



ADDIS ABABA UNIVERSITY
SCHOOL OF INFORMATION SCIENCE AND
SCHOOL OF PUBLIC HEALTH

**A Framework to Support Knowledge Sharing Practice
among Health Care Professionals at Yekatit 12 Hospital
Medical College**

By Betelehem Lema

**A Research Project Submitted to the School of Graduate Studies of Addis
Ababa University in Partial Fulfillment of the Requirement for the Degree of
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Dedication

This work is dedicated to my beloved father Lema Assefa who is always eager to see my academic success, my beloved mother Mulu Biyadlegne who wants to see changes in my life and did not get my support at home during the study time, my brothers Kirubel and Surafel Lema and my sisters Eyerusalem Lema and Meron Teklu.

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Acronyms and Abbreviations

AOR	Adjusted Odds Ratio
CI	Confidence Interval
HMIS	Health Management Information System
ICT	Information Communication Technology
IT	Information Technology
KM	Knowledge Management
KMS	Knowledge Management System
KS	Knowledge Sharing
OR	Odds Ratio
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

Abstract

Background: - Knowledge is a prime asset of organizations especially in knowledge intensive organizations like health sector and its management is important for organizational success. Knowledge sharing is transferring task relevant ideas, information, knowledge and experiences with other members as well as its retrieval and reuse in the organization. Therefore, acknowledgement of the importance of knowledge sharing in healthcare organizations will improve the quality of health care service.

Objective: - The purpose of this research project is to investigate the current knowledge sharing practice among health professionals so as to propose framework that support knowledge flow process in yekatit 12 Hospital medical college.

Methods: - A facility based cross sectional mixed qualitative and quantitative study was conducted among 279 health workers using proportionally stratified random sampling technique. The data was collected using self-administered structured questionnaire and supplemented with a qualitative in-depth interviews. The quantitative data was entered and analyzed using SPSS version 20 while the qualitative data analyzed using thematic approach and presented in the form of narration.

Result: - The study revealed that 53% of the study participants frequently share their knowledge. More than half of the participants report the absence of motivational schema or system and 60% of the respondents have high motivational level. Multivariate analysis result indicates that knowledge sharing of the health care professionals is by 2.87 score more in the presence of information communication technology with (AOR=2.87; 95% CI= (1.18, 7.007)). Therefore, information communication technology found to be an independent predictor for knowledge sharing. Based on the findings of the study a framework that support the knowledge flow process was proposed. Therefore, framework is designed to enable information technology plays its part in improving knowledge sharing practice in the hospital to improve the quality of health care service.

Conclusion: - The study shows that most of the respondents were aware of the importance of knowledge sharing, engage in active knowledge sharing practice and use face to face communication and observation as knowledge sharing mechanism in the hospital. And also the study indicate availability of ICT as independent predictor of knowledge sharing.

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CHAPTER ONE

INTRODUCTION

1.1. Background

These days global competitions are increased in every business and the society become more knowledge based. Therefore the organizations that can identify, value, create and evolve their knowledge assets are likely to be more successful than those that do not. Knowledge in a modern organization is an essential resource especially because it is not readily replicated by rivals (1).

Knowledge is defined as human expertise, which is found in peoples mind and gained through experience, interaction and the like. Nonaka distinguishes two main kinds of knowledge: tacit and explicit. Tacit knowledge is the personal, unarticulated, unexpressed knowledge possessed by an individual. It is the knowledge and expertise that a person has gained over the years through experience, by interacting with others, and through a process of trial and error. This knowledge lies in the individual's brain. Generally found in non-structured form, such as an individual's ideas, insights, values, experiences and judgments, it is more difficult to identify and to manage. Thus, it needs to be structured before it may be stored and processed. On the other hand, explicit knowledge is a knowledge that can be explicated, codified and set down in manuals, written procedures, records, notes, and graphic representations, audio and visual materials. Stored in databases, explicit knowledge is suitable for access and processing (2).

Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This is achieved through the promotion of creating, sharing, and applying knowledge as well as through the feeding of valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning (3).

The health care industry is increasingly becoming a knowledge-based community that depends critically on KM activities to improve the quality of care. Utilizing KMS to manage medical information and health care knowledge to support the full spectrum of knowledge needs in the medical process has become an important issue for health professionals (3).

World Health Organization (WHO) defines knowledge management as “a set of principles, tools and practices that enable people to create knowledge, and to share, translate and apply what they know to create value and improve effectiveness” (4).

Knowledge sharing is transferring or sharing task relevant ideas, information and suggestions or the behavior of disseminating and transferring knowledge with other members, within one’s organization. The availability of shared knowledge is necessary for adapting, extending and creating new knowledge and innovation. Effective knowledge sharing involves the dissemination and transfer of knowledge as well as its retrieval and reuse. In the process of sharing knowledge, people are the primary entity. This is because knowledge usually exists in the mind of individuals. The process of sharing knowledge often starts at the individual level, and expands to the group level and the organizational level. Such a process of sharing organizational knowledge facilitates the exchange of working experiences, technical know-how and individual insights between and among individuals. Knowledge sharing increases the organizational knowledge and improves the capability of its employees for performing their jobs better. The basic purpose of communicating knowledge with in a group is to utilize the available knowledge and improve group performance (5, 6).

Since health care industry is knowledge intensive, it deals with patients’ lives and wellness. If the knowledge in this industry is not shared the benefit will be limited. There is clear understanding among the health care managers and practitioners about the transformation of health care industry towards knowledge based industry (7). Healthcare organizations have recently realized that medical knowledge not only needs to be managed but also shared among professionals and patients. Inadequate knowledge sharing in healthcare organizations can lead to medical errors. Thus, knowledge sharing in healthcare industry may no longer be a “nice to have” process but changes into a “must have” one. Acknowledgement of the importance of knowledge sharing in healthcare organizations has resulted creating, sharing and using knowledge to improve the health care service quality and reduce cost (8).

Healthcare organizations should have the culture of knowledge sharing practices to make better use of the know-how, experiences and skills of their healthcare professionals. So, having a KS culture enables the healthcare workers to implement their best practices and generate new ideas and better quality healthcare service can be delivered (9).

1.1.1. Overview of Yekatit 12 Hospital Medical College

Yekatit 12 Hospital Medical College was established by Emperor Hilesele in 1915 E.C. At that time the hospital was called “Betesida beteferi mekonnen” and it had only 25 beds. Since, 1987 the hospital became under Addis Ababa bureau.

The hospital is located in Arada Sub City, Worde 06. Yekatit 12 hospital medical college is a referral teaching hospital and it starts teaching medical doctors’ since 2003 E.C. It used as a referral center for 16 catchment area health centers and other private clinics/ hospitals. It gives around 36 services as an inpatient and outpatient such as delivery service, dental, plastic surgery service for burn and cleft lip and palate, neonatal intensive care, adult intensive care, speech therapy, psychiatry services and so on with 355 beds. Yekatit 12 Hospital medical college has a total of 1134 technical and supportive staff among them 664 of them are health professionals and the rest 466 are supportive staffs.

1.2.Statement of the problem

Healthcare is experiencing an exponential growth in the scientific understanding of diseases, treatments and care pathways. As a consequence, healthcare knowledge is in flux new healthcare knowledge is being generated at a rapid pace and its utilization can profoundly impact patient care and health outcomes. But, this growth of knowledge is not congruent with our ability to effectively disseminate, translate and apply current healthcare knowledge in clinical practice (10).

According to the Lin and Hsieh, “delivering safe and high quality services to patients is highly dependent on sharing the following types of knowledge, i.e. medical knowledge, scientific knowledge, incident knowledge, and experience knowledge”. Medical knowledge is defined as the required information for diagnosis and treatment. Scientific knowledge is about applying research findings in practice. Incident knowledge refers to learn from medical errors. Finally, experience knowledge refers to experienced healthcare providers educate less experienced practitioners about the best practice procedures. Failure to share the above mentioned knowledge can impact patient safety. Thus, all these types of knowledge require special attention, in order to create an environment to improve the quality of healthcare services (8).

Many healthcare organizations are facing lack of knowledge sharing due to absence of processes and framework for knowledge management. As a result, they face difficulties while acquiring the knowledge due to its rapid growth. One of the existing problems in healthcare knowledge

management is lack of knowledge sharing culture; departments within healthcare have no such contact with each other where both can share their knowledge. This problem leads them towards the narrow vision of knowledge and as a consequence, it becomes difficult for healthcare organization to work as a group. This problem leads organization to the falling of efficiency and customer satisfaction (11).

According to the estimation of US medicine institute around 98,000 patients die each year as a consequence of preventable errors. Also, a study conducted in two UK hospitals shows that 11% of admitted patients experienced adverse events of which 48% of these events were most likely preventable if the right knowledge was applied. The conclusion drawn from the above studies is that the under-utilization of healthcare knowledge contributes to incorrect clinical decisions, medical errors, sub-optimal utilization of resources and high healthcare delivery costs (10).

Previous studies conducted in Ethiopia indicated lower level of knowledge sharing practices among health professionals due to several reasons like, lack of opportunity for knowledge sharing, lack of interest to share (openness). The studies also shows that there is lack of formal knowledge sharing opportunities, lack of integrated knowledge sharing with the hospital work process and lack of infrastructures that help to facilitate knowledge sharing practices. The majority of respondents are not motivated to share knowledge and poor management support of the KS activity of the hospital (12, 13 and 14).

By observing the hospital knowledge sharing practice it faces the problem that mentioned in the above studies. In Yekatit 12 hospital medical college there are knowledge sharing practices like (seminars, morning sessions) which encompasses doctors or specialists but the hospital does not have structured framework that comprises different types of health care professionals to share their knowledge, skill and practice to give a quality care to patients. The hospital knowledge sharing practice is not putted in an integrated way, not supported by KS supportive infrastructures, and there is poor KS practices between different departments. Therefore, the aim of this research project is to identify the challenges of knowledge sharing and to propose a framework that support the knowledge sharing environment among healthcare professionals in yekatit 12 Hospital medical college.

At the end, this research project will attempt to answer the following study questions:-

- What does the current knowledge sharing practices in yekatit 12 Hospital medical college look like?
- What are the challenges of current knowledge sharing among healthcare professionals?
- How factors can be mapped to knowledge sharing framework?
- How to evaluate the proposed knowledge sharing framework?

1.3.Objectives of the research project

1.3.1. General objective

The purpose of this research project is to investigate the factor that influence the current knowledge sharing practice among health care professionals in order to design a framework that support knowledge flow and reuse in yekatit 12 hospital medical college.

1.3.2. Specific objectives

- To identify the current knowledge sharing practice among health professionals in yekatit 12 hospital medical college.
- To identify the factors that influence knowledge sharing practice among health professionals in yekatit 12 hospital medical college.
- To map contextual factors into framework for knowledge sharing practice among healthcare professionals in yekatit 12 hospital medical college.
- To evaluate the designed framework of knowledge sharing in yekatit 12 hospital medical college.

1.4. Significance of the research project

The availability of accurate and timely knowledge enables organizations to create high quality services, products, and processes. The health care industry is knowledge intensive industry, most of this knowledge resides in the heads of health care professionals. In healthcare organizations, medical decision depends mostly on experience and knowledge of health professionals. Thus, facilitating the interaction, integrating, sharing and making this knowledge available to healthcare professional will improve health care delivery and decision making.

The research project help to identify the challenges and current knowledge sharing practice of the health professional and to design a contextual knowledge sharing framework. Identifying the challenges will enable the hospital to take measure on the contextual challenges and also the

proposed KS framework would help as a road map to design and implement healthcare knowledge management system which enhance KS practice of healthcare professionals and improve healthcare quality.

1.5.Scope of the research project

Knowledge management covers knowledge creation, capturing, representation and sharing. However this research project is going to be conducted only in the context of knowledge sharing. Knowledge sharing occurs at individual, departmental, organizational, intra organizational levels and facilitated by ICT. In this project individual, organizational and technology factors affecting knowledge sharing are investigated and it is delimited to factors proposed in the conceptual framework. Therefore, this research project is conceptual by its nature and aims to propose a framework to support knowledge sharing practice among health professionals in yekatit 12 Hospital medical college.

The reason for selecting Yekatit 12 Hospital Medical College as a research project case is that it is one and only hospital under Addis Ababa health bureau that teaches medical doctors. Therefore, the health professionals should have an up-to-date knowledge. This knowledge is going to be shared among the health professionals to improve health care quality and to have a knowledgeable students that serve the country in the future.

1.6.Organization of the research project

This research project is organized into five chapters. Chapter one discusses about the background of the research, research problem, research objectives and significance of the research. Chapter two discusses about knowledge, knowledge sharing, and factors of knowledge sharing, the findings of related works and the conceptual framework. Chapter three presents the research method employed to answer the research questions stated in Chapter one. It describes research procedures, data collection instruments and data analysis techniques. Chapter four focuses on results of the empirical data analysis on knowledge sharing among health care professionals and present and describe the proposed KS framework. The last Chapter presents the conclusion and recommendation for future research work.

CHAPTER TWO

LITRATURE REVIEW

2.1. Overview

This chapter present a review of different literatures concerning knowledge sharing among health care professionals and factors that influence their knowledge sharing behavior of the health care professionals. Reviewing a literature provides an up-to-date understanding on the research topic, identify gaps/limitations in current state of knowledge, prevent repeated errors occurrence, and help to develop research questions for the topic, provide readers with a coherent, focused summary of current state of knowledge.

The literature review of this research project try to observe what knowledge and knowledge management, knowledge management lifecycle: knowledge creation, structuring, dissemination and application, knowledge sharing in health organization, the influencing factors of KS categorizing in to individual, organizational and technological factors and different research which are related with the research topic are going to be discussed to support the research project and finally the literature review is going to be summarized.

2.2. Knowledge and knowledge management

Davenport and Prusak defines knowledge as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms (15).

Knowledge comes from information processed by using data. It includes individuals' experiences, values, insights, and contextual information and helps to evaluate and incorporate new experiences and information. Knowledge originates from and is applied by knowledge workers. People use knowledge in making decisions. Recently, organizations realized that as they own massive amount of knowledge and that this knowledge needs to be managed (16).

Knowledge is an important strategic resource for all organizations. It could help organizations to gain competitive advantage. In health care, knowledge is the main assets of the organizations because it enables the organizations to accomplish best medical results. In recent times, healthcare organizations are attempting to build and enhance the use of owned knowledge (17).

Knowledge in an organization has two perspectives (18): Tacit knowledge is personal, which is stored in the heads of people. It is accumulated through study and experience. Tacit knowledge grows through the practice of trial and error and the experience of success and failure. Tacit knowledge is deeply rooted in action, procedure, routines, commitment, values and emotions. It is intangible and not easy to articulate, making it difficult to share with others. Tacit knowledge can be shared and communicated through various activities and mechanisms. Activities include conversations, workshops, on-the-job training and the like. Mechanisms include, the use of information technology tools such as email, groupware, instant messaging, web portal and related technologies.

Explicit knowledge comprises of knowledge that is codified, documented and archived on a paper or paperless media (like database). These include knowledge assets such as reports, memos, business plans, drawings, patents, trademarks, customer lists, methodologies, and the like. They represent an accumulation of the organization's experience kept in a form that can readily be accessed by interested parties and replicated if desired. In many organizations these knowledge assets are stored with the help of computers and information technology. Explicit knowledge has a tangible dimension that can be more easily captured, codified and communicated. It can be processed, transmitted and stored relatively easily (18).

