analysis of the table 5.18 shows that most of the male (97.46 per cent) PG Medical students prefer follow-up patients through direct meet. Majority of the female (86.32 per cent) PG Medical students also prefer follow-up patients through direct meet. The second most preferred follow up method used by PG Medical students is phone calls. A few male (1.69 per cent) and female (2.83 per cent) PG Medical students opined that they prefer email to follow up patients. Letters and patient portal systems are preferred by few PG Medical students for the purpose of follow up.

It is revealed that direct meets are preferred by most of the PG Medical students irrespective of their gender. The second most preferred follow up method is the phone calls by a good number of PG Medical students.

5.9.2 The Methods Preferred to Follow-Up by the PG Medical Students with respect to Department

Doctors use various types of follow-up methods in order to follow-up patients after discharge. Table 5.19 summarizes the different follow-up methods used by PG Medical Students.

Table 5.19

Methods preferred to Follow-Up by the PG Medical Students with respect to Department

Department	Methods preferred to Follow-Up				
	Direct meet	Letter	Phone calls	e-mail	Patient portal system
Clinic	237 (92.22%)	-	131 (50.97%)	2 (0.78%)	-
Non-Clinic	61 (83.56%)	-	24 (32.88%)	6 (8.22%)	-

Analysis

Analysis of the table 5.19 shows that most of the clinical (92.22 per cent) PG Medical Students prefer to follow-up patients through direct meet. Majority of the non-clinical (83.56 per cent) PG Medical students also prefer to follow-up patients through direct meet. The second most preferred follow up method used by both clinical (50.97 per cent) and non-clinical (32.88 per cent) PG Medical students is phone calls. A few clinical (0.78 per cent) and non-clinical (8.22 per cent) PG Medical Students opined that they prefer email to follow up patients. Letters and patient portal systems are preferred by few PG Medical students for the purpose of follow up.

It is revealed that direct meets are preferred by most of the PG Medical students irrespective of their department. The second most preferred follow up method is the phone calls by a good number of PG Medical students.

5.10 Factors hindering the Communication with Patients / Patient relatives

Quality communication is the backbone of the effective functioning of the hospitals. The quality of communication depends on several factors including; Lack of patient awareness about medical terms, Language problem in communicating with patients / relatives, Patients are unable to read the discharging/referral letters, Misunderstandings in non-verbal communication (symbol, signs, actions etc.) There exist various factors that hinder the communication between doctors and patients and their relatives. Table 5.20 shows the hindering factors in communication between doctors and patients and their relatives.

Analysis of the Table 5.20 shows that a considerably good number of PG Medical students (36.96 per cent) often feel the lack of patient awareness about medical terms act as a hindrance in communication. More than half of the PG Medical students (53.03 per cent) opined that, sometimes patients are

Analysis

unable to read the discharging/referral letters. A good number of PG Medical students opined that Language problem in communicating with patients / relatives (46.36 per cent) and misunderstandings in non-verbal communication (symbol, signs, actions etc.) (41.21 per cent) rarely act as a hindrance in communication.

Table 5.20

Factors hindering the Communication with Patients/Patient relatives

Hindrance in Communication	Always	Often	Sometimes	Rarely	Never
Lack of patient awareness about medical terms	50 (15.15%)	122 (36.96%)	89 (26.96%)	53 (16.06%)	16 (4.84%)
Language problem in communicating with patients / relatives	9 (2.72%)	24 (7.27%)	115 (34.84%)	153 (46.36%)	29 (8.78%)
Patients are unable to read the discharging/referral letters	16 (4.84%)	29 (8.78%)	175 (53.03%)	86 (26.06%)	24 (7.27%)
Misunderstandings in non-verbal communication (symbol, signs, actions etc.)	7 (2.12%)	34 (10.30%)	103 (31.21%)	136 (41.21%)	50 (15.15%)

It is revealed that lack of patient awareness about medical terms, unable to read the discharging/referral letters are the major factors that act as a hindrance in communication.

Result of Table 5.21 shows the hindering factors in communication between doctors and patients and their relatives with respect to gender.

Table 5.21

Factors Hindering the Communication with Patients/Patient relatives with respect to Gender

Hindrance in Communication	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	2.8517	0.72371	212	2.7370	0.59381	1.552	.122

Table 5.21 reveals that p value (0.122) is greater than 0.05 for hindrance in communication. Since p value is greater than 0.05, there is no significant difference between gender and hindrance in communication. Based on the mean score, it is found that the mean value of the hindrance in communication of male PG students is 2.8517 and that of female is 2.7370. This also shows that there is no statistically significant difference. That is factors hinder the communication does not vary according to the gender of the PG Medical students.

Table 5.22

Factors hindering the Communication with Patients/Patient relatives with respect to Department

Hindrance in Communication	Department						t value	P value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	2.7296	.58197	73	2.9486	.81005	-2.585	.010

Analysis shows that p value (0.010) is less than 0.05 for hindrance in communication. Since p value is less than 0.05, there is a significant difference between department and hindrance in communication. This may be

Analysis

due to the fact that clinical PG students are more frequently contact with patients so they must face more hindrance to communicate with patients and their relatives.

Analysis reveals that lack of patient awareness about medical terms, unable to read the discharging/referral letters are the major factors that act as a hindrance in communication. Results of the t test show that there is no significant difference between gender and hindrance in communication. That is factors hinder the communication does not vary according to the gender of the PG Medical students. At the same time there is a significant difference between factors that hinder the communication with patients and their relatives and the department of PG Medical students. This may be due to the fact that clinical PG students are more frequently contact with patients so they must face more hindrance to communicate with patients and their relatives.

Part 4: Continuing Medical Education Programmes (CME)

5.11 Participation in Continuing Medical Education Programmes

To improve clinical performance of health professionals and for the professional development Continuing Medical Education (CME) is essential. CME programmes include attending seminar, conferences, lectures, clinical rounds, journal reading, group discussion etc. A study by (Davis et al.,1999) showed that CME programmes have impact on physician performance and healthcare outcomes. It is recommended that medical colleges have to improve their educational competency to be able to deliver good CME programmes.

5.11.1 Participation in Continuing Medical Education Programmes with respect to Gender

Health professionals especially doctors have to take part in Continuing Medical Education Programmes in order to keep up to date in their field. Table 5.23 depicts the participation of the PG Medical students in the Continuing Medical Education Programmes.

Table 5.23
Participation in Continuing
Medical Education Programmes with respect to Gender

Gender	Participation in CME Programmes		
	Yes	No	Total
Male	117 (99.15%)	1 (0.85%)	118 (100%)
Female	211.00 (99.53%)	1 (0.47%)	212 (100.00%)

Result of Table 5.23 shows that almost all the male (99.15 per cent) PG Medical students and almost all the female (99.53 per cent) PG Medical Students participate in CME programmes. A negligible male PG Medical students (0.85 per cent) and female PG Medical students (0.47 per cent) reported that they never participate in CME Programmes.

It is found that almost all of the PG Medical students participate in Continuing Medical Education Programmes irrespective of their gender. Only very few PG Medical students reported that they never participate in Continuing Medical Education Programmes.

5.11.2 Participation in Continuing Medical Education Programmes with respect to Department

Table 5.24 depicts the participation of the PG Medical students in the Continuing Medical Education Programmes with respect to their department.

Table 5.24
Participation in Continuing Medical Education Programmes with respect to Department

Department	Participation in CME Programmes		
	Yes	No	Total
Clinic	255 (99.22%)	2 (0.78%)	257 (100%)
Non-Clinic	73 (100%)	-	73 (100.00%)

Analysis shows that majority of the PG Medical students (99.22 per cent) in clinical department participate in CME programmes. A negligible number of PG Medical students (0.78 per cent) in clinical department opined that they do not participate in CME programmes. In non-clinical department it is reported that all of the PG Medical students (100 per cent) take part in CME programmes.

Participation in CME programmes has a positive impact on physician performance. It is found that majority of the PG Medical Students in clinical department and all the PG Medical students in non-clinical department take part in CME programmes.

5.12 Types of Continuing Medical Education Programmes

Medical colleges and other organizations are conducting different kinds of Continuing Medical Education Programmes for the development of

health professionals. Here the researcher asked to point out the types of CME Programmes that the PG Medical students are participating.

5.12.1 Types of Continuing Medical Education Programmes with respect to Gender

Table 5.25 summarizes the different types of CME Programmes that the PG Medical Students are participating.

From Table 5.25 it can be seen that majority of the male PG Medical students (94.92 per cent) and Majority of the female PG Medical students (97.64 per cent) participate in conferences as a part of CME Programmes. It is also found that the second most used CME Programmes by a good number of male PG Medical students (83.90 per cent) and female PG Medical students (94.81 per cent) is workshops and seminars in their hospitals. A good number of male PG Medical students (80.51 per cent) opined that they participate in journal clubs as a part of CME Programmes. 71.23 per cent of the female male PG Medical Students and 68.64 per cent of the male PG Medical Students reported that they attend workshops and seminars in other hospitals. A considerably good number of male PG Medical students (74.58 per cent) and female PG Medical students (66.98 per cent) take part in lectures. Nearly half of the female PG Medical students (48.58 per cent) and a considerably good number of male PG Medical students (71.19 per cent) participate in group discussions. More than half of the male PG Medical students (66.10 per cent) and female PG Medical students (59.91 per cent) participate in clinical meetings.

Table 5.25
Types of Continuing Medical
Education Programmes with respect to Gender

Sl. No	Types of Continuing Medical Education Programmes	Male	Female
1.	Attending conferences	112 (94.92%)	207 (97.64%)
2.	Workshops/seminars in your hospitals	99 (83.90%)	201 (94.81%)
3.	Workshops/seminars in other hospitals/organizations	81 (68.64%)	151 (71.23%)
4.	Journal clubs	95 (80.51%)	157 (74.06%)
5.	Lectures	88 (74.58%)	142 (66.98%)
6.	Group discussions	84 (71.19%)	103 (48.58%)
7.	Clinical meetings	78 (66.10%)	127 (59.91%)

It is revealed that majority of the male PG Medical Students female PG Medical students participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of male PG Medical students and female PG Medical students is workshops and seminars in their hospitals

5.12.2 Types of Continuing Medical Education Programmes with respect to Department

The researcher asked to point out the types of CME Programmes that the PG Medical students are participating. Table 5.26 summarizes the different types of CME Programmes that the PG Medical students are participating with respect to their department.

Analysis

From Table 5.26 it can be seen that majority of the students in clinical department (97.67 per cent) and majority of non - clinical students (93.15 per cent) reported that they attend conferences. The second most participation by clinical PG Medical students (90.27 per cent) is in workshops/seminars in their hospitals. Majority of non - clinical students (93.15 per cent) reported that they attend workshops/seminars in their hospitals. A good number of clinical PG Medical students (76.21 per cent) opined that they participate in journal clubs as a part of CME Programmes. It is also seen that 64.98 per cent of the clinical PG Medical students and a very good number of (89.04 per cent) non - clinical PG Medical students reported that they attend workshops and seminars in other hospitals.

Table 5.26

**Types of Continuing Medical
Education Programmes with respect to Department**

Sl. No	Types of Continuing Medical Education Programmes	Clinical	Non-Clinical
1.	Attending conferences	251 (97.67%)	68 (93.15%)
2.	Workshops/seminars in your hospitals	232 (90.27%)	68 (93.15%)
3.	Workshops/seminars in other hospitals/organizations	167 (64.98%)	65 (89.04%)
4.	Journal clubs	196 (76.26%)	56 (76.71%)
5.	Lectures	168 (65.37%)	62 (84.93%)
6.	Group discussions	140 (54.47%)	47 (64.38%)
7.	Clinical meetings	159 (61.87%)	46 (63.01%)

Analysis

A considerably good number of clinical PG Medical students (65.37 per cent) and a very good number of non-clinical PG Medical students (84.93 per cent) take part in lectures. More than half of the clinical PG Medical students (54.47 per cent) and a good number of non - clinical PG Medical students (64.38per cent) participate in group discussions. More than half of the clinical PG Medical students (61.87 per cent) and non - clinical PG Medical students (63.01 per cent) participate in clinical meetings.

It is revealed that that majority of the clinical PG Medical students and non - clinical PG Medical students participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of clinical PG Medical students is attending workshops and seminars in their hospitals. Majority of non - clinical students also reported that they attend workshops/seminars in their hospitals.

5.13 Frequency of Participation in CME Programmes

“According to MCI Regulations -2002, Section 1.2.3, a physician should participate in professional meetings as a part of CME programmes for at least 30 hours every 5 years organized by reputed professional academic bodies or any other authorized organisations. “(Bhullar, 2006).

5.13.1 Frequency of Participation in CME Programmes with respect to Gender

In this context respondents were asked to point out the frequency of participation in CME Programmes. The information given by the respondents is summarized in the Table 5.27

Table 5.27**Frequency of Participation in CME Programmes with respect to Gender**

Gender	Regularly	Occasionally	Rarely	Never	Total
Male	44 (37.29%)	73 (61.86%)	1 (0.85%)	-	118 (100%)
Female	67 (31.60%)	145 (68.40%)	-	-	212 (100%)

It is clear from the Table 5.27 that a good number of male (61.86 per cent) and female (68.40 per cent) PG Medical students occasionally participate in CME Programmes and a considerably good number of male (37.29 per cent) and female (31.60 per cent) PG Medical students regularly participate in CME Programmes. A negligible number of male (0.85 per cent) reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

It is found that a good number of male and female PG Medical students occasionally participate in CME Programmes and a considerably good number of male and female PG Medical students regularly participate in CME Programmes. A negligible number of male reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

5.13.2 Frequency of Participation in CME Programmes with respect to Department

Respondents were asked to point out the frequency of participation in CME Programmes. The information given by the respondents is summarized in the Table 5.28

Table 5.28**Frequency of Participation in
CME Programmes with respect to Department**

Department	Regularly	Occasionally	rarely	Never	Total
Clinic	77 (29.96%)	179 (69.65%)	1 (0.39%)	-	257 (100%)
Non-Clinic	34 (46.58%)	39 (53.42%)	-	-	73 (100%)

Analysis of the Table 5.28 shows that a good number of clinical (69.65 per cent) and more than half of non-clinical (53.42 per cent) PG Medical students occasionally participate in CME Programmes and more than quarter of clinical (29.96 per cent) and a good number of non-clinical (46.58 per cent) PG Medical students regularly participate in CME Programmes. A negligible number of clinical PG Medical students (0.39 per cent) reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

It is found good number of clinical and more than half of non-clinical PG Medical Students occasionally participate in CME Programmes and more than quarter of clinical and a good number of non-clinical PG Medical students regularly participate in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

The graphical representation of frequency of participation in continuing medical education programs is given below.

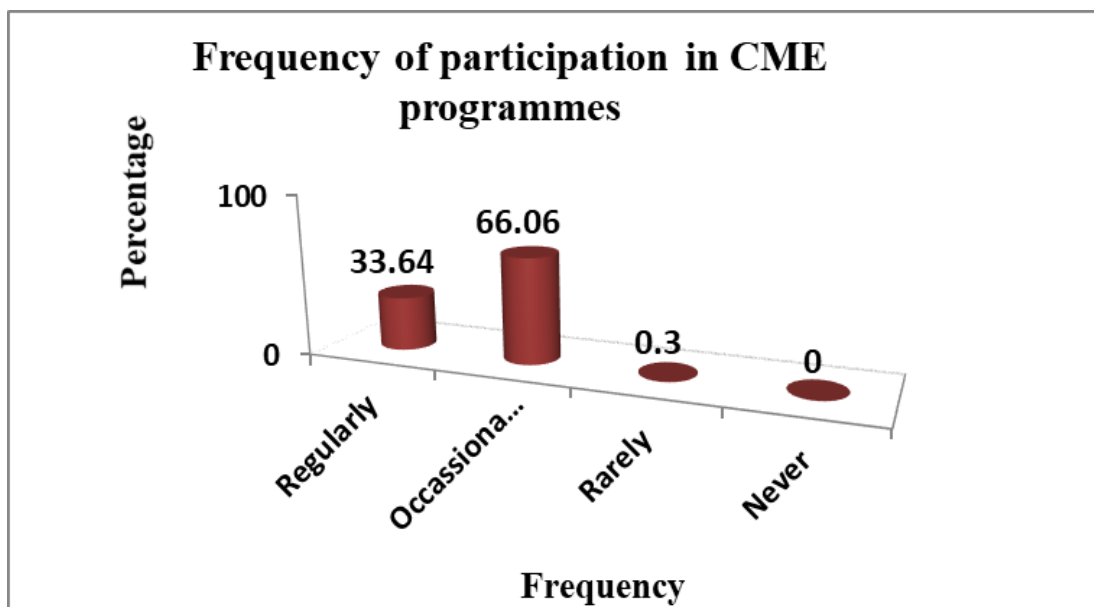


Figure 5.5 Frequency of participation in CME programmes

Analysis of the Figure 5.5 shows that most of the PG Medical students (66.06 per cent) occasionally participate in CME programs. More than quarter of the PG Medical students (33.64 per cent) reporter that they regularly participate in CME programs.

Over all analysis shows that majority of the PG Medical students take part in CME programs occasionally.

5.14 Presentations in CME Programmes

CME programmes are focused on sharing medical knowledge which improves healthcare outcome. Thus participation and involvement of physicians are necessary for the effectiveness of CME programmes.

5.14.1 Presentations in CME Programmes with respect to Gender

Respondents were asked to answer whether they present papers in CME Programmes or not. The answers given by the respondents is given in the Table 5.29

Table 5.29

Presentations in CME Programmes with respect to Gender

Gender	Presentations in CME Programmes		
	Yes	No	Total
Male	78 (66.10%)	40 (33.90%)	118 (100%)
Female	126 (59.43%)	86 (40.57%)	212 (100%)

Analysis shows that a good number of male PG Medical students (66.10 per cent) presents papers in CME Programmes. More than half of the female PG Medical students (59.43 per cent) also presents papers in CME Programmes. 33.90 per cent of the male PG Medical students never participate in CME Programmes and a considerably good number of female PG Medical students (40.57 per cent) also never participate in CME Programmes.

It is revealed that good number of male PG Medical students and more than half of the female PG Medical students presents papers in CME Programmes.

5.14.2 Presentations in CME Programmes with respect to Department

Responses regarding the participation in CME programmes with respect to department are sought. The responses given by the respondents are given in the Table 5.30

Table 5.30**Presentations in CME Programmes with respect to Department**

Department	Presentations in CME Programmes		
	Yes	No	Total
Clinic	163 (63.42%)	94 (36.58%)	257 (100%)
Non-Clinic	41 (56.16%)	32 (43.84%)	73 (100%)

Results in the Table 5.30 shows that nearly two third of clinical PG Medical students (63.42 per cent) presents papers in CME Programmes. More than half of the non - clinical PG Medical students (56.16 per cent) also presents papers in CME Programmes. More than one third (36.58 per cent) of the clinical PG Medical students never participate in CME Programmes and a considerably good number of non-clinical PG Medical students (43.84 per cent) also never participate in CME Programmes.

It is revealed that nearly two third of clinical PG Medical students presents papers in CME Programmes. More than half of the non-clinical PG Medical Students also presents papers in CME Programmes. More than one third of the clinical PG Medical students never participates in CME Programmes and a considerably good number of non - clinical PG Medical students also never participate in CME Programmes.

The graphical representation of presentation in CME programs is shown below.

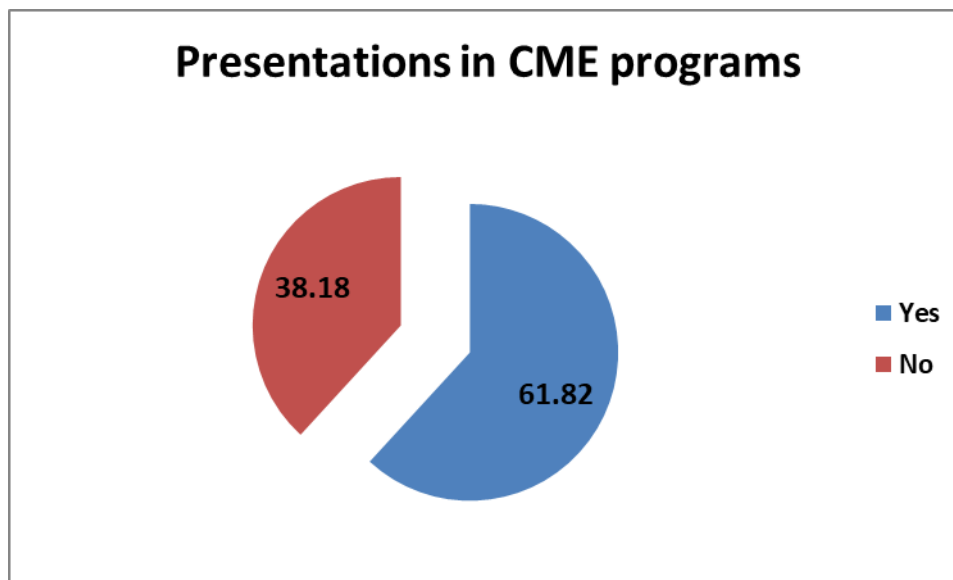


Figure 5.6 Presentations in CME programs

Results in the Figure 5.6 shows that most of the PG Medical students (61.82 per cent) present papers in CME programs. More than one third of the PG Medical students (38.18 per cent) reported that they never presented papers in CME programs.

Over all analysis of the study shows that most of the PG Medical students present papers in CME programs. More than one third of the PG Medical students reported that they never presented papers in CME programs.

5.15 Channels used to Present Findings/Papers in CME Programmes

“Continuing Medical Education (CME) has been geared towards strengthening the knowledge of physicians and other health care providers in their particular area of specialization or practice. In other words, the education was directed towards individual practitioners.”(Balmer, 2013). Health care professionals take parts in CME programmes in order to improve their experience. To present their research findings they make use of these CME programmes.

5.15.1 Channels used to Present Findings/Papers in CME Programmes with respect to Gender

Here the respondents were asked to mention the channels they prefer in order to present findings/papers in CME programmes with respect to their gender. Results are shown in the Table 5.31

Table 5.31
**Channels used to Present Findings/
Papers in CME Programmes with respect to Gender**

Channels	Male	Female	Weighted Mean	Rank
Conference papers	1.71	2.68	2.19	1
Journal articles	1.45	1.53	1.49	2
Books	0.53	0.43	0.48	3
Newspaper articles	0.34	0.16	0.25	4
Technical reports	0.35	0.10	0.22	5
Public speeches	0.32	0.08	0.20	6
Radio talks	0.25	0.05	0.15	7
Invite talks/lectures	0.19	0.05	0.12	8
Blog posts	0.14	0.03	0.08	9

Analysis shows the weighted mean score of the channels used to present findings/papers in CME programmes with respect to gender. Majority of male PG Medical students (Mean =1.71) and female PG Medical students (Mean= 2.68) give first preference to conference papers as the channel used to present papers and findings in CME programmes. The second preference was given to journal articles by the male (Mean=1.45) and female (Mean=1.53) PG Medical students. Books are the third most preferred channel to publish the works by the male (Mean=0.53) and female (Mean=0.43) PG Medical students. Newspaper articles (Weighted Mean=0.25), technical reports (Weighted Mean=0.22), public speeches

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(Weighted Mean=0.20), radio talks (Weighted Mean=0.15), invite talks/lectures (Weighted Mean=0.12), blog posts (Weighted Mean=0.08) are reported as the least used channels by the PG Medical students to present their findings or works in CME programmes.

It is seen that Conference paper (Weighted Mean = 2.19) and journal article (Weighted Mean =1.49) are the most preferred channels used by PG Medical students with respect to gender in order to present their findings or works in CME programmes.

5.15.2 Channels used to Present Findings/Papers in CME Programmes with respect to Department

Here the respondents were asked to mention the channels they prefer in order to present findings/papers in CME programmes with respect to their department. Results are shown in the Table 5.32

Table 5.32
Channels used to Present Findings/Papers in
CME Programmes with respect to Department

Channels	Clinic	Non-clinic	Weighted Mean	Rank
Conference papers	1.06	3.88	2.47	1
Journal articles	0.75	2.60	1.68	2
Books	0.29	0.79	0.54	3
Newspaper articles	0.20	0.34	0.27	4
Technical reports	0.13	0.38	0.25	5
Public speeches	0.12	0.34	0.23	6
Radio talks	0.08	0.26	0.17	7
Invite talks/lectures	0.07	0.21	0.14	8
Blog posts	0.03	0.15	0.09	9

Analysis

Analysis shows the weighted mean score of the channels used to present findings/papers in CME programmes with respect to gender. Majority of clinical PG Medical students (Mean =1.06) and non-clinical PG Medical students (Mean= 3.88) give first preference to conference papers as the channel used to present papers and findings in CME programmes. The second preference was given to journal articles by the clinical (Mean=0.75) and non-clinical (Mean=2.60) PG Medical students. Books are the third most preferred channel to publish the works by the clinical (Mean=0.29) and non-clinical (Mean=0.79) PG Medical students. Newspaper articles (Weighted Mean=0.27), technical reports (Weighted Mean=0.25), public speeches (Weighted Mean=0.23), radio talks (Weighted Mean=0.17), invite talks/lectures (Weighted Mean=0.14), blog posts (Weighted Mean=0.09) are reported as the least used channels by the PG Medical students to present their findings or works in CME programmes.

It is seen that Conference paper (Weighted Mean = 2.47) and journal article (Weighted Mean =1.68) are the most preferred channels used by PG Medical students with respect to department in order to present their findings or works in CME programmes..