Healthcare knowledge is central to clinical decision making throughout the diagnostic-therapeutic cycle. The knowledge is applied to arrive at correct diagnostic decisions and to derive the most effective therapeutic regimes. To make Clinical decisions the healthcare professional applies knowledge to validate prior hypothesis and satisfy a few more constraints to get closer to the final decision. Healthcare knowledge is dynamically contextualized to interpret the patient's evolving health status, and to derive treatment interventions that will work for a specific patient in a specific healthcare setting. Therefore, the key to successful clinical decision-making is the timely availability of correct and relevant knowledge with respect to the clinical context (10).

Knowledge Management (KM) is the process by which people in organizations capture, share, and generate knowledge for action. It is one of the key elements in improving organizational effectiveness and efficiency. Thus, organizations that are capable of generating new knowledge, managing it, and applying it effectively will be successful at creating a competitive edge (22).

Knowledge management (KM) become very important in the 1990's because it will help organization to have competitive advantage and effective work through sharing and re-use of knowledge in an organization. Knowledge should be managed properly in an organization due to information overload, technology advancement, increased professional specialization, competition, workforce mobility and turnover, and capitalize on organizational knowledge (16).

Different perspectives of knowledge create different perspectives of knowledge management. If knowledge is seen as an object or an access to information, then knowledge management should pay attention to knowledge store and manage it. If knowledge is seen as a process, then knowledge management should focus on creation, sharing and using this knowledge. In this case, knowledge management needs to meet organization needs by exploiting and determination existing knowledge and thus creating a new knowledge. Knowledge management should pay attention to a human factor if knowledge is seen as an object. According to Davenport & Prusak, KM has three main mostly used aims: Make knowledge visible, show and determine a role of knowledge in organization, develop a culture by managing employee's behavior and design a connection between employees; create spaces, tools, time for employees. To encounter the aims and organizational needs knowledge management provides a framework, which helps an organization to create and share knowledge. For an organization it is important to capture and to share knowledge in an effective way in order to obtain more profits (23).

Knowledge management in health care is aligning people, processes, data and technologies to optimize information, collaboration, expertise, and experience in order to drive organizational performance and growth and characterized as, modeling the systematic creation, sharing operations, and the translation of health knowledge to improve the quality of patient care. The purpose of the health care knowledge management is to promote and provide optimum health knowledge, timely, effective and pragmatic for health professionals (and even to patients and individuals) where and when they need to help them create high quality, well-informed and cost effective patient care decisions (10, 22).

2.3. Knowledge management life cycle

Knowledge management cycle consists four processing steps (24): namely, knowledge creation, knowledge structuring, knowledge transferring or disseminating and knowledge application.

2.3.1. Knowledge creation process

Knowledge creation process concerned with creating new tacit and explicit knowledge which are embedding in organization's products, services and work processes after creating (25). The knowledge creation process includes knowledge acquisition and knowledge representation. Knowledge can be created from several sources and methods such as research and development center, organizational learning outcomes, lessons-learned analysis and innovation. The knowledge acquisition method is both internal and external sources, need to be developed. The knowledge is represented using the formal representation methods developed by the organization for processing (24).

2.3.2. Knowledge structuring process

The knowledge structuring process includes defining, storing, categorizing, indexing, and linking digital objects such as documents and images to knowledge units. The idea of mapping the existing and available knowledge including expertise and skills in terms of its context, relevance, and locations helps in the classification of the organization knowledge. A proper storage of knowledge with proper indexing and linking with other relevant knowledge for example company yellow pages of experience and knowledge, skill development and company training materials. The classification system groups similar documents together and fits them into relevant categories, which can be generated by manual or automated means, or a combination of the two (24, 26).

2.3.3. Knowledge transferring or disseminating process

Knowledge dissemination process consists of different techniques and methods of knowledge sharing and collaboration. Knowledge presentation which includes searching (pulling) and providing (pushing) relevant content automatically to the user on the basis of user requirements. Knowledge sharing is done using different means, some of which are automatic and some manual, such as training and education, company intranet, communities of practice, external or internal benchmarking, documentation and newsletter, and cross-functional teams (26).

2.3.4. Knowledge application process

The knowledge application process involves applying, which includes retrieving and using, knowledge in support of decisions, actions, problem-solving, developing competency maps to place people in best jobs and teams for improving productivity, establishing communities of

interest, automating routine work or workflow, and training the people to meet the requirements of current issues (26).

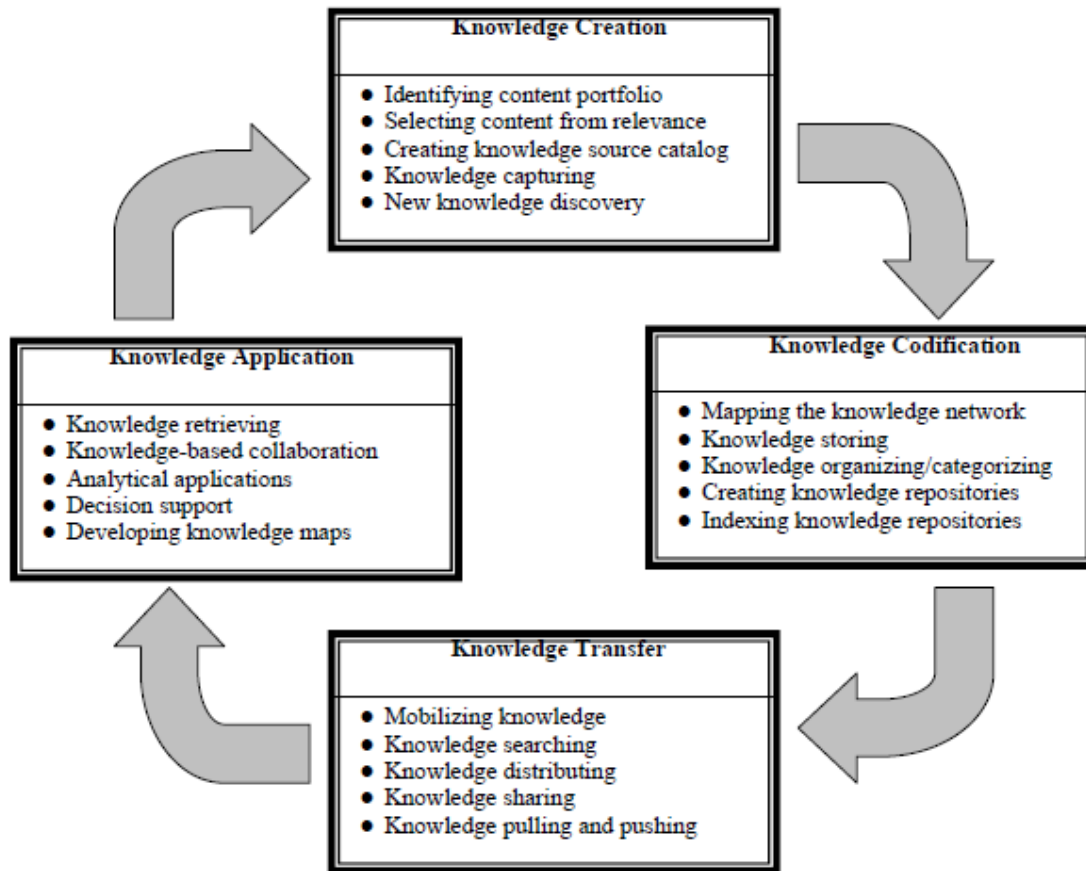


Figure 1: Knowledge management cycle

2.4. Knowledge sharing in health care organization

According to the WHO “A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health” (19). Healthcare organizations are composed of health care professionals from multiple disciplines forming several interconnected care teams that attempt to provide safe and consistent care (20). The care teams have to coordinate and communicate amongst their team members and with other teams to function in a cohesive manner to execute the highly coordinated and high risk activity that is called patient care. Health care organizations have to be able to modify their activities based on sudden changes in the condition of their patients or sudden demands due to public health disasters without compromising

patient safety or quality of care. New knowledge creation, technology advances and other market changes can add new and unexpected demands in health care delivery. Health care organizations have to maintain stability following institutional protocols but have to assess their performance and evaluate protocols to create and incorporate new knowledge. The created and incorporated new knowledge should be managed and shared among the health professionals (21).

Knowledge sharing has become an essential part of knowledge management. The ultimate goal of KS is to distribute the right content to the right people at right time. The system therefore must enable us quickly and effectively to find relevant information & expertise and that can aid into decision-making & problem solving. Hence, the tacit knowledge resides in the minds of individuals, in their skills, experiences, value judgments (8).

Knowledge Sharing is an interactive practice of disseminating reliable knowledge, to the right people at the right time, in an intelligible way that allows them to act carefully and to enrich the organization's knowledge base (27).

Knowledge sharing among individuals enables work groups to enhance competency and mutual generating new knowledge. This results in a synergistic effect. That is, social capital is created as those who share knowledge improve their knowledge by dialogue and those who receive knowledge learn. Furthermore, this implies that organizations need to assist employees to become conscious of tacit knowledge (28).

Knowledge sharing is the key to health care organization for patient care. Once knowledge is created there is health care quality that results from its sharing both because more than one individual can use knowledge at the same time and shared knowledge stimulates the creation of new knowledge (29).

Knowledge sharing is important in industries where knowledge is a key asset like healthcare organizations. The healthcare industry is a knowledge rich community which deals with patients' lives and wellness. Losing the opportunity of having the right knowledge at the right time can lead to medical errors. Therefore, knowledge sharing is a must in healthcare organizations (8).

From a healthcare knowledge management (KM) perspective it is vital to join and facilitate tacit knowledge sharing among clinical teams. Sharing knowledge in health care can be characterized as an explanation and dissemination of health knowledge by and for health care stakeholders

through a collaborative communication tool for advancing knowledge of health stakeholder participated intelligences. Healthcare organizations should have the culture of knowledge sharing practices to make better use of the knowhow, experiences and skills of their healthcare professionals. As a result, the healthcare workers enable to implement their best practices and generate new ideas and better healthcare quality service can be delivered (14).

Generally, knowledge sharing is a people to people process to exchange knowledge. For an organization, it is very important to have employees, who are willing to share knowledge and are motivated to do this. An employee could improve her/his ability by using ideals and experiences from co-workers. Cabrera and Cabrera argue that when an employee shares knowledge, he or she does not lose this knowledge as “knowledge is not commodity”. Sharing knowledge has a cost which is based on a cost of realizing the sharing process (for instance, providing tools, documentation, group meetings etc.) (32).

2.5. Knowledge sharing model

According to Nonaka and Takeuchi (2), knowledge sharing is a process of interactions between explicit and tacit knowledge. The interactions between tacit and explicit knowledge lead to the creation and sharing of new knowledge. Nonaka developed SECI model, which includes four modes of knowledge conversion: socialization, externalization, codification and internalization. Although this model is originally developed for knowledge creation, it is also used to study knowledge sharing processes (45). The arrows in Figure 2 show knowledge conversion from tacit to explicit and back to tacit knowledge.

Socialization – is the process of creating common tacit knowledge through shared experiences. In socialization, a field of interaction is built where individuals share experiences and space at the same time. Through this process common unarticulated beliefs and embodied skills are created and developed. It uses observation, demonstration and apparent ship to share knowledge (18).

Externalization – is the conversion of tacit knowledge into observable knowledge assets. The knowledge shared in social settings is documented and converted into explicit knowledge that is shared through publicly accessible media (such as articles, books and audiovisual materials). Here the tacit knowledge in the brains of experts are articulated and expressed as concepts or drawings, thus becoming explicit knowledge that can be further studied and refined (2).

Combination – is a process of assembling new and existing explicit knowledge into a systemic knowledge (18). What commonly occurs is the combination of a newly created concept with existing knowledge to produce something tangible (e.g., a new product model). Individuals receive new knowledge and combine it with their own experience and former knowledge to expand their knowledge base (2).

Internalization – refers to conversion of explicit and tacit knowledge into personal knowledge. This is a process of embodying explicit knowledge to tacit knowledge explicit knowledge is shared throughout the organization and then converted into tacit knowledge by individuals. It is very much related to learning by doing, for example through; training programs, simulations and experiments (2).

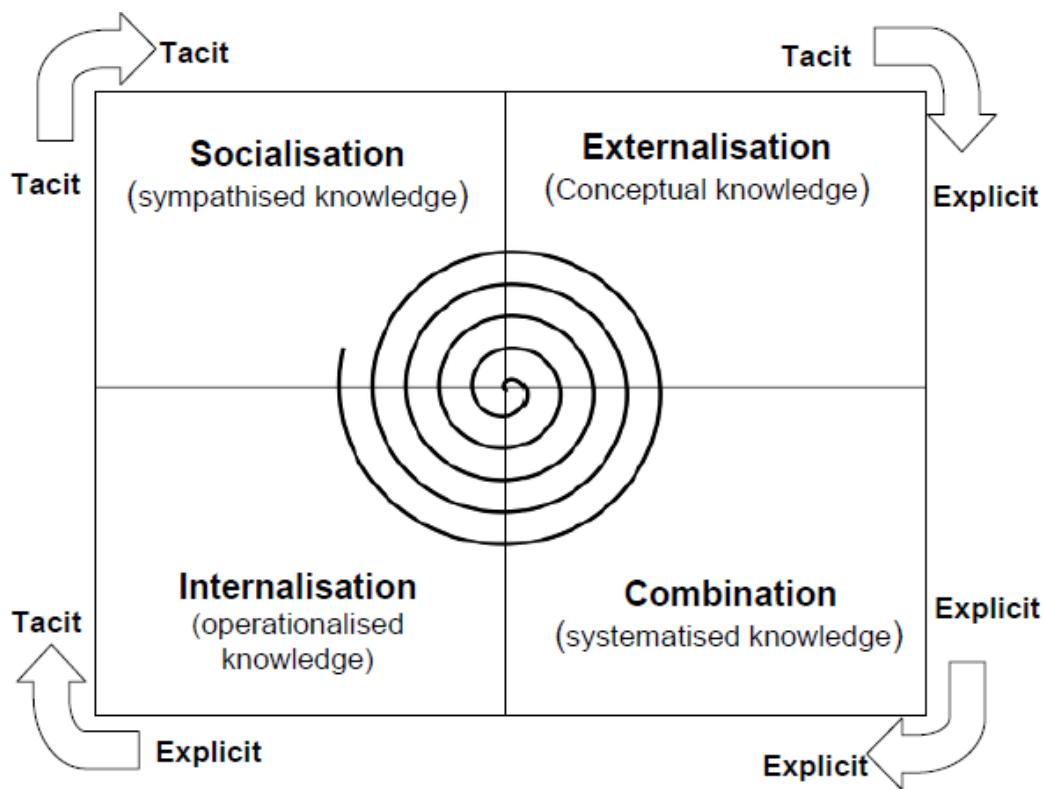


Figure 2: SECI model for KS

Source: (Nonaka and Tekuechi, 1995)

2.6. Factor influencing knowledge sharing

One of the major barrier to effective knowledge management has proven to be the absence of knowledge sharing. More specifically, sharing employees' skills and expertise is likely to enhance organizational capabilities in knowledge management and renewal, and consequently to produce more than desirable work outcomes. Knowledge sharing can occur through written correspondence or face to face communications via networking with other experts, or documenting, organizing and capturing knowledge for others (30, 31).