5.16 Motivation by the Institution to take part in CME Programmes

The barriers identified by (Kuskar et al., 2013) in taking part in CME programmes were time constraints, lack of resources, support and lack of motivation. In an another study by (Dyrbye & Shanafelt, 2011) found that motivation for the CME programme was the major factor affected the health professionals attitude towards the participation in CME Programmes. It is in this context the motivation of PG Medical Students in Government Medical Colleges in Kerala studied.

5.16.1 Motivation by the Institution to take part in CME Programmes with respect to Gender

Medical colleges may promote their students and staffs to take part in CME Programmes. Here PG Medical students asked to report whether their institution motivate them to participate in CME Programmes. Analysis of the Table 5.33 shows the responses made by the PG Medical Students.

Table 5.33
Motivation by the Institution to
take part in CME Programmes with respect to Gender

Gender	Motivation by the Institution		
	Yes	No	Total
Male	113 (95.76%)	5 (4.24%)	118 (100%)
Female	206 (97.17%)	6 (2.83%)	212 (100%)

It is seen that in the opinion of majority of the male PG Medical students (95.76 per cent) and female PG Medical Students (97.17 per cent) their institutions are motivating them to take part in CME Programmes. A very few number of male PG Medical students (4.24 per cent) and female PG Medical students(2.83 per cent) reported that their institutions are not motivating them to take part in CME Programmes.

It is clear from the analysis that medical colleges are motivating their students to participate in CME Programmes in the opinion of majority of PG Medical students irrespective of their gender.

5.16.2 Motivation by the Institution to take part in CME Programmes with respect to Department

Here PG Medical students asked to report whether their institution motivate them to participate in CME Programmes. Table 5.34 shows the responses made by the PG Medical students with respect to their department.

Table 5.34
Motivation by the Institution to take part in CME Programmes with respect to Department

Department	Motivation by the Institution		
	Yes	No	Total
Clinic	248 (96.50%)	9 (3.50%)	257 (100%)
Non-Clinic	71 (97.26%)	2 (2.74%)	73 (100%)

It is seen from the Table 5.34 that in the opinion of majority of the clinical PG Medical students (96.50 per cent) and non-clinical PG Medical students (97.26 per cent) their institutions are motivating them to take part in CME Programmes. A meager clinical PG Medical students (3.50per cent) and non-clinical PG Medical Students (2.78 per cent) reported that their institutions are not motivating them to take part in CME Programmes.

It is clear from the analysis that medical colleges are motivating their students to participate in CME Programmes in the opinion of majority of PG Medical students irrespective of their department.

5.17 Initiatives taken by the Institutions

CME is defined as “any activity that is intended to maintain, develop or increase the knowledge, skills and professional performance and relationships that a physician uses to provide services for patients, the public,

or the profession.”(Shumway & Harden,2003). Educational institutions have an important role in creating opportunities to students in participating in CME programmes. Professionals need extra motivation to commit to CME Programmes since they experience more barriers to learning (Cantillon, 1999).

5.17.1 Initiatives taken by the Institutions with respect to Gender

Institutions take initiatives to motivate their students and doctors to participate in CME Programmes. The Table 5.35 gives account of the initiatives taken by institutions to motivate the participation in CME Programmes.

Table 5.35

Initiatives taken by the Institutions with respect to Gender

Gender	Initiatives taken by Institutions		
	Gives stipend	Gives duty leave	Others
Male	6 (5.08%)	107 (90.68%)	24 (20.34%)
Female	18 (8.49%)	192 (90.57%)	7 (3.3%)

From the Table 5.35 it can be seen that in the opinion of majority of the male PG Medical students (90.68 per cent) and majority of the female PG Medical students (90.57 per cent) their institutions are giving duty leaves in order to participate in CME Programmes. A very few number of male PG Medical students (5.08 per cent) and a very few number of the female PG Medical students (8.49 per cent) reported that their institutions are giving stipend to take part in CME Programmes. About 20.34 per cent of the male PG students and 3.3 per cent of the female PG students opined that their

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institution and their faculties motivate them to participate in CME programmes.

It is cleared that in the opinion of majority of the male PG Medical students and majority of the female PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A very few number of male PG Medical students and a very few number of the female PG Medical Students reported that their institutions are giving stipend to take part in CME Programmes.

5.17.2 Initiatives taken by the Institutions with respect to Department

The Table 5.36 gives account of the initiatives taken by institutions to motivate the participation in CME Programmes with respect to department.

Table 5.36

Initiatives taken by the Institutions with respect to Department

Department	Initiatives taken by Institutions		
	Gives stipend	Gives duty leave	Others
Clinic	10 (3.89%)	242 (94.16%)	24 (20.34%)
Non-Clinic	14 (19.18%)	57 (78.08%)	7 (3.3%)

From the Table 5.36 it can be seen that in the opinion of majority of the clinical PG Medical Students (94.16) and a very good number of the non-clinical PG Medical students (78.08 per cent) their institutions are giving duty leaves in order to participate in CME Programmes. A meager clinical PG Medical students (3.89 per cent) and a few number of the non-clinical PG Medical students (19.18 per cent) reported that their institutions are giving stipend to take part in CME Programmes. About 20.34 per cent of the clinical

Analysis

PG students and 3.3 per cent of the non-clinical PG students opined that their institution and their faculties motivate them to participate in CME programmes.

It is clear that in the opinion of majority of the clinical PG Medical students and a very good number of the non-clinical PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A meager clinical PG Medical students and a few number of the non-clinical PG Medical students reported that their institutions are giving stipend to take part in CME Programmes.

5.18 Frequency of use of Resources to get details of Patients and their Diseases

Interaction among patient, patient relative, nurses and other health professionals are must for a physician to get details of patients and their diseases. Clinical materials are also used for addressing general problems. In a study done by (Slotnick et al., 2001) emphasize that consultations and print materials are the primary information sources used by clinicians and they depend on colleagues to evaluate and validate the medical developments.

PG Medical Students were asked to point out the resources they consult to get details of patients and their diseases. Table 5.37 depicts the frequency of consulting resources by the PG Medical students to get details of patients and their diseases.

Table 5.37
Frequency of use of Resources to
get details of Patients and their Diseases

Sl. No	Resources	Always	Often	Sometimes	Rarely	Never
1.	From patient	259 (78.48%)	41 (12.42%)	36 (10.90%)	-	-
2.	From patient's relatives	127 (38.48%)	171 (51.81%)	32 (9.69%)	-	-
3.	From colleagues	42 (12.72%)	123 (37.27%)	140 (42.42%)	24 (7.27%)	1 (0.85%)
4.	From nurses	16 (7.63%)	56 (25.42%)	176 (61.02%)	58 (17.57%)	24 (7.27%)
5.	From other health professionals	21 (6.36%)	60 (18.18%)	171 (51.81%)	59 (17.87%)	-
6.	Refer patient file/medical records	93 (28.18%)	130 (39.93%)	101 (30.60%)	9 (2.72%)	-

Analysis shows that most of the PG Medical students (78.48 per cent) always depends on patients to get details of patients and their diseases. More than half of the (51.81 per cent) PG Medical students gets details of patients and their diseases from patient's relatives. 42.42 per cent of the PG Medical Students depend their colleagues in order to find patient information. A good number of the PG Medical students (61.02 per cent) sometimes relay on nurses to get information related to patients and their diseases. More than half of the PG Medical students (51.81 per cent) sometimes depends on other health professionals to get information related to patients and their diseases.

Analysis

Only a few (28.18 per cent) PG Medical students reported that they always refer patient file/medical records for attaining patient information. A considerably good number of (30.60 per cent) PG Medical students sometimes refer patient file/medical records for attaining patient information. A few (7.27 per cent) PG Medical students reported that they never depend on nurses to find out patient information.

Frequency of use of resources to get details of patients and their diseases with respect to their gender is analyzed using t test and the results are given in the Table 5.38

Table 5.38
Frequency of use of Resources to get details of Patients and their Diseases with respect to Gender

Frequency of use of Resources	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	3.8079	.47222	212	3.6879	.40947	2.414	.016

Analysis of Table 5.38 shows that p value (0.016) of the result is less than 0.05; hence there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their gender. That is, there is a significant difference in the frequency of use of resources to get details of patients and their diseases between the male and female PG Medical students.

Again t test were carried out to determine the relation between frequency of use of resources to get details of patients and their diseases and the department of PG Medical student. Results are given in Table 5.39

Table 5.39

Frequency of use of Resources to get details of Patients and their Diseases with respect to Department

Frequency of use of Resources	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	3.7646	.42978	73	3.6119	.44013	2.665	.008

Table 5.39 depicts that p value (0.008) of the t test is less than 0.05; hence there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their department. That is, there is a significant difference in the frequency of use of resources to get details of patients between the PG Medical students in different departments. .

It is found that most of the PG Medical students always depends on patients to get details of patients and their diseases. More than half of the PG Medical students gets details of patients and their diseases from patient’s relatives. A good number of the PG Medical students sometimes relay on nurses to get information related to patients and their diseases. More than half of the PG Medical Students sometimes depends on other health professionals to get information related to patients and their diseases. Only a few PG Medical students reported that they always refer patient file/medical records for attaining patient information. A few PG Medical students reported that they never depend on nurses to find out patient information. Analysis of the t test shows that there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their gender. That is, there is a significant difference in the frequency of use of resources to get details of patients and their diseases between the male and

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female PG Medical students. It is also seen that there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their department. That is the frequency of use of resources to get details of patients differ according to the departments of PG Medical students.

5.19 Purpose for which PG Medical Students need Information about patients

It is assumed, by librarians and information specialists, that doctors have information needs associated with clinical work. However, as with any profession, the need varies amongst the population and is not homogenous. (Davies, 2007) In order to give better patient care physicians need different types of information including medication list, conditions of health, laboratory results, medical diagnostic reports etc. Here the researcher try to find out purposes for which PG Medical students need information.

5.19.1 Purpose for which PG Medical Students need Information about patients with respect to Gender

Here the respondents were asked to mention the purpose for which PG medical students need information with respect to gender. Results are shown in the Table 5.40

Table 5.40

Purpose for which PG Medical Students need Information about patients with respect to Gender

Purpose	Male	Female	Mean	Rank
To provide better patient care	6.29	12.40	9.35	1
Aid treatment	6.48	11.03	8.75	2
Disease prevention	4.67	8.72	6.69	3
Current developments	3.61	4.05	3.83	4
Continuing medical education	2.41	3.39	2.90	5

Analysis

Analysis shows the weighted mean score of the purpose for which PG Medical students need information with respect to gender. Majority of male PG Medical students (Mean =6.29) and female PG Medical students (Mean= 12.40) give first preference to provide better patient care for which they need information. The second preference for which they need information was to aid treatment by the male (Mean=6.48) and female (Mean=11.03) PG Medical students. Disease prevention was the third most preferred reason to search for information by the male (Mean=4.67) and female (Mean=8.72) PG Medical students. Current developments (Weighted Mean=3.83), continuing medical education (Weighted Mean=2.90) are reported as the least marked reasons for which PG Medical students need information.

It is seen that PG Medical students need information mainly to provide better patient care and to aid treatment for the patients irrespective of their gender.

5.19.2 Purpose for which PG Medical Students need Information about patients with respect to Department

Here the respondents were asked to mention the purpose for which PG Medical students need information with respect to department. Results are shown in the Table 5.41

Table 5.41

Purpose for which PG Medical Students need Information about patients with respect to Department

Purpose	Clinical	Non- Clinical	Mean	Rank
To provide better patient care	7.32	11.43	9.37	1
Aid treatment	6.77	11.29	9.03	2
Disease prevention	4.91	9.25	7.08	3
Current developments	5.32	4.96	5.14	4
Continuing medical education	3.19	2.95	3.07	5

Analysis

Analysis given in the table shows the weighted mean score of the purpose for which PG Medical students need information with respect to department. Majority of clinical PG Medical students (Mean =7.32) and non-clinical PG Medical students (Mean= 11.43) give first preference to provide better patient care for which they need information. The second preference for which they need information was to aid treatment by the clinical (Mean=6.77) and non-clinical (Mean=11.29) PG Medical students. Disease prevention was the third most preferred reason to search for information by the clinical (Mean=4.91) and clinical (Mean=9.25) PG Medical students. Current developments (Weighted Mean=5.14), continuing medical education (Weighted Mean=3.07) are reported as the least marked reasons for which PG Medical students need information.

It is seen that PG Medical students need information mainly to provide better patient care and to aid treatment for the patients irrespective of their department.

5.20 Frequency of use of Resources for Patient Care

Reviewing resource utilization in healthcare assures the quality of patient care. Resources include print sources, web resources and human resources. “Medical text or print resources provide information or knowledge in printed format such as books, journals and grey literature. Books have been in existence and use for centuries now and are regarded as traditional sources of health information. They form the core collection of medical libraries and that of personal collection of the doctors.”(Obianuju, et al., 2015).

Respondents were asked to mark the frequency of using resources for providing effective patient care. Table 5.42 gives the details of frequency of using resources in order to provide effective patients care by the PG Medical Students.

Table 5.42

Frequency of use of Resources for Patient Care

Sl. No	Sources of Information	Always	Often	Sometimes	Rarely	Never
1.	Colleagues at work	207 (62.72%)	112 (33.93%)	11 (3.33%)	-	-
2.	Library collection	29 (8.78%)	127 (38.48%)	126 (38.18%)	36 (10.90%)	2 (0.60%)
3.	Medical text books	201 (60.90%)	95 (28.78%)	22 (6.66%)	1 (0.30%)	11 (3.33%)
4.	Medical journals	71 (21.51%)	182 (55.15%)	70 (21.21%)	7 (2.12%)	-
5.	Online medical journals	67 (20.30%)	118 (35.75%)	42 (12.72%)	25 (7.57%)	8 (2.42%)
6.	Medical databases	48 (14.54%)	148 (44.84%)	62 (18.78%)	48 (14.54%)	24 (7.27%)
7.	Radio	3 (0.90%)	10 (3.03%)	102 (30.90%)	81 (24.54%)	134 (40.60%)
8.	Television	22 (6.66%)	47 (14.24%)	99 (30%)	84 (25.4%5)	78 (23.63%)
9.	Mobile phones	130 (39.39%)	79 (23.93%)	104 (31.51%)	14 (4.24%)	3 (0.90%)
10.	Computer	131 (39.69%)	97 (29.39%)	75 (22.72%)	7 (2.12%)	20 (6.06%)
11.	Internet	131 (39.69%)	123 (37.27%)	52 (15.75%)	5 (1.51%)	17 (5.15%)
12.	CD ROMS	6 (1.81%)	24 (7.27%)	141 (42.72%)	89 (26.96%)	70 (21.21%)
13.	DVDs	17 (5.15%)	23 (6.96%)	131 (39.69%)	88 (26.66%)	71 (21.51%)

Analysis shows that a good number of PG Medical students (62.72 per cent) depends on their colleagues at work to provide better patient services. 33.93 per cent of the PG Medical students often depends on their colleagues at work to provide better patient services. A considerable number of PG Medical students (38.48 per cent) sometimes consult library collection in order to find information to provide effective patient care. More than half of the PG Medical students (60.90 per cent) always use medical text books for the purpose of providing better patient care. More than half of the PG Medical

Analysis

students (55.15 per cent) often use medical text books for the purpose of providing better patient care. It is seen that only a 35.75 per cent PG Medical students often depends on online medical journals to find information. A considerably good number of (44.84 per cent) PG Medical students often use medical databases for the purpose of finding information. It is seen that a good number of (40.60 per cent) PG Medical students never depends on radio to attain valuable information. It is also seen that only a 30 per cent PG Medical students sometimes depends on television to get information for patient care. A considerably good number of PG Medical students always use computer (39.39 per cent) and internet (39.69 per cent) to get information for providing better patient care. Only a very few PG Medical students always relay on CD ROMS (1.81 per cent) and DVDs (5.15 per cent).

The relationship between frequency of use of information sources used for patient care and the gender of PG Medical students were sought out using t test. Analysis were given below in the Table 5.43

Table 5.43

Frequency of use of Information Sources with respect to Gender

Frequency of use of Information Sources	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	3.5671	.52489	212	3.4260	.51557	2.367	.018

Table 5.43 depicts that p value (0.018) is less than 0.05; hence there is a significant difference between the frequency of use of information sources and the gender of PG Medical students. That is the frequency of use of information sources vary according to whether the PG Medical students are male or female.

Analysis

The data were again analyzed to determine whether there is any difference between the frequency of use of information sources and the department of PG Medical students.

Table 5.44

Frequency of use of Information Sources with respect to Department

Frequency of use of Information Sources	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	3.4711	.50281	73	3.4953	.59016	-.348	.728

Table 5.44 depicts that p value (0.728) is greater than 0.05; hence there is no significant difference between the frequency of use of information sources and the department of PG Medical students. That is the frequency of use of information sources does not vary on different departments.

From the analysis it can be seen that a good number of PG Medical Students depends on their colleagues at work to provide better patient services. A considerable number of PG Medical students sometimes consult library collection in order to find information to provide effective patient care. More than half of the PG Medical students always use medical text books for the purpose of providing better patient care. A considerably good number of PG Medical students often use medical databases for the purpose of finding information. A good number of PG Medical students reported that they never depend on radio to attain valuable information. A considerably good number of PG Medical students always use computer and internet to get information for providing better patient care. Only a very few PG Medical students always rely on CD ROMS and DVDs. From t test analysis it is cleared that there is a significant difference between the frequency of use of information sources and the gender of PG Medical students. That is the frequency of use

Analysis

of information sources vary according to whether the PG Medical students are male or female and it is also seen that there is no significant difference between the frequency of use of information sources and the department of PG Medical students. That is the frequency of use of information sources does not vary on different departments.

Part - 6: Information and Communication Technology (ICT)

5.21 Ownership of ICT Equipments

ICT helps medical professionals to attain information they need and helps to communicate with patients and other health professionals. The right communication channel eases the care and treatment for the patient. In a study conducted by (Dery et.al, 2016) on the use of ICT by health science students in University of Ghana found that computer knowledge, use and ownership were high among health science students.

5.21.1 Ownership of ICT Equipments with respect to Gender

The PG Medical students are asked to point out what all ICT equipments they own. The result is given in the table 5.45

Table 5.45

Ownership of ICT Equipments with respect to Gender

Sl. No	Ownership of ICT Equipments	Male	Female
1.	Ordinary mobile phone	64 (54.24%)	32 (15.09%)
2.	Smart phone	116 (98.31%)	206 (97.17%)
3.	Desktop computer	67 (56.78%)	70 (33.02%)
4.	Laptop computer	90 (76.27%)	158 (74.52%)
5.	Tablet computer	48 (40.68%)	77 (36.32%)

Analysis

Analysis shows that almost all of the male PG Medical students (98.31 per cent) the female PG Medical students (97.17 per cent) possess smart phones and a very good number of male PG Medical students (76.27 per cent) and a very good number of female PG Medical students (74.52 per cent) reported that they own laptops. More than half of the male PG Medical students (56.78 per cent) owned desktop computers whereas only a 33.02 per cent of the female PG Medical students own desktop computers. It is also seen that more than half of the male PG Medical students (54.24 per cent) still use ordinary mobile phones whereas only a very few female PG Medical students (15.09 per cent) use ordinary mobile phones. It is also seen that a good number of male PG Medical students (40.68 per cent) have tablet computers whereas a 36.32 per cent female PG Medical students have tablet computers.

It is found that almost all of the female PG Medical students and most of the male PG Medical students possess smart phones and a very good number of male PG Medical students and a very good number of female PG Medical students reported that they own laptops. More than half of the male PG Medical students owned desktop computers. It is also seen that more than half of the male PG Medical students still use ordinary mobile phones whereas only a very few female PG Medical students use ordinary mobile phones. It is also seen that a good number of male as well as PG Medical students have tablet computers.

5.21.2 Ownership of ICT Equipments with respect to Department

Ownership of ICT Equipments with respect to Department is sought out. The details are given in the below Table 5.46

Table 5.46

Ownership of ICT Equipments with respect to Department

Sl. No.	Ownership of ICT Equipments	Clinic	Non-Clinic
1.	Ordinary mobile phone	83 (32.30%)	13 (17.81%)
2.	Smart phone	253 (98.44%)	69 (94.52%)
3.	Desktop computer	113 (43.97%)	24 (32.88%)
4.	Laptop computer	200 (77.82%)	48 (65.75%)
5.	Tablet computer	99 (38.52%)	26 (35.62%)

Analysis shows that a lion’s share of the clinical PG Medical students (98.44 per cent) and most of the non-clinical PG Medical students (94.52 per cent) possess smart phones and a very good number of clinical PG Medical students (77.82 per cent) and a good number of non-clinical PG Medical students (65.75 per cent) reported that they own laptops. A considerably good number of the clinical PG Medical students (43.97 per cent) owned desktop computers whereas only a 32.88 per cent of the non-clinical PG Medical students own desktop computers. It is also seen that a considerable number of clinical PG Medical students (32.30 per cent) still use ordinary mobile phones whereas only a meager non-clinical PG Medical students (17.81 per cent) use ordinary mobile phones. It is also seen that nearly two fifth of clinical PG Medical Students (38.52 per cent) have tablet computers whereas only a 36.32 per cent non-clinical PG Medical students have tablet computers.

Analysis

It is found that a lion's share of the clinical PG Medical students and most of the non-clinical PG Medical students possess smart phones and a very good number of clinical PG Medical students and a good number of non-clinical PG Medical students reported that they own laptops. A considerably good number of the clinical PG Medical students owned desktop computers. It is also seen that a considerable number of clinical PG Medical students still use ordinary mobile phones whereas only a meager non-clinical PG Medical students use ordinary mobile phones. It is also seen that nearly two fifth of clinical PG Medical students have tablet computers whereas only a 36.32 per cent non-clinical PG Medical students have tablet computers.

5.22 Use of ICT for Communication Purpose

Technology is used largely for communication. Mobile phones, emails, video conferences, social Medias are used as channels of communication. According to US National Higher Education ICT Initiative (2003)" ICT knowledge includes the ability to use technology as a tool to research, organize, evaluate and communicate information and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information." ("ICT Literacy", 2003) . A study by (Maroof et al., 2012) found that the most common use of ICT was communication and is same as studies conducted among medical students from different parts of India.

5.22.1 Use of ICT for Communication Purpose with respect to Gender

ICTs can be used for communication purposes. It is used to share information and it works beyond time and space. According to (Teck & Lai 2011) even though India has achievement in moving towards universal school enrollment and in enacting policies to address educational inequalities based on gender, there still exist an educational gap. In developing countries

Analysis

poverty, illiteracy, lack of computer literacy, language barriers results digital divide.

Respondents were asked to report whether they use ICTs for communication purposes or not. Detail are given below in Table 5.47

Table 5.47

Use of ICT for Communication Purpose with respect to Gender

Use of ICT for Communication Purpose	Male	Female
Yes	118 (100%)	212 (100%)
No	-	-
Total	118	212

Analysis shows that all the PG Medical students uses ICT for communication purposes irrespective of their gender. In a study done by (Cooper, 2003) it was found that there is a significant difference in the ownership and use of ICT. It was seen that men own and use ICT more than women. Men spent more time online, take more technology classes and show more motivation to learn digital skills.

It is found that all of the PG Medical students irrespective of their gender make use of ICT for communication purposes.

5.22.2 Use of ICT for Communication Purpose with respect to Department

ICT has gained importance in education, mainly for medical education in the developed world.(Swagerty et al.,2000). ICT enables transfer, delivery, storage and also facilitate communication of information. (Dorup, 2004)

Analysis

reported that use of ICT was increasing over time. Use of ICT makes students being able to assess competencies and milestones and thereby they can access medical information necessary to deliver quality patient care.

Responses regarding the use of ICT for communication purpose with respect to department are sought out and details are given in the Table 5.48

Table 5.48

Use of ICT for Communication purpose with respect to Department

Use of ICT for Communication purpose	Clinic	Non-Clinic
Yes	257 (100%)	73 (100%)
No	-	-
Total	257	73

Analysis shows that all the PG Medical students uses ICT for communication purposes irrespective of their department. (Singh et.al, 2013) also pointed out that the internet use and awareness among medical students of today's era is almost 100%.

It is found that all of the PG Medical students make use of ICT for communication purposes.

5.23 Usage of Internet

The majority of studies on Internet adoption and usage, together with studies on computer usage, have noted a male tendency in getting familiar with new technologies at the level of computer and Internet skills, the range of online activities undertaken, the frequency of appearances, and time spent online (Bujala, 2012). A study by (Bidmon & Terultter, 2015) shows that Women were more engaged in using the Internet for health-related

Analysis

information searching. Gender differences were found for the frequency of usage of various Internet channels for health-related information searches. Women used the Internet for health-related information searches to a higher degree for social motives and enjoyment and they judged the usability of the Internet medium and of the information gained by health information searches higher than men did. Women had a more positive attitude toward Web 2.0 than men did, but supposed themselves as less digitally proficient. Women had a higher health and nutrition awareness and a greater reluctance to make use of medical support, as well as a higher personal disposition of being well-informed as a patient. Men may be more open toward the virtual patient-physician relationship.

5.23.1 Usage of Internet with respect to Gender

In this study respondents were asked to mention how long they have been using internet. Responses given by them are tabulated below:

Table 5.49

Usage of Internet with respect to Gender

Usage of Internet	Male	Female
Below 3 years	4 (3.38%)	38 (17.92%)
3-4 years	20 (16.94%)	84 (39.62%)
Above 4 years	94 (79.66%)	90 (42.45%)
Total	118 (100%)	212 (100%)

From the Table 5.49 it can be seen that majority of the male PG Medical students (79.66per cent) using internet more than 4 years and it is

Analysis

seen that a good number of female PG Medical students (42.45 per cent) reported that they are using internet more than 4 years. Only a few male PG Medical students (3.38 per cent) reported that they are using internet below 3 years and a few female PG Medical students (17.92 per cent) reported that they use internet below 3 years. A considerable number of female PG Medical students (39.62 per cent) reported that they have been using internet 3 – 4 years.

It is cleared that majority of the male PG Medical students and a good number of the female PG Medical students are using internet more than 4 years

5.23.2 Usage of Internet with respect to Department

Responses given by the PG Medical students on the usage of internet with respect to department is given in the Table 5.50

Table 5.50

Usage of Internet with respect to Department

Usage of Internet	Clinic	Non-Clinic
Below 3 years	30 (11.67%)	12 (16.43%)
3-4 years	75 (29.18%)	29 (39.72%)
Above 4 years	152 (59.14%)	32 (43.83%)
Total	257 (100%)	73 (100%)

From the Table 5.50 it is seen that more than half of the respondents (59.14 per cent) in clinical department and a considerable number of PG students (43.83 per cent) in non-clinic department have been using internet

Analysis

above 4 years. Around two fifth of the respondents (39.72 per cent) in non-clinic department have been using internet 3-4 years.

It is cleared that more than half of the respondents in clinical department and a considerably good number of respondents in non-clinic department have been using internet above 4 years.

The graphical representation of usage of internet is given below.

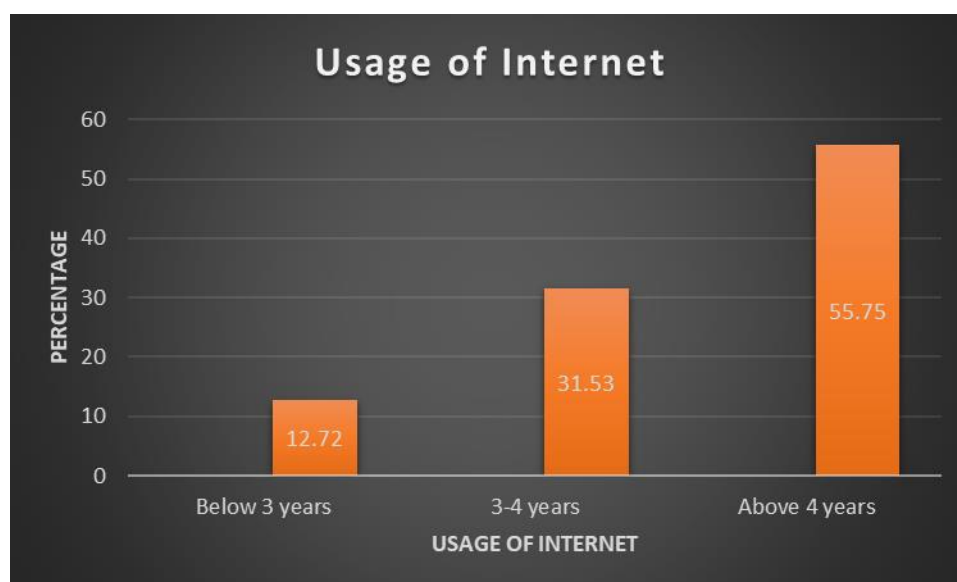


Figure 5.7 Usage of Internet

Analysis of the Figure 5.7 shows that more than half of the PG Medical students (55.75 per cent) use internet above 4 years. Only a few PG Medical students (12.72 per cent) reported that they have been using internet below 3 years. A considerably good number of PG Medical students (31.53 per cent) reported that they have been using internet 3-4 years.

Overall analysis shows that more than half of the PG Medical students have been using Internet above 4 years.

5.24 Time spent in search of Information and Communication

Information is available in abundance over internet and in all other media. Thus it is crucial to researchers and information seekers to find right information at the right time. The information needs of doctors commonly identified a clinical information need. Clinical information needs may have tight deadlines or may occur outside the hours a library is staffed so a degree of end-user searching should be anticipated. The final element researched is the resources themselves. To ensure 24/7 access, the most viable resources are electronic. (Davies & Harrison, 2007). Doctors need information for providing better patient care. The success of the searches conducted by doctors is important as this really determines if time and effort has been successfully utilized. Searching for information 15 years ago involved trawling through Index Medicus and browsing the journal shelves. Since the introduction of electronic databases, the time spent searching for the evidence has declined dramatically, as users do not have to travel to the library to look at physical books and journals, but can access electronic resources remotely. (Maurice, 1993)

5.24.1 Time spent in search of Information and Communication with respect to Gender

Here the PG Medical Students are asked to point out the time spent in search of information and its communication. Table 5.51 gives account of the time spent in search of information and its communication by the PG Medical Students.

Table 5.51

**Time spent in search of Information and
Communication with respect to Gender**

Time spent in search of Information and Communication	Male	Female
15 Minutes	6 (5.08%)	18 (8.49%)
30 Minutes	9 (7.63%)	57 (26.89%)
1 Hour	64 (54.24%)	93 (43.87%)
More than 1 Hour	39 (33.05%)	44 (20.75%)
Chi-square=21.5 df=3 p=0.000		

Analysis shows that more than half of the male PG Medical students (54.24 per cent) spent about 1 hour in search of information and its communication and a good number of female PG Medical students (43.87 per cent) also spent about 1 hour in search of information and its communication. A considerably good number of male PG Medical students (33.05 per cent) spent more than 1 hour in search of information and its communication while 20.75 per cent of the female PG Medical students spent more than 1 hour in search of information and its communication. Only a few PG male (5.08 per cent) and female (8.49 per cent) Medical students reported that they spent only 15 minutes in search of information and its communication. Chi square analysis shows that p value is 0.000 which is less than 0.05; hence there is a significant difference at level 0.05 between the gender and time spent in search of information by PG Medical students. That is time spent in search of information varies with the gender of PG Medical students.

It is cleared that more than half of the male PG Medical students spent about 1 hour in search of information and its communication and a good

Analysis

number of female PG Medical students also spent about 1 hour in search of information and its communication. A considerably good number of male PG Medical Students spent more than 1 hour in search of information and its communication. Only a few PG male and female Medical Students reported that they spent only 15 minutes in search of information and its communication. There is a significant difference at level 0.05 between the gender and time spent in search of information by PG Medical students. That is time spent in search of information varies with the gender of PG Medical students.

5.24.2 Time spent in search of Information and Communication with respect to Department

The details of time spent in search of information and communication with respect to department is given in the Table 5.52

Table 5.52

Time spent in search of Information and Communication with respect to Department

Time spent in search of Information and Communication	Clinic	Non-Clinic
15 Minutes	17 (6.61%)	7 (9.59%)
30 Minutes	58 (22.57%)	8 (10.96%)
1 Hour	117 (45.53%)	40 (54.79%)
More than 1 Hour	65 (25.29%)	18 (24.66%)
Chi-square=5.56 df=3 p=0.135		

Analysis shows that nearly half of the clinical PG Medical students (45.53 per cent) spent about 1 hour in search of information and its

Analysis

communication and more than half of non-clinical PG Medical students (54.79 per cent) also spent about 1 hour in search of information and its communication. Around quarter of clinical PG Medical students (25.29 per cent) and non-clinical (24.66 per cent) spent more than 1 hour in search of information and its communication. Only a few PG clinical (6.61 per cent) and non-clinical (9.59 per cent) Medical students reported that they spent only 15 minutes in search of information and its communication. However the chi-square test indicates that the p value is 0.135 which is greater than 0.05 so there is no significant difference at level 0.05 between the department and time spent in search of information and communication by PG Medical students. That is and time spent in search of information and communication by PG Medical students does not vary with departments.

It is cleared that nearly half of the clinical PG Medical students spent about 1 hour in search of information and its communication and more than half of non-clinical PG Medical Students also spent about 1 hour in search of information and its communication. Around quarter of clinical PG Medical Students and non-clinical spent more than 1 hour in search of information and its communication. Only a few PG clinical and non-clinical Medical Students reported that they spent only 15 minutes in search of information and its communication. There is no significant difference at level 0.05 between the department and time spent in search of information and communication by PG Medical students.

The graphical representation of time spent in search of information and its communication is given below:



Figure 5.8 Time spent in search of information and its communication

From figure it is seen that nearly half of the (47.58 per cent) PG Medical students reported that they spent about 1 hour in search of information and its communication. About quarter of the (25.15 per cent) PG Medical students opined that they spent more than 1 hour in search of information and its communication. About 20 per cent of the students said that they only spent 30 minutes in search of information and its communication. Only a few students (7.27 per cent) responded that they spent only 15 minutes in search of information.

Over all analysis shows that nearly half of the PG Medical students spent about 1hour in search of information and its communication.

5.25 Place of accessing Internet

Internet is used worldwide and is also used in medical education to improve its quality. Internet is considered as an important tool to access information by health professionals. In order to provide internet access to all the students many institutions take different initiatives. Maulana Azad Medical College (MAMC), a government medical college opened a private

“Internet Café” open from 10.00AM to 7.00AM daily and charges a Rs.10/- for one hour of internet use. Besides these students and faculty can also access internet in the college library which is free of cost but have limited working hours.(Lal et al., 2006)

5.25.1 Place of accessing Internet with respect to Gender

Internet can be accessed from different places depending upon the accessibility and availability. Here the PG Medical students were asked to point out the places from where they access internet for different purposes. Responses are given in the Table 5.53

Table 5.53

Place of accessing Internet with respect to Gender

Place of accessing Internet	Male	Female
Department	55 (46.61%)	96 (45.28%)
Medical College Library	45 (38.14%)	78 (36.79%)
Home	82 (69.49%)	140 (66.04%)
Internet Café	29 (24.58%)	12 (5.66%)
Personal Devices	102 (86.44%)	150 (70.75%)
Others	35 (29.66%)	42 (19.81%)

From the Table 5.53 it can be seen that most of the male PG Medical students (86.44 per cent) and female PG Medical students (70.75 per cent) use internet through personal devices. The second most place of accessing internet by the male PG Medical students (69.49 per cent) is from home. The second most used way of accessing internet by the female PG Medical students (66.04 per cent) is also from home. A considerably good number of

Analysis

male (46.61 per cent) and female (45.28 per cent) PG Medical students access internet from their departments. A considerable number of male (38.14 per cent) and female PG Medical Students (36.79 per cent) access internet from Medical college library. More than quarter of the male PG students (29.66 per cent) and 19.81 per cent female PG students access internet by other means like LRC.

It is cleared that most of the male and female PG Medical students use internet through personal devices. The second most place of accessing internet by the male and female PG Medical students is from home. A considerably good number of male and female PG Medical students access internet from their departments.

5.25.2 Place of accessing Internet with respect to Department

Responses regarding the place of accessing internet with respect to department is given in the Table 5.54

Table 5.54

Place of accessing Internet with respect to Department

Place of accessing Internet	Clinic	Non-Clinic
Department	126 (49.03%)	25 (34.25%)
Medical College Library	101 (39.30%)	22 (30.14%)
Home	191 (74.32%)	31 (42.46%)
Internet Café	29 (11.28%)	12 (16.44)
Personal Devices	191 (74.32%)	61 (83.56%)
Others	55 (75.34%)	22 (30.13%)

Analysis

From the Table 5.54 it is seen that nearly three fourth of the clinical PG Medical students (74.32 per cent) use internet through personal devices and from home. Most of the non-clinical PG Medical students (83.56 per cent) reported that they access internet from personal devices. The second most used way of accessing internet by the non-clinical PG Medical students (34.25 per cent) is from department. A considerably good number of clinical (39.30 per cent) and non-clinical (30.14 per cent) PG Medical students access internet from their departments.

It is cleared that nearly three fourth of the clinical PG Medical students use internet through personal devices and from home. Most of the non-clinical PG Medical students reported that they access internet from personal devices. The second most used way of accessing internet by the non-clinical PG Medical students is from department. A considerably good number of clinical and non-clinical PG Medical students access internet from their departments.

The graphical representation of place of accessing internet is given below.

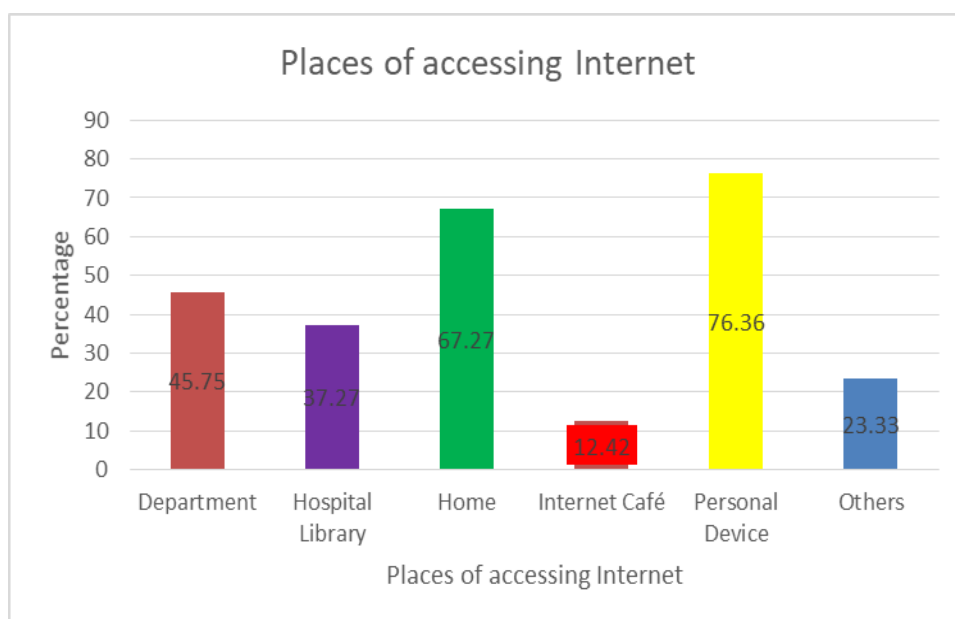


Figure 5.9 Place of accessing Internet

Analysis

Analysis of the Figure 5.9 shows that majority of the PG Medical students (76.36 per cent) access internet through personal devices. Second majority of students (67.27 per cent) responded that they access internet from home. Nearly half of the PG Students (45.75 per cent) access internet from their department and a 37.27 per cent of the students access internet from Medical College library. Only a few (12.42 per cent) of the respondents depends internet café to access internet and nearly quarter of the PG students (23.33 per cent) access internet from other places like LRC.

Over all analysis shows that majority of PG Medical students access internet through personal devices.

5.26 Methods of accessing Internet

Medical education enables students to update knowledge and to become life-long learners. Internet helps them to access information from any source at anytime from anywhere. (Ayatollahi et al., 2014) in his study reported that all the medical students have personal computer and internet access. There are different ways in which electronic devices can connect to internet. Methods of accessing internet are the way by which individuals and institutions connect to internet.

5.26.1 Methods of accessing Internet with respect to Gender

Internet can be accessed through different methods. Respondents were asked to write down the methods they use to access internet. Table 5.55 depicts the methods of accessing internet by the PG Medical students.

Table 5.55
Methods of accessing Internet with respect to Gender

Methods of accessing Internet	Male	Female
Broadband	30 (25.42%)	45 (21.23%)
WiFi Connection	47 (39.83%)	61 (28.77%)
Personal Devices	90 (76.27%)	154 (72.64%)

Analysis of the Table 5.55 shows that majority of the male (76.27 per cent) and female (72.64 per cent) PG Medical students access internet through their personal devices. A considerably good number of male (39.83 per cent) and female (28.77 per cent) PG Medical students access internet through Wi-Fi connection. Only a 25.42 per cent male PG Medical students and 21.23 per cent female PG Medical students reported that they access internet through broadband connection.

It is cleared that majority of the male and female PG Medical students access internet through their personal devices. A considerably good number of male and female PG Medical students reported that they access internet through Wi-Fi connection.

5.26.2 Methods of accessing Internet with respect to Department

Here the respondents were asked to write down the methods they use to access internet. Table 5.56 depicts the methods of accessing internet with respect to department.

Table 5.56
Methods of accessing Internet with respect to Department

Methods of Accessing Internet	Clinic	Non-Clinic
Broadband	51 (19.84%)	24 (32.88%)
Wi-Fi Connection	84 (32.68%)	24 (32.88%)
Personal Devices	189 (73.54%)	55 (75.34%)

Analysis of the Table 5.56 shows that around three fourth of the clinical (73.54 per cent) and non-clinical (75.34 per cent) PG Medical students access internet through their personal devices. Around one third of clinical (32.68 per cent) and non-clinical (32.88 per cent) PG Medical Students access internet through Wi-Fi connection. Only a 19.84 per cent clinical PG Medical students and a one third of the non-clinical (32.88 per cent) PG Medical students reported that they access internet through broadband connection.

It is cleared around three fourth of the clinical and non-clinical PG Medical students access internet through their personal devices. Around one third of clinical and non-clinical PG Medical students access internet through Wi-Fi connection. Only a 19.84 per cent clinical PG Medical students and a one third of the non-clinical PG Medical students reported that they access internet through broadband connection.

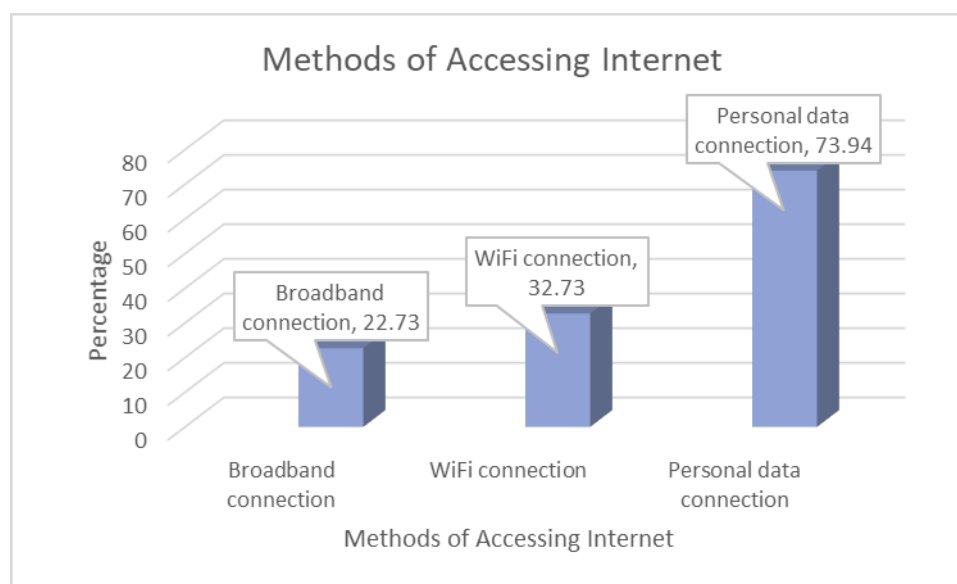


Figure 5.10 Methods of accessing Internet

From the figure 5.10 it is cleared that most of the PG Medical students (73.94 per cent) in Government Medical Colleges in Kerala use their personal data connection to access internet. Nearly one third of the PG Medical students (32.73 per cent) reported that they access internet through Wi-Fi connection. Only a 22.73 per cent students responded that they use broadband connection to access internet.

From the overall analysis it can be understood that most of the PG Medical students in Government Medical Colleges in Kerala use their personal data connection to access internet.

5.27 Devices used to access Internet

Internet is widely used by medical students. Even though computer technologies are widely used in medicine, it started to spread by the use of personal computer. “Over the last two decades, the use of modern information technology (IT) has developed at a breathtaking pace in all fields including medicine. Computers, tablets and smart phones are readily available even in low resource settings.”(Parve et al., 2016)

5.27.1 Devices used to access Internet with respect to Gender

There are many devices that can be used to access internet. Here the respondents are requested to address the devices that are preferred to access internet. The details given by them are given in the Table 5.57

Table 5.57

Devices used to access Internet with respect to Gender

Devices	Male	Female
Laptop	73 (61.86%)	129 (60.85%)
Desktop	29 (24.58%)	48 (22.64%)
Tablet	13 (11.02%)	22 (10.38%)
Smart Phone	94 (74.66%)	175 (82.55%)

From Table 5.57 it is seen that most of the male (74.66 per cent) and female (82.55 per cent) PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by male (61.86 per cent) and female (60.85 per cent) PG Medical students. A considerably good number of male (24.58 per cent) and female (22.64 per cent) PG Medical students prefer desktops. A few male (11.02per cent) and female (10.38 per cent) PG Medical students prefer tablets.

It is found that most of the male and female PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by male and female PG Medical students.

5.27.2 Devices used to access Internet with respect to Department

The details given by the respondents on the devices used to access internet with respect to department is given in the Table 5.58

Table 5.58**Devices used to access Internet with respect to Department**

Devices	Clinic	Non-Clinic
Laptop	159 (61.87%)	43 (58.90%)
Desktop	69 (26.85%)	8 (10.96%)
Tablet	28 (10.89%)	7 (9.59%)
Smart Phone	208 (80.93%)	61 (83.56%)

From Table 5.58 it is seen that most of the clinical (80.93 per cent) and non-clinical (83.56 per cent) PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by clinical (61.87 per cent) and non-clinical (58.90 per cent) PG Medical students. A quarter of clinical (26.85 per cent) and a meager non-clinical (10.96 per cent) PG Medical students prefer desktops. A few clinical (10.89 per cent) and non-clinical (9.59 per cent) PG Medical students prefer tablets.

It is found that most of the clinical and non-clinical PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by clinical and non-clinical PG Medical students. A quarter of clinical and a meager non-clinical PG Medical students prefer desktops. Only a few clinical and non-clinical PG Medical students prefer tablets.

Analysis

The graphical representation of devices used to access internet by PG Medical students in Government Medical Colleges in Kerala is shown in the figure below.

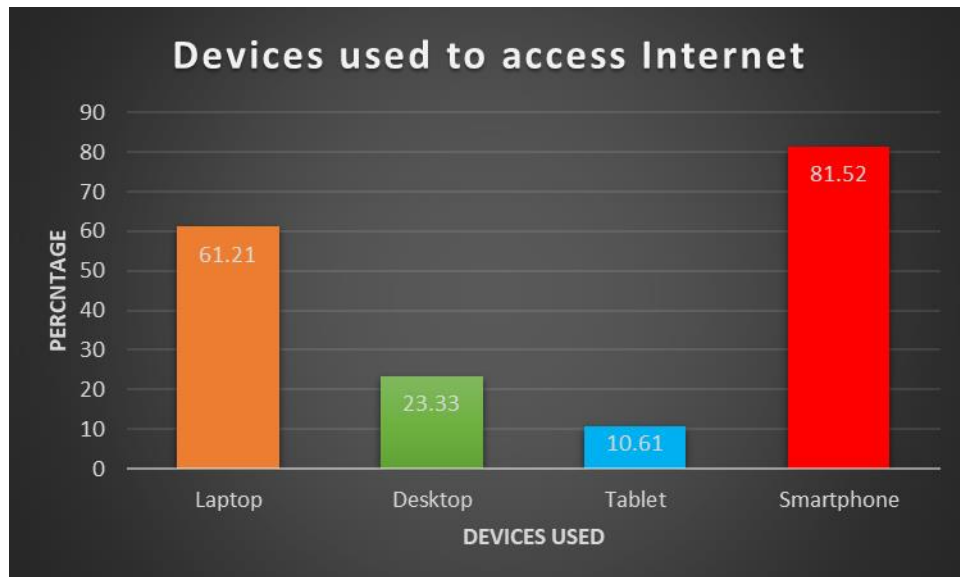


Figure 5.11 Devices used to access Internet

From figure 5.11 it can be seen that majority of the Post Graduate Medical students in Government Medical Colleges in Kerala depends on smartphones (81.52 per cent) to access internet. More than half of the PG Medical students (61.21 per cent) reported that they use laptop in order to access internet. Nearly quarter (23.33 per cent) of the respondents use desktops to access internet and a few (10.61 per cent) responded that they access internet through tablets.

Overall analysis shows that the majority of PG Medical students access internet through smartphones. Accessing internet through mobile sometimes create problems in areas like downloading and many features may not be available to mobile view. These create problems in getting needed information.

5.28 Reasons for using ICT Equipments

Traditionally transferring of knowledge and skills from teachers to students and health professionals are happening in medical colleges. “Advances in medicine in recent decades are in significant correlation with the advances in the information technology. Modern information technologies (IT) have enabled faster, more reliable and comprehensive data collection”.(Masic, Izet et al., 2011).

ICTs are used for different purposes and the reasons for using ICT equipments vary from the needs and convenience of users. Table 5.59 gives the reasons for using ICT equipments by the PG Medical students.

Table 5.59

Reasons for using ICT Equipments

Reasons for using ICT Equipments	Always	Often	Sometimes	Rarely	Never
Improves clinical decision making	129 (39.09%)	179 (54.24%)	15 (4.54%)	4 (1.21%)	3 (0.90%)
Ease of use	201 (60.90%)	106 (32.12%)	16 (4.84%)	6 (1.81%)	1 (0.30%)
Improves professional knowledge	239 (72.42%)	68 (20.60%)	15 (4.54%)	8 (2.42%)	-
Keep up-to-date	247 (74.84%)	60 (18.18%)	20 (6.06%)	2 (0.60%)	1 (0.30%)
Ease communication	189 (57.27%)	108 (32.72%)	28 (2.42%)	4 (1.21%)	1 (0.30%)
Make easy coordination of activities	144 (43.63%)	128 (38.78%)	30 (9.09%)	25 (7.57%)	2 (0.60%)
Save time	209 (63.33%)	58 (17.57%)	34 (10.30%)	21 (6.36%)	8 (2.42%)

Analysis

Analysis shows that majority of the PG Medical students (74.84 per cent) opined that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical students (72.42 per cent) is that it helps them to improve professional knowledge. It is seen that a good number of PG Medical students (63.33 per cent) opined that ICT equipments save time and a good number of PG Medical students (60.90 per cent) always use ICTs since they are easy to use. More than half of the PG Medical students (57.27 per cent) opined that they always depends on ICTs since it eases communication. More than half of the PG Medical students (54.24 per cent) often use ICTS because it improves clinical decision making.