A number of factors impact employees' perception of a knowledge sharing culture. The identified factors can be broadly categorized into three groups: individual or human factors, organizational factors and technological factors. Identifying the factors help organizations to control their knowledge asset, first they must understand factors that affect KS at individual level. Also knowledge sharing takes place in the organization and to facilitate the knowledge sharing process ICT plays an important role.

2.6.1 Individual factors

The success of any knowledge management depends on the communication among individuals, particularly sharing knowledge among the individuals. Knowledge sharing is related to the willingness and readiness of individuals to share their knowledge with others. However, effective knowledge sharing among individuals depends on the individual knowledge sharing behavior. Therefore, organization may focus on the individual factors that influence knowledge sharing behavior of individuals to have successful knowledge sharing initiatives. Trust, awareness, personality and intrinsic factor of motivation categorized as individual factor (17).

2.6.1.1. Trust

Trusting relationship is important between employees, participants to share and transfer knowledge. A trust plays a great role in knowledge management. An organization and a team group should create a trusting relationship in order to achieve company's goals in an effective way (33). Trust among employees will promote active KS behavior. Such active KS behavior enhances effective communication by empowering members or an organization to freely share personal knowledge and concerns. The high levels of employee trust can lead to better knowledge sharing and shared goals (34).

2.6.1.2. Awareness

Awareness among individuals is the first phase of KS initiative in organization. Awareness is defined as the degree to which an employee aware of the importance of knowledge sharing and benefits he/she could gain from the sharing. The awareness about the importance of knowledge sharing considered as an attitude that every employee should have including the top management. Organization at unawareness phase does not realize the contribution of knowledge against their competitors (35).

2.6.1.3. Personality

Personality is one of the impediments or barriers of knowledge sharing and employees who are extroverts, self-confidence, feel secured have more tendency to share their experience and knowledge compared to those who are introverts, self-centered of security conscious. An individual personality can be characterized through his values, attitude, mood and emotion (35).

2.6.1.4. Motivation (intrinsic motivation)

Motivation refers to internal factors that induce action and to external factors that can act as inducements (encouragement) to action. Sharing knowledge can be motivated by extrinsic as well as intrinsic factors. Intrinsic motivations distinguish from extrinsic motivation is by how employees satisfied. Intrinsic motivation satisfied employee's immediate need while extrinsic motivation satisfied employee's need indirectly. Intrinsic motivation refers to engaging in an activity for its own sake, out of interest, or for the pleasure and satisfaction derived from the experience (36).

- **Knowledge Self-efficacy (competence)**

Competence or self-efficacy is the judgments of individuals regarding their capabilities to organize and complete courses of action required to achieve specific levels of performance. Competence or self-efficacy can motivate employees to share knowledge with colleagues (36). Sharing expertise useful to the organization is an opportunity to enhance sense of self-worth. When knowledge self-efficacy increases, people gain confidence in terms of what they can do. When people think that their expertise can improve work efficiency and increase productivity, they will be more motivated to share knowledge with others (37).

- **Altruism (Enjoyment in Helping Others)**

Altruism is having flexible behaviors to help others with organizationally relevant tasks or problems. Some people share their knowledge simply because it makes them feel happy about it; they share it willingly whenever they get the chance to. This kind of knowledge sharing is primarily motivated by the love of sharing or by an innate will to help others, believing that they are serving the greater good without the need for any extrinsic motivation like rewards, incentives, recognition, encouragement or persuasion. This type of people is more concerned with his/her individual non materialistic goals. They are intrinsically motivated and do not usually get affected by the outer environment (38)

2.6.2. Organizational factors

In organization there are many ways to motivate and promote knowledge sharing. Knowledge exists in organizations however, its existence does not guarantee its utilization and dissemination among employees. Organizations that don't manage their knowledge resources effectively and facilitate sharing will have less competitive advantage as compared to organizations that do. Therefore, organizations are required to build and maintain organizational factors that will support a knowledge sharing environment (38).

2.6.2.1. Administrative Support

Leaders are responsible for creating the ideal atmosphere for work by developing a sense of trust, passion, and confidence among their followers, and bringing them together by building strong professional relationships between them. Moreover, leaders are expected to develop a system that acknowledges and encourages knowledge sharing also discourages hiding, in order to create a proper work environment that supports and promotes interaction and communication. Also, managers can lead the organization to actively and dynamically create knowledge by providing and understanding the knowledge vision of the company, developing and promoting sharing of knowledge assets, and creating the time and place to share knowledge (38).

2.6.2.2. Team work

KS occurs within organization through group interaction. Team work indicate communications, dialogue, and individual or group interactions that support and encourage knowledge-related

employee activities. The ties among individuals within team can facilitate KS and enhance knowledge sharing capability among employees in organization (34).

2.6.2.3. Organizational arrangement

Organizational arrangement refers to how people and task in an organization is arranged to ensure the work done. How the organization arranged may affect the work which is done in an organization or the information transfer and knowledge sharing practice among the employees. The organizational arrangement domain consists of two component; organizational office layout, work process.

- **Organizational Office layout**

Nowadays, office layout becomes important issues of KS in organizations. Corporate planner, architects, academics, and executives should give consideration and creative thought to the issues of office design which hinder corporate world citizens from working with knowledge. A good office design should create a work environment that encourages interaction among employees (35).

- **Work Process**

The knowledge sharing among employees will be more effective if, it is included in the work process. It is difficult to capture knowledge because people refused to contribute knowledge or are not capable to deliver their knowledge. Integrating knowledge sharing with the work process is the best way that make people capable to share and contribute knowledge to the organization (34).

2.6.2.4 Extrinsic Motivation (Organizational Reward and recognition)

From an extrinsic motivational perspective, individual behavior is driven by its perceived values and the benefits of the action. The fundamental goals of extrinsically motivated behaviors are to receive organizational rewards or mutual benefits. Organizational rewards can range from monetary incentives such as increased salary and bonuses to non-monetary awards such as promotions, recognition and job security (36). Incentive and reward systems give a high impact on KS. Therefore, Knowledge sharing occurs when employees perceive that incentive of knowledge contribution exceeds costs required for knowledge sharing. Thus, if there are appropriate rewards or incentive mechanisms such as bonus or career advancement, employees will be motivated to share their knowledge (37).

2.6.3. Technological factors

Technology is a software and hardware that people in organization use in order to do their tasks and it is a key element in distributing information within the organization, and granting people the proper access to the right information at the right time. It facilitates the flow of information by designing and implementing systems that support communication, collaboration and knowledge distribution. The role of ICT in knowledge sharing is connecting people with other people or with explicit knowledge (38). In this study three variables considered to be included which are ICT infrastructure, ICT usage.

2.6.3.1. ICT infrastructures

ICT infrastructure is an up to date physical ICT infrastructure that support employee to create, structure, share and use knowledge in organization. Effective knowledge sharing depends on the readiness of employees to share knowledge through computer facilities that can be accessed by all organizational employees (35).

2.6.3.2. ICT usage

It is a computer system or tools like email groupware and computer-based information systems that facilitate KS in organization usage of workers in doing their daily works. In order to create, structure and share knowledge through ICT system all employees should have ICT know-how by having sufficient and suitable ICT training (35).

2.7. Related works

Different studies are conducted internationally and locally to investigate knowledge sharing practice of employees and factors that influence knowledge sharing.

A study conducted in Lebanon, Beirut by Hussin et.al on Knowledge sharing: Assessment of factors affecting employee motivation and behavior in the Lebanese organization using both quantitative and qualitative approaches. The study reveals that factors like trust, management's support, culture and psychological ownership of knowledge are fundamental for the success of knowledge sharing. They concluded that organizations have to create a culture that is pro-knowledge sharing, where knowledge sharing is valued by everyone, and strategies that are more knowledge friendly are implemented; this is done through the mentoring programs, creating

communities, conferences and through generating a vision that emphasizes knowledge and its importance (38).

A study conducted in South Korea top ranked four university hospitals by Hyun and Seong on factors affecting employees' knowledge sharing intention, knowledge sharing behavior, and innovation behavior used self-administered questionnaires to collect the data for survey study design. In this study the researchers categorizes factor influencing knowledge sharing in to individual factors (incentives, reciprocity, subjective norms, and behavioral control) and organizational factors (organizational structure, administrative support, learning climate, information technology systems, rewards systems, and trust). In this study reciprocity, subjective norms, behavioral control and trust significantly influenced knowledge sharing intention. Reciprocity, behavioral control and administrative support, IT system, and trust had a significant influence on knowledge sharing behavior. Behavioral control and reciprocity and organizational structure, administrative support, and trust significantly influenced innovation behavior through knowledge sharing intention and knowledge sharing behavior. Generally, reciprocity, behavioral control, and trust are factors affecting hospital employees' knowledge sharing intention, knowledge sharing behavior, and innovation behavior (39).

A study conducted in an American based multinational company in Malaysia about knowledge sharing, barriers to knowledge sharing, and strategies to promote knowledge sharing. The results show that most of the respondents agreed that there is a knowledge sharing strategy and there is a growing awareness of the benefit of knowledge sharing in the organization. However, it was worrying to know that 22 percent responded negatively to the statement that knowledge sharing is important to the organization. Also, 27 percent of the respondents were also not willing to share knowledge. The study points out that the most effective method to promote knowledge sharing was to link it with rewards and performance appraisal. Top management support was also vital to ensure the success of knowledge sharing in the organization (41).

A study conducted in Jordan by Alhalhouli, Hassan and Abualkishik on updated Model to Enhance Knowledge Sharing among Stakeholders in Jordanian Hospitals Using Social Networks used interview survey and interviewed 15 randomly selected workers; doctors, nurses and pharmacists on the government, military and private sectors. The researchers categorizes knowledge sharing barriers as individual, organizational and technological barriers. The influential individual barriers

lack of time, past mistakes, experience, and lack of interaction, are factors that hinder stakeholders from sharing their knowledge and impact the behavior of stakeholders, who work in Jordanian hospitals. The organizational barriers that influence the knowledge sharing of the stakeholders in Jordanian hospital are: lack of leadership, shortage of formal and informal spaces to share, existing corporate culture, deficiency of company and physical work environment. And unrealistic expectations of employees, lack of compatibility, mismatch, reluctance to use IT systems, lack of training and lack of communication are the technological barriers that impact the knowledge sharing among stakeholders of the Jordanian hospital. Finally, based on the findings the researchers developed a conceptual model, to improve and encourage stakeholders to share knowledge, among them (17).

A study conducted in Taiwan on the Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions using survey showed that motivational factors such as reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others were significantly associated with employee knowledge sharing attitudes and intentions. However, expected organizational rewards did not significantly influence employee attitudes and behavior intentions regarding knowledge sharing. This study also found that employee attitudes towards knowledge sharing were strongly associated with their intrinsic motivation to share knowledge. And a sense of the competence and confidence of employees may be a requirement for employees to engage in knowledge sharing (36).

A case study conducted at Malaysia's healthcare research institutes on Knowledge sharing practices using descriptive survey method and studied 400 researchers and officers from six research institutes under national institute of health: Institute for Medical Research, Institute for Public Health, Network for Clinical Research Centers, Institute for Health Management, Institute for Health Systems Research and Institute for Health Promotion. The study indicated that knowledge sharing depends on the context of encouraging and rewarding practices of organizational knowledge sharing. The findings suggest that organizational Environment and Infrastructure, Management Support, organizational Culture and Technology are factors that influence the organizational knowledge sharing practices among the employees. On the other hand, respondents in the case study did not perceived lack of policies and guidelines and lack of reward schemes would hinder knowledge sharing. Finally this study concluded that creating a knowledge sharing environment in an organization requires change in the corporate culture and

knowledge sharing culture needs to be seen as a positive force towards creating an innovative organization. (42).

A study conducted in South Africa on Improving Knowledge Management Practices in the South African Healthcare System using a mixed method i.e. qualitative and quantitative. It indicates that elements of knowledge management namely knowledge creation, knowledge sharing and knowledge application, have a positive, significant relationship with all measures of organizational performance and healthcare service delivery. The findings indicate that by employing knowledge management principles, the Health care system could improve its ability to achieve its operational goals and objectives, and also solve organizational and healthcare challenges, thereby improving organizational performance and enhancing healthcare service delivery (40).

The study conducted by Amezenech, on assessment of knowledge sharing practices and continuous learning commitment of health care professionals in hospitals in Hawassa using both quantitative and qualitative methods. The study was conducted among two public hospitals and two private hospitals in Hawassa and in order to select the sample population simple random sampling technique was used. The study indicated that Work experience, willingness, knowledge sharing opportunity and intrinsic motivation were common independent predictors of knowledge sharing practice in public and private hospitals. There is association between knowledge sharing practice and learning commitment in private hospitals. Therefore, the study concluded that stake holders and owners should create a method or a way for strengthen knowledge sharing practice through improving all the hinderers of knowledge sharing (43).

The study conducted by Adem, in Felege hiwot referral hospital on knowledge sharing among health professionals using a facility based cross-sectional study employing both quantitative and qualitative methods. The study included a total of 196 health professional working in Felege Hiwot Referral Hospital. The study indicate that there is no frequent knowledge sharing activities, due to lack of formal and informal knowledge sharing opportunities. The hospital has no ICT infrastructures which help to facilitate knowledge sharing. Due to lack of incentives and poor management support the respondents are not motivated to share knowledge. In that study knowledge sharing opportunity, communication channel, motivation, resource allocation, and high education were found as an independent predictor of knowledge sharing practice. The study concluded that the hospital management should give attention on implementing mechanisms that

motivate the staffs and the necessary ICT infrastructures that facilitate the knowledge sharing activities (13).

The study conducted by Tirualem, on the assessment of knowledge sharing practice of health care professionals in hospitals under Addis Ababa health bureau using both qualitative and quantitative method. The study reveals that job satisfaction, very high level of motivation, extrinsic motivation, use of communication channel and the presence of knowledge sharing opportunity were found as an independent predictors of the knowledge sharing practice and the study concluded that by pointing that stake holders should device a way for strengthen knowledge sharing practice through improving all the hinderers of knowledge sharing (12).

A study conducted by Teklit et al., on Knowledge sharing practice among healthcare professional of public hospitals and its associated factors in Mekelle, Northern Ethiopia using cross sectional study design and applied simple random sampling technique to select respondents for the study after distributing the health care professional proportionally to each hospital under, Mekelle city. The study indicates that motivation to transfer knowledge, salary increment, supportive leadership, knowledge sharing opportunity were a significant predictor that affect healthcare professional's knowledge sharing practices in the hospitals under the study (14).

A study conducted by Chala et.al, on the status of KS among health professionals the mechanism and tools that foster KS in Assosa hospital using a cross-sectional study design and applied both simple random sampling and purposive sampling to select the study participants. The study indicates that the vast majority of the respondents (89%) said that there is no knowledge sharing strategy in Assosa Hospital. As to knowledge sharing, 73% of the respondents disagreed on healthcare workers share their knowledge, work experience and ideas through group discussions, review meetings frequently and the participants (59%) said there is no motivational scheme in hospital for sharing knowledge (44).

The review of existing literatures on knowledge sharing indicates that health care organization face different challenges on knowledge sharing practice worldwide. This research project evaluate and identify contextual challenges of knowledge sharing practices of healthcare professionals in the hospital and finally propose contextual framework to support knowledge sharing practice.