The given data were analyzed to determine whether there is any significant difference between the reasons of using ICT equipments and the gender of PG Medical students. The results are given in the Table 5.60

Table 5.60

Reasons of using ICT Equipments with respect to Gender

Reasons of using ICT equipments	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	4.4576	.74701	212	4.2028	.64682	3.242	.001

From the Table 5.60 it can be seen that p value (0.001) of the t test is less than 0.05; hence there is a significant relation between reasons of using ICT equipments and the gender of the PG Medical students. That is reasons of using ICT equipments varies with the gender of the PG Medical students.

Analysis

The given data were again analyzed to determine whether there is any significant difference between the reasons of using ICT equipments and the department of PG Medical students. The results are given in the Table 5.61

Table 5.61

Reasons of using ICT Equipments with respect to Department

Reasons of using ICT equipments	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	4.3930	.62907	73	3.9452	.79740	5.042	.000

Results shows that p value (0.000) is less than 0.05; hence there is a significant relation between reasons of using ICT equipments and the department of the PG Medical students. That is reasons of using ICT equipments varies with the different departments of the PG Medical students.

It is cleared that majority of the PG Medical Students opined that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical Students is that it helps them to improve professional knowledge. It is seen that a good number of PG Medical Students opined that ICT equipments save time and a good number of PG Medical Students always use ICTs since they are easy to use. More than half of the PG Medical Students opined that they always depend on ICTs since it eases communication. More than half of the PG Medical Students often use ICTS because it improves clinical decision making. From t test analysis it is shown that there is a significant relation between reasons of using ICT equipments and the gender of the PG Medical students. That is reasons of using ICT equipments varies with the gender of the PG Medical students. It is also seen that there is a significant relation

between reasons of using ICT equipments and the department of the PG Medical students. That is reasons of using ICT equipments varies with the different departments of the PG Medical students.

5.29 Purposes of using ICT Equipments

Purpose of medical education is to convey the knowledge and skills to students. In recent times ICT is used for various purposes. ICT have the capacity to ease communication, to facilitate decision making, to keep up to date than any other medium it enables more effective patient care delivery. ICT helps to reduce the medical errors with better knowledge management and evidence based decision making. (Øvretveit J et al., 2007). In addition, the health care professionals are expected to attain efficiency, delegation support and remote care with the implementation of ICT in hospitals. Respondents were asked to express the purposes of using ICT equipments. The details given by the respondents are given in the Table 5.62

Table 5.62 depicts that most of the PG Medical students (74.24 per cent) always use ICT equipments for presentation purposes. Communication is the second most purpose for which PG Medical students (64.54 per cent) use ICT equipments. A good number of PG Medical students (63.03 per cent) always use ICT equipments to keep up to date. It is seen that a very good number of PG Medical Students (71.51 per cent) often use ICT equipments to facilitate decision making. Nearly half of the PG Medical students (47.87 per cent) mentioned that they often use ICTs for data/record management. A good number of PG Medical Students (40.30 per cent) often use ICT equipments for distance education. It is seen that 23.93 per cent PG Medical students sometimes use ICTs Identify opportunities and threats

Table 5.62

Purposes of using ICT Equipments

Purposes of using ICT Equipments	Always	Often	Sometimes	Rarely	Never
For communication	213 (64.54%)	80 (24.24%)	21 (6.36%)	16 (4.84%)	-
Facilitate decision making	45 (13.63%)	236 (71.51%)	31 (9.39%)	18 (5.45%)	-
Data/records management	58 (17.57%)	158 (47.87%)	52 (15.75%)	29 (8.78%)	33 (10%)
Identify opportunities and threats	59 (17.87%)	130 (39.39%)	79 (23.93%)	39 (11.81%)	23 (6.96%)
Distance education	66 (20%)	133 (40.30%)	48 (14.54%)	57 (17.27%)	26 (7.87%)
Presentations	245 (74.24%)	47 (14.24%)	23 (6.96%)	9 (2.72%)	-
Keep up to date	208 (63.03%)	89 (26.96%)	30 (9.09%)	3 (0.90%)	-
Skills acquisition	129 (39.09%)	123 (37.27%)	56 (16.96%)	17 (5.15%)	5 (1.51%)

The relationship between purpose of using ICT equipments and the gender of PG Medical students were sought out using t test and the results are given in the Table 5.63

Table 5.63

Purpose of using ICT Equipments with respect to Gender

Purpose of using ICT equipments	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	3.9153	.61496	212	4.0814	.50868		

Analysis

Analysis of the Table 5.63 shows that p value (0.009) of the t test is less than 0.05; hence there is a significant difference in the purpose of using ICT equipments with respect to gender. T test establishes that purpose of using ICT equipments vary with the gender of the PG Medical students.

The relationship between purpose of using ICT equipments and the department of PG Medical students were sought out using t test and the results are given in the Table 5.50.2

Table 5.64

Purpose of using ICT Equipments with respect to Department

Purpose of using ICT equipments	Department						t value	P value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	4.0501	.47840	73	3.9229	.75853	1.736	.083

Table 5.64 reveals that p value (0.083) is greater than 0.05; hence there is no significant difference between purpose of using ICT equipments with respect to department. T test establishes that purpose of using ICT equipments does not vary with the PG Medical students in different departments.

It is revealed that most of the PG Medical students always use ICT equipments for presentation purposes. Communication is the second most purpose for which PG Medical students use ICT equipments. A good number of PG Medical students always use ICT equipments to keep up to date. It is seen that a very good number of PG Medical students often use ICT equipments to facilitate decision making. Nearly half of the PG Medical students mentioned that they often use ICTs for data/record management. A

Analysis

good number of PG Medical students often use ICT equipments for distance education. t test of the analysis shows that there is a significant difference in the purpose of using ICT equipments with respect to gender. That is the purpose of using ICT equipments vary with the gender of the PG Medical students. It is also seen that there is no significant difference between purposes of using ICT equipments with respect to department. That is the purpose of using ICT equipments does not vary with the PG Medical students in different departments.

5.30 Frequency of use of accessing Information with the help of ICT

ICT is used to manage information and knowledge which includes production, storage, processing, distribution and sharing of information. With the use of modern Information and Communication Technologies, users can access, disseminate the information they needed within a short time. ICT enables quick access to ideas and experiences from a wide range of people, communities and cultures, and allows pupils to collaborate and exchange information on a wide scale (Bhatti, 2011)

Respondents are asked to express their frequency of use of different types of information with the help of ICT. Table 5.65 gives account of the frequency of use of different types of information with the help of ICT.

From the Table 5.65 it can be seen that more than half of the PG Medical students always use clinical information (54.24 per cent) and educational information (53.63 per cent) with the help of ICT. Career information (41.66 per cent) is the second most accessed information with the help of ICT. It is seen that 33.03 per cent respondents often access information related to training opportunities with ICTs. A considerable number of PG Medical students (30.30 per cent) sometimes access administrative information with ICTs. From the analysis it is seen that a

Analysis

considerably good number of PG Medical students (30.90 per cent) reported that they rarely access legal issues in medical field using ICTs. Only few respondents (0.30 per cent) reported that they never access clinical information using ICTs.

Table 5.65

Frequency of use of accessing Information with the help of ICT

Type of Information	Always	Often	Sometimes	Rarely	Never
Clinical information	179 (54.24%)	100 (30.30%)	16 (4.84%)	34 (10.30%)	1 (0.30%)
Educational information	177 (53.63%)	105 (31.81%)	44 (13.33%)	4 (1.21%)	-
Career information	125 (41.66%)	100 (30.30%)	48 (14.54%)	57 (17.27%)	-
Training opportunities	102 (30.90%)	109 (33.03%)	56 (16.96%)	63 (19.09%)	-
Administrative information	44 (13.33%)	96 (29.09%)	100 (30.30%)	79 (23.93%)	11 (3.33%)
Legal issues in medical field	49 (14.84%)	101 (30.60%)	52 (15.75%)	102 (30.90%)	22 (6.66%)

Frequency of accessing information with respect to gender is analyzed using t test and the results are given in the Table 5.66.

Table 5.66

Frequency of accessing Information with respect to Gender

Frequency of accessing Information	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	4.0014	.70256	212	3.6627	.62539	4.509	.000

Analysis

Analysis shows that p value (0.000) is less than 0.05; hence there is a significant difference between frequency of accessing information using ICT and the gender of the students. That is frequency of accessing information using ICT varies with the gender of the PG Medical students.

Relationship between the frequency of accessing information using ICT and their department is sought out by t test and the results are given below in Table 5.67.

Table 5.67

Frequency of accessing Information with respect to Department

Frequency of accessing Information	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	3.7198	.63206	73	4.0091	.76320	-3.290	.001

Analysis shows that p value (0.001) is less than 0.05; hence there is a significant difference between frequency of accessing information using ICT and the department of the students. That is frequency of accessing information using ICT varies with the different departments.

It is found that more than half of the PG Medical students always use clinical information and educational information with the help of ICT. Career information is the second most accessed information with the help of ICT. A considerable number of PG Medical students sometimes access administrative information with ICTs. From the analysis it is seen that a considerably good number of PG Medical students reported that they rarely access legal issues in medical field using ICTs. Only few respondents reported that they never access clinical information using ICTs. From the t test analysis it is cleared

Analysis

that there is a significant difference between frequency of accessing information using ICT and the gender of the students and their department. That is frequency of accessing information using ICT varies with the gender as well as department of the PG Medical students.

5.31 Frequency of use of ICT Equipments by the PG Medical Students

There exist different types of ICT equipments. People all over the world use these ICT equipments depending on their recruitment and accessibility. A study by (Afolayan & Oyekunle, 2014) indicated that the ICTs that are commonly used by health professionals includes mobile phones, computers, fax machines, TV sets. Although, Internet driven facilities like video-conferencing, teleconferencing, web discussion forums and email among others, were not readily available to the health professionals. , a comparative analysis reveals that there was superior availability and use of computers, projectors, e-mails and Internet by health professionals in private hospitals than those in public hospitals.

Here the PG medical Students are revealed their frequency of use of different ICT equipments.

Analysis of the Table 5.68 shows that large majority of the PG Medical students (93.03 per cent) always use mobiles phones. More than half of the PG Medical students (56.36 per cent) always use computers and laptops and it is also seen that a good number of PG Medical students (37.87 per cent) often use computers and laptops. A few of PG Medical students (29.39 per cent) sometimes make use of LCD projectors. A good number of PG Medical Students rarely use radio (40.90 per cent), CD/DVD (47.27 per cent), Video technology (40.60 per cent), Scanners (32.42 per cent). It is seen that 26.06 per cent PG Medical Students sometimes make use of cameras.

Table 5.68

Frequency of use of ICT Equipments by the PG Medical Students

Frequency of use of ICT Equipments	Always	Often	Sometimes	Rarely	Never
Mobile phones	307 (93.03%)	13 (3.93%)	10 (3.03%)	-	-
Computer and Laptop	186 (56.36%)	125 (37.87%)	19 (5.75%)	-	-
Flash Discs	6 (1.81%)	12 (3.63%)	13 (3.93%)	73 (22.12%)	226 (68.48%)
LCD Projector	17 (5.15%)	71 (21.51%)	97 (29.39%)	77 (23.33%)	68 (20.60%)
Radio	4 (1.21%)	48 (14.54%)	24 (7.27%)	135 (40.90%)	119 (36.06%)
CD/DVD	21 (6.36%)	40 (12.12%)	51 (15.45%)	156 (47.27%)	62 (18.78%)
Video Technology	7 (2.12%)	34 (10.30%)	56 (16.96%)	134 (40.60%)	98 (29.69%)
Scanners	10 (3.03%)	34 (10.30%)	85 (25.71%)	107 (32.42%)	94 (28.48%)
Cameras	62 (18.78%)	65 (19.69%)	86 (26.06%)	79 (23.93%)	38 (11.51%)
Printers	23 (6.96%)	77 (23.33%)	168 (50.90%)	42 (12.72%)	20 (6.06%)
Fixed line Telephone	4 (1.21%)	6 (1.81%)	76 (23.03%)	140 (42.42%)	104 (31.51%)
Fax	-	4 (1.21%)	10 (3.03%)	125 (37.87%)	191 (57.87%)

Half of the PG Medical students (50.90 per cent) reported that they sometimes use printers. . A good number of PG Medical students (42.42 per cent) rarely make use of fixed line telephones. More than half of the PG Medical students (57.87 per cent) reported that they never use fax in their activities.

Analysis

The relation between the frequency of use ICT equipments and the gender of PG Medical students is sought out using t test and the results are given in the Table 5.69.

Table 5.69

Frequency of use of ICT Equipments with respect to Gender

Frequency of use of ICT Equipments	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	2.4401	.34295	212	2.3739	.39493	1.528	.127

From Table 5.69 it can be seen that p value (0.127) of the t test is greater than 0.05; hence there is no significant relation between frequency of use ICT equipments and the gender of PG Medical students. That is whether the PG Medical students are male or female , it does not affect the frequency of use of ICT equipments.

The given data were again analyzed to determine whether there is any significant difference between the frequency of use ICT equipments and the department of PG Medical students. The results are given in the Table 5.70.

Table 5.70

Frequency of use of ICT Equipments with respect to Department

Frequency of use of ICT Equipments	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	2.3717	.35738	73	2.4886	.43348	-2.347	.020

Analysis

Table 5.70 it can be seen that p value (0.020) of the t test is less than 0.05; hence there is a significant relation between frequency of use ICT equipments and the department of the PG Medical students. That is frequency of use of ICT equipments by PG Medical students vary with different departments.

It is realized that majority of the PG Medical students always use mobiles phones. More than half of the PG Medical students always use computers and laptops and it is also seen that a good number of PG Medical students often use computers and laptops. A considerably good number of PG Medical students sometimes make use of LCD projectors. A good number of PG Medical Students rarely use radio, CD/DVD, Video technology, Scanners. Half of the PG Medical Students reported that they sometimes use printers. . A good number of PG Medical Students rarely make use of fixed line telephones. More than half of the PG Medical students reported that they never use fax in their activities. From the t test of the analysis it is seen that there is no significant relation between frequency of use ICT equipments and the gender of PG Medical students. That is whether the PG Medical students are male or female, it does not affect the frequency of use of ICT equipments. It is also seen that there is a significant relation between frequency of use ICT equipments and the department of the PG Medical students. That is frequency of use of ICT equipments by PG Medical students vary with different departments.

5.32 Use of Social Networking Sites by the PG Medical Students

Social networking sites ensure the communication by sharing information, messages, comments, images and videos. Depending upon the requirements different types of social networking site are used. Google and Facebook are the frequently used social media tools, followed by YouTube, Twitter, Flickr, and LinkedIn. (" Search engines", 2016). Twitter is considered

Analysis

as a popular micro blogging site that is used to share novel information. Engagement with social media can be personal, professional, or both, and there is sufficient evidence that digitally-savvy adults and youth use social media for health-related information(Greene et al., 2011)

5.32.1 Use of Social Networking Sites with respect to Gender

Social networking sites are now used to exchange/ communicate information all over the world. Here the respondents were asked to mention whether they use social networking sites to share/exchange/communicate information with others. In a study done by (Khan, 2010) reported that majority of male students use social networking sites than their female counterpart and their purpose is for searching knowledge. (Thompson & Lougheed ,2012) in his study it is noted that more females are “heavy users” of Facebook and that they spent more than 1 hour a day on the site than their male counterparts. The details of use of social networking sites by Government Medical College PG students are given in Table 5.71.

Table 5.71

Use of Social Networking Sites with respect to Gender

Use of Social Networking Sites	Male	Female
Yes	102 (86.44%)	211 (99.53%)
No	16 (13.56%)	1 (0.47%)

It can be seen that majority of the male (86.44 per cent) and female (99.53 per cent) PG Medical students use social networking sites to share/exchange/communicate information with others. Only a few male (13.56 per cent) and female (0.47 per cent) PG Medical students opined that

Analysis

they do not use social networking sites to share/exchange/communicate information with others.

It is clear that majority of the male and female PG Medical students use social networking sites to share/exchange/communicate information with others. Since usage of social networking sites by the general public has increased it will be a good step if health professionals share information, educate and interact with patients and colleagues. It will definitely motivate patients to take care of their health.

Table 5.32.2 Use of Social Networking Sites with respect to Department

Here the respondents were asked to mention whether they use social networking sites to share/exchange/communicate information with others. Details of use of social networking sites with respect to department is given in Table 5.72.

Table 5.72

Use of Social Networking Sites with respect to Department

Use of Social Networking Sites	Clinic	Non-Clinic
Yes	240 (93.39%)	73 (100%)
No	17 (6.61%)	-

It can be seen that a lion's share of the clinical (93.39 per cent) and all of the non-clinical (100 per cent) PG Medical students reported that they use social networking sites to share/exchange/communicate information with others. Only a meager clinical (6.61 per cent) PG Medical students opined that they do not use social networking sites to share/exchange/communicate information with others.

It is cleared that majority of the clinical and non-clinical PG Medical students use social networking sites to share/exchange/communicate information with others.

5.33 Types of Social Networking Sites used by the PG Medical Students

According to (Knight-McCord et al., 2016) “Students are most likely to use social networking sites that enable them to post pictures and videos. They are least likely to use social networking sites that enable them to develop a professional network or post media content into organized categories. Social media sites are increasingly tailored to meet the needs of specific target markets. Understanding this evolutionary pattern is the key that unlocks which social media platforms college students will continue to use most.”

5.33.1 Types of Social Networking Sites used by the PG Medical Students with respect to Gender

Different types of social networking sites are available to share/exchange/communicate information with others. They can be used for entertainment purposes and academic purposes. Here the respondents were asked to mention the social networking types that are used to share/exchange/communicate information with others with respect to their gender. Details are given in the Table 5.73.

It is seen that majority of the male (83.05 per cent) and female (99.06 per cent) PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and a very good number of male (67.80per cent) PG Medical students and female (59.43 per cent) PG Medical students use face book to share/exchange/communicate information with others. Nearly half of the male PG Medical students (47.46 per cent) mentioned the use of youtube to share/exchange/communicate

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information with others whereas only 16.04 per cent female PG Medical students reported that they use youtube to share/exchange/communicate information with others. It is also noted that only a few male (5.08 per cent) and female (3.77 per cent) PG Medical students use twitter services. A very few male (1.69 per cent) and female (0.94 per cent) female PG Medical students uses other social networking sites these includes instagram, telegram.

Table 5.73

**Types of Social Networking
Sites used by the PG Medical Students with respect to Gender**

Types of Social Networking Sites	Male	Female
Face book	80 (67.80%)	126 (59.43%)
Twitter	6 (5.08%)	8 (3.77%)
Whatsapp	98 (83.05%)	210 (99.06%)
Youtube	56 (47.46%)	34 (16.04%)
Others	2 (1.69%)	2 (0.94%)

It is revealed that majority of the male and female PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and a very good number of male PG Medical Students and female PG Medical Students use face book to share/exchange/communicate information with others. Nearly half of the male PG Medical students mentioned the use of youtube to share/exchange/communicate information with others. It is also noted that only a few male and female PG Medical Students use twitter services.

5.33.2 Types of Social Networking Sites used by the PG Medical Students with respect to Department

The details of use of different types social networking sites that are used to share/exchange/communicate information with others with respect to department is given in the Table 5.74.

Table 5.74
Types of Social Networking Sites
used by the PG Medical Students with respect to Department

Types of Social Networking Sites	Clinic	Non-Clinic
Face book	159 (61.87%)	47 (64.38%)
Twitter	10 (3.89%)	4 (5.48%)
Whatsapp	239 (93.00%)	73 (100%)
Youtube	61 (23.74%)	29 (39.73%)
Others	4 (1.56%)	-

It can be seen that majority of the clinical (93.00 per cent) and all of the non-clinical (100 per cent) PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and 2/3rd of clinical (61.87 per cent) PG Medical students and non-clinical (64.38 per cent) PG Medical Students use facebook to share/exchange/communicate information with others. Nearly quarter of the clinical PG Medical students (23.47 per cent) mentioned the use of youtube to share/exchange/communicate information with others whereas two fifth of the non-clinical PG Medical students (39.73 per cent) reported that they use youtube to

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share/exchange/communicate information with others. It is also noted that only a few clinical (3.89 per cent) and non-clinical (5.48 per cent) PG Medical students use twitter services.

It is revealed that majority of the clinical and all of the non-clinical PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and two third of clinical PG Medical students and non-clinical PG Medical students use facebook to share/exchange/communicate information with others. Nearly quarter of the clinical PG Medical students mentioned the use of youtube to share/exchange/communicate information with others whereas two fifth of the non-clinical PG Medical students reported that they use youtube to share/exchange/communicate information with others. It is also noted that only a few clinical and non-clinical PG Medical students use twitter services.

Graphical representation of types of social networking sites used by PG Medical students in Government Medical Colleges in Kerala is shown in the figure below.

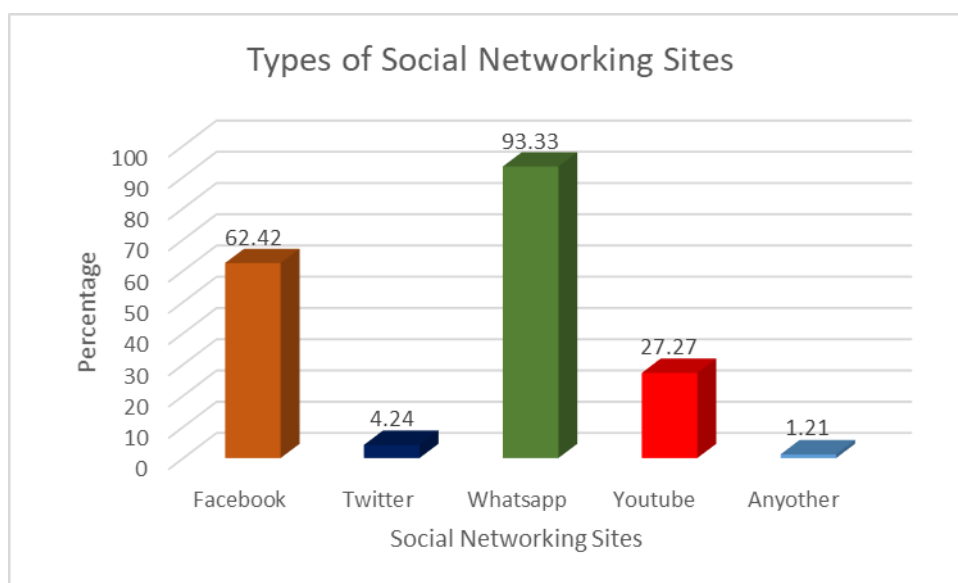


Figure 5.12 Types of Social Networking Sites

Analysis

Figure 5.12 shows that majority of the PG Medical students (93.33 per cent) use whatsapp to share/exchange/communicate information with others. A very good number of PG Medical students (62.42 per cent) reported that they use facebook. More than quarter of the PG Medical students (27.27 per cent) respondents marked the use of youtube. A very few students (4.24 per cent) use twitter to share/exchange/communicate information with others. A negligible number of students (1.21 per cent) mention the use of other social networking site like instagram, telegram etc.

5.34 Strategies taken by the Institutions to facilitate better Communication

Communication failures negatively impact the health care delivery system and the quality of patient care. In order to improve interprofessional communication and collaboration it is necessary to recognize the problems associated with clinical and collaboration communication.

5.34.1 Strategies taken by the Institutions with respect to Gender

Respondents were asked to point out the strategies put forward by their institution in order to facilitate better communication. The details given are tabulated in Table 5.75.

Table 5.75 shows that majority of male (78.81 per cent) and female (80.19 per cent) PG Medical students agreed that their institution provides e-journals/e-resources. A good number of male (61.86 per cent) and female (68.87per cent) PG Medical students opined that there are available range of ICT infrastructures in their institution. In the opinion of a good number of male (61.86 per cent) and female (62.26per cent) PG Medical students reported that they have access to computer databases. Half of the male (50.00 per cent) and a considerably good number of female (38.68 per cent) PG Medical students expressed that their computer labs are connected to internet.