2.8. Conceptual framework of the study

The conceptual framework of this research project is derived from different studies (17, 34, 35, and 36) conducted in the area of factors affecting knowledge sharing. The arrows in the diagram show interactions between the variables. As depicted in the diagram knowledge sharing is affected by individual, organizational, and technological factors.

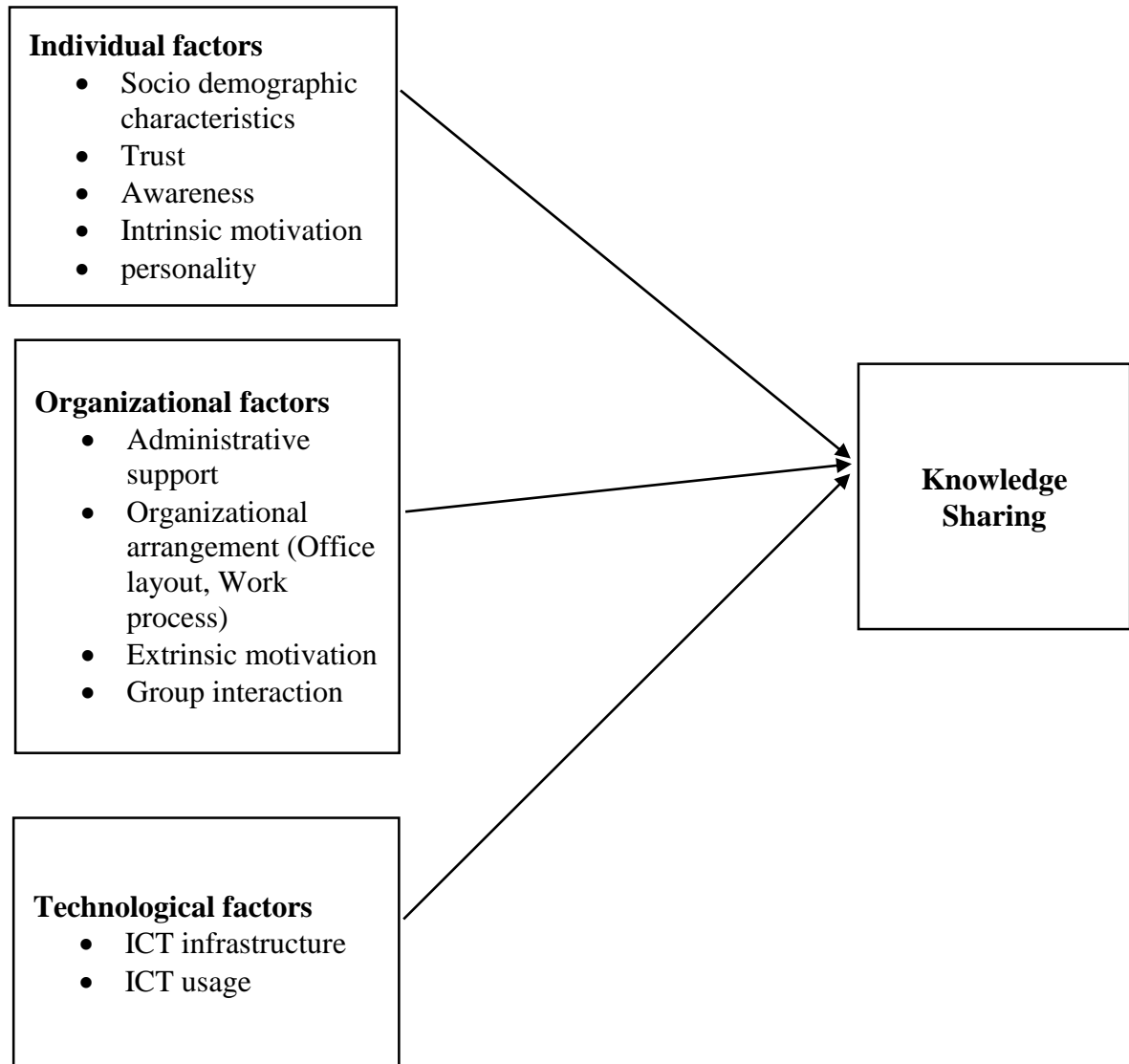


Figure 3: Conceptual framework to analyze the determinants of knowledge sharing

2.9. Chapter Summary

Knowledge comes from information processed by using data. It includes individuals' experiences, values, insights, and contextual information and helps to evaluate and incorporate new experiences and information. It applied by the knowledge workers. Knowledge is a strategic resource and the main asset for all organization because it could help for organization to have a competitive advantages.

KM is the process by which people in organizations capture, share, and generate knowledge for action. Knowledge that found in an organization should be captured, or created, managed and apply it makes the organization competitive. In organization to share and reuse the organizational knowledge it should be managed thus, it should pass through processes i.e. knowledge creation, structuring, dissemination and application processes. Knowledge creation process concerned in creating tacit and explicit knowledge which are embedding in organization work process, organization product and the like. Knowledge structuring process is defining, storing, and linking knowledge to the knowledge unit or grouping similar documents together and fits them into relevant categories which can be generated through manual or automated means. Knowledge dissemination or sharing includes searching and providing relevant content automatically to the user on the basis of user requirements. Knowledge application process includes retrieving and using, knowledge in support of decisions, actions, and problem-solving, activities in organization.

KS has become an essential part of KM. Knowledge sharing is sharing task-relevant ideas, information, and suggestions among team members. The ultimate goal of KS is to distribute the right content to the right people at right time. Knowledge sharing is important in an organization where knowledge is a key asset like healthcare because not having the right knowledge at the right time may lead to medical errors. Therefore, knowledge sharing in health organization it is a must to have. Healthcare organizations should have the culture of knowledge sharing practices to make better use of the knowhow, experiences and skills of their healthcare professionals, it support the workers to generate new ideas and deliver better healthcare quality service.

The knowledge sharing behavior of employees could be influenced by different factors and these factors categorized in to individual, organizational and technological factors. Knowledge sharing mostly depend on the communication among individuals, the willingness and readiness of individuals to share knowledge. Trust, awareness, personality and intrinsic motivation included as

individual factors. Organizational factors include commitment of leaders to KS, group interaction, organizational office layout, work process and extrinsic motivations could affect KS. Technology facilitate the flow of knowledge in organization by designing and implementing system that support the organization KS systems. Technological factors include ICT infrastructure, and usage. Finally, different researches that are relevant to the topic are discussed. Most of the researches indicates that trust, management support, organizational culture, IT system, and intrinsic motivation are factors that influence knowledge sharing in an organization.

Table 1: Related works summary

Author (year)	Purpose/Objectives	Methods/ Approach	Key findings	Remark
Hussen et.al (2014)	To analyze how organizational & human factor influence KS in the organization	Mixed approach (both qualitative and quantitative)	Trust, management support, organizational culture are fundamental for the success of KS	
Hyun & Seong (2014)	Identifying factor affecting employees' KS intention, behavior, innovation behavior	Quantitative approach using survey	Reciprocity, trust, behavioral control and administrative support are the factors	
Alhalhouli Hassan & Abualkishik (2013)	Examining the barriers that hinder the stakeholders from knowledge sharing	Survey method	Lack of leadership support, lack of open space, reluctance to use IT system, experience are factors that hinders KS	Based on the findings they develop conceptual model
Adem Agmas (2010)	Identifying factors that influence KS	Both quantitative and qualitative	KS opportunity, poor management support, lack of incentive are found as independent predictor of KS practice	
Teklit et.al (2014)	Identifying factors that influence KS among health care professionals.	Quantitative (cross sectional study design)	Salary increment, supportive leadership, KS opportunity are significant predictor of KS	

CHAPTER THREE

METHODOLOGY

3.1. Study area

The study was conducted in Yekatit 12 Hospital medical college which is found under Addis Ababa health bureau. It was built in 1915 E.C. and located in Arada Sub City, Worde 06. Yekatit 12 hospital medical college is a referral teaching hospital and it starts teaching medical doctors' since 2003 E.C. It used as a referral center for 16 catchment area health centers and other private clinics/ hospitals. It gives around 36 services as an inpatient and outpatient such as delivery service, dental, plastic surgery service for burn and cleft lip and palate, neonatal intensive care, adult intensive care, speech therapy, psychiatry services and so on. Yekatit 12 Hospital medical college has a total of 1134 technical and supportive staff among them 664 of them are health professionals and the rest 466 are supportive staffs.

3.2. Study design

A study design is a specific plan or protocol for conducting the study and allows the investigator to translate the conceptual hypothesis into an operational one. This study uses both quantitative and qualitative methods. The quantitative method attempts to generalize the findings and generate statistics by use of large scale survey while the qualitative method explores attitudes, behavior, knowledge and experiences through interviews. It attempts to get an in-depth opinion from participants. Therefore, approaching by mixing both research methods enables to counteract the weaknesses in both qualitative and quantitative research and gives superior evidence of the result. Therefore, a facility based cross sectional mixed qualitative and quantitative study was conducted. Cross sectional study design was selected because it is relatively easy to conduct, cheaper and not time consuming because the researcher can collect all the needed data at a single time.

3.3. Source Population

The source population comprises of all healthcare professionals who are employees of yekatit 12 Hospital medical college. There are a total of 664 healthcare professionals such as Specialists, Medical Doctor, Doctors of dental medicine, Physiotherapist, Nurses, Health officers, Pharmacists, Sanitarians, Midwives', Anesthetist, Laboratory technicians, Radiographers but among them 69 of them sent for education to upgrade themselves therefore, totally 595 health professionals are working in the hospital. (Annex VI)

3.4. Study Population

The study population for the quantitative study comprises healthcare professionals who are the employee of yekatit 12 hospital medical college and those selected during the sampling procedure. For the qualitative study different department heads were participated.

3.5. Sample size and Sampling procedure

Quantitative study

As described previously the total number of the study population are 595 health professionals. In order to determine appropriate sample size single population proportion formula was used.

Where: **n** = the desired sample size of respondent.

P = (P stands for the prevalence or proportion of important factors to be studied). In this study p is proportion of health care professionals involved in knowledge sharing behavior and learning practice

Z $\alpha/2$ =Critical value at 95% confidence level of certainty (1.96)

d = Precision (marginal error)

N =source population (595)

i.e. With 95% CI, Z $\alpha/2$ =1.96, p= 0.5, d =0.05.

Based on the formula the sample size calculated as

$$n = \frac{z^2 p(1-p)}{d^2} \quad n = \frac{(1.96)^2 \times (0.5) \times (1-0.5)}{(0.05)^2} = \mathbf{384.16}$$

By using correctional formula, $n \text{ final} = \frac{n}{1 + \frac{n}{N}} \quad n \text{ final} = \frac{384}{1 + \frac{384}{595}} = \mathbf{233}$

So, with adjustment for non-response (10% contingency) n= 233+59= **292** was the final number of health professionals included in the research project.

Qualitative Study

For the qualitative study an interview was conducted with eight participants. The participants were matron, pharmacy, laboratory, imaging, pediatrics, outpatient, emergency and maternal health department heads.

3.6. Sampling Technique and Procedure

For the qualitative study only those who serve as the head of the departments were chosen using purposive sampling because the participants are people who give inside and detail information about the study topic.

For quantitative study the sample population were selected using proportionally stratified random sampling. It is a sampling technique in which the sample population categorize in to different subcategories then the sample identified and selected proportionate to their occurrence in the population. In this technique the sample reflects the true proportion in the population of individuals with certain characteristics. When randomly selecting people from a population, these characteristics may or may not be present in the sample in the same proportions as in the population; stratification ensures their representation than simple random sampling technique.

All health professionals was included in the study under different profession and the list of the health care professionals were taken from human resource department to use as a sampling frame. The number of professionals in each profession is not proportional, to ensure the representativeness of each profession, the study population categorized based on their profession and their number become proportionate. In the hospital there are 35 specialists, 60 GPs (general practitioners), 342 nurses, 25 midwifery, 20 health officers (HO), 22 anesthetics, 35 laboratory professionals, 33 pharmacy professionals and 23 other health professionals (physiotherapist, imaging, psychiatry nurses, M.C.H, environmental health professionals). Based on this number the total sample size (292) was proportionally allocated to each profession and from each profession the participants selected using random sampling. Therefore, from the total sample size 17 specialists, 29 GPs, 168 nurses, 13 midwifery, 10 HO, 11 anesthetics, 17 laboratory professionals, 16 pharmacy professionals and 11 other health professionals were participated. Using this methods gives the respondents equal chance of to be selected to participate, ensure the representativeness of all professionals in the research project and avoid the possibility of conscious or unconscious bias.

3.7. Data collection methods

For the quantitative study both closed ended questionnaire was adapted from related works or articles (12, 17, 34, 36, and 39) and some modification was done in line with the objectives of the research project. The questionnaire was prepared in English and prior to the data collection pretest was done on 14(5%) respondent at Minillik II Hospital in similar population group and modified (vague, ambiguous words changed) before the actual data collection started. The self-administered questionnaire was distributed and collected by the investigator.

For the qualitative data semi-structured interview guide was developed to collect the data. The total of 8 key informants were involved in an interview. The qualitative data were collected by the investigator through taking notes and for the ease of communication the interview was conducted in Amharic then later translated to English and finally were summarized for writing up.

3.8 Data Processing and Analysis

The quantitative data was entered and analyzed using SPSS version 20. Frequencies and percentage were used for describing the study population in relation to relevant variables. Bivariate analysis was done to assess the presence and degree of association between dependent and independent variables. Multivariate analysis was used to examine the relationship between multiple independent variables and dependent variable.

For the qualitative study, the Amharic data later translated in to English and was analyzed using inductive (thematic analysis). It is a process of analyzing data with little or no predetermined theory, uses the actual data itself to derive the structure of analysis, the process involves analyzing transcripts, identifying themes within those data and gathering together examples of those themes from the text.

3.9. Data quality management

- Self-administered questionnaires and semi structured interview guide were adapted from related works or articles and some modification was done to meet the objectives.
- Pretest was done in Minillik II Hospital prior to the study and corrections were made based on the feedbacks collected.
- For problems encountered during data collection appropriate action was taken.

- Questionnaires checked for missing value and inconsistency. Questionnaires that were found to have lots of missing values and inconsistencies excluded from the study
- The qualitative data collection was conducted by the principal investigator to smoothen communication and to avoid any miss understanding.

3.10. Inclusion and Exclusion criteria

Inclusion criteria

All health professionals who are employees of the hospital with a minimum qualification of diploma.

Exclusion Criteria

Employees of hospital who do not fulfill the minimum qualification i.e. diploma, health professionals who are not employees but working there, medical students who get per time payment from the hospital like interns and residents and sponsored students who are employees of the hospital but not working there because of attending education.

3.11. Study Variables

Based on the conceptual framework, knowledge sharing practice was identified as dependent variable and awareness, trust, personality, intrinsic benefit, socio demographic variables, administrative support, organizational arrangement (office layout, work process), extrinsic benefit and ICT infrastructure, ICT usage as independent variables.