Table 5.75

Strategies taken by Institutions with respect to Gender

Strategies taken by the Institutions	Male	Female
Available range of ICT	73 (61.86%)	146 (68.87%)
Computer databases	73 (61.86%)	132 (62.26%)
Electronic patient records	21 (17.80%)	47 (22.17%)
Computer labs connected to internet	59 (50.00%)	82 (38.68%)
Hospital has networked computers	27 (22.88%)	48 (22.64%)
Wireless network	32 (27.12%)	53 (25.00%)
Training and workshops	25 (21.19%)	107 (50.47%)
Tapes on health	5 (4.24%)	23 (10.85%)
Telemedicine facility	23 (19.49%)	18 (3.30%)
Tele consultation facility	5 (4.24%)	7 (4.24%)
Purchase of new books by the library	53 (44.92%)	90 (80.19%)
E- journals/ E-resources	93 (78.81%)	170 (80.19%)
Inter library loan	4 (3.39%)	3 (1.42%)

It is seen that a very good number of (80.19 per cent) female PG Medical students agreed that their library purchase new books whereas only 44.92 per cent male PG Medical students agreed that their library purchase new books. It is found that only a few male (17.80 per cent) and female (22.17per cent) PG Medical students reported that they have electronic patient records. Half of the female (50.47 per cent) respondents reported that training and workshops are conducted by institution where as only 21.19 per cent male

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respondents agreed to this statement. Only a few male (19.49 per cent) and a very few female (3.30 per cent) reported that there is telemedicine facility and a very few male (4.24 per cent) and female (4.24 per cent) opined that they have teleconsultation facility. A considerably good number of male (27.12 per cent) and female (25.00 per cent) PG Medical students pointed out that there is wireless connectivity in their institution.

It is found that majority of male and female PG Medical students agreed that their institution provides e-journals/e-resources. A good number of male and female PG Medical students opined that there is available range of ICT infrastructures in their institution. In the opinion of a good number of male and female PG Medical students reported that they have access to computer databases. Half of the male and a considerably good number of female PG Medical students expressed that their computer labs are connected to internet. It is seen that a very good number of female PG Medical students agreed that their library purchase new books. It is found that only a few male and female PG Medical students reported that they have electronic patient records. Half of the female respondents reported that training and workshops are conducted by institution. Only a few male and a very few female reported that there is telemedicine facility and a very few male and female opined that they have teleconsultation facility. A considerably good number of male and female PG Medical students pointed out that there is good wireless connectivity in their institution.

5.34.2 Strategies taken by the Institutions with respect to Department

Respondents were asked to point out the strategies put forward by their institution in order to facilitate better communication. The details given by the respondents with respect to department are tabulated below in 5.76.

Table 5.76
Strategies taken by the Institutions with respect to Department

Strategies taken by the Institutions	Clinic	Non-Clinic
Available range of ICT	171 (66.54%)	48 (65.75%)
Computer databases	167 (64.98%)	38 (52.05%)
Electronic patient records	51 (19.84%)	17 (23.29%)
Computer labs connected to internet	102 (39.69%)	39 (53.42%)
Hospital has networked computers	59 (22.88%)	48 (22.64%)
Wireless network	69 (26.85%)	16 (21.92%)
Training and workshops	91 (35.41%)	41 (56.16%)
Tapes on health	17 (6.61%)	11 (15.07%)
Telemedicine facility	28 (10.28%)	13 (17.81%)
Tele consultation facility	10 (3.89%)	2 (2.74%)
Purchase of new books by the library	116 (45.14%)	27 (36.99%)
E- journals/ E-resources	214 (83.27%)	49 (67.12%)
Inter library loan	3 (1.17%)	4 (5.48%)

Analysis shows that majority of clinical (83.27 per cent) and a good number of non-clinical (67.12 per cent) PG Medical students agreed that their institution provides e-journals/e-resources. A good number of clinical (66.54 per cent) and non-clinical (65.75 per cent) PG Medical students opined that there are available ranges of ICT infrastructures in their institution. In the opinion of a two third of clinical (64.98 per cent) and more than half of the non-clinical (52.05per cent) PG Medical students reported that they have

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access to computer databases. Around two fifth of the clinical (39.69 per cent) and more than half of non-clinical (53.42 per cent) PG Medical students expressed that their computer labs are connected to internet. It is seen that a considerable number of (45.14 per cent) clinical PG Medical students agreed that their library purchase new books whereas only 36.99 per cent non-clinical PG Medical Students agreed that their library purchase new books. It is found that only a few clinical (19.84 per cent) and non-clinical (23.29 per cent) PG Medical Students reported that they have electronic patient records. More than half of the non-clinical (56.16 per cent) respondents reported that training and workshops are conducted by institution where as only around one third (35.41 per cent) clinical respondents agreed to this statement. Only a few clinical (10.28 per cent) and a very few non-clinical (17.81 per cent) reported that there is telemedicine facility and a meager clinical (3.89 per cent) and non-clinical (2.74 per cent) opined that they have teleconsultation facility. Around a quarter of clinical (26.85 per cent) and non-clinical (21.92 per cent) PG Medical students pointed out that there is wireless connectivity in their institution.

It is found that majority of clinical and a good number of non-clinical PG Medical students agreed that their institution provides e-journals/e-resources. A good number of clinical and non-clinical PG Medical students opined that there are available ranges of ICT infrastructures in their institution. In the opinion of a two third of clinical and more than half of the non-clinical PG Medical students reported that they have access to computer databases. Around two fifth of the clinical and more than half of non-clinical PG Medical students expressed that their computer labs are connected to internet. It is seen that a considerable number of clinical PG Medical students agreed that their library purchase new books whereas only 36.99 per cent non-clinical PG Medical Students agreed that their library purchase new books. It is found that only a few clinical and non-clinical PG Medical students

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reported that they have electronic patient records. More than half of the non-clinical respondents reported that training and workshops are conducted by institution where as only around one third clinical respondents agreed to this statement. Only a few clinical and a very few non-clinical reported that there is telemedicine facility and a meager clinical and non-clinical opined that they have teleconsultation facility. Around a quarter of clinical and non-clinical PG Medical students pointed out that there is good wireless connectivity in their institution.

5.35 Influence of ICT on Professional Communication

Information and communication technologies (ICTs) used in the health care system have several advantages. ICTs are used to improve quality of care, to educate health professionals and patients etc. However, execution of ICTs is complicated and involves changes at different levels: patients, healthcare providers, and healthcare organizations (Rouleau, et al.,2015). ICT influences the job efficiency in different ways. Here the respondents were asked to point out their opinion on the influence of ICT on professional communication of PG Medical students.

From the Table 5.77 it can be seen that majority of the PG Medical students (91.81 per cent) agreed that ICT has enabled faster access to relevant medical information. The second most (90.60 per cent) influential factor is that ICT enabled access to current information in their field. A very good number of PG Medical students (84.54 per cent) opined that ICT increased ease of communication. A good number of PG Medical students (79.69 per cent) agreed that ICT Facilitated remote consultation, diagnoses & treatment. In the opinion of a good number of PG Medical students (76.06 per cent) ICT bettered the number of publications. Half of the PG Medical students (50.60 per cent) neither agreed nor disagreed the fact that ICT reduced face to face interactions.

Table 5.77

Influence of ICT on Professional Communication

Sl. No	Influence Of ICT On Professional Communication	Agree	Neutral	Disagree
1.	ICT has increased job efficiency	204 (61.81%)	102 (30.90%)	24 (7.27%)
2.	Enabled faster access to relevant medical information	303 (91.81%)	26 (7.87%)	1 (0.30%)
3.	Facilitated remote consultation, diagnoses & treatment	263 (79.69%)	59 (17.87%)	8 (2.42%)
4.	Quicker Medical diagnosis	212 (64.24%)	101 (30.60%)	17 (5.15%)
5.	Ensured easy communication	279 (84.54%)	49 (14.84%)	2 (0.60%)
6.	Access to current information	299 (90.60%)	17 (5.15%)	14 (4.24%)
7.	Increased collaboration among colleagues	202 (61.21%)	114 (34.54%)	14 (4.24%)
8.	Bettered number of publication	251 (76.06%)	66 (20%)	13 (3.93%)
9.	Reduced face to face interactions	128 (38.78%)	167 (50.60%)	35 (10.60%)

A good number of PG Medical students (64.24 per cent) reported that ICT enabled quicker medical diagnosis and a good number of PG Medical students opined that ICT increased their job efficiency (61.81 per cent) and ICT has increased collaboration among colleagues (61.21 per cent).

The data were analyzed to determine the relation between the opinion on the influence of ICT on professional communication and their gender. The analysis is given in the Table 5.78.

Table 5.78

Influence of ICT on Professional Communication with respect to Gender

Influence of ICT on Professional Communication	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	1.3211	.30534	212	1.3208	.27614	0.196	.992

The analysis of the Table 5.78 shows that p value (0.992) of the t test is greater than 0.05; so there is no significant difference between the opinion on the influence of ICT on professional communication and their gender. That is whether the PG Medical students are male or female it does not affect their opinion on the influence of ICT on professional communication.

The opinion by PG Medical students on the influence of ICT on professional communication were again analyzed using t test to understand whether there is any difference between the opinion on the influence of ICT on professional communication and their department. Results of the analysis is given in the Table 5.79.

Table 5.79
Influence of ICT on Professional Communication with respect to Department

Influence of ICT on professional communication	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	1.3031	.26470	73	1.3836	.34746	.001	.034

From Table 5.79 it can be seen that p value (0.034) of the test is less than 0.05; hence there is a significant difference between the opinions on the

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influence of ICT on professional communication and their department. That is the opinion on the influence of ICT on professional communication vary with different departments.

It is cleared that majority of the PG Medical students agreed that ICT has enabled faster access to relevant medical information. The second most influential factor is that ICT enabled access to current information in their field. A very good number of PG Medical students opined that ICT increased ease of communication. A good number of PG Medical students agreed that ICT Facilitated remote consultation, diagnoses & treatment. In the opinion of a good number of PG Medical students ICT bettered the number of publications. Half of the PG Medical students neither agreed nor disagreed the fact that ICT reduced face to face interactions. A good number of PG Medical students reported that ICT enabled quicker medical diagnosis and a good number of PG Medical students opined that ICT increased their job efficiency and ICT has increased collaboration among colleagues. From the analysis it is cleared that ICT has a positive influence on PG Medical students. From the t test it is cleared that there is no significant difference between the opinion on the influence of ICT on professional communication and their gender. That is whether the PG Medical students are male or female it does not affect their opinion on the influence of ICT on professional communication. It is also seen that there is a significant difference between the opinions on the influence of ICT on professional communication and their department. That is the opinion on the influence of ICT on professional communication vary with different departments.

5.36 Barriers/Hindrances in Professional Communication

Poor communication between healthcare staffs leads higher patient morbidity and mortality. Different professional languages between health care staffs, hierarchy that hinders free communication, mistakes in handover of

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information etc adversely affects effective communication in hospitals. Respondents in five Government Medical Colleges reported some barriers in professional communication. They are tabulated in the given Table 5.80.

Table 5.80

Barriers/Hindrances in Professional Communication

Sl. No	Barriers/Hindrances	Extreme Barrier	Moderate Barrier	Not a Barrier
1.	Inaccessibility of patient files	91 (27.57%)	154 (46.66%)	85 (25.75%)
2.	Missing patient files	76 (23.03%)	154 (46.66%)	100 (30.30%)
3.	Lack of co-operation among health professionals	35 (10.60%)	237 (71.81%)	49 (14.84%)
4.	Lack of patient awareness in understanding medical terms	21 (6.36%)	224 (67.87%)	85 (25.75%)
5.	Lack of ICT equipment for communication	62 (18.78%)	138 (41.81%)	130 (39.39%)
6.	Inadequate library resources	91 (27.57%)	144 (43.63%)	95 (28.78%)
7.	Unavailability of Medical college library	41 (12.42%)	130 (39.93%)	159 (48.18%)
8.	Lack of infrastructure	28 (8.48%)	165 (50%)	137 (41.51%)
9.	Library is located far away from the department	39 (11.81%)	129 (39.09%)	162 (49.09%)
10.	Lack of internet searching skill	25 (7.57%)	130 (39.39%)	175 (53.03%)
11.	Information abundance on the Internet	26 (7.87%)	186 (56.36%)	118 (35.75%)

From the analysis of the Table 5.80 it is cleared that lack of cooperation among health professionals is considered to be a moderate barrier by a good number of PG Medical students (71.81 per cent). The second most hindrance (67.87 per cent) in professional communication is the lack of patient awareness in understanding medical terms. More than half of the PG Medical students (56.36 per cent) opined that information abundance on the

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Internet act as a moderate barrier in professional communication. Half of the PG Medical students (50 per cent) reported that lack of infrastructure is a reason for the inefficient professional communication. In the opinion of more than half of the PG Medical students (53.03 per cent) lack of internet searching skill does not act as a barrier in professional communication. It can be seen that a good number of PG Medical students (46.66 per cent) believed that missing patient file and inaccessibility of patient files results a moderate hindrance in proper professional communication. A considerably good number of PG Medical students (43.63 per cent) felt inadequate library resources act as a moderate barrier and a good number of PG Medical students (41.81 per cent) were in the opinion that lack of ICT equipment for communication is moderate barrier in the professional communication activities.

The Table 5.81 depicts the relationship between barriers in professional communication faced by PG Medical students and their gender.

Table 5.81

Barriers in Professional Communication with respect to Gender

Barriers in Professional Communication	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	1.8274	.42264	212	1.7740	.47345	1.020	.307

Analysis shows that the p value (0.307) is greater than 0.05; hence there is no significant difference between barriers in professional communication faced by PG Medical students and their gender. That is the barriers in professional communication faced by PG Medical students do not significantly vary with gender of the PG Medical students.

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Again the data were analyzed to understand the relationship between barriers in professional communication faced by PG Medical students and their department.

Table 5.82

Barriers in Professional Communication with respect to Department

Barriers in Professional Communication	Department						t value	P value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	1.7980	.47715	73	1.7758	.37455	.366	.714

Analysis of the Table 5.82 shows that p value is (0.714) greater than 0.05; hence there is no relationship between barriers in professional communication faced by PG Medical students and their department. That is the barriers in professional communication faced by PG Medical students do not significantly vary with different departments.

Over all analysis depicts that that lack of cooperation among health professionals is considered to be a moderate barrier by a good number of PG Medical students. The second most hindrance in professional communication is the lack of patient awareness in understanding medical terms. More than half of the PG Medical students opined that information abundance on the Internet act as a moderate barrier in professional communication. Half of the PG Medical students reported that lack of infrastructure is a reason for the inefficient professional communication. A good number of PG Medical students believed that missing patient file and inaccessibility of patient files results a moderate hindrance in proper professional communication. A considerably good number of PG Medical students felt inadequate library resources act as a moderate barrier in professional communication and a good

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number of PG Medical students were in the opinion that lack of ICT equipment for communication is moderate barrier in the professional communication activities. t test analysis shows that there is no significant difference between barriers in professional communication faced by PG Medical students and their gender and their department. That is the barriers in professional communication faced by PG Medical students do not significantly vary with gender as well as department of the PG Medical students.

5.37 Factors hinder the use of ICT Equipment

Information and Communication Technology (ICT) has turn into a key tool in the provision of health services just as it has made a great influence on other areas. (Zeiler & Fergus, 2013) in his study “Factors That Affect the Use of ICT in Nursing Profession in Ebonyi State Nigeria” listed seven factors that affect the use of ICT in health sectors. These factors are Government’s attitude, electric power supply, cost of ICT equipments, telecommunication facilities, internet connectivity, resistance to new technology, lack of maintenance culture.

5.37.1 Factors hinder the use of ICT Equipment with respect to Gender

In our study PG Medical students were asked to mention the factors that hinder them to use the ICT equipments and the gender wise responses are shown in the Table 5.83.

Table 5.83 depicts that in the opinion of a very good number of (77.12 per cent) male PG Medical students constant break down of the equipments are the major hindering factor that prevent them to use ICT equipments. Half of the (50 per cent) male respondents opined that they face security and privacy issues and nearly half of the male PG Medical students (48.31 per cent) and more than half of the female (51.89 per cent) PG Medial students

responded that inadequate access to ICT facilities are a hindering factor in hospitals.

Table 5.83
Factors Hinder the Use of ICT Equipment with respect to Gender

Factors hinder the use of ICT Equipment	Male	Female
Poor infrastructures provided by hospital	49 (41.53%)	115 (54.25%)
High cost of ICT equipment and services	30 (25.42%)	86 (40.57%)
Poor power supply	3 (2.54%)	49 (23.11%)
Constant break down of equipment	91 (77.12%)	72 (33.96%)
Security/privacy issues	59 (50.00%)	70 (33.02%)
Inadequate access to ICT facilities	57 (48.31%)	110 (51.89%)
Insufficient knowledge on use of ICT	13 (11.02%)	83 (39.15%)

More than half of the female (54.25 per cent) and a considerable number of male respondents (41.53 per cent) were in the opinion that hospitals provide poor infrastructure to them.

It is found that constant break down of the equipments are the major hindering factor that prevent them to use ICT equipments in the opinion of a very good number of male respondents. More than half of the female and a considerable number of male respondents were in the opinion that hospitals provide poor infrastructure to them. Security and privacy issues and inadequate access to ICT facilities are the other major hindering factors reported by the PG Medical students.

5.37.2 Factors hinder the use of ICT Equipment with respect to Department

In our study PG Medical students were asked to mention the factors that hinder them to use the ICT equipments and the department wise responses are shown in the Table 5.84.

Table 5.84

Factors hinder the use of ICT Equipment with respect to Department

Factors hinder the use of ICT Equipment	Clinic	Non-Clinic
Poor infrastructures provided by hospital	121 (47.08%)	43 (58.90%)
High cost of ICT equipment and services	87 (33.85%)	29 (39.73%)
Poor power supply	32 (12.45%)	20 (27.40%)
Constant break down of equipment	132 (51.36%)	31 (42.47%)
Security/privacy issues	105 (40.86%)	24 (32.88%)
Inadequate access to ICT facilities	134 (52.14%)	33 (45.21%)
Insufficient knowledge on use of ICT	77 (29.96%)	19 (26.03%)

Table 5.84 depicts that constant break down of the equipments (51.36 per cent) and inadequate access to ICT facilities (52.14 per cent) are the major factors that prevent clinical PG Medical students to use ICT equipments. More than half of the non-clinical PG Medical students (58.90 per cent) and a nearly half of the clinical students (47.08 per cent) opined that hospital provides poor infrastructure to them. It is seen than only a few clinical (29.96 per cent) and non-clinical (26.03 per cent) PG Medical students reported that they lack knowledge on use of ICT.

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It is found that that constant break down of the equipments and inadequate access to ICT facilities are the major factors that prevent clinical PG Medical students to use ICT equipments. More than half of the non-clinical PG Medical students and a nearly half of the clinical students opined that hospital provides poor infrastructure to them.

5.38 Suggestions to improve Professional Communication

Taking steps to improve professional communication in healthcare setting will build a better environment. These steps include incorporating effective communication in organization's mandatory training program, make communication part of organization's culture, implement patient satisfaction surveys, schedule regular meetings for staffs, and utilize technology when appropriate. ("Five Steps to Improve Communication Between Your Healthcare Staff and Patients", 2018). Technology has an important role in enhancing communication in health sector by improving connectivity and facilitating information flow.

PG Medical Students were asked to express their suggestions to improve the professional communication in their institutions. The details given by the respondents are tabulated below.

Analysis of the Table 5.85 shows that majority of the PG Medical students (83.93 per cent) agreed the fact that providing better internet connectivity in the hospital will improve the professional communication in the hospital. The second most suggestion was to train doctors on the use of ICT equipments (73.93 per cent). In the opinion of 69.09 per cent PG Medical students providing better qualified staff in medical record department is necessary for the efficient professional communication.

Table 5.85

Suggestions to improve Professional Communication

Sl. No	Suggestions to improve Professional Communication	Agree	Neutral	Disagree
1.	Provide better Medical college library	210 (63.6 %)	100 (30.30%)	20 (6.06%)
2.	Provide health education for patients	216 (65.45%)	108 (32.72%)	6 (1.81%)
3.	Provide better qualified staff in medical record department	228 (69.09%)	102 (30.90%)	-
4.	Provide better internet connectivity in hospital	277 (83.93%)	49 (14.84%)	1 (0.30%)
5.	Train doctors on the use of ICT equipments	244 (73.93%)	84 (25.45%)	2 (0.60%)
6.	Provide better qualified staff in the Medical college library	226 (68.48%)	103 (31.21%)	1 (0.30%)
7.	Develop new communication pathways	224 (67.87%)	103 (31.21%)	3 (0.90 %)

A good number of PG Medical students (68.48 per cent) opined to provide better qualified staff in the Medical college library and a good number of PG Medical Students (67.87 per cent) suggested developing new communication pathways. Another good number of PG Medical students (65.45 per cent) were suggested to provide health education for patient in order to improve the professional communication in their institution and a considerably good number of (63.60 per cent) opined for better Medical college library.

The suggestions given by PG Medical students were again analyzed using t test to understand whether there is any difference between the suggestions given by the PG students and their gender. Results of the analysis is give3mn in the Table 5.86.

Table 5.86

Suggestions to improve Professional Communication with respect to Gender

Suggestions to improve professional communication	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	1.2518	.34373	212	1.3457	.38615		

Analysis of the Table 5.86 shows that p value (0.029) of the result is less than 0.05, hence there is a significant difference between suggestions given by the PG students in order to improve professional communication and their gender. That is suggestions given by the PG students in order to improve professional communication vary with the gender of the PG Medical student.

The suggestions given by PG Medical students were also analyzed using t test to understand whether there is any difference between the suggestions given by the PG students and their department. Results of the analysis is given in the Table 5.87.

Table 5.87

Suggestions to improve Professional Communication with respect to Department

Suggestions to improve Professional Communication	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	1.3168	.38151	73	1.2321	.30558		

Analysis of the Table 5.87 shows that p value (0.667) of the result is greater than 0.05; hence there is no significant difference between suggestions

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given by the PG students in order to improve professional communication and their department. That is suggestions given by the PG students in order to improve professional communication does not vary with different departments of the PG Medical students.

The overall analysis of the study shows that majority of the PG Medical students agreed the fact that providing better internet connectivity in the hospital will improve the professional communication in the hospital. The second most opined suggestion was train doctors on the use of ICT equipments. In the opinion of a good number of PG Medical students providing better qualified staff in medical record department is necessary for the efficient professional communication. A good number of PG Medical students also opined to provide better qualified staff in the Medical college library and a good number of PG Medical Students suggested developing new communication pathways. Another good number of PG Medical students were suggested to provide health education for patient in order to improve the professional communication in their institution and a considerably good number of opined for better Medical college library. From the t test it is seen that there is a significant difference between suggestions given by the PG students in order to improve professional communication and their gender. That is suggestions given by the PG students in order to improve professional communication vary with the gender of the PG Medical student. It is also seen that there is no significant difference between suggestions given by the PG students in order to improve professional communication and their department. That is suggestions given by the PG students in order to improve professional communication does not vary with different departments of the PG Medical students.

5.39 Suggestions to improve the use of ICT

It has been cleared that ICT has significant potential to improve the delivery of education. According to Dr. A.V.M Kutty, Registrar and Head of the Department at Sri Devaraj Urs Medical College in Tumkur in the state of Karnataka "Technology extends the productivity of faculty and medical schools to reach students in more efficient ways such as self-paces and distance learning. ("Building capabilities and capacity through ICT for Medical students and schools in India," 2009). Now a days developing countries are trying to strengthen their Health Management Information System (HMIS). Poor economic and communication infrastructure limits the modernization to national and provincial/ region levels. Therefore developing countries have to take deliberate efforts to set up appropriate strategies and policies in the medical field (Daudi, 2008).

Here the respondents were asked to suggest their opinion to improve the use of ICTs in their institutions. The details given are tabulated in Table 5.88.

Table 5.88 depicts that most of the PG Medical students (86.96 per cent) agreed that providing better wireless connectivity will enhance the use of ICTs. Another majority of the PG Medical students (80 per cent) suggested for facilitating easy access to internet. A very good number of PG Medical students (71.81 per cent) suggested conducting ICT training programmes to improve the use of ICTs and a very good number of PG Medical students (71.51 per cent) suggested providing enough ICT equipments/services. In the opinion of a good number of PG Medical students (68.87 per cent) expansion of internet bandwidth is necessary. Considerably good number of PG Medical students (64.54 per cent) suggested for the proper maintenance of ICT equipments. In the opinion of 61.51 per cent PG Medical students

implementation of effective health information system will enhance the use of ICT equipments.

Table 5.88
Suggestions to improve the use of ICT

Sl. No	Suggestions to improve the use of ICT	Agree	Neutral	Disagree
1.	Provide sufficient power supply	194 (58.78%)	133 (40.30%)	3 (0.90%)
2.	Provision of enough ICT equipments/services	236 (71.51%)	93 (28.18%)	1 (0.30%)
3.	Proper maintenance of ICT equipment	213 (64.54%)	111 (33.63%)	3 (0.90%)
4.	Conducting ICT training programs	237 (71.81%)	81 (24.54%)	12 (3.63%)
5.	Implementing an effective health information system	203 (61.51%)	125 (37.87%)	2 (0.60%)
6.	Facilitating easy access to internet	240 (80%)	87 (26.36%)	3 (0.90%)
7.	Provide more computers	191 (57.87%)	138 (41.81%)	7 (2.12%)
8.	Expansion of internet bandwidth	227 (68.87%)	92 (27.87%)	11 (3.33%)
9.	Employee more IT personnel	143 (43.33%)	157 (47.57%)	30 (9.09%)
10.	Increase budget allocation to ICT	190 (57.57%)	134 (40.60%)	6 (1.81%)
11.	Provide better wireless connectivity	287 (86.96%)	37 (11.21%)	6 (1.81%)

It is clear that most of the PG Medical students agreed that providing better wireless connectivity will enhance the use of ICTs. Another majority of the PG Medical students suggested for facilitating easy access to internet. A very good number of PG Medical students suggested conducting ICT training programmes to improve the use of ICTs and a very good number of PG Medical students suggested providing enough ICT equipments/services. In the opinion of a good number of PG Medical students' expansion of internet

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bandwidth is necessary. Considerably good number of PG Medical Students suggested for the proper maintenance of ICT equipments.

t test is carried out to find whether there is any difference the suggestions provided by PG Medical students and their gender. Results are given below the Table 5.89.