Dependent variable

- Knowledge sharing

Independent variable

- | | |
|--|------------------------------|
| • Socio demographic characteristics | • Administrative support |
| • Trust | • Organizational arrangement |
| • Awareness | • Group interaction |
| • Personality | • ICT infrastructure |
| • Motivation (intrinsic and Extrinsic) | • ICT usage |

3.12. Design and evaluation of the framework

Evaluating a framework provides evidence that a new framework achieves the purpose for which it was designed. Framework evaluation focuses either on human variables (human centric) or technology variables (or technology centric). Technology centric evaluation focuses on artifact efficiency and effectiveness while human centric evaluation uses end user satisfaction and acceptance as metrics of artifact evaluation (45). Therefore, the proposed framework evaluation uses human centric evaluation because it puts end users as a center of evaluation. An interview was conducted among five department heads after presenting about the framework function and purpose.

3.13. Operational Definitions

Knowledge sharing Practice is degree of how frequent individuals practice knowledge sharing.

Contextual factors are factors affecting knowledge sharing in the context of the study area.

Trust is defined as the degree to which employees believes and use the knowledge gained from their co-workers properly.

Personality is the degree to which employee's attitude is whether extrovert, confident and feel secure to share knowledge.

Awareness: - is defined as the degree to which employees are aware of the importance of knowledge sharing and benefits he/she could gain from sharing.

Intrinsic motivation is the degree to which employees believe that their experience can improve work efficiency and productivity and inherent satisfaction they get by helping others.

Extrinsic motivation focuses on the goal-driven reasons, e.g. rewards or benefits earned when performing an activity (promotion, admiration, and financial incentives).

Organizational Arrangement: - is the degree to which an organization which have a good office layout such as open space that encourage knowledge sharing and the presence of knowledge sharing in the organization's work process.

Supportive leadership indicates the degree to which managers encourage health care professionals to give comments, to ask questions, and encourage KS in the organization.

ICT infrastructure indicates that an up to date physical ICT structure that helps employee create, share and transfer knowledge in organization.

ICT usage the degree in which the employees use computer-based information systems in their daily work for knowledge sharing.

3.14. Measurements

Knowledge sharing practice was measured by using one close ended question with a response option ranging from never to always and by three close ended question with a response option was Likert scale ranging from strongly disagree to strongly agree. Knowledge sharing has a potential response score ranging from 1-5 and high score shows high knowledge sharing practice and potential response score ranging from 3-15 and high score shows high knowledge sharing practice respectively.

Trust was measured by five close ended questions and the response option was Likert scale ranging from strongly disagree to strongly agree. Trust has a potential response score ranging from 4-20 and high score shows having high trust on their coworkers.

Awareness was measured by four close ended questions and the response option was Likert scale ranging from strongly disagree to strongly agree. Awareness has potential response score ranging from 4-20 and high score shows that have awareness on knowledge sharing practice.

Personality was measured by three close ended questions and the response option was Likert scale ranging from strongly disagree to strongly agree. Personality has potential response score ranging from 3-15 and high score shows that better attitude for knowledge sharing.

Intrinsic motivation was measured by four close ended questions and the response option was Likert scale ranging from strongly disagree to strongly agree. Intrinsic motivation has potential response score ranging from 4-20 and high score shows having high intrinsic motivation to share knowledge.

Extrinsic motivation was measured by two close ended questions and the response option was Likert scale ranging from strongly disagree to strongly agree. Extrinsic motivation has potential response score ranging from 2-10 and high score shows high need of extrinsic motivation for knowledge sharing.

Administrative support was measured by three close ended questions and the response option for each question was Likert scale ranging from strongly disagree to strongly agree. Administrative support has potential response score ranging from 3-15 and high score shows high administrative support knowledge sharing.

Organizational arrangement was measured by two close ended questions and the response option for each question was Likert scale ranging from strongly disagree to strongly agree. Organizational arrangement has potential response score ranging from 2-10 and high score shows better organizational arrangement for knowledge sharing.

Group interaction was measured by three close ended questions and the response option for each question was Likert scale ranging from strongly disagree to strongly agree. Organizational arrangement has potential response score ranging from 3-15 and high score shows better group interaction for knowledge sharing.

ICT infrastructure was measured by two close ended questions and the response option for each question was Likert scale ranging from strongly disagree to strongly agree. ICT infrastructure has potential response score ranging from 2-10 and high score shows having low ICT infrastructure presence in the hospital.

ICT usage was measured by two close ended questions and the response option for each question was Likert scale ranging from strongly disagree to strongly agree. ICT usage has potential response score ranging from 2-10 and high score shows high ICT usage.

3.15. Ethical Considerations

Prior to data collection appropriate ethical clearance was taken from ethical committee of the School of Public Health, Addis Ababa University. To conduct the study formal letter was obtained from Addis Ababa University school of Information science. Further, concerned administrative bodies of the hospital under the study was informed. During data collection, each respondent was informed about the purpose, scope and expected outcome of the project and appropriate written informed consent was taken from the respondents. Anyone who is not willing to participate in the study was excluded.

CHAPTER FOUR

RESULT AND DISCUSSION

This section describes results on knowledge sharing among health care professionals at Yekatit 12 Hospital Medical College and present a supportive framework for knowledge sharing in the hospital. The results of the study are presented and discussed component wise in the following section. The first part presents the results of the quantitative study. Under the quantitative study the univariate analysis which is descriptive analysis of each variable, bivariate and multivariate analysis which deals with the association between two or more variables. Also the qualitative data results presented. Then the framework with its description and evaluation of the framework presented.

4.1. Results of quantitative study

To undertake knowledge sharing practice analysis, a total of 292 questionnaires were distributed. Of the total distributed questionnaires, 279 (95.5%) were complete and returned back for analysis.

4.1.1. Socio-Demographic characteristics of the respondents

Among 279 respondents 167(59.9%) were females. Regarding the age group of the respondents the result shows that the average age of the respondents 204(73.1%) were between the age group 21-30 years. From the total, 240(86%) had first degree, 16(5.7%) had specialty degree of doctors. In terms of educational background 160 (57.3%) were nurses, followed by medical doctors (GPs) and specialist doctors comprising 28(10%), 16(5.7%) respectively. Most of the respondents 210(75.3%) had worked for less than or equal to 5. (Table 2)

Table 2: Socio Demographic characteristics of the respondent in Yekatit 12 Hospital Medical College, 2017, Addis Ababa, Ethiopia, n= 279

Characteristics	Frequency	Percent	Cumulative percentage
Gender			
Male	112	40.1	40.1
Female	167	59.9	100.0
Age			
21-30	204	73.1	73.1
31-40	60	21.5	94.6
Above 41	15	5.4	100.0
Educational level			
Diploma	23	8.2	8.2
First degree	240	86.0	94.3
Specialty	16	5.7	100.0
Profession			
Specialist Doctor	16	5.7	5.7
General practitioner	28	10.0	15.8
Nurse	160	57.3	73.1
Health Officers	9	3.2	76.3
Midwifery	13	4.7	81.0
Anesthetics	10	3.6	84.6
Laboratory professional	16	5.7	90.3
Pharmacy professional	16	5.7	96.1
Others*	11	3.9	100.0
Work experience			
Less than 5 years	210	75.3	75.3
6 - 10 years	47	16.8	92.1
11-15 years	14	5.0	97.1
Above 16 years	8	2.9	100.0

(Others * include physiotherapist, imaging professionals, psychiatry nurses)

4.1.2. Knowledge Sharing Practice

Knowledge sharing is sharing task relevant ideas, information and suggestion among team members or staffs and making the shared knowledge reusable by other people or staffs. The result shows that 53% of the respondents frequently engaged in knowledge sharing activities. On the other hand 47% of the respondents not frequently share knowledge with other health professionals

in the hospital. The mean distribution of responses is 3.78 which is close to ‘often’. Based on this it can be concluded that most of the respondents engaged in frequent knowledge sharing practice. Among the respondents 50.5% uses training programs, workshop for knowledge sharing and 40.5% of the respondents uses informal ways to share knowledge.

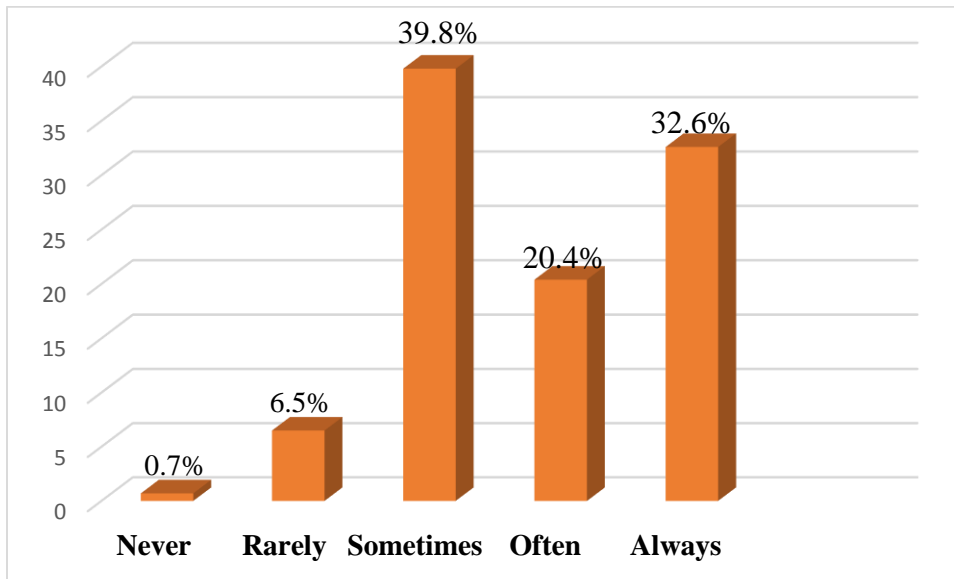


Figure 4: knowledge sharing practice of the health care professionals in Yekatit 12 Hospital Medical College, Addis Ababa, 2017

4.1.3. Knowledge sharing mechanisms in yekatit 12 Hospital Medical College

To share knowledge among health care professionals different mechanisms are going to be used. Using knowledge sharing mechanisms like face to face communication, phone, observation and internet facilitate the knowledge sharing practice among the professionals. In this case each respondents have a chance to give more than one responses so the total response cases become 536. The result shows two hundred forty (86%) uses face to face communication, 142(50.9%) uses observation to share knowledge with coworkers.

The result shows that the respondents use different mechanisms in combination. The finding shows 111(39.8%) of the respondents uses face to face communication and observation, 100(35.8%) of them uses face to face and phone, 36(12.9) uses face to face and internet, 63(22.6%) of them uses observation and phone, 21(7.5%) of them uses both observation and internet and 18(6.5%) of them uses phone and internet to share knowledge with their colleague.

Table 3: Combination usage of Knowledge sharing mechanism in Yekatit 12 Hospital medical college, Addis Ababa, 2017

KS mechanisms	Frequency	Percent
Face to face communication and observation	111	39.8%
Face to face communication and phone	100	35.8%
Observation and phone	63	22.6%
Face to face communication and internet	36	12.9%
Observation and internet	21	7.5%
Phone and internet	18	6.5%

4.1.4. Motivation

Motivation of an individual determine their engagement in knowledge sharing practice so, knowing their level of motivation and motivational system in the hospital is important to take appropriate measures.

Most of the respondents have high motivational level to engage in knowledge sharing practice. As the findings shows fig. 5, 60.5% the respondents were highly motivated and 36.6% of the respondent have medium motivation to participate or engage in knowledge sharing practice.

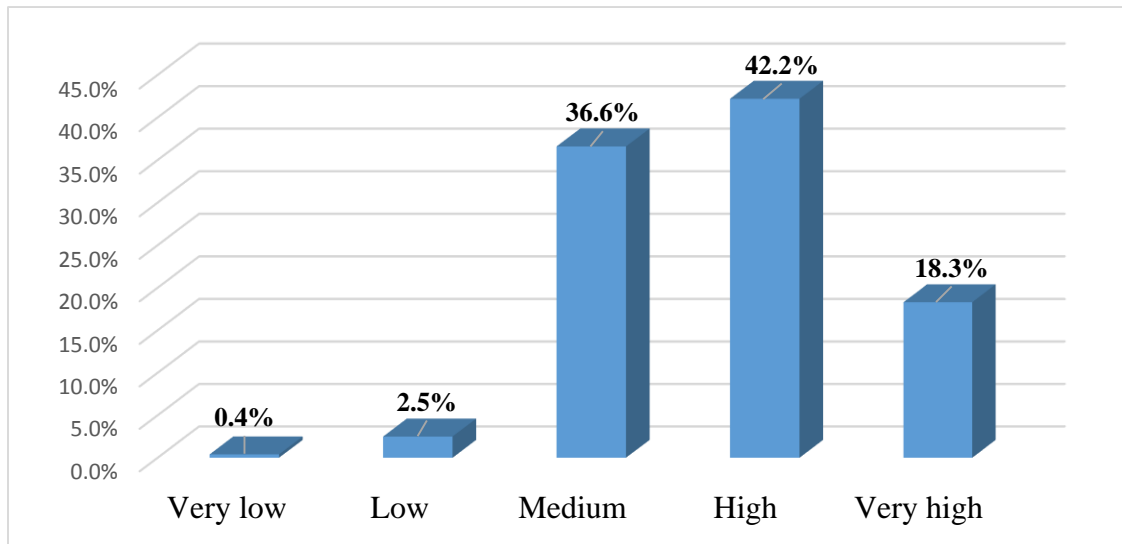


Figure 5: Motivational level of the respondents in Yekatit 12 hospital medical college, Addis Ababa, Ethiopia, 2017

The health care professionals in the hospital most of them have high level of motivation to engage in knowledge sharing practice. But fig 6 shows that 55.6% of the respondents indicates that there is no motivational scheme or system in the hospital while 44.4% of the respondents indicates that there is motivational scheme in the hospital. Therefore, this indicates that the participants have high motivation but the absence of motivational scheme in the hospital may affect their participation in knowledge sharing activities.

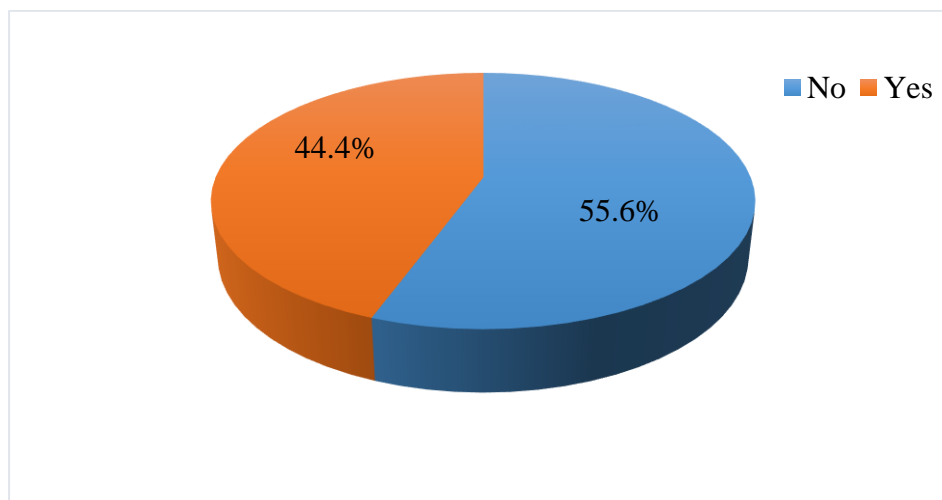


Figure 6: Presence of motivational scheme or system in yekatit 12 Hospital medical college, Addis Ababa, Ethiopia, 2017

4.1.5. Factor affecting knowledge sharing

Different questions forwarded to respondents to identify factors that affect knowledge sharing practice in the hospital. The factors categorized in to individual, organizational and technological factors this help to identify factors in their specific categories and support the managers to take measures with respective problem category. This help managers to design strategies that improve organizational efficiency via better knowledge sharing.

4.1.5.1. Individual factors

The success of knowledge sharing depends on the individual knowledge sharing behavior which can be influenced by different factors. Identifying this factors help to have a better knowledge sharing practice. This study include four individual factors: trust, awareness, personality and intrinsic motivation or benefit.

Trust

A trust plays a great role in knowledge sharing. Without trusting relationships between coworkers or staff sharing knowledge and reusing it become difficult. In hospitals a team group should create a trusting relationship in order to provide quality of health care.

The result shows on table 4, 61% of the respondents agree and 17.6% of the respondents even strongly agree on trust with each other. Therefore, 78.6% of the respondents considered that individual have trust with each other. The mean distribution of responses found to be 3.84 which is near to the value of 'Agree'. Thus, more than half of the respondents in the hospital have mutual trust that can improve knowledge sharing by creating conducive knowledge sharing environment in the hospital.

Table 4: Trust among health care professionals in yekatit 12 Hospital medical college, Addis Ababa, 2017, n=279

Trust	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
I trust knowledge of my co-workers	3 (1.1%)	15 (5.4%)	42 (15.1%)	176 (63.0%)	43 (15.4%)	3.8
I have full confidence in the skills of my co-workers	3 (1.1%)	14 (5.0%)	43 (15.4%)	175 (62.7%)	44 (15.8%)	3.8
If I got into difficulties at work my co-workers would help me out	7 (2.5%)	10 (3.6%)	40 (14.3%)	166 (59.5%)	56 (20.1%)	3.9
If I share knowledge my colleagues will believe that I am very concerned about their welfare	4 (1.4%)	17 (6.1%)	46 (16.5%)	170 (60.9%)	42 (15.1%)	3.8
If I share knowledge with my organization my colleagues will feel very confident about my skill and capability	3 (1.1%)	14 (5.0%)	41 (14.7%)	167 (59.8%)	54 (19.4%)	3.9
Total score	20 (1.4%)	70 (5.0%)	212 (15.0%)	854 (61.0%)	239 (17.6%)	3.84

Awareness

As table 5 shows that, 255(91.4%) of the respondents were aware on the importance of knowledge sharing in their daily work process and 12(4.3%) of respondents did not have an awareness on the importance of knowledge sharing in their daily work process.

Two hundred forty five (87.8%) of the respondents have an awareness that knowledge sharing helps not to repeat the same mistake, 11 (3.9%) were indifferent and 23 (8.2%) have an awareness on this aspect.

Regarding gaining new ideas, skills or techniques by knowledge sharing 254 (91%) of the respondents agreed/ strongly agreed, 16 (5.7%) were indifferent whereas 9 (3.3%) were disagree/ strongly disagree on this aspect.

The result shown on table 5 indicate that high proportion 90.9% of the respondents had an awareness about knowledge sharing and only 4.4% of the respondents disagree. Moreover, the

mean of the distribution found to be 4.41 which are nearest to the value of ‘Agree’. Therefore, it is clear that the health professionals have an awareness on the importance of knowledge sharing not only for the hospital but also for the health care professional themselves.

Table 5:Health care professionals knowledge sharing awareness in Yekatit 12 hospital medical college, Addis Ababa, 2017, n=279

Awareness	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
I am aware of the importance of knowledge sharing in daily work	1 (0.4%)	11 (3.9%)	12 (4.3%)	119 (42.7%)	136 (48.7%)	4.35
Knowledge sharing helps not to repeat the same mistake	4 (1.4%)	19 (6.8%)	11 (4.0%)	86 (30.8%)	159 (57%)	4.35
By sharing knowledge I would gain new ideas, skills or techniques	1 (0.4%)	8 (2.9%)	16 (5.7%)	86 (30.8%)	168 (60.2%)	4.48
I believe knowledge sharing helps to learn faster	2 (0.7%)	3 (1.1%)	13 (4.7%)	109 (39.1%)	152 (54.5%)	4.46
Total	8 (0.7%)	41 (3.7%)	52 (4.7%)	400 (35.8%)	615 (55.1%)	4.41

Personality

As shown in table 6, 211 (75.6%) of the respondents had an extrovert personality, 53 (19%) of respondents were indifferent. 251 (90.0%) of the respondents have high self-confidence to share and 25 (8.2%) were indifferent. 211 (75.7%) of the respondents feels secured during sharing knowledge and experience and 35(12.5%) were indifferent. Overall, 80.4% of the respondents had an extrovert personality and high self-confidence share knowledge and experience and 13.3% were indifferent. Furthermore, the mean distribution value found to be 3.99 which is nearest to the value ‘Agree’. Hence, it shows that most of the respondents are extroverts, self-confident and feels secured when they share their knowledge to coworkers.

Table 6: Health care professionals personality in Yekatit 12 Hospital Medical College, Addis Ababa, 2017, n=279

Personality	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
Extrovert personality (who socialize and open minded)	1 (0.4%)	14 (5%)	53 (19%)	129 (46.2%)	82 (29.4%)	3.99
Having high confidence	0 (0%)	5 (1.8%)	23 (8.2%)	179 (64.2%)	72 (25.8%)	4.14
Feeling secured during sharing knowledge and experience	8 (2.9%)	25 (9%)	35 (12.5%)	145 (52%)	66 (23.7%)	3.85
Total	9 (1.1%)	44 (5.2%)	111 (13.3%)	453 (54.1%)	220 (26.3%)	3.99

Intrinsic motivation

The findings on table 7 shows that 250 (89.6%) of the respondents believe that there experience can improve work efficiency and 22 (7.9%) were indifferent. 254 (91.1%) of the respondents enjoy helping others by sharing knowledge and 18 (6.4%) were neutral on this aspect. 232 (83.1%) of the respondents were confident in their ability to provide valuable knowledge and 34 (12.2%) of the respondents were indifferent. 237(84.9%) of the respondents enjoy only by sharing knowledge and 28 (10%) are neutral. Precisely, 57.9% of the respondents agree and 29.3% of the respondents strongly agreed that they are intrinsically motivated. In general, 87.2% of the respondents were intrinsically motivated to share their knowledge. The mean distribution of the responses is 4.1 which is equal to the value 'Agree'. Hence, most of the respondents have intrinsic motivation to share knowledge.

Table 7: Intrinsic motivation of health care professionals in Yekatit 12 Hospital Medical college, Addis Ababa, 2017, n=279

Intrinsic motivation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
I believe my experience can improve work efficiency and increase productivity	1 (0.4%)	6 (2.2%)	22 (7.9%)	147 (52.7%)	103 (36.9%)	4.24
Enjoy helping colleagues by sharing knowledge	1 (0.4%)	6 (2.2%)	18 (6.4%)	164 (58.8%)	90 (32.2%)	4.2
I am confident in my ability to provide knowledge that others in my organization consider valuable	0 (0%)	13 (4.7%)	34 (12.2%)	165 (59.1%)	67 (24%)	4.03
Enjoy by sharing knowledge with colleagues	2 (0.7%)	12 (4.3%)	28 (10%)	170 (60.9%)	67 (24%)	4.03
Total	4 (0.4%)	37 (3.3%)	102 (9.1%)	646 (57.9%)	327 (29.3%)	4.12

To conclude about the individual factors 76% of the respondents considered that individual have trust with each other, 90.9% of the respondents have an awareness about knowledge sharing , among the respondents 87.2% of them were intrinsically motivated and 80.4% of the respondents had an extrovert personality and high confidence to share knowledge and experience each other.

4.1.5.2 Organizational Factor

Healthcare organizations are knowledge intensive organization but the knowledge by itself does not assure its sharing or utilization. Organizations should confront factors that hinders the knowledge sharing activities and also create a better knowledge sharing environment. In this study four factors are included: administrative support, KS opportunities, organizational arrangement, extrinsic motivation and group interaction or team work.

Administrative support

The finding on table 8 shows that 136 (48.8%) of the respondents disagreed/ strongly disagreed on the presence of managers encouragement of knowledge sharing with staffs whereas, 85(30.5%) of the respondents agreed/ strongly agreed and 58 (30.5%) were indifferent with the mean score 2.74.

One hundred twenty-nine (46.2%) of the respondents strongly disagreed/agreed on managers encouragement for new ideas while 90 (32.3%) of the respondents agreed/ strongly disagreed and 60(21.5%) were neutral with the mean score 2.77.

One hundred fourteen (40.8%) of the respondents agreed on the presence of consultation from managers to team members for solving problem whereas, 98 (35.2%) of the respondents disagree and 67 (24%) were indifferent. Overall, 43.3% of the respondents disagreed on the presence of administrative support for knowledge sharing and 34.4% of the respondents agreed.

Table 8: Administrative support for knowledge sharing in Yekatit 12 medical college, Addis Ababa, 2017, n=279

Administrative support	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N %	N %	N %	N %	N %	
Managers encourage knowledge sharing with colleagues or staffs	41 (14.7%)	95 (34.1%)	58 (20.8%)	65 (23.3%)	20 (7.1%)	2.74
Managers encourage new idea and focus on learning from failure	43 (15.4%)	86 (30.8%)	60 (21.5%)	72 (25.8%)	18 (6.5%)	2.77
Managers consult team members to make decision and solve problem	20 (7.2%)	78 (28.0%)	67 (24.0%)	88 (31.5%)	26 (9.3%)	3.08
Total	104 (12.4%)	259 (31.0%)	185 (22.1%)	225 (26.9%)	64 (7.6%)	2.86

Organizational arrangement

As the result shown in table 9 one hundred thirteen (40.5%) of the respondents agreed/ strongly agreed on the presence of open space for knowledge sharing in the hospital while 105 (37.6%) of the respondents disagreed/ strongly disagreed and 61 (21.9%) were indifferent.

One hundred forty two (50.9%) of the respondents agreed that knowledge sharing included in work process, 53 (19%) of the respondents disagreed and 84 (30.1%) were neutral. Overall, 45% of the

respondents think that there is open space for knowledge sharing and the knowledge sharing included in a daily work process.

Table 9: Organizational arrangement for knowledge sharing in Yekatit 12 hospital medical college, Addis Ababa, 2017, n=279

Organizational arrangement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
There is open space that used for knowledge sharing in the hospital	22 (7.9%)	83 (29.7%)	61 (21.9%)	86 (30.8%)	27 (9.7%)	3.05
In the hospital knowledge sharing included in daily work process	7 (2.5%)	46 (16.5%)	84 (30.1%)	95 (34.1%)	47 (16.8%)	3.46
Total	29 (5.3%)	129 (23.1%)	145 (25.9%)	181 (32.4%)	74 (13.3%)	3.25

Extrinsic motivation

As a result shows in table 10, 162(59.9%) of the respondents disagreed on knowledge sharing for getting bonus as a reward and 61 (21.8%) of the respondents agreed. On the other hand, 100(35.9%) of the respondents agree that they share knowledge to get recognition, 118(42.3%) of the respondents disagreed and the rest 61(21.9%) were indifferent. Furthermore, 51.1% of the respondents share their knowledge without considering to get recognition or bonus, 20.1% of the respondents were indifferent and 28.8% of the respondent share their knowledge to get recognition the mean distribution of responses found to be 2.61 which is mid-way between the value of ‘disagree’ and ‘neutral’. Hence, the health care professionals share knowledge without considering to get recognition or bonus.

Table 10: Extrinsic motivation of health care professionals in Yekatit 12 hospital medical college, Addis Ababa, 2017, n=279

Extrinsic motivation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N (%)	N (%)	N (%)	N (%)	N (%)	
Sharing knowledge to get recognition and acknowledgement	53 (19.0%)	65 (23.3%)	61 (21.8%)	75 (26.9%)	25 (9.0%)	2.84
Sharing knowledge with colleague to get bonus, promotion	75 (26.9%)	92 (32.9%)	51 (18.3%)	49 (17.6%)	12 (4.3%)	2.39
Total	128 (22.9%)	157 (28.2%)	112 (20.1%)	124 (22.2%)	37 (6.6%)	2.61

Team work

As table 11 shows the highest proportion 70.3% of the respondents considered that individuals are cooperative and learn from others as a team. Specifically, 51.4% of the respondents agreed and 18.9% strongly agreed on this aspect. The mean distribution of responses found to be 3.86, which is close to the value of 'agree'. Therefore, the health care professionals believe in working as a team or believe in team work.

Table 11: Health care professionals team work for knowledge sharing in Yekatit 12 hospital medical college, Addis Ababa, 2017, n=279

Team work	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N %	N %	N %	N %	N %	
Organization encourage team work regarding knowledge sharing	8 (2.9%)	48 (17.2%)	49 (17.6%)	134 (48.0%)	40 (14.3%)	3.54
Most of the people I work with are cooperative and open to share knowledge	4 (1.4%)	24 (8.6%)	37 (13.3%)	161 (57.7%)	53 (19.0%)	3.84
I would rather cooperate with colleague than compete with them	2 (0.7%)	24 (8.6%)	52 (18.6%)	135 (48.4%)	66 (23.7%)	3.86
Total	14 (1.7%)	96 (11.5%)	138 (16.5%)	430 (51.4%)	159 (18.9%)	3.75

Generally, 43.3% of the respondents disagreed on the presence of organizational support, 45% of them believe on the availability of good organizational arrangement, 51.1% of the respondents share their knowledge without considering recognition or bonus and 70.3% of individuals believe in learning from others and being cooperative as a team.

4.1.5.3. Technological Factors

Information communication technology is a crucial element to the linkage of information and knowledge integration in organizations and supports the information stage for creating, accessing, organizing and distributing knowledge.

Technological factors

As the result shows in table 12, two hundred twelve (76%) of the respondents disagreed on the availability of internet, intranet in the hospital and 21(7.5%) were neutral.

Two hundred eight (74.6%) of the respondents disagreed the presence of technical support and integrated IT system and 31(11.1%) were indifferent.

One hundred thirty-four (48.1%) of the respondents disagree for the use of knowledge network like email to communicate with colleague and 13.6% were neutral. On the other hand, 56% of the respondents disagreed with extensive use of electronic storage (such as database) to access knowledge and the remaining 17.9% of the respondents were indifferent. Overall, 63.5% of the respondents disagreed on the availability of ICT infrastructure, usage of email for knowledge sharing and 23.7% of them agreed. The mean distribution of the mean found to be 2.45 which is near to the value of 'Disagree'. Therefore, it there is lack of ICT infrastructure and low usage of email, internet for knowledge sharing.