Table 5.89
Suggestions to improve the use of ICT with respect to Gender

Suggestions to improve the use of ICT	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	1.4445	.36321	212	1.3332	.35310	0.658	.007

Table 5.89 depicts the suggestions to improve the use of ICT with respect to gender. Analysis of the Table shows that p value (0.007) is less than 0.05; hence there is a significant difference in the suggestions provided by PG Medical students and their gender. Means that the suggestions provided by PG Medical students vary with their gender.

Suggestion to improve the use of ICT with respect to department is given in the below Table 5.90.

Table 5.90
Suggestions to improve the use of ICT with respect to Department

Suggestions to improve the use of ICT	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	1.3979	.34759	73	1.2852	.39140	0.546	.018

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Table 5.90 depicts the suggestions to improve the use of ICT with respect to gender. Analysis of the Table shows that p value (0.018) is less than 0.05; hence there is a significant difference in the suggestions provided by PG Medical students and their department. Means that the suggestions provided by PG Medical students vary with their department.

The analysis shows that most of the PG Medical students agreed that providing wireless connectivity will enhance the use of ICTs. Another majority of the PG Medical students suggested for facilitating easy access to internet. A very good number of PG Medical students suggested conducting ICT training programmes to improve the use of ICTs and a very good number of PG Medical students suggested providing enough ICT equipments/services. In the opinion of a good number of PG Medical students' expansion of internet bandwidth is necessary. Considerably good number of PG Medical Students suggested for the proper maintenance of ICT equipments. From the t test it is seen that there is a significant difference in the suggestions provided by PG Medical students and their gender and department. Means that the suggestions provided by PG Medical students vary with their gender as well as department.

5.40 Communication Satisfaction by the PG Medical Students

For the effective functioning of any organisation internal communication as well as employee and communication satisfaction has to be exercised. Communication satisfaction is “the satisfaction with various aspects of communication in an organization it includes the communication climate, organizational integration of messages between layers and divisions in the organization, media quality, nature and impact of peer to peer communication, understanding of key messages etc.(“Communication satisfaction in the organisation,” 2013)

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Here the PG Medical students were asked to express their communication satisfaction with colleagues, with other health professionals, with Patients/Patient's relatives, with teachers / research scholars /administrative people like H.O.D, Principal etc, Interdisciplinary communication, with other hospitals/organizations and with general public. The details are given in the Table 5.91.

Table 5.91
Communication Satisfaction by the PG Medical Students

Sl. No	Communication Satisfaction	Fully satisfied	Moderately satisfied	Not satisfied
1.	Communication with colleagues	232 (70.30%)	93 (28.18%)	5 (1.51%)
2.	Communication with other health professionals	84 (25.45%)	231 (70%)	15 (4.54%)
3.	Communication with Patients/Patient's relatives	137 (41.51%)	171 (51.81%)	22 (6.66%)
4.	Communication with teachers / research scholars /administrative people like H.O.D, Principal etc	127 (38.48%)	178 (53.93%)	25 (7.57%)
5.	Interdisciplinary communication (Communication with other Departments)	64 (19.39%)	196 (59.39%)	70 (21.21%)
6.	Communication with other hospitals/organisations	62 (18.78%)	159 (48.18%)	109 (33.03%)
7.	Communication with general public.	63 (19.09%)	169 (54.21%)	98 (29.69%)

From the analysis of Table 5.91 it can be seen that most of the PG Medical students (70.30 per cent) are fully satisfied in communication with colleagues. Only a very few (1.51 per cent) reported that they are not satisfied in communication with colleagues. Most of the PG Medical students (70 per cent) are moderately satisfied in communication with other health professionals. Only 25.45 per cent PG Medical students opined that they are fully satisfied in communication with other health professionals. More than

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half of the PG Medical students (51.81 per cent) are moderately satisfied in communication with Patients/Patient's relatives. A considerably good number of PG Medical students (41.51 per cent) are fully satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students (53.93 per cent) reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students (59.39 per cent) are moderately satisfied in interdisciplinary communication. It is seen that 21.21 per cent of the PG Medical students are not satisfied in interdisciplinary communication. Nearly half of the PG Medical Students (48.18 per cent) reported that they are moderately satisfied with in Communication with other hospitals/organizations. A considerably good number of PG Medical students (33.03 per cent) are not satisfied in Communication with other hospitals/organizations. More than half of the PG Medical students (54.21 per cent) reported that they are moderately satisfied in communication with general public.

From the analysis it is seen that most of the PG Medical students are fully satisfied in communication with colleagues and most of the PG Medical students are moderately satisfied in communication with other health professionals. More than half of the PG Medical students are moderately satisfied in communication with Patients/Patient's relatives. It is also seen that considerably good number of PG Medical students are fully satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students are moderately satisfied in interdisciplinary communication. Nearly half of the PG Medical students reported that they are moderately satisfied with in communication with other hospitals/organizations. A considerably good number of PG

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Medical students are not satisfied in communication with other hospitals/organizations. More than half of the PG Medical students reported that they are moderately satisfied in communication with general public.

Communication satisfaction of PG Medical students with respect to gender is analyzed using t test and is given in the below Table 5.92.

Table 5.92

Communication Satisfaction with respect to Gender

Communication Satisfaction	Gender						t value	P value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	2.1223	.29784	212	2.2183	.48488		

Analysis of the Table 5.92 shows that p value of the t test is 0.051 is less than or equal to 0.05, hence it indicates that there is a significant difference between communication satisfaction of PG Medical students and gender. Means that communication satisfaction of PG Medical student vary with their gender.

Communication satisfaction of PG Medical students with respect to gender is analyzed using t test and is given in the below Table 5.93.

Table 5.93

Communication Satisfaction with respect to Department

Satisfaction in Communication	Department						t value	P value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	2.2151	.43156	73	2.0744	.40624		

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Analysis of the Table 5.93 shows that p value of the t test is 0.013 is less than or equal to 0.05, hence it indicates that there is a significant difference between communication satisfaction of PG Medical student and department. Means that communication satisfaction of PG Medical student vary with their department.

The overall analysis of indicates that most of the PG Medical students are fully satisfied in communication with colleagues and most of the PG Medical students are moderately satisfied in communication with other health professionals. More than half of the PG Medical students are moderately satisfied in communication with Patients/Patient's relatives. It is also seen that considerably good number of PG Medical students are fully satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students are moderately satisfied in interdisciplinary communication. Nearly half of the PG Medical students reported that they are moderately satisfied with in Communication with other hospitals/organizations. A considerably good number of PG Medical students are not satisfied in Communication with other hospitals/organizations. More than half of the PG Medical Students reported that they are moderately satisfied in communication with general public. The test analysis shows that there is a significant difference between communication satisfaction of PG Medical student and gender and department. Means that communication satisfaction of PG Medical student vary with their gender as well as department.

5.41 Satisfaction with ICT provision

The reason behind the implementation of knowledge management in healthcare is to improve the quality of diagnosis to patients, efficient and

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effective information management, help in undergoing medical research, and this quality will be provided by introducing information technology solutions (Itumalla, 2012). Thus the communication satisfaction with these ICTs is a significant measure of healthcare quality. Here PG Medical Students were asked to express their communication satisfaction with ICT provision in their institution. The results are summarized in the Table 5.94.

Table 5.94
Satisfaction with ICT provision

Satisfaction with ICT provision	Level of Satisfaction		
	Fully satisfied	Moderately satisfied	Not satisfied
	19 (5.75%)	210 (63.63%)	101 (30.60%)

From Table 5.94 it is found that most of the PG Medical students (63.63 per cent) are moderately satisfied with the current ICT provision in their institution. A considerably good number of PG Medical students (30.60 per cent) are not satisfied with the current ICT provision in their institution. Only a few PG Medical students (5.75 per cent) reported that they are fully satisfied with the current ICT provision in their institution.

It is cleared that most of the PG Medical students are moderately satisfied with the current ICT provision in their institution. A considerably good number of PG Medical students are not satisfied with the current ICT provision in their institution. Only a few PG Medical students reported that they are fully satisfied with the current ICT provision in their institution.

Satisfaction of PG Medical students regarding the ICT provision in Medical colleges with respect to gender is analyzed using t test is given in the below Table 5.95.

Table 5.95

Satisfaction with ICT provision with respect to Gender

Satisfaction with ICT provision in the hospital	Gender						t value	p value
	Male			Female				
	N	Mean	SD	N	Mean	SD		
	118	1.6017	.57199	212	1.8302	.51465	-3.713	.000

Table 5.95 depicts the satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to gender. Here the p value (0.00) is less than 0.05 that means there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to gender. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their gender.

Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to department is analyzed using t test is given in the below Table 5.96.

Table 5.96

Satisfaction with ICT provision with respect to Department

Satisfaction with ICT provision in the hospital	Department						t value	p value
	Clinic			Non-Clinic				
	N	Mean	SD	N	Mean	SD		
	257	1.7160	.56687	73	1.8630	.45077	-2.040	.042

Table 5.96 depicts the satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to department. Here the p value (0.042) is less than 0.05 that means there is a significant difference in satisfaction of PG Medical students regarding the ICT provision in Medical

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colleges with respect to department. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their department.

The overall analysis reveals that most of the PG Medical students are moderately satisfied with the current ICT provision in their institution. A considerably good number of PG Medical students are not satisfied with the current ICT provision in their institution. Only a few PG Medical students reported that they are fully satisfied with the current ICT provision in their institution. From t test analysis it can be seen that there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical colleges with respect to gender and department. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their gender as well as department.

5.42. Conclusion

Study revealed that most of the PG Medical students regularly take part in communication activities in the hospital. PG Medical students always take part in professional communication for the purpose of sharing professional knowledge. Almost all PG Medical students takes part in CME programmes irrespective of their gender and department. Majority of the PG Medical students depends on face-to-face communication in order to communicate with colleagues with other health professionals, with patients and patients' relatives, and with Teachers/research scholars /administrative people, with interdisciplinary communication, with general public. Almost all of the male and female PG Medical Students possess smart phones and a very good of them own laptops. All of the PG Medical Students make use of ICT for communication purposes irrespective of their gender and department. Majority of the PG Medical students access internet through their personal devices. Most of the PG Medical students prefer their smart phones to access internet. Majority of the PG Medical students reported that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical students is that it helps

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them to improve professional knowledge. More than half of the PG Medical students always access clinical information and educational information with the help of ICT. Career information is the second most accessed information with the help of ICT. Constant break down of the equipments, poor infrastructure provided by the hospitals, Lack of patient awareness in understanding medical terms, lack of cooperation among health professionals are the major hindering factor that prevent them in professional communication activities. Most of the PG Medical students are moderately satisfied with the current ICT provision in their institution for communication.

It can be concluded that PG Medical students in Government Medical Colleges in Kerala regularly take part in communication activities for which they depend on face to face method more than other electronic communication channels. It is found that PG Medical students are not generally enquire the socio-economic background of the patients. Since socio economic status is linked with many health problems and accessibility of good treatment physicians should take initiatives to enquire the background of the patient to provide better patient care. It is also seen that most of the PG students prefer their smartphone to access internet. Since accessing internet through mobile sometimes create problems in areas like downloading and many features may not be available to mobile view, it may create problems in getting needed information. Constant break down of the equipments, poor infrastructure provided by the hospitals, lack of patient awareness in understanding medical terms, lack of cooperation among health professionals are the major hindering factor that prevent them in professional communication activities. Most of the PG Medical students are moderately satisfied with the current ICT provision in their institution for communication.

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Chapter **6**

**SUMMARY OF FINDINGS AND
CONCLUSION**

6.1 Introduction

6.2 Major finding

6.3 Tenability of hypotheses

6.4 Suggestions for further research

6.5 Conclusion

6.1 Introduction

This chapter summaries the overall results of the analysis of the professional communication of Post Graduate Medical Students in Government Medical Colleges in Kerala discussed in the chapter 5, followed by tenability of hypotheses, suggestions and conclusion.

6.2 Major Findings

The data collected were analyzed and the major findings revealed from the analysis of data are summarized below:

6.2.1 General Information

1. The majority of the Post Graduate Medical Students in Government Medical Colleges in Kerala are within the age group of 25-30. About 10.61 per cent of them are within the age group 30-35 and a very few of them are below the age 25 and above the age 35.
2. The majority of the Post Graduate Medical students belong to clinical departments and a few of them belongs to non-clinical department.
3. The majority of the respondents in Post Graduate Medical Students in Government Medical Colleges in Kerala are female and nearly two fifth of the post graduate medical students are male.

6.2.2 Frequency of Professional Communication activities of PG Medical Students

4. Most of the respondents always communicate with their colleagues. Most of the PG Medical students reported that they often communicate with other health professionals. Nearly half of the PG Medical students always communicate with the patients and their relatives regarding the health issues. More than half of the PG Medical students often share

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information and ideas with teachers/research scholars / administrative people etc. Only a very few of PG Medical students always take part in interdisciplinary communication. Nearly half of the respondents opined that they sometimes take part in Communication with other hospitals/organizations and a considerably good number of respondents only sometimes communicate with general public.

5. The study revealed that there is a significant gender difference in professional communication activities of the PG Medical students. That is the frequency of taking part in communication activities depends on the gender of the PG Medical Students.
6. Also it is revealed that there is a significant departmental difference in professional communication activities of the PG Medical students. That is the frequency of taking part in communication activities also depends on the department of the PG Medical Students.

6.2.3 Communication Channels used by PG Medical Students

7. The majority of the PG Medical students depend on face-to-face communication in order to communicate with colleagues, other health professionals, patients and patients' relatives, Teachers/research scholars /administrative people, interdisciplinary communication and with general public. Even though mobile phones, email, video conferencing allow easy way to communicate face to face communication ensures the effectiveness of a communication in a workplace. In this study it is found that majority of the PG Medical students depends on face-to-face communication which is considered as the most effective way of communication.

Summary

8. It is identified that in order to communicate with other hospitals and organizations more than half of the PG Medical students use mobile phones. It is seen that posters are the second most used communication channels used by the PG Medical students to communicate with the general public.
9. Mobile phones are reported as the second most used communication channels to communicate with colleagues, other health professionals, patients and relatives, teachers/research scholars /administrative people, interdisciplinary communication. It is seen that nearly half of the PG Medical students communicate through social media, followed by email and discussion groups.
10. A considerably good number of PG Medical students use email to communicate with other health professionals. Nearly half of the PG Medical students use email service to make communication with teachers/research scholars/administrative people etc. From the analysis it is seen that a considerably good number of PG Medical students communicate with the general public through announcements. Personal websites and video conference are the least used communication channels by the majority of the PG Medical students.

6.2.4 Purpose of Professional Communication by the PG Medical Students

11. The majority of the male PG Medical students always take part in professional communication for the purpose of sharing professional knowledge. A good number of female PG Medical students also always share professional knowledge. It is seen that only a few male PG Medical students discuss patient cases whereas the majority of the female PG Medical students discuss patient cases. A considerable

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number of male and female PG Medical students always take part in professional communication activities in case of admitting discharging matters. Nearly half of the male PG Medical students often ask/give second opinion. Whereas only a few female PG Medical students often ask/give second opinion.

12. It is noted that a very few female PG Medical students rarely share professional knowledge and a very few female PG Medical students reported that they rarely take part in professional communication activities in case of admitting discharging matters. A negligible number of female PG Medical students opined that they never discuss patient cases, consult for admitting/discharging, give/ask for second opinion.
13. The majority of the male PG Medical students and a good number of female PG Medical students always share professional knowledge. A considerably good number of male PG students often discuss patient cases and a good number of female PG students always discuss patient cases.
14. It is seen that that there is no significant difference between purpose of communication and gender of Post Graduate Medical Students. That is whether it is male or female it does not affect the purpose for which they take part in professional communication.
15. More than half of the clinical PG Medical Students always share professional knowledge. Whereas only a considerable number of the PG Medical Students in non-clinical department always do so.
16. It is seen that there exist a significant difference between purpose of professional communication and department. That is purpose of taking

part in professional communication varies on the basis of department of the PG Medical students.

6.2.5 Enquiry of Socio-economic background of the Patients

17. A very good number of the male and majority of female PG Medical students do not enquire the socio-economic background of the patients. Only a few male and female PG Medical Students reported that they never seek socio-economic background of the patients. It is found that PG Medical Students are not generally enquire the socio-economic background of the patients. Since socio economic status is linked with many health problems and accessibility of good treatment physicians should take initiatives to enquire the background of the patient to provide better patient care.
18. The study reveals that there is a significant association between the gender and enquiry of socio economic background of the patients. That is it establishes that whether the PG Medical students enquire about the socio-economic background of the patients depends on the gender of the PG Medical students.
19. Majority of the clinical and non-clinical PG Medical students do not enquire the socio-economic background of the patients. Only a few clinical and female PG Medical students reported that they seek socio-economic background of the patients.
20. It is seen that there is no significant association between the department and enquiry of socio economic background of the patients. That is the tendency to ask socio economic background about the patients do not depend on the department of PG Medical students.

6.2.6 The Usefulness of Socio-economic background of the Patients

21. More than half of the male PG Medical students found enquiring socio-economic background of the patients moderately useful in diagnosis. Nearly half of the female of the PG Medical students also opined that socio-economic background of the patients moderately useful in diagnosis.
22. More than half of the clinical PG Medical students and a good number of non -clinical PG Medical students found enquiring the socio-economic background of the patients moderately useful in diagnosis.

6.2.7 Frequency of Follow-Up after Discharge

23. Half of the female and nearly half of the male reported that they rarely follow-up patients after discharging. Nearly half of the male PG Medical students never follow-up the patients after discharge. Whereas only a few male and female PG Medical students occasionally follow-up the patients after discharge. A very few male and female PG Medical students reported that they regularly follow-up the patients after discharge. Since follow up gives chance to check on patient's progress it will help to clear the misunderstandings and can make further assessment and treatment. Here nearly half of the PG Medical students reported that they rarely follow up after discharge, which will negatively affect the better patient outcome.
24. The study revealed that there is no significant association between the gender and frequency of follow up after discharge. It establishes that frequency of follow up after discharge does not depends on the gender of the PG Medical students.

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25. Nearly half of the clinical PG Medical students never follow-up the patients after discharge. Whereas half of the clinical and nearly half of the non-clinical PG Medical students reported that they rarely follow-up patients after discharging. Only a few clinical PG Medical students reported that they occasionally follow-up the patients after discharge. A considerable number of non-clinical PG Medical students reported that they occasionally follow-up the patients after discharge. A very few non-clinical PG Medical students reported that they regularly follow-up the patients after discharge.
26. The study revealed that there is a significant association between the department and frequency of follow up after discharge. It establishes that the frequency of follow up after discharge depends on the department of the PG Medical students.

6.2.8 The Methods preferred to Follow-Up the by PG Medical Students

27. Most of the male PG Medical students prefer to follow-up patients through direct meet. Majority of the female PG Medical students also prefer to follow-up patients through direct meet. The second most preferred follow up method used by PG Medical students is phone calls.
28. Most of the clinical PG Medical students prefer to follow-up patients through direct meet. Majority of the non-clinical PG Medical students also prefer to follow-up patients through direct meet. The second most preferred follow up method used by both clinical and non-clinical PG Medical Students is phone calls.

6.2.9 Factors hindering the Communication with Patients/Patient relatives

29. More than half of the PG Medical students opined that, sometimes patients are unable to read the discharging/referral letters. A good number of PG Medical Students opined that Language problem in communicating with patients / relatives and Misunderstandings in non-verbal communication (symbol, signs, actions etc.) rarely act as a hindrance in communication. . A considerably good number of PG Medical students opined that they often feel the lack of patient awareness about medical terms act as a hindrance in communication.
30. It reveals that there is no significant difference between gender and hindrance in communication. .That is factors hinder the communication does not vary according to the gender of the PG Medical students.
31. It is also shows that there is a significant difference between department and hindrance in communication. This may be due to the fact that clinical PG students are more frequently contact with patients so they must face more hindrance to communicate with patients and their relatives.

6.2.10 Participation in Continuing Medical Education Programmes

32. Almost all the male and female PG Medical students participate in CME Programmes. A negligible male PG Medical students and female PG Medical Students reported that they never participate in CME Programmes. Participation in CME programmes has a positive impact on physician performance. It is found that majority of the PG Medical students in clinical department and all the PG Medical students in non-clinical department take part in CME programmes.

33. The majority of the PG Medical students in clinical department participate in CME programmes. A negligible number of PG Medical students in clinical department reported that they do not participate in CME programmes. In non-clinical department it is reported that all of the PG Medical students take part in CME programmes.

6.2.11 Types of Continuing Medical Education Programmes

34. The majority of the male PG Medical students and female PG Medical student participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of male PG Medical students and female PG Medical students is workshops and seminars in their hospitals.
35. The majority of the clinical PG Medical students and non-clinical PG Medical students participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of clinical PG Medical students is attending workshops and seminars in their hospitals. Majority of non-clinical students also reported that they attend workshops/seminars in their hospitals.

6.2.12 Frequency of participation in CME Programmes

36. A good number of male and female PG Medical students occasionally participate in CME Programmes and a considerably good number of male and female PG Medical students regularly participate in CME Programmes. A negligible number of male reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

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37. A good number of clinical and more than half of non-clinical PG Medical students occasionally participate in CME Programmes and more than quarter of clinical and a good number of non-clinical PG Medical students regularly participate in CME Programmes. A negligible number of clinical reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

6.2.13 Presentations in CME Programmes

38. A good number of male PG Medical students and more than half of the female PG Medical students presents papers in CME Programmes.
39. Nearly two third of clinical PG Medical students presents papers in CME Programmes. More than half of the non-clinical PG Medical students also presents papers in CME Programmes. More than one third of the clinical PG Medical students never participate in CME Programmes and a considerably good number of non-clinical PG Medical students also never participate in CME Programmes.

6.2.14 Channels used to Present Findings/Papers in CME Programmes

40. Conference paper and journal article are the most preferred channels used by PG Medical students with respect to gender in order to present their findings or works in CME programmes.
41. Conference paper and journal article are the most preferred channels used by PG Medical students with respect to department in order to present their findings or works in CME programmes.

6.2.15 Motivation by the Institution to take part in CME Programmes

42. The majority of the male PG Medical students and female PG Medical students their institutions are motivating them to take part in CME

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Programmes. A very few number of male PG Medical students and female PG Medical students reported that their institutions are not motivating them to take part in CME Programmes.

43. The majority of the clinical PG Medical students and non-clinical PG Medical students their institutions are motivating them to take part in CME Programmes. A meagre clinical PG Medical students and non-clinical PG Medical students reported that their institutions are not motivating them to take part in CME Programmes.

6.2.16 Initiatives taken by the Institutions

44. The majority of the male PG Medical students and majority of the female PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A very few number of male PG Medical students and a very few number of the female PG Medical students reported that their institutions are giving stipend to take part in CME Programmes.
45. The majority of the clinical PG Medical students and a very good number of the non-clinical PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A meagre clinical PG Medical students and a few number of the non-clinical PG Medical students reported that their institutions are giving stipend to take part in CME Programmes.

6.2.17 Frequency of use of Resources to get details of Patients and their Diseases

46. Most of the PG Medical students always depends on patients to get details of patients and their diseases. More than half of the PG Medical students gets details of patients and their diseases from patient's

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relatives. A good number of the PG Medical students sometimes rely on nurses to get information related to patients and their diseases. More than half of the PG Medical students sometimes depends on other health professionals to get information related to patients and their diseases.

47. It is seen that there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their gender. That is, there is a significant difference in the frequency of use of resources to get details of patients and their diseases between the male and female PG Medical students.
48. It is seen that there is a significant difference between frequency of use of resources to get details of patients and their diseases with respect to their department. That is the frequency of use of resources to get details of patients differ according to the departments of PG Medical students.

6.2.18 Purpose for which PG Medical Students need Information

49. It is seen that PG Medical students need information mainly to provide better patient care and to aid treatment for the patients irrespective of their gender and department.

6.2.19 Frequency of use of Resources for Patient Care

50. A good number of PG Medical students depends on their colleagues at work to provide better patient services. A considerable number of the PG Medical Students often depends on their colleagues at work to provide better patient services. A considerable number of PG Medical Students sometimes consult library collection in order to find information to provide effective patient care. More than half of the PG

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Medical students always use medical text books for the purpose of providing better patient care. More than half of the PG Medical students often use medical text books for the purpose of providing better patient care. It is seen that only a considerable number of PG Medical students often depends on online medical journals to find information. A considerably good number of PG Medical students often use medical databases for the purpose of finding information. It is seen that a good number of PG Medical students never depends on radio to attain valuable information. It is also seen that only a considerable number of PG Medical students sometimes depends on television to get information for patient care. A considerably good number of PG Medical students always use computer and internet) to get information for providing better patient care. Only a very few PG Medical students always relay on CD ROMS and DVDs

51. Study revealed there is a significant difference between the frequency of use of information sources and the gender of PG Medical students. That is the frequency of use of information sources vary according to whether the PG Medical students are male or female.
52. It is also seen that there is no significant difference between the frequency of use of information sources and the department of PG Medical students. That is the frequency of use of information sources does not vary on different departments.

Part - 6: Information and Communication Technology (ICT)

6.2.20 Ownership of ICT Equipments

53. Almost all of the female PG Medical students and male PG Medical Students possess smart phones and a very good number of male PG Medical students and a very good number of female PG Medical

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students reported that they own laptops. More than half of the male PG Medical students owned desktop computers. It is also seen that more than half of the male PG Medical students still use ordinary mobile phones whereas only a very few female PG Medical students use ordinary mobile phones.. It is also seen that a good number of male PG Medical students have tablet computers.