Table 12: Technological factors in Yekatit 12 hospital medical college, Addis Ababa, 2017, n=279

Technological factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean score
	N %	N %	N %	N %	N %	
ICT infrastructure (internet, intranet) is available	132 (47.3%)	80 (28.7%)	21 (7.5%)	30 (10.8%)	16 (5.7%)	1.99
There is technical support and maintenance for ICT	116 (41.6%)	92 (33%)	31 (11.1%)	30 (10.8%)	10 (3.6%)	2.01
Employees use knowledge networks such as email to communicate with colleagues	66 (23.7%)	68 (24.4%)	38 (13.6%)	74 (26.5%)	33 (11.8%)	3.20
Employees make extensive use of electronic storage (such as database) to access knowledge	54 (19.4%)	102 (36.6%)	50 (17.9%)	44 (15.8%)	29 (10.4%)	2.61
Total	368 (32.9%)	342 (30.6%)	140 (12.5%)	178 (15.9%)	88 (7.8%)	2.45

4.1.6. Determinant factors associated with knowledge sharing

Bivariate regression analysis is done to test the presence of association between two variables. In this study to test the association between variables binary logistic regression was done and variables which have significant association with knowledge sharing practice at 5% significant level were selected for multivariate analysis. In this study socio demographic data like gender, age, educational level, profession and work experience did not show statistically significant association with knowledge sharing practice of the health professionals, see (table 13) While the binary logistic regression test on the independent variables trust, awareness, personality, extrinsic motivation, administrative support, organizational arrangement, team work and ICT shows statistical significant association with knowledge sharing practice of health professionals at 5% ($p < 0.05$). (Table 14).

Multivariate analysis is done to identify or examine the effects of more than two variables on the dependent variable simultaneously. Those variables that have significant association with the knowledge sharing practice of the health care professionals entered together to determine the predictor. Therefore, the result indicates that knowledge sharing of the health care professionals is by 2.87 score more in the presence of information communication technology with (AOR=2.87; 95% CI= (1.18, 7.007)). Therefore, information communication technology found to be an independent predictor for knowledge sharing.

Table 13: Association between socio demographic variable and knowledge sharing in Yekatit 12 Hospital Medical College, Addis Ababa, 2017

Characteristics	COR (95%CI)	p value
Gender		
Male	1	
Female	0.63(0.29-1.36)	0.246
Age		
21-30 yrs.	1	
31-40 yrs.	0.51(0.6-4.05)	0.52
>40 yrs.	1.00(0.10-9.66)	1.00
Educational level	0.00(0.00-0.00)	0.99
Profession		
Physicians	1	
Other health profession	1.77(0.51-6.12)	0.36
Working experience	0.00(0.00-0.00)	0.99

Table 14: Crude and Adjusted Odds ratio for knowledge sharing practice and selected variables in yekatit 12 Hospital Medical College, Addis Ababa, 2017

variables	COR(95%CI)	p value	AOR(95% CI)	p value
Trust				
No	Reference			
Yes	0.061(0.014, 0.27)	0.000	0.411(0.056,3.046)	0.385
Awareness				
No	Reference			
Yes	0.061(0.014,0.27)	0.000	0.138(0.015,1.300)	0.083
Personality				
No	Reference			
Yes	0.244(0.07,0.847)	0.026	1.053(0.16,6.919)	0.957
Intrinsic motivation				
No	Reference			
Yes	0.171(0.27,1.066)	0.059		
Extrinsic motivation				
No	Reference			
Yes	0.379(0.162,0.883)	0.024	0.52(0.189,1.430)	0.205
Administrative support				
No	Reference			
Yes	0.379(0.183,0.862)	0.02	0.732(0.262,2.040)	0.551
Organizational arrangement				
No	Reference			
Yes	0.266(0.122,0.58)	0.001	0.446(0.171,1.164)	0.099
Teamwork				
No	Reference			
Yes	0.123(0.038,0.434)	0.001	0.335(0.075,1.497)	0.152
Technological factors				
No	Reference			
Yes	3.34(1.54,7.24)	0.002	2.87(1.18,7.007)	0.02

4.2. Results of qualitative study

Key informant in-depth interview

An in-depth interview were conducted with eight participants to obtain detail information on the topic. Regarding how participants understand the concept of knowledge sharing, the respondents understand knowledge sharing as a sharing of knowledge that obtained from schools learnings, training, guidelines and experience and when they give response about the hospital knowledge

sharing culture most of them said that the knowledge sharing culture differ from department to department but there is no integrated knowledge sharing culture in the hospital.

When the respondents talk about the importance of knowledge sharing, they said that knowledge sharing helps not to repeat the same mistake, helps to learn faster with little time and increases the staff communication which will help to improve work practice.

At the time of interview some of the respondents indicate that they use different mechanisms to share knowledge. Most of them use face to face mechanisms and observation. They also states that they obtain knowledge through trainings that conducted by the hospital or other organization (governmental and non-governmental), by asking question and making discussion with senior staffs, through morning sessions but the morning sessions are attended only by physicians and ward rounds. But one of the respondent states that: “the hospital does not have formal mechanism that support interdepartmental knowledge sharing. The knowledge from one department to other differs in many ways but to exchange that knowledge the staff uses informal ways, if the person wants to know something from that department he/ she ask the member department.”

Regarding the existing challenge in implementing effective knowledge sharing the respondents’ states that lack of time due to high flow of patient, individual interest and absence of knowledge sharing sessions like morning sessions, seminars in other professions as physicians do.

As the respondents reported, in the hospital there is no management support to encourage knowledge sharing. But some of the respondents stated that the senior managements tries to support knowledge sharing by organizing different trainings with other governmental and non-governmental organizations and by facilitating ways that the staff learn from other organizations best practices.

To improve knowledge sharing the respondents suggest different measures. Majority of the respondents recommends that awareness creation about the importance of knowledge sharing among the staffs, providing recognition and reward for those who share their knowledge, facilitating for those who don’t have knowledge sharing sessions departments or professions to start the session and setting knowledge sharing strategies may help to improve knowledge sharing.

4.3. Discussion

The purpose of this research project is to identify the current knowledge sharing practice and factors among health care professionals to design a framework that support knowledge sharing and reuse in yekatit 12 hospital medical college.

Knowledge sharing can increase job performance and facilitate new knowledge creation by achieving the value of knowledge. Knowledge sharing is a deliberate act that make knowledge reusable by other professionals by exchanging knowledge (tacit or explicit) and to create a new knowledge (35).The result of the study showed that, out of 279 study participants 53% of the respondents frequently share knowledge with coworkers this is higher than the study conducted in Bahirdar which is 82.3% of the participants are not frequently share knowledge with other healthcare professional or coworkers (13). It might be due to the majority of the respondents are intrinsically motivated to share their knowledge as a result it makes the respondents to share their knowledge frequently.

The healthcare professionals' motivation is important to share knowledge as health care is knowledge intensive area professionals gain knowledge from experience, different training and the acquired knowledge mostly reside in the heads of the professional. In order to transfer their knowledge with their colleagues in the hospital individuals should be motivated.

The result in this study indicates that 42.2% of the respondents had high level of motivation to transfer their experience and skill to their staffs. This result was higher than the result of the study conducted in hospitals under Addis Ababa health bureau which was 26.8% of the study participants were motivated to share their knowledge with their staff (12).

Identifying factors that encourage or discourage knowledge sharing practices in organizations in general and the hospitals under study in particular; is important to investigate ways to increase the use of knowledge that already exists in the hospitals. The factors affecting knowledge sharing could be categorized into three factors: individual, organizational and technological factors. This is because in order for organizations to fully control their knowledge based assets, they must first understand factors that affect knowledge sharing at individual level. Furthermore, knowledge sharing takes place in the organization and to facilitate the knowledge sharing process, information and communication technology play an important role (46).

Individual knowledge is part of an organization's knowledge which resides in the brains and bodily skills of the individual. It involves all the knowledge possessed by the individual that can be applied independently to specific types of tasks and problems. Because individuals have cognitive limits in terms of storing and processing information, individual knowledge tends to be specialized and domain specific in nature and there are different factors that influence individual knowledge (49). From individual factors trust, awareness, personality and intrinsic motivation were included in this study.

A trust plays a great role in knowledge sharing. Without trusting relationships between employees, participants would not share and transfer knowledge. An organization or hospitals and a team group may create a trusting relationship in order to achieve their goals in an effective way. This study indicates that 76% of the study participants agreed on the presence of trusting relationship among each other which is higher than the study conducted in hospitals under Addis Ababa health bureau in which 68.9% of the study participants had trust among coworkers (12).

Awareness represents the first phase of knowledge sharing initiative in organizations. The awareness about the importance of knowledge sharing is considered as an attitude that every employee should have including the top management. As employees aware about the importance of knowledge sharing they practice it and gain from it (35). The result of this study confirmed that majority (90.9%) of the study participants agreed on having awareness about the importance of knowledge sharing which is much closer to the study conducted in Bahirdar Felege hiwot hospital which is 88.7% of the study participants had awareness about the importance of knowledge sharing.

The other important individual factor is that personality of the individual. This study shows that 80.4% of the respondents had an extrovert personality and high self-confidence to share knowledge and experience with colleague. On the study conducted in Malaysian electronic government agencies personality was the most significant predictor of knowledge sharing in the result of multiple regression analysis (34).

Intrinsic motivation is one of the individual factor that influence knowledge sharing. When people think engaging in an activity for their own sake, out of interest, can increase productivity, gain pleasure, satisfaction and joy by helping others they will be more predispose to share knowledge with others (36). This study shows that 87.2% of the study participants had intrinsic motivation

for knowledge sharing and it has no statistically significant association with knowledge sharing. The study conducted in Taiwan intrinsic motivation was found to have statistically significant association with knowledge sharing (36).

At the organizational factors Administrative support, organizational arrangement, extrinsic motivation and team work was used in this study. Hospitals may create conducive environment or conditions which are necessary for ensuring a willingness to share knowledge.

Managers or administrators can lead the organization to actively and dynamically create knowledge by providing and understanding the knowledge vision of the hospital, developing and promoting sharing of knowledge assets, and creating the time and place to share knowledge (38). The result in this study confirmed that 43.3% of the study participants disagreed on the presence of administrative support for knowledge sharing which supported by the qualitative study and it is smaller than the study conducted in Addis Ababa which is 63.2% of respondents think that there is no supportive leadership or administrative support in the hospital.

One of the organization factor is organizational arrangement. It is the arrangement that organization structured to ensure the work done. The arrangement of an organization may have flexible design to encourage knowledge sharing between individuals and team members. The offices should have open space for knowledge sharing and incorporate the hospital knowledge sharing in a daily work process.

Individual behavior is driven by its perceived values and the benefits of the action. The fundamental goals of extrinsically motivated behaviors are to receive rewards or reciprocal benefits. Organizational rewards are useful for motivating individuals to perform desired actions (36). This study result indicates that 28.8% of the study participants share their knowledge to get recognition or acknowledgement, reward and the extrinsic motivation have statistically significant association with knowledge sharing but in the study conducted in Taiwan to examine the role of both extrinsic and intrinsic motivators in explaining employee knowledge sharing intention the result showed that extrinsic motivators were not significantly associated with knowledge sharing intention of employees (36).

Technological factors are factors that influence knowledge sharing. ICT is crucial to the linkage of information and knowledge integration in organizations. In order to build knowledge sharing capabilities, the organization must develop a comprehensive infrastructure that facilitates the

various types of knowledge and communication (47). Infrastructure is very important for knowledge sharing by saying that a knowledge infrastructure consisting of technology, structure, and culture along with knowledge process architecture of acquisition, conversion, application, and protection are essential organizational capabilities or "preconditions" for effective knowledge sharing (48). In this study information communication technology found to be an independent predictor of knowledge sharing which is not similar to the study conducted in Mekelle (14).

4.4. The proposed knowledge sharing Framework

ICT plays a great role to improve and support knowledge sharing. Information technology infrastructure is crucial to the linkage of information and knowledge integration in organizations. In order to build knowledge sharing capabilities, the organization must develop a comprehensive infrastructure that facilitates various types of knowledge and communication (47).

The result of this study shows that ICT had statistically significant association and found to be independent predictor of knowledge sharing among health care professionals. So, to support knowledge sharing among health care professionals the following framework was proposed by taking into account the need for one point access knowledge portal (gateway) that facilitate knowledge creation, acquisition, sharing and search, the use of intranet/extranet/internet for creating a secured knowledge sharing environment, having an integrated interdepartmental KS and the need to create organizational memory such as clinical data base to maintain integrated knowledge sharing.

The framework has three layers which have separate application and this makes easier to implement re-usable components for knowledge sharing in the hospital. The front layer runs on the client side which is the presentation layer, the middle layer which is the process layer and the third layer is the database or knowledge repository layer.

The proposed presentation layer

It is a layer that the accessed knowledge presented using different knowledge portals. Knowledge portal (KP) is a type of portal that purposely supports the knowledge creation, structuring, sharing and application of knowledge to provide secure, customizable, personalizable, and integrated access to dynamic information from a variety of sources interface that interacts with the KS (50). The user access the integrated knowledge through interface which offers direct and unified access to relevant features. As presented in qualitative study there is no structured and integrated way that

different departments share their knowledge so, considering this the framework interconnect the departments to have an integrated knowledge among the professionals.

The proposed process layer

The process layer that make communication between the database and the presentation layer. At this layer most of applications translates clients processing needs in to database requests and brings database responses with respect to the knowledge and data need of the user. The system processes using intranet, communication tools (audio player, video player, pdf and the like). Intranet is a private network implemented using internet protocols and concept to securely disseminate and exchange data, sound, graphic, and other media. Intranet support KS by providing compression of time and spaces among the users, by offering the flexibility to exchange information, and by supporting information transfers and organizational networking independent of direct contacts between users (51).

The proposed knowledge repository layer

The back end layer in knowledge management architecture is where repositories are installed. Knowledge repository serve as a storage for the knowledge collected in the past stages. Therefore, Knowledge repository is viewed as organization memory and retention of knowledge assets. Knowledge repository must have sufficient storage media to accumulate knowledge and prevent valuable expertise from disappearing. Also, knowledge repository importance relies on the viscosity of knowledge to store, amount of knowledge accruing, objective of organization, infrastructure and culture (52).

To store, the knowledge stored should have proper indexing for easy retrieval. Based on the capacity, knowledge can be stored in different locations or databases. In this layer the data or knowledge stored at different databases. Once the repositories are created they are linked to form an integrated repository. An integrated repository brings together all the knowledge available from the repositories.

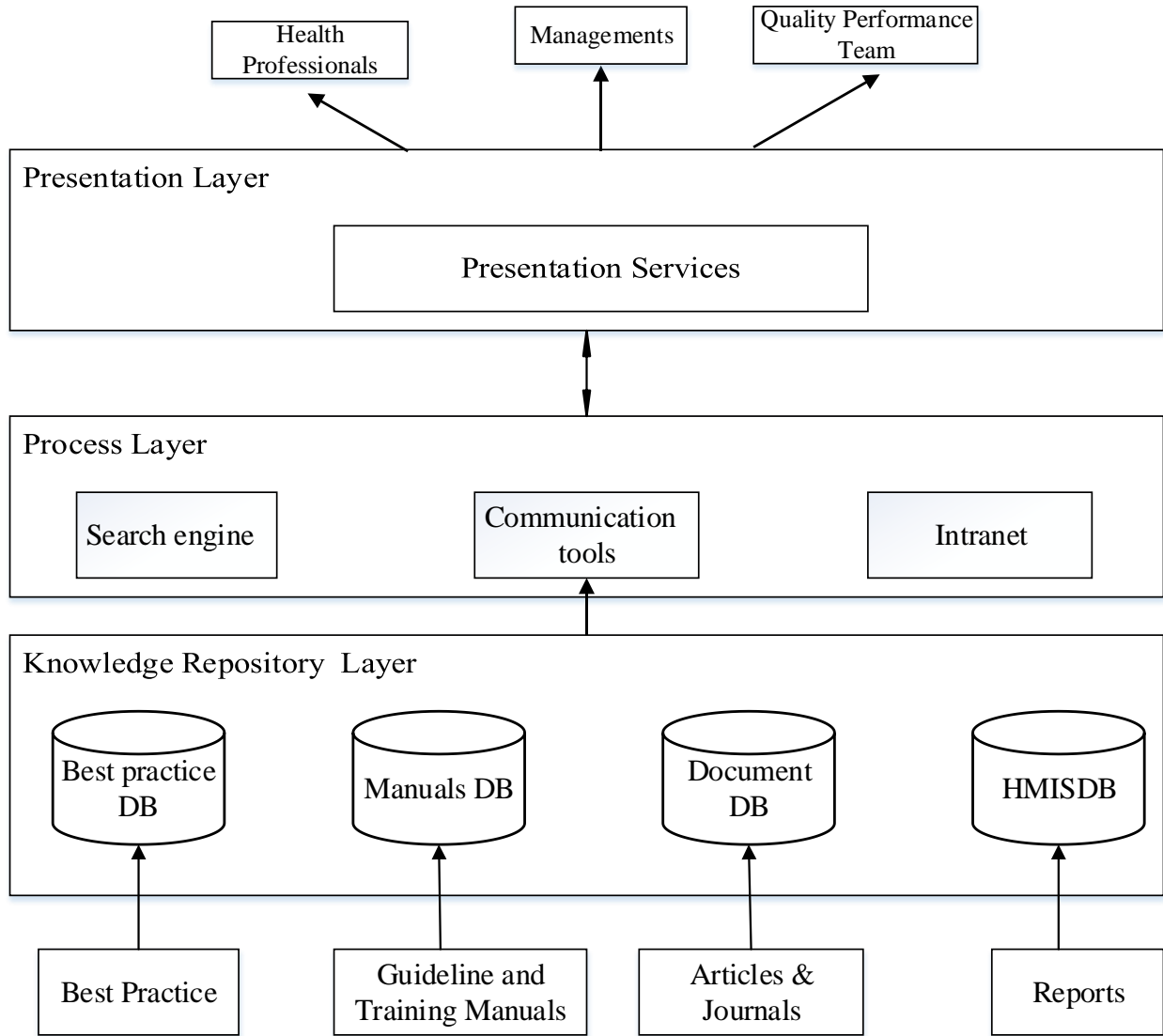


Figure 7: The proposed framework to support knowledge sharing among health care professionals at Yekatit 12 Hospital Medical College

4.5. Evaluation of the framework

To evaluate the proposed KS framework, the framework was presented for the selected end users. The researcher explained the main functions of the proposed KS framework, what benefits it will bring to potential users and how it will be accessible when it is implemented and followed by an interview and discussion with the selected frame work evaluator.

The respondents explain about the usefulness of the design, having knowledge repository service in the framework helps to access knowledge in many and different ways and also it support to accesses a scientific knowledge easily.

The respondents agreed that the framework can provide the needed knowledge at the required quality. The knowledge that different departments required are going to be putted in an integrated repository and the user access the knowledge in integrated ways. One of the evaluator reported that “Sometimes, when we ask a coworker they may not give as or share a full and integrated knowledge this can cause a problem on doing tasks at the workplace so, the frame work can solve this ”.

In the workplace there are different social barriers that hinder knowledge sharing among health care professionals. One of the respondent reported that “When you ask information from another person, you do not feel comfortable because you feel that you disturb your colleagues. You may not be sure whether he is willing to answer your question and the like. In addition, you do not know whether you are contacting the right person. But if you access the knowledge online, you are free and you can access it at any time you want”.

One of the current system problem is that there is no formal interdepartmental knowledge sharing but this framework lets the health professionals to share. This support the health professionals to have an integrated information or knowledge and makes the health professionals to have know-how what each departments do.

As shown on the framework the frame work uses different ways to present knowledge. This makes the system attractive, easily understandable and gives different chance to accesses the knowledge. To conclude that the design that contains knowledge repository service has high acceptance by users because of its support to overcome social barriers to get knowledge from other colleagues. As long as there is well organized and easily accessible knowledge repository.

All interviewed professionals state that the current problem to implement the proposed framework in the hospital is the absence of ICT infrastructure and this may challenge the framework implementation.

To conclude, the interviewed professionals confirmed that the proposed KS framework has ability to access the needed knowledge at the required time and quality, to get an integrated knowledge, it supports the interdepartmental knowledge sharing and since we access the existing knowledge database it reduces seniors' interruption by simple questions. The main challenge specified by users is that the supporting ICT infrastructures.

4.6 Strength and Limitation of the Research Project

Strength

- Both qualitative and quantitative data were collected so that an issue missed by one method could be picked by the other
- This study had 95.5% response rate for the quantitative study which is a high response rate.
- This study proposed a framework after investigating the current knowledge sharing practice.

Limitation

- The study uses self-administered questionnaires; this may affect the quality of the data.
- For time and logistic reasons the study was conducted only in Yekatit 12 Hospital medical college.
- The proposed KS framework was not evaluated by a developed prototype. The developed prototype provides opportunity for users to practically experience and understand the proposed KS in the real environment.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

As health care organizations are knowledge intensive organizations thus the knowledge is created by the health care professionals and the created knowledge interpreted in to the organizational knowledge; this requires effective knowledge management and knowledge sharing practice. This practice helps to deal with diverse problems, helps to address organizational goals and to deliver quality service.

In this study most of the respondents are aware of the importance of knowledge sharing, have mutual trust and have appropriate personality for knowledge sharing but only half of them were frequently engaged in knowledge sharing practice. To share their knowledge most of them use face to face communication and by combining face to face with observation.

In this study the majority of the participants were highly motivated to share their knowledge but they agreed on the absence of organizational motivation system for sharing knowledge. Also, the majority of the respondents need less recognition, acknowledgement and reward in return of their knowledge sharing.

The study shows that most of the participants work in team or believe in team work and this makes easier the knowledge sharing practice among the health workers. Also, majority of the respondents indicate that there is good organizational arrangement in the hospital for knowledge sharing but they point out that the management support is low for knowledge sharing.

In this study more than half of the respondents agreed on the absence of information communication technologies in the hospital. From the factor that have a significant association with knowledge sharing technological factor identified as independent predictor for knowledge sharing. This shows that presence of ICT improves knowledge sharing and absence will hinder knowledge sharing activity of healthcare professionals. Hence, a framework is designed to support knowledge sharing activities among health care professionals.

5.2. Recommendations

To address organizational need and to have a quality health care service, knowledge sharing among health care professionals is important because medical knowledge is dynamic by its nature. So, each health professional should update his/her knowledge timely. And also, most of individual knowledge reside in the heads of the professionals in order to use, share and reuse the knowledge the hospital need to have a structured framework. Thus, health institutions, health bureau and health professionals should give emphasis to facilitate the knowledge sharing practice.

5.2.1. For Addis Ababa health bureau

- The bureau may support hospitals that are under its administration by giving technical and non-technical support to have a knowledge sharing structure which facilitate and encourage the health professionals to share their knowledge and practice.

5.2.2. For Yekatit 12 Hospital Medical College

- Creating a motivational system that encourage the knowledge sharing among health care professionals.
- Integrating knowledge sharing with information technology by providing ICT infrastructures.
- Creating formal inter departmental knowledge sharing activities.
- Encouraging professionals to have a formal knowledge sharing mechanisms like meeting, morning sessions and seminars as physicians do or should integrate other professionals with them to have an integrated and full knowledge sharing practice.

5.2.3. For health care professionals

- The health care professionals who have more working experience should take a responsibility to transfer their experience knowledge to the new workers or for less experienced workers.
- The professionals need to use other mechanisms like phone, internet in addition to face to face and observation to improve their knowledge sharing practice.
- The health care professionals should increase their ICT usage for knowledge sharing.

5.2.4. Future research

This research project identify the current knowledge sharing practice, factors that influence knowledge sharing practice of the health care professionals and propose only the framework for knowledge sharing. So, researchers further enhance and validate the framework through a system that support knowledge sharing among the professionals.

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ANNEXES

ANNEX I - INFORMATION SHEET

My name is Betelehem Lema. I came from Addis Ababa University and I am currently conducting a research project for the partial fulfillment of master's degree in health informatics. The purpose of this research project is to design a framework to support knowledge sharing practice among health care professionals in yekatit 12 hospital medical college.

I would like to ask you some questions related to the topic I mentioned above, the information you provide are confidential and will be used only for the purpose of the study. I would like to ask you to give your honest answers. However, you have the right not to respond if you are not voluntary.

The answers you give on this form will help in better understanding of the situation of knowledge sharing practice in the hospital and will help in designing appropriate intervention programs to alleviate knowledge sharing problems. Your honest and genuine participation in responding to the questions prepared is very important and highly appreciated.

May I get your permission to continue?

Yes Go to the consent form

No Stop

Principal investigator: Betelehem Lema

Email betelem2@gmail.com

ANNEX II- CONSENT FORM

I have been informed that this questionnaire is part of research project that used to design a framework for knowledge sharing practice among health care professionals in yekatit 12 hospital medical college. I have been told that the project will provide better understanding on the existing situation about knowledge sharing practice among healthcare professionals. Understanding the existing situation will be used as a base line for designing intervention program to alleviate the knowledge sharing problems. The proposed framework will be beneficial for all health professionals and health care organization. Finally, I am assured that confidentiality of my response will be strictly maintained. Therefore, I have agreed to participate in the study by signing this form

The study participant's Signature _____

Date _____

ANNEX III- SELF-ADMINISTERED QUESTIONNAIRE

Part 1: Demographic profile of the Respondents

Please encircle your answer or write in space provided that represents your most appropriate answer.

1. Indicate your gender?
 - A. Male
 - B. Female
2. Indicate your age group?
 - A. Less than 20 years
 - B. 21 – 30 years
 - C. 31- 40 years
 - D. Above 40 years
3. Your highest educational level?
 - A. Diploma
 - B. First degree
 - C. Master's degree
 - D. Specialty
 - E. Doctorate degree (PhD)
4. Your profession?
 - A. Specialist doctor
 - B. General practitioner
 - C. Nurse
 - D. Health officers
 - E. Midwifery
 - F. Anesthetics
 - G. Laboratory professional
 - H. Pharmacy professional
 - I. Others
5. Your working experience in health organization? _____

Part 2: Questions on knowledge sharing

Knowledge sharing is sharing task-relevant ideas, information, and suggestions among team members (staffs) and making the shared knowledge reusable by other people.

Based on the above Knowledge sharing context please encircle your answer that represents your most appropriate answer.

6. How often do you share knowledge with staffs in the hospital?
 - A. Never
 - B. Rarely
 - C. Sometimes
 - D. Often
 - E. Always
7. Currently what mechanism do you use to share knowledge in the hospital? (**Possible to choose more than one answer**)
 - A. Face to face communication with colleague
 - B. Observation
 - C. Using phone
 - D. Using internet (such as e-mail)
 - E. Other specify _____

8. How do you feel motivated to transfer your knowledge?

A. Very low B. Low C. Medium D. High E. Very high

9. Is their motivational scheme (system) in the hospital to motivate knowledge sharing?

A. Yes B. No

No.	Please tick (√)one answer only which indicate your extent of agreement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Knowledge Sharing						
10.	In the hospital there is periodic meetings in which people working in different teams, department may participate					
11.	In the hospital there are formal opportunities like training program and workshop within the hospital that allow employee to share knowledge.					
12.	There is informal knowledge sharing practice within the hospital					
Trust						
13.	I trust knowledge of my co-workers					
14.	I have full confidence in the skills of my coworkers					
15.	If I got into difficulties at work, I know my coworkers would try and help me out					
16.	If I share knowledge with in my organization my colleagues will believe that I am very concerned about their welfare (wellbeing)					
17.	If I share knowledge with my organization my colleagues will feel very confident about my skill and capability					
Awareness						
18.	I am aware of the importance of knowledge sharing in daily work					
19.	Knowledge sharing helps not to repeat the same mistake					

20.	I believe I would gain new ideas, technologies, skills or techniques by sharing knowledge					
21.	I believe knowledge sharing helps to learn faster					
Personality						
22.	I am an extrovert type of person (like to know what is happening, socialize and open minded)					
23.	My self confidence is high to share knowledge					
24.	I feel secured when I share my knowledge and experience					
Intrinsic Motivation						
25.	I believe my experience can improve work efficiency and increase productivity					
26.	I enjoy helping colleagues by sharing my knowledge					
27.	I am confident in my ability to provide knowledge that others in my organization consider valuable					
28.	I enjoy sharing my knowledge with colleagues					
Extrinsic Motivation						
29.	In my organization individuals who share their knowledge gets recognition and acknowledgement					
30.	In my organization I get bonus, promotion in return to my knowledge sharing with colleague					
Administrative Support						
31.	Managers in our organization encourage knowledge sharing with colleagues or staffs					
32.	Managers in my organization encourage new idea and focus on learning from failure					

33.	Managers in my organization consult team members to make decision and solve problem					
Organizational Arrangement						
34.	There is open space that used for knowledge sharing in the hospital					
35.	In the hospital knowledge sharing included in daily work process					
Team Work						
36.	Our organization encourage group interaction (team work) regarding knowledge sharing					
37.	Most of the people I work with are cooperative and open to share knowledge					
38.	I would rather cooperate with colleague than compete with them					
Information Technology						
39.	Information Communication Technology infrastructure (internet, intranet) is available in the hospital					
40.	There is technical support and maintenance of integrated Information Technology system					
41.	In the hospital, employees use knowledge networks such as (email, intranet, internet) to communicate with colleagues					
42.	Employees make extensive use of electronic storage (such as databases) to access knowledge					

Thank you for your cooperation!!!!

ANNEX IV- INTERVIEW GUIDE

Interview guide to design a framework to support knowledge sharing among health professionals in Yekatit 12 Medical College.

1. What is your general understanding of knowledge sharing and knowledge sharing culture of the hospital?
2. What is the importance of knowledge sharing among healthcare professionals?
3. What are the current ways/ mechanisms of knowledge sharing in the hospital?
4. What are the existing challenge in implementing effective knowledge sharing?
5. Do senior managers Support knowledge sharing in the hospitals?
6. What measures should the hospital take in order to improve knowledge sharing

ANNEX V- KNOWLEDGE SHARING FRAMEWORK EVALUATION CHECKLIST

1. Do you think that the proposed KS framework can provide you useful knowledge for your task?
2. Do you think that the proposed KS can provide the required knowledge at the required quality?
3. Do you think that the proposed KS framework can solve existing social barriers to access knowledge?
4. What do you think about the interdepartmental connection for knowledge sharing?
5. Do you think the way how the knowledge going to be presented at the presentation layer is helpful to share knowledge?
6. What challenge do you think the proposed framework face to use it?

ANNEX VI – LIST OF HEALTH PROFESSIONALS

List of health professional in Yekatit 12 Hospital Medical College, 2017

Profession	Number of professionals	Sample taken
Specialist Doctors	35	17
General Practitioners	60	29
Nurses	342	168
Health Officers	20	10
Midwifery	25	13
Anesthetists	22	11
Laboratory Professionals	35	17
Pharmacy Professionals	33	16
Others*	23	11
Total	595	292

*Others includes physiotherapist, imaging professionals, psychiatry nurses