54. A lion's share of the clinical PG Medical students and most of the non-clinical PG Medical Students possess smart phones and a very good number of clinical PG Medical students and a good number of non-clinical PG Medical Students reported that they own laptops. A considerably good number of the clinical PG Medical students owned desktop computers whereas only a considerable number of the non-clinical PG Medical students own desktop computers. It is also seen that a considerable number of clinical PG Medical students still use ordinary mobile phones whereas only a meager non-clinical PG Medical students use ordinary mobile phones. It is also seen that nearly two fifth of clinical PG Medical Students have tablet computers whereas only a considerable number of non-clinical PG Medical students have tablet computers.

6.2.21 Use of ICT for Communication Purpose

55. All of the PG Medical students make use of ICT for communication purposes irrespective of their gender and department.

6.2.22 Usage of Internet

56. The majority of the male PG Medical students and a good number of the female PG Medical Students are using internet more than 4 years

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57. More than half of the respondents in clinical department and a good number of respondents in non- clinical department reported that they have been using internet above 4 years.

6.2.23 Time spent in search of Information and Communication

58. More than half of the male PG Medical students spent about 1 hour in search of information and its communication and a good number of female PG Medical students also spent about 1 hour in search of information and its communication. A considerably good number of male PG Medical students spent more than 1 hour in search of information and its communication. Whereas only a few female PG Medical students spent more than 1 hour in search of information and its communication. Chi square analysis shows that there is a significant difference between the gender and time spent in search of information by PG Medical students. That is time spent in search of information varies with the gender of PG Medical students.
59. Nearly half of the clinical PG Medical students spent about 1 hour in search of information and its communication and more than half of non- clinical PG Medical students also spent about 1 hour in search of information and its communication. Only a few PG clinical and non-clinical Medical students reported that they spent only 15 minutes in search of information and its communication. Chi square analysis shows that there is no significant difference between the department and time spent in search of information and communication by PG Medical students. That is time spent in search of information do not vary with the department of PG Medical students.

6.2.24 Place of accessing Internet

60. Most of the male PG Medical students and female PG Medical students use internet through personal devices. The second most place of accessing internet by the male PG Medical students is from home. The second most used way of accessing internet by the female PG Medical students is also from home.
61. Nearly three fourth of the clinical PG Medical students use internet through personal devices and from home. Most of the non-clinical PG Medical students reported that they access internet from personal devices. The second most used way of accessing internet by the non-clinical PG Medical students is from department

6.2.25 Methods of accessing Internet

62. The majority of the male and female PG Medical students access internet through their personal devices. A considerably good number of male and female PG Medical students reported that they access internet through WiFi connection.
63. Around three fourth of the clinical and non- clinical PG Medical students access internet through their personal devices. Around one third of clinical and non -clinical PG Medical students access internet through WiFi connection. Only a few clinical PG Medical students and one third of the non- clinical PG Medical Students reported that they access internet through broadband connection.

6.2.26 Devices used to access Internet

64. Most of the male and female PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by male and female PG Medical students. Accessing

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internet through mobile sometimes create problems in areas like downloading and many features may not be available to mobile view. These create problems in getting needed information.

65. Most of the clinical and non - clinical PG Medical students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by clinical and non - clinical PG Medical students. A quarter of clinical and a meagre non-clinical PG Medical students prefer desktops. A few clinical and non-clinical PG Medical students prefer tablets.

6.2.27 Reasons for using ICT Equipments

66. The majority of the PG Medical students opined that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical Students is that it helps them to improve professional knowledge. It is seen that a good number of PG Medical Students opined that ICT equipments save time and a good number of PG Medical students always use ICTs since they are easy to use. More than half of the PG Medical students opined that they always depends on ICTs since it eases communication. More than half of the PG Medical students often use ICTS because it improves clinical decision making.
67. It is found that there is a significant relation between reasons of using ICT equipments and the gender of the PG Medical students. That is reasons of using ICT equipments varies with the gender of the PG Medical students.
68. It is also found that there is a significant relation between reasons of using ICT equipments and the department of the PG Medical students.

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That is reasons of using ICT equipments varies with the different departments of the PG Medical students.

6.2.28 Purposes of using ICT Equipments

69. Most of the PG Medical students always use ICT equipments for presentation purposes. Communication is the second most purpose for which PG Medical students use ICT equipments. A good number of PG Medical students always use ICT equipments to keep up to date. It is seen that a very good number of PG Medical students often use ICT equipments to facilitate decision making. Nearly half of the PG Medical students mentioned that they often use ICTs for data/record management. A good number of PG Medical students often use ICT equipments for distance education.
70. From the study it is revealed that there is a significant difference in the purposes of using ICT equipments with respect to gender. That is the purpose of using ICT equipments vary with the gender of the PG Medical students
71. It is also seen that there is no significant difference between purposes of using ICT equipments with respect to department. That is the purpose of using ICT equipments does not vary with the PG Medical students in different departments.

6.2.29 Frequency of use of accessing Information with the help of ICT

72. More than half of the PG Medical students always access clinical information and educational information with the help of ICT. Career information is the second most accessed information with the help of ICT. A considerable number of PG Medical students sometimes access administrative information with ICTs. From the analysis it is seen that

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a considerably good number of PG Medical students reported that they rarely access legal issues in medical field using ICTs. Only few respondents reported that they never access clinical information using ICTs.

73. It is revealed that there is a significant difference between frequency of accessing information using ICT and the gender of the students and their department. That is frequency of accessing information using ICT varies with the gender as well as department of the PG Medical students.

6.2.30 Frequency of use of ICT Equipments

74. The majority of the PG Medical students always use mobiles phones. More than half of the PG Medical students always use computers and laptops. A considerable number of PG Medical students sometimes make use of LCD projectors. A good number of PG Medical students rarely use radio, CD/DVD, Video technology, Scanners. Half of the PG Medical Students reported that they sometimes use printers. A good number of PG Medical students rarely make use of fixed line telephones. More than half of the PG Medical students reported that they never use fax in their activities.
75. It is seen that there is no significant relation between frequency of use ICT equipments and the gender of PG Medical students. It is also seen that there is a significant relation between frequency of use ICT equipments and the department of the PG Medical students. That is whether the PG Medical students are male or female, it does not affect the frequency of use of ICT equipments and the frequency of use of ICT equipments by PG Medical students vary with different departments.

6.2.31 Use of Social Networking Sites

76. The majority of the male and female PG Medical students use social networking sites to share/exchange/communicate information with others. Since usage of social networking sites by the general public has increased it will be a good step if health professionals share information, educate and interact with patients and colleagues. It will definitely motivate patients to take care of their health.
77. The majority of the clinical and all of the non-clinical and non-clinical PG Medical students use social networking sites to share/exchange/communicate information with others.

6.2.32 Types of Social Networking Sites

78. The majority of the male and female PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and a very good number of male PG Medical students and female PG Medical students use face book to share/exchange/communicate information with others. Nearly half of the male PG Medical students mentioned the use of youtube to share/exchange/communicate information with others. It is also noted that only a few male and female PG Medical students use twitter services.
79. The majority of the clinical and all of the non-clinical PG Medical students make use of whatsapp in order to share/exchange/communicate information with others and two third of clinical PG Medical students and non-clinical PG Medical students use facebook to share/exchange/communicate information with others. Nearly quarter of the clinical PG Medical students mentioned the use of youtube to share/exchange/communicate information with others where as two

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fifth of the non-clinical PG Medical students reported that they use youtube to share/exchange/communicate information with others. It is also noted that only a few clinical and non-clinical PG Medical students use twitter services.

6.2.33 Strategies taken by the Institutions to facilitate better Communication

80. The majority of male and female PG Medical students agreed that their institution provides e-journals/e-resources. A good number of male and female PG Medical students opined that there are available range of ICT infrastructures in their institution. In the opinion of a good number of male and female PG Medical students reported that they have access to computer databases. Half of the male and a considerably good number of female PG Medical students expressed that their computer labs are connected to internet. It is seen that a very good number of female PG Medical students agreed that their library purchase new books whereas only a considerable number of male PG Medical students agreed that their library purchase new books. It is found that only a few male and female PG Medical students reported that they have electronic patient records. Half of the female respondents reported that training and workshops are conducted by institution where as only a few male respondents agreed to this statement. Only a few male and a very few female reported that there is telemedicine facility and a very few male and female opined that they have teleconsultation facility. A considerably good number of male and female PG Medical students pointed out that there is good wireless connectivity in their institution.
81. The majority of clinical and a good number of non-clinical PG Medical students agreed that their institution provides e-journals/e-resources. A

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good number of clinical and non-clinical PG Medical students opined that there are available ranges of ICT infrastructures in their institution. In the opinion of a two third of clinical and more than half of the non-clinical PG Medical students reported that they have access to computer databases. Around two fifth of the clinical and more than half of non-clinical PG Medical students expressed that their computer labs are connected to internet. It is seen that a considerable number of clinical PG Medical students agreed that their library purchase new books whereas only a considerable number of non-clinical PG Medical students agreed that their library purchase new books. It is found that only a few clinical and non-clinical PG Medical students reported that they have electronic patient records. More than half of the non-clinical respondents reported that training and workshops are conducted by institution where as only around one third clinical respondents agreed to this statement. Only a few clinical and a very few non-clinical reported that there is telemedicine facility and a meager clinical and non-clinical opined that they have teleconsultation facility. Around a quarter of clinical and non-clinical PG Medical students pointed out that there is good wireless connectivity in their institution.

6.2.34 Influence of ICT on Professional Communication

82. Majority of the PG Medical students agreed that ICT has enabled faster access to relevant medical information. The second most influential factor is that ICT enabled access to current information in their field. A very good number of PG Medical students opined that ICT increased ease of communication. A good number of PG Medical students agreed that ICT Facilitated remote consultation, diagnoses & treatment. In the opinion of a good number of PG Medical students ICT bettered the number of publications. Half of the PG Medical students neither agreed

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nor disagreed the fact that ICT reduced face to face interactions. A good number of PG Medical Students reported that ICT enabled quicker medical diagnosis and a good number of PG Medical students opined that ICT increased their job efficiency and ICT has increased collaboration among colleagues.

83. From the analysis it is clear that ICT has a positive influence on PG Medical students. It is also seen that there is no significant difference between the opinion on the influence of ICT on professional communication and their gender. That is whether the PG Medical students are male or female it does not affect their opinion on the influence of ICT on professional communication.
84. It is also found that there is a significant difference between the opinions on the influence of ICT on professional communication and their department. That is the opinion on the influence of ICT on professional communication vary with different departments.

6.2.35 Barriers/Hindrances in Professional Communication

85. Lack of cooperation among health professionals is considered to be a moderate barrier by a good number of PG Medical students. The second most hindrance in professional communication is lack of patient awareness in understanding medical terms. More than half of the PG Medical students opined that information abundance on the Internet act as a moderate barrier in professional communication. Half of the PG Medical students reported that lack of infrastructure is a reason for the inefficient professional communication. A good number of PG Medical students believed that missing patient file and inaccessibility of patient files results a moderate hindrance in proper professional communication. A considerably good number of PG

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Medical students felt inadequate library resources act as a moderate barrier in professional communication and a good number of PG Medical students were in the opinion that lack of ICT equipment for communication is moderate barrier in the professional communication activities. It is seen that there is no significant difference between barriers in professional communication faced by PG Medical students and their gender. That is the barriers in professional communication faced by PG Medical students do not significantly vary with gender of the PG Medical students.

86. It is also seen that there is no relationship between barriers in professional communication faced by PG Medical students and their department. That is the barriers in professional communication faced by PG Medical students do not significantly vary with department of the PG Medical students.

6.2.36 Factors hinder the use of ICT Equipment

87. It is found that constant break down of the equipments are the major hindering factor that prevent them to use ICT equipments in the opinion of a very good number of male respondents. More than half of the female and a considerable number of male respondents were in the opinion that hospitals provide poor infrastructure to them. Security and privacy issues and inadequate access to ICT facilities are the other major hindering factors reported by the PG Medical students.
88. It is also found that constant break down of the equipments and inadequate access to ICT facilities are the major factors that prevent clinical PG Medical students to use ICT equipments. More than half of the non-clinical PG Medical students and a nearly half of the clinical students opined that hospital provides poor infrastructure to them.

6.2.37 Suggestions to improve Professional Communication

89. The majority of the PG Medical students agreed the fact that providing better internet connectivity in the hospital will improve the professional communication in the hospital. The second most suggestion was to train doctors on the use of ICT equipments. In the opinion of a good number of PG Medical students providing better qualified staff in medical record department is necessary for the efficient professional communication. A good number of PG Medical students opined to provide better qualified staff in the Medical college library and a good number of PG Medical students suggested developing new communication pathways. Another good number of PG Medical students were suggested to provide health education for patient in order to improve the professional communication in their institution and a considerably good number of opined for better Medical college library.
90. It is found that there is a significant difference between suggestions given by the PG students in order to improve professional communication and their gender. That is suggestions given by the PG students in order to improve professional communication vary with the gender of the PG Medical student
91. It is also seen that there is no significant difference between suggestions given by the PG students in order to improve professional communication and their department. That is suggestions given by the PG students in order to improve professional communication does not vary with different departments of the PG Medical students.

6.2.38 Suggestions to improve the use of ICT

92. Most of the PG Medical students agreed that providing better wireless connectivity will enhance the use of ICTs. Another majority of the PG Medical students suggested for facilitating easy access to internet. A very good number of PG Medical students suggested conducting ICT training programmes to improve the use of ICTs and a very good number of PG Medical students suggested providing enough ICT equipments/services. In the opinion of a good number of PG Medical students expansion of internet bandwidth is necessary. Considerably good number of PG Medical students suggested for the proper maintenance of ICT equipments.
93. It is revealed that there is a significant difference in the suggestions provided by PG Medical students and their gender. Means that the suggestions provided by PG Medical students to improve the use of IC vary with their gender.
94. It is also revealed that there is a significant difference in the suggestions provided by PG Medical students and their department. Means that the suggestions provided by PG Medical students to improve the use of ICT vary with their department.

6.2.39 Communication Satisfaction by the PG Medical Students

95. Most of the PG Medical students are fully satisfied in communication with colleagues. Only a very few reported that they are not satisfied in communication with colleagues. Most of the PG Medical students are moderately satisfied in communication with other health professionals. Only a quarter of the PG Medical students opined that they are fully satisfied in communication with other health professionals. More than half of the PG Medical students are moderately satisfied in

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communication with Patients/Patient's relatives. A considerably good number of PG Medical students are fully satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students are moderately satisfied in interdisciplinary communication. It is seen that a few PG Medical students are not satisfied in interdisciplinary communication. Nearly half of the PG Medical students reported that they are moderately satisfied with in Communication with other hospitals/organizations. A considerably good number of PG Medical students are not satisfied in Communication with other hospitals/organizations. More than half of the PG Medical students reported that they are moderately satisfied in communication with general public.

96. It is found that that there is a significant difference between communication satisfaction of PG Medical student and gender. Means that communication satisfaction of PG Medical student vary with their gender.
97. It is also found that there is a significant difference between communication satisfaction of PG Medical student and department. Means that communication satisfaction of PG Medical student vary with their department.

6.2.40 Satisfaction with ICT provision

98. Most of the PG Medical students are moderately satisfied with the current ICT provision in their institution. A considerably good number of PG Medical students are not satisfied with the current ICT provision

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in their institution. Only a few PG Medical students reported that they are fully satisfied with the current ICT provision in their institution.

99. The study revealed that there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to gender. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their gender.
100. The study also revealed that there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to department. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their department.

6.3 Tenability of Hypotheses

The tenability of hypotheses framed for the study is tested based on the findings drawn out of the study.

6.3.1 Hypothesis 1

Post Graduate Students in Government Medical Colleges in Kerala regularly take part in communication activities.

It is revealed **from the finding 4** that Most of the respondents always communicate with their colleagues and most of the PG Medical students reported that they often communicate with other health professionals. Nearly half of the PG Medical students always communicate with the patients and their relatives regarding the health issues. More than half of the PG Medical students often share information and ideas with teachers/research scholars / administrative people etc. Only a very few of PG Medical students always take part in interdisciplinary communication. Nearly half of the respondents opined that they sometimes take part in Communication with other

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hospitals/organizations and a considerably good number of respondents they only sometimes communicate with general public.

It is revealed through **the finding 11** that majority of the male PG Medical students always take part in professional communication for the purpose of sharing professional knowledge. A good number of female PG Medical students also always sharing professional knowledge. A considerable number of male and female PG Medical students always take part in professional communication activities in case of admitting discharging matters.

More than half of the clinical PG Medical students always share professional knowledge. Whereas only a considerable number of the PG Medical students in non-clinical department always share professional knowledge. **The finding 15** proves this.

From the findings 32 and 33 it is clear that almost all PG Medical students take part in CME programmes irrespective of their gender and department.

A good number of male and female PG Medical students occasionally participate in CME Programmes where as a considerably good number of male and female PG Medical students regularly participate in CME Programmes. **The finding 36** proves this.

A good number of clinical and more than half of non-clinical PG Medical students occasionally participate in CME Programmes and only more than quarter of clinical and a good number of non-clinical PG Medical Students regularly participate in CME Programmes. **The finding 37** proves this.

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However considering the communication with patients it is seen that PG Medical students are not generally enquire the socio-economic background of the patients. Since socio economic status is linked with many health problems and accessibility of good treatment physicians should take initiatives to enquire the background of the patient to provide better patient care. It is also found that majority of the PG Medical students irrespective of their department do not enquire the socio-economic background of the patients. Only a few PG Medical students reported that they never seek socio-economic background of the patients. **The findings 17 to 20 prove this.**

It can be seen that nearly half of the male PG Medical students and half of the female PG Medical students rarely follow-up patients after discharge. Only a very few male and female PG Medical students reported that they occasionally follow-up the patients after discharge. It is also seen that half of the non -clinical PG Medical students and nearly half of the clinical PG Medical students rarely follow-up patients after discharging. Since follow up gives chance to check on patient's progress it will help to clear the misunderstandings and can make further assessment and treatment. Here nearly half of the PG Medical students reported that they rarely follow up after discharge, which will negatively affect the better patient outcome. **The findings 23 to 26 prove this.**

Hence from the findings it is seen that even though PG Medical students regularly take part in communication with health professionals and have good participation in CME programmes they rarely follow up and keep good relationship with patients. **Thus this hypothesis is partially proved by the findings of the study.**

6.3.2 Hypothesis 2

Informal Communication Methods are mainly used to exchange health information in Government Medical Colleges in Kerala.

The majority of the PG Medical students engaged on face-to-face communication in order to communicate with colleagues with other health professionals, with patients and patients' relatives, and with Teachers/research scholars /administrative people, with interdisciplinary communication, with general public. Even though mobile phones, email, video conferencing allow easy way to communicate face to face communication ensures the effectiveness of a communication in a workplace. In this study it is found that majority of the PG Medical students depends on face-to-face communication which is considered as the most effective way of communication. **The finding 7 proves this.**

In order communicate with other hospitals and organizations more than half of the PG Medical students use mobile phones. It is seen that posters are the second most used communication channels used by the PG Medical students to communicate with general public. Mobile phones are reported as the second most use communication channels to communicate with colleagues, with other health professionals, with patients and relatives, and with teachers/research scholars /administrative people, in interdisciplinary communication. It is seen that nearly half of the PG Medical students communicate through social media, followed by email and discussion groups. **The findings 8 and 9 prove this.**

The finding 10 proves that considerably good number of PG Medical students use email to communicate with other health professionals. Nearly half of the PG Medical students use email service to make communication with teachers/research scholars/administrative people etc. From the analysis it

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is seen that a considerably good number of PG Medical students communicate with general public through announcement. Personal websites and video conference are the least used communication channels by majority of the PG Medical students. From the overall findings it is seen that face –to-face communication and mobile phones are the most preferred communication channels by the PG Medical Students. **Thus this hypothesis is substantiated**

6.3.3. Hypothesis 3

Post Graduate Medical Students in Government Medical Colleges in Kerala regularly participate in Continuing Medical Education Programmes.

Almost all the male PG Medical students and almost all the female PG Medical Students participate in CME Programmes. A negligible male PG Medical students and female PG Medical students reported that they never participate in CME Programmes.

The majority of the PG Medical students in clinical department also participate in CME programmes. A negligible number of PG Medical students in clinical department reported that they do not participate in CME programmes. In non-clinical department it is reported that all of the PG Medical Students take part in CME programmes. **The findings 32 and 33 prove this.**

The majority of the male PG Medical students and female PG Medical students participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of male PG Medical students and female PG Medical students is workshops and seminars in their hospitals. The majority of the clinical PG Medical students and non-clinical PG Medical students participate in conferences as a part of CME Programmes. The second most used CME Programmes by a good number of clinical PG Medical

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students is attending workshops and seminars in their hospitals. Majority of non-clinical students also reported that they attend workshops/seminars in their hospitals. **The findings 34 and 35 prove this.**

A good number of male and female PG Medical students occasionally participate in CME Programmes and a considerably good number of male and female PG Medical students regularly participate in CME Programmes. A negligible number of male reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes.

A good number of clinical and more than half of non-clinical PG Medical students occasionally participate in CME Programmes and more than quarter of clinical and a good number of non-clinical PG Medical students regularly participate in CME Programmes. A negligible number of clinical reported that they rarely take part in CME Programmes. None of the PG Medical students reported that they never participate in CME Programmes. **The findings 36 and 37 prove this.**

A good number of male PG Medical students and more than half of the female PG Medical students presents papers in CME Programmes. Nearly two third of clinical PG Medical students presents papers in CME Programmes. More than half of the non-clinical PG Medical students also presents papers in CME Programmes. More than one third of the clinical PG Medical students never participate in CME Programmes and a considerably good number of non-clinical PG Medical students also never participate in CME Programmes. **The findings 38 and 39 prove this.**

The majority of the male PG Medical students and female PG Medical Students their institutions are motivating them to take part in CME Programmes. A very few number of male PG Medical students and female

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PG Medical students reported that their institutions are not motivating them to take part in CME Programmes. The majority of the clinical PG Medical students and non-clinical PG Medical students their institutions are motivating them to take part in CME Programmes. A meagre clinical PG Medical students and non-clinical PG Medical students reported that their institutions are not motivating them to take part in CME Programmes. **The findings 42 and 43 prove this.**

The majority of the male PG Medical students and majority of the female PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A very few number of male PG Medical students and a very few number of the female PG Medical students reported that their institutions are giving stipend to take part in CME Programmes. The majority of the clinical PG Medical students and a very good number of the non-clinical PG Medical students their institutions are giving duty leaves in order to participate in CME Programmes. A meagre clinical PG Medical students and a few number of the non-clinical PG Medical Students reported that their institutions are giving stipend to take part in CME Programmes. **The findings 44 and 45 prove this.**

From these findings it is found that almost all the male and female PG Medical students participate in CME Programmes. **Thus the hypothesis is substantiated.**

6.3.4 Hypothesis 4

Socio economic background of the patients is not found useful in the clinical decision making.

A very good number of the male and majority of female PG Medical students do not enquire the socio-economic background of the patients. Only a few male and female PG Medical students reported that they never seek

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socio-economic background of the patients. It is found that PG Medical students are not generally enquire the socio-economic background of the patients. **The finding 17 proves this.**

It is also found that majority of the clinical and non-clinical PG Medical students do not enquire the socio-economic background of the patients. Only a few clinical and female PG Medical students reported that they seek socio-economic background of the patients. **The finding 19 proves this.**

More than half of the male PG Medical students opined that enquiring socio-economic background of the patients moderately useful in diagnosis. Nearly half of the female of the PG Medical students also opined that socio-economic background of the patients moderately useful in diagnosis. **The finding 21 proves this.**

More than half of the clinical and non-clinical PG Medical students opined that enquiring socio-economic background of the patients moderately useful in diagnosis. **The finding 22 proves this.**

Even though majority of the PG Medical students do not enquire the socio economic background of the patients they were in the opinion that enquiring the background of the patients should be moderately useful in clinical decision making. **Thus the hypothesis is partially substantiated.**

6.3.5 Hypothesis 5

There is a significant gender as well as departmental difference in the use of ICT equipments by the Post Graduate Medical Students in Government Medical Colleges in Kerala.

Almost all of the male and female PG Medical students possess smart phones and a very good number of male and female PG Medical students

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reported that they own laptops. Desktop computers and tablets are used by a good number of male PG Medical students. It is also seen that more than half of the male PG Medical students still use ordinary mobile phones whereas only a very few female PG Medical students use ordinary mobile phones. **The finding 53 proves this.**

A lion's share of the clinical PG Medical students and most of the non-clinical PG Medical students possess smart phones and a very good number of clinical PG Medical students and a good number of non-clinical PG Medical Students reported that they own laptops. It is also seen that nearly two fifth of clinical PG Medical students have tablet computers whereas only a considerable number of non-clinical PG Medical students have tablet computers. **The finding 54 proves this.**

All the PG Medical students make use of ICT for communication purposes irrespective of their gender and department. Majority of the male PG Medical students using internet more than 4 years while most of the female PG Medical students reported that they are using internet below 3 years. More than half of the respondents in clinical department and a good number of respondents in non- clinical department reported that they have been using internet above 4 years. **The finding 55 and 57 prove this.**

More than half of the male PG Medical students spent about 1 hour in search of information and its communication and a good number of female PG Medical students also spent about 1 hour in search of information and its communication. A considerably good number of male PG Medical students spent more than 1 hour in search of information and its communication. Whereas only nearly quarter of female PG Medical students spent more than 1 hour in search of information and its communication. Study found that there is a significant difference between the gender and time spent in search of information by PG Medical students. That is time spent in search of

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information varies with the gender of PG Medical students. **The finding 58 proves this.**

Nearly half of the clinical PG Medical students spent about 1 hour in search of information and its communication and more than half of non-clinical PG Medical students also spent about 1 hour in search of information and its communication. Only a few PG clinical and non-clinical Medical Students reported that they spent only 15 minutes in search of information and its communication. Study revealed that there is no significant difference between the department and time spent in search of information and communication by PG Medical students. That is time spent in search of information do not vary with the department of PG Medical students. **The finding 59 proves this.**

Most of the PG Medical students use internet through personal devices. It is cleared that most of the male and female PG Medical students use internet through personal devices. The second most place of accessing internet by the male and female PG Medical students is from home. **The finding 60 proves this.** Majority of the male and female PG Medical students access internet through their personal devices. A considerably good number of male and female PG Medical students reported that they access internet through WiFi connection. **The finding 62 proves this. The finding 64 proves that** most of the male and female PG Medical students prefer their smart phones to access internet. Accessing internet through mobile sometimes create problems in areas like downloading and many features may not be available to mobile view. These create problems in getting needed information. The second most preferred device to access internet is laptops by male and female PG Medical students.

Nearly three fourth of the clinical PG Medical students use internet through personal devices and from home. Most of the non-clinical PG

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Medical students reported that they access internet from personal devices. The second most used way of accessing internet by the non-clinical PG Medical students is from department. **The finding 61 proves this.** Around three fourth of the clinical and non- clinical PG Medical Students access internet through their personal devices. Around one third of clinical and non -clinical PG Medical students access internet through WiFi connection. Only a few clinical PG Medical students and one third of the non- clinical PG Medical students reported that they access internet through broadband connection. **The finding 63 proves this. The finding 65 proves that** Most of the clinical and non - clinical PG Medical Students prefer their smart phones to access internet. The second most preferred device to access internet is laptops by clinical and non - clinical PG Medical Students. A quarter of clinical and a meagre non-clinical PG Medical students prefer desktops. A few clinical and non-clinical PG Medical students prefer tablets.

The majority of the PG Medical students opined that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical students is that it helps them to improve professional knowledge. It is seen that a good number of PG Medical students opined that ICT equipments save time and a good number of PG Medical students always use ICTs since they are easy to use. More than half of the PG Medical students opined that they always depends on ICTs since it eases communication. More than half of the PG Medical students often use ICTs because it improves clinical decision making. It is found that there is a significant relation between reasons of using ICT equipments and the gender as well as department of the PG Medical students. That is reasons of using ICT equipments varies with the gender as well as department of the PG Medical students. **The findings 66 and 68 prove this.**

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Most of the PG Medical students always use ICT equipments for presentation purposes. Communication is the second most purpose for which PG Medical Students use ICT equipments. A good number of PG Medical students always use ICT equipments to keep up to date. It is seen that a very good number of PG Medical students often use ICT equipments to facilitate decision making. Nearly half of the PG Medical students mentioned that they often use ICTs for data/record management. A good number of PG Medical students often use ICT equipments for distance education and it is seen that there is a significant difference in the purposes of using ICT equipments with respect to gender. It is also seen that there is no significant difference between purposes of using ICT equipments with respect to department. That is the purpose of using ICT equipments vary with the gender of the PG Medical students. Whereas the purpose of using ICT equipments does not vary with the PG Medical students in different departments. **The findings 69 to 71 prove this.**

More than half of the PG Medical students always use clinical information and educational information with the help of ICT. Career information is the second most accessed information with the help of ICT. A considerable number of PG Medical students sometimes access administrative information with ICTs. From the analysis it is seen that a considerably good number of PG Medical students reported that they rarely access legal issues in medical field using ICTs. Only few respondents reported that they never access clinical information using ICTs. From the analysis it is seen that there is a significant difference between frequency of accessing information using ICT and the gender of the students as well as department. That is frequency of accessing information using ICT varies with the gender as well as department of the PG Medical students. **The finding 72 and 73 prove this.**

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The finding 74 and 75 show that majority of the PG Medical students always use mobiles phones. More than half of the PG Medical students always use computers and laptops. A considerable number of PG Medical students sometimes make use of LCD projectors. A good number of PG Medical students rarely use radio, CD/DVD, Video technology, Scanners. Half of the PG Medical students reported that they sometimes use printers. A good number of PG Medical students rarely make use of fixed line telephones. More than half of the PG Medical students reported that they never use fax in their activities. From the analysis it is seen that there is no significant relation between frequency of use ICT equipments and the gender of PG Medical students. It is also seen that there is a significant relation between frequency of use ICT equipments and the department of the PG Medical students. That is whether the PG Medical students are male or female, it does not affect the frequency of use of ICT equipments and the frequency of use of ICT equipments by PG Medical students vary with different departments.

From the overall findings it is seen that all the PG Medical students make use of ICT for communication purposes irrespective of their gender and department. The time spent in search of information varies with the gender of PG Medical students. That is time spent in search of information do not vary with the department of PG Medical students. It is also found that there is a significant relation between reasons of using ICT equipments and the gender as well as department of the PG Medical students. Study revealed that reasons of using ICT equipments varies with the gender as well as department of the PG Medical students. That is the purpose of using ICT equipments vary with the gender of the PG Medical students. Whereas the purpose of using ICT equipments does not vary with the PG Medical students in different departments and it is also seen that frequency of accessing information using ICT varies with the gender as well as department of the PG Medical students.

Thus this hypothesis is partially proved by the findings of the study.

6.3.6 Hypothesis 6

There is no significant difference in the factors that hinder the flow of professional communication in Government Medical Colleges in Kerala with respect to department.

The finding 88 shows that constant break down of the equipments and inadequate access to ICT facilities are the major factors that prevent clinical PG Medical students to use ICT equipments. More than half of the non-clinical PG Medical students and a nearly half of the clinical students opined that hospital provides poor infrastructure to them.

The finding 85 shows that lack of cooperation among health professionals is considered to be a moderate barrier by a good number of PG Medical students. The second most hindrance in professional communication is lack of patient awareness in understanding medical terms. More than half of the PG Medical Students opined that information abundance on the Internet act as a moderate barrier in professional communication. Half of the PG Medical students reported that lack of infrastructure is a reason for the inefficient professional communication. A good number of PG Medical students believed that missing patient file and inaccessibility of patient files results a moderate hindrance in proper professional communication. A considerably good number of PG Medical students felt inadequate library resources act as a moderate barrier in professional communication and a good number of PG Medical students were in the opinion that lack of ICT equipment for communication is moderate barrier in the professional communication activities. It is found that there is no relationship between barriers in professional communication faced by PG Medical students and their department. That is the barriers in professional communication faced by

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PG Medical students do not significantly vary with department of the PG Medical students. **This is proved by the finding 86. Thus the hypothesis is substantiated by the findings of the study.**

6.3.7 Hypothesis 7

There is a significant gender difference in the communication satisfaction by the Post Graduate Students in Government Medical Colleges in Kerala.

Most of the PG Medical students are fully satisfied in communication with colleagues. Only a very few reported that they are not satisfied in communication with colleagues. Most of the PG Medical students are moderately satisfied in communication with other health professionals. Only a quarter of the PG Medical students reported that they are fully satisfied in communication with other health professionals. More than half of the PG Medical students are moderately satisfied in communication with Patients/Patient's relatives. A considerably good number of PG Medical students are fully satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students are moderately satisfied in interdisciplinary communication. It is seen that nearly a quarter of the PG Medical students are not satisfied in interdisciplinary communication. Nearly half of the PG Medical students reported that they are moderately satisfied with in Communication with other hospitals/ organizations. A considerably good number of PG Medical students are not satisfied in Communication with other hospitals/organizations. More than half of the PG Medical students reported that they are moderately satisfied in communication with general public. **This is proved by finding 95.**

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It is seen that there is a significant difference between communication satisfaction of PG Medical student and gender. Means that communication satisfaction of PG Medical student vary with their gender. **This is proved by finding 96.**

The finding 98 shows that most of the PG Medical students are moderately satisfied with the current ICT provision in their institution for communication. A considerably good number of PG Medical students are not satisfied with the current ICT provision in their institution. Only a few PG Medical students reported that they are fully satisfied with the current ICT provision in their institution for communication.

It is seen that there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to gender. It establishes that satisfaction of PG Medical students regarding the ICT provision vary with their gender. **This is proved by finding 99.**

Thus the hypothesis is substantiated by the findings of the study.

6.4 Suggestion for the further research

Based on the findings of the study, the following areas are suggested for further research.

1. The application of Information and Communication Technology in the management of health information by doctors.
2. The information seeking behavior of doctors in Government Medical Colleges in Kerala.
3. Access and awareness of ICT resources and services in Medical College libraries in Kerala.

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4. Knowledge and attitudes of doctors towards e- health use in healthcare delivery in Government hospitals.
5. A study on Doctor-patient communication and patient safety in Government Medical Colleges in Kerala.
6. Faculty attitude towards medical communication and their perceptions of students' communication skills training in Government Medical Colleges in Kerala.

6.5 Conclusion

The use of Information and Communication Technologies in health sector and communication systems in health sector has to get more attention since many studies shown that patient satisfaction and experience of care is related to the communication among health care professionals. This investigation imparted a delineation of Professional Communication of Post Graduate students in Government Medical Colleges in Kerala. Most of the PG Medical students constantly takes part in communication activities in the hospital. It is seen that PG Medical students always take part in professional communication for the purpose of sharing professional knowledge. Almost all PG Medical students takes part in CME programmes irrespective of their gender and department. Majority of the PG Medical students depends on face-to-face communication in order to communicate with colleagues with other health professionals, with patients and patients' relatives, and with Teachers/research scholars /administrative people, with interdisciplinary communication, with general public. Almost all of the male and female PG Medical Students possess smart phones and a very good number of male and female PG Medical Students reported that they own laptops. All of the PG Medical Students make use of ICT for communication purposes irrespective of their gender and department. Majority of the male PG Medical Students

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using internet more than 4 years while most of the female PG Medical students reported that they are using internet below 3 years. More than half of the male PG Medical students spent about 1 hour in search of information and its communication and a good number of female PG Medical students also spent about 1 hour in search of information and its communication. Majority of the male and female PG Medical students access internet through their personal devices. It is seen that most of the male and female PG Medical students prefer their smart phones to access internet. Majority of the PG Medical students opined that they always depend on ICT equipments since it helps to keep up-to-date. The second most reason for using ICT equipments by the PG Medical students is that it helps them to improve professional knowledge. More than half of the PG Medical students always access clinical information and educational information with the help of ICT. Career information is the second most accessed information with the help of ICT. Constant break down of the equipments are the major hindering factor that prevent them to use ICT equipments in professional communication in the opinion of a very good number of male respondents. More than half of the female and a considerable number of male respondents were in the opinion that hospitals provide poor infrastructure to them. Lack of patient awareness in understanding medical terms is considered to be a moderate barrier by a good number of PG Medical students. The second most hindrance in professional communication is the lack of cooperation among health professionals. t test shows there is no significant difference between barriers in professional communication faced by PG Medical students and their gender. Most of the PG Medical students are fully satisfied in communication with colleagues. Most of the PG Medical students are moderately satisfied in communication with other health professionals. More than half of the PG Medical students are moderately satisfied in communication with Patients/Patient's relatives. More than half of the PG Medical students

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reported that they are moderately satisfied in communication with teachers / research scholars /administrative people like H.O.D, Principal etc. A good number of PG Medical students are moderately satisfied in interdisciplinary communication. Nearly half of the PG Medical students reported that they are moderately satisfied with in Communication with other hospitals/ organizations. More than half of the PG Medical students reported that they are moderately satisfied in communication with general public. T test analysis shows that there is a significant difference between communication satisfaction of PG Medical student and gender. It is also seen that most of the PG Medical students are moderately satisfied with the current ICT provision in their institution for communication. T test shows that there is a significant difference in Satisfaction of PG Medical students regarding the ICT provision in Medical Colleges with respect to gender.

ICT has made a massive impact on health care sector. Quality of healthcare, patient safety, data maintenance etc sections are enhanced by the use of ICTs. Effective communication among healthcare professionals eases the delivery of patient care and digitalizing of medical data about patient information eases the retrieval of patient data which also helps in getting second opinion form other physicians. The eHealth project of Department of Health and Family Welfare, Government of Kerala is aiming to computerize all the hospital activities starting from patient registration to in- patient management. Thus there is a need to provide proper guidance and training to the doctors in using eHealth applications. The present study concluded that the ICT infrastructure in the Medical Colleges and co-operation among healthcare professionals should be improved and training should be given to health professionals in the area of Information and Communication Technology and its applications which should improve the communication scenario in the institutions.

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APPENDIX

QUESTIONNAIRE
Professional Communication of Post Graduate Medical Students
in Government Medical Colleges in Kerala

Dear respondent,

This questionnaire is intended to collect data regarding ‘Professional Communication of Post Graduate Students in Government Medical Colleges in Kerala’ in partial fulfillment of my Ph D programme undertaken by me under the supervision of DR. M. Bavakutty, Former Professor and Head, DLIS, University of Calicut. The goal of this questionnaire is to assess communication patterns in Government Medical Colleges in Kerala.

Professional communication is the health care professional’s relationship with each other as well as their exchange of knowledge and skills for making wise clinical decisions about patient care. This study considers professional communication in an academic context. I seek your valuable cooperation and help in obtaining the necessary information.

Linsha M
Research Scholar
Email:linsha1992@gmail.com
CHMK Library
University of Calicut

Part - 1: General Information (Please tick mark (√) appropriate boxes)

Gender: a) Male / b) Female

Age: Below 25 26- 30 31-35 Above 36

Department:

Part - 2: Professional Communication Activities

1. How often do you engage with the following communication activities? (Please tick mark (√) appropriate boxes)

Sl. No.	Professional Communication Activities	Always	Often	Sometimes	Rarely	Never
1.	Communication with colleague					
2.	Communication with other health professionals					
3.	Communication with Patients/Patient's relatives					
4.	Communication with teachers/research scholars / administrative people etc.					
5.	Interdisciplinary communication					
6.	Communication with other hospitals/organizations					
7.	Communication with general public					

2. Which of these communication channels do you use in following communication activities?(Please tick mark (√) appropriate boxes)

Communication channels	Professional communication activities with						
	Colleagues	Other health professionals	Patients/ Patient's relatives	Teachers/research scholars/administrative people etc	Interdisciplinary communication	hospitals/organizations	General public
Face to face							
Letter							
Posters							
Announcement							
Mobile phone							
Telephone							
Email							
Social media							
Discussion groups							
Personal website							
Video conference							

Appendix

3. How often do you take part in professional communication for the following purpose?

Sl. No	Purposes	Always	Often	Sometimes	Rarely	Never
1.	Sharing professional knowledge					
2.	Discuss patient cases					
3.	Consult for admitting / discharging					
4.	To ask/give second opinion					

Part - 3: Communication with patients

4. Do you enquire the socio-economic background of the patients?

a) Yes b) No

If Yes, how useful it is in the diagnosis?

a) Very much useful b) Moderately useful c) Not useful

5. How often patients follow up after discharge?

a) Regularly c) Rarely

b) Occassionaly d) Never

6. Which of the following method patients use to follow up?(Please tick(√)mark the appropriate)

Sl. No	Follow - up method	Please tick(√) mark the appropriate
1.	Direct meet	
1.	Letter	
2.	Phone calls	
3.	e-mail	
4.	Patient portal system	
5.	Others(Please specify):	

7. How far the lacks of following factors act as a barrier/hindrance in communication with patients/patient relatives?

Appendix

Sl. No	Hindrance in communication	Always	Often	Sometimes	Rarely	Never
1.	Lack of patient awareness about medical terms					
2.	Language problem in communicating with patients/relatives					
3.	Patients are unable to read the discharging/referral letters					
4.	Misunderstandings in non-verbal communication (symbol, signs, actions etc.)					

Part - 4: Continuing Medical Education Programmes (CME)

8. Do you take part in Continuing Medical Education Programmes?

a) Yes b) No

If yes, which of these forms of Continuing Medical Education Programmes do you attend?

Sl. No	Continuing Medical Education Programmes	Please tick(√) mark the appropriate
1.	Attending conferences	
2.	Workshops/seminars in your hospitals	
3.	Workshops/seminars in other hospitals/organizations	
4.	Journal clubs	
5.	Lectures	
6.	Group discussions	
7.	Clinical meetings	
8.	Others (please specify):	

9. How often do you participate in the Continuing Medical Education Programmes?

Appendix

- a) Regularly b) Occasionally c) Rarely d) Never

10. Do you present papers in Continuing Medical Education Programmes?

- a) Yes b) No

If Yes, how do you communicate your findings/ paper contents to others?

(Please rank the items as 1, 2, 3, 4....)

Sl. No	Communication channels	Rank
1.	Conference papers	
2.	Journal articles	
3.	Books	
4.	Newspaper articles	
5.	Technical reports	
6.	Public speeches	
7.	Radio talks	
8.	Invite talks/lectures	
9.	Blog posts	
10.	Others (Please specify):	

11. Does the institution motivate you to participate in CME programmes?

- a) Yes b) No

If Yes, what are the initiatives taken by the institution?

- a) Gives stipend b) Gives duty leave

C) Any Other please specify.....

Part - 5: Information and Communication

12. Please indicate your frequency of use of the following resources to get details of patients and their diseases?

Sl. No	Resources	Always	Often	Sometimes	Rarely	Never
1.	From patient					
2.	From patient's relatives					
3.	From colleagues					
4.	From nurses					
5.	From other health professionals					
6.	Refer patient file/medical records					

13. Please specify the purposes for which you need information? (Please rank as 1, 2, 3, 4.....)

Sl. No	Purposes	Rank
1.	To provide better patient care	
2.	Aid treatment	
3.	Disease prevention	
4.	Current developments	
5.	Continuing medical education	
6..	Others (Please specify):	

Appendix

14. Please indicate your frequency of use of following resources for getting information you needed for patient care?

Sl. No	Sources of Information	Always	Often	Sometimes	Rarely	Never
1.	Colleagues at work					
2.	Library collection					
3.	Medical text books					
4.	Medical journals					
5.	Online medical journals					
6.	Medical databases					
7.	Radio					
8.	Television					
9.	Mobile phones					
10.	Computer					
11.	Internet					
12.	CD ROMS					
13.	DVDs					
14.	Others (Please specify):					

Part - 6: Information and Communication Technology (ICT)

15. What all ICT equipments do you own?

- a) Ordinary mobile phone d) Laptop computer
 b) Smart phone e) Tablet computer
 c) Desktop computer f) Other specify.....

16. Do you use ICT equipments for communication purposes?

- a) Yes b) No

If No,

Mention the reason for not using ICT equipment for communication? (Please put tick mark (√) on appropriate boxes)

- a) Expensive d) Not user friendly
 b) Insufficient knowledge on the use of ICT e) Unnecessary
 c) Time consuming f) Any other please specify.....

Appendix

If Yes,

17. How long you have been using internet?
 a) Below 3 years b) 3-4years c) above 5 year
18. How much time do you spend in search of information and its communication?
 a) 15 minutes b) 30 minutes c) 1 hour d) More than 1 hour
19. Where do you use internet? (Please tick (√) mark the appropriate boxes)
 a) Department b) Medical College Library c) Home
 d) Internet café e) Personal devices f) Any Other please specify.....
20. How do you access internet in your institution?
 a) Broadband connection b) WiFi connection
 c) Personal data connection
 d) Others please specify.....
21. Which of the following device do you prefer to access internet?
 a) Laptop c) Tablet e) AnyOtherplease specify.....
 b) Desktop d) Smartphone
22. Please indicate the frequency for which you use ICT equipments for the following reasons?

Sl. No	Reasons	Always	Often	Sometimes	Rarely	Never
1.	Improves clinical decision making					
2.	Ease of use					
3.	Improves professional knowledge					
4.	Keep up to date					
5.	Ease communication					
6.	Make easy coordination of activities					
7.	Save time					

Appendix

23. How often do you use the ICT equipments for the following purposes?

Sl. No	Purposes	Always	Often	Sometimes	Rarely	Never
1.	For communication					
2.	Facilitate decision making					
3.	Data/records management					
4.	Identify opportunities and threats					
5.	Distance education					
6.	Presentations					
7.	Keep up to date					
8.	Skills acquisition					

24. Please indicate the frequency of use of accessing following information with the help of ICT?

Sl. No	Type of Information	Always	Often	Sometimes	Rarely	Never
1.	Clinical information					
2.	Educational information					
3.	Career information					
4.	Training opportunities					
5.	Administrative information					
6.	Legal issues in medical field					

25. Please mention the frequency of using following ICT equipments?

Sl. No	ICT equipments	Always	Often	Sometimes	Rarely	Never
1.	Mobile phones					
2.	Computer and Laptop					
4.	Flash Discs					
5.	LCD Projector					
6.	Radio					
7.	CD/DVD					
8.	Video Technology					
9.	Scanners					
10.	Cameras					
11.	Printers					
13.	Fixed line Telephone					
14.	Fax					

Appendix

26. Do you use social networking site or apps to share/exchange/communicate information with others?

- a) Yes b) No

If Yes,

Which of the following social networking sites/apps do you prefer to use?

- a) Facebook b) Twitter c) Whatsapp d) Youtube
d) Any Other please specify.....

27. What are the strategies that your college put forward to facilitate better communication?

Sl. No	Facilities	Please tick (✓) mark the appropriate
1.	Available range of ICT	
2.	Computer databases	
3.	Electronic patient records	
4.	Computer labs connected to internet	
5.	Hospital has networked computers	
6.	Wireless network	
7.	Training and workshops	
8.	Tapes on health	
9.	Telemedicine facility	
10	Tele consultation facility	
11	Purchase of new books by the library	
12	E- journals/ E-resources	
13	Inter library loan	

Appendix

28. Please specify your agreement with the influence of ICT equipment in establishing efficient communication?

Sl. No	Influence of ICT on professional communication	Disagree	Neutral	Agree
1.	ICT has increased job efficiency			
2.	Enabled faster access to relevant medical information			
3.	Facilitated remote consultation, diagnoses & treatment			
4.	Quicker Medical diagnosis			
5.	Ensured easy communication			
6.	Access to current information			
7.	Increased collaboration among colleagues			
8.	Bettered number of publication			
9.	Reduced face to face interactions			

Part - 7: Barriers in Professional Communication

29. How far the lacks of following factors act as a barrier/hindrane to your professional communication? (Please tick (√) mark the appropriate boxes)

Sl. No	Barriers/Hindrane	Extreme	Moderate	None
1.	Inaccessibility of patient files			
2.	Missing patient files			
3.	Lack of patient awareness in understanding medical terms			
4.	Lack of co-operation among health professionals			
5.	Lack of ICT equipment for communication			
6.	Lack of infrastructure to communicate with other hospitals			
7.	Unavailability of Medical College Library			
8.	Inadequate library resources			
9.	Library is located far away from the department			
10.	Lack of internet searching skill			
11.	Information abundance on the Internet			

Appendix

30. What are the factors that hinder the use of ICT equipment in your hospital?
(Please tick (✓) mark the appropriate boxes)

Sl. No	Hindering Factors	Please tick(✓) mark
1.	Poor ICT infrastructures provided by hospital	
2.	High cost of ICT equipments and services	
3.	Poor power supply	
4.	Constant break down of equipments	
5.	Security/privacy issues	
6.	Inadequate access to ICT facilities	
7.	Insufficient knowledge on use of ICT	

31. In your opinion how the communication in your hospital can be improved?
Please specify your agreement by ticking (✓) appropriate boxes?

Sl. No	Suggestions to improve professional communication	Disagree	Neutral	Agree
1.	Train doctors on the use of ICT equipments			
2.	Provide health education for patients			
3.	Provide better qualified staff in medical record department			
4.	Provide internet connectivity in hospital			
5.	Provide Medical College Library			
6.	Provide better qualified staff in the Medical College Library			
7.	Develop new communication pathways			

Appendix

32. Indicate your opinion to improve the use of ICT in your institution by putting tick (✓) mark at the appropriate options?

Sl. No	Suggestions to improve the use of ICT	Disagree	Neutral	Agree
1.	Provide sufficient power supply			
2.	Provision of enough ICT equipments/services			
3.	Proper maintenance of ICT equipment			
4.	Conducting ICT training programs			
5.	Implementing an effective health information system			
6.	Facilitating easy access to internet			
7.	Provide more computers			
8.	Expansion of internet bandwidth			
9.	Employee more IT personnel			
10.	Increase budget allocation to ICT			
11.	Provide wireless connectivity			

33. How would you rate your satisfaction in communication with the following categories?

Sl. No	Satisfaction in Communication	Fully satisfied	Moderately satisfied	Not satisfied
1.	Communication with colleagues			
2.	Communication with other health professionals			
3.	Communication with Patients/Patient's relatives			
4.	Communication with teachers / research scholars /administrative people like H.O.D, Principal etc			
5.	Interdisciplinary communication /Communication with other Departments			
6.	Communication with other hospitals / organizations			
7.	Communication with general public.			

34. How satisfied are you with the current ICT provision in your institution?

Satisfaction with ICT provision in your hospital	Level of Satisfaction		
	Fully satisfied	Moderately satisfied	Not satisfied

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A) Publications in Professional Journals

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