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**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
SCHOOL OF INFORMATION SCIENCE
AND SCHOOL OF PUBLIC HEALTH**

**A CONTEXTUAL FRAMEWORK FOR IMPROVING KNOWLEDGE
SHARING AMONG HEALTHCARE PROFESSIONALS AT ST. PETER'S
HOSPITAL**

BY: SHEHIRA FARUK

**A Project Submitted to the School of Graduate Studies of Addis Ababa
University in the Partial Fulfillment of the Requirement for the Degree of
Master of Science in Health Informatics**

June, 2015

Addis Ababa, Ethiopia

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M.SC IN HEALTH INFORMATICS PROGRAM

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Acronyms

AAU	Addis Ababa University
Epinfo	Epidemiological information
HIV/AIDS	Human Immune Virus or Acquired Immuno Deficiency Syndrome
ICT	Information Communication Technology
KM	Knowledge Management
KMS	Knowledge Management System
KS	Knowledge Sharing
KSC	Knowledge Sharing Capability
MCH	Maternal and Child Health
MDR-TB	Multi Drug Resistant Tuberculosis
MOH	Ministry of Health
SPSS	Statistical Package for Social Science
TB	Tuberculosis
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

Abstract

Background:- Knowledge is critical asset to individual as well as to organization. Managing this organizational key asset effectively will help the organization to be successful in this increasingly competitive environment. Knowledge sharing is a fundamental means through which employees in an organization exchange their knowledge and experience. Therefore the aim of this research project is to propose theoretical framework to drive knowledge sharing practice among healthcare professionals in St. Peter's hospital.

Objective:- The purpose of this project is to explore the current knowledge sharing practice among health professionals so as to propose contextual framework that enable to enhance knowledge flow in St. Peter's Hospital.

Methods:-A facility based quantitative and qualitative study with cross sectional study design was conducted from March to April 2015G.C. A self administered questionnaire was distributed to a total of 191 healthcare professionals of St. Peter's hospital during the data collection period and to supplement the quantitative study in-depth interviews with department heads was conducted. The quantitative data was entered and cleaned by epinfo version 3.5.1 and analyzed using SPSS version 16. Frequency, percentage, mean and standard deviation were used to describe the study population and after checking the normality of the dependent variable linear regression with 95 % confidence interval was used to assess the presence of association between the dependent and independent variable.

Result:- The finding of this study shows that healthcare professionals of St. Peter's hospital are infrequently practicing knowledge sharing. According to multivariate analysis, the factors that were independent predictors of knowledge sharing are willingness and lack of information technology. Knowledge sharing practice of healthcare professionals is by 0.10 score more in presence of willingness than absence with $A\beta(95\%CI):0.10[0.01, 0.20]$ and knowledge sharing practice is by 0.07 score less when there is lack of information technology than presence of information technology with $A\beta(95\%CI): -0.07[-0.12, -0.01]$. Hence a contextual framework is designed to enable information technology plays its part in enhancing knowledge sharing in the hospital.

Conclusion and Recommendation:- The study St.Peter's hospital shows that most of healthcare professionals are aware of the importance of knowledge sharing and have appropriate personality for knowledge sharing but they are not engaged in knowledge sharing frequently. So the hospital administration should plan a way to strengthen knowledge sharing practice by improving the identified contextual factors through implementing the designed contextual framework.

Key words: Knowledge, knowledge sharing, knowledge sharing barriers, contextual framework.

CHAPTER ONE

INTRODUCTION

1.1 Background

It is widely known that knowledge is the vital asset to individual as well as to organization to be successful in the increasing competitive environment. Hence, making use of this knowledge in order to create the great value is becoming an essential concern [1]. “Knowledge of an organization is mainly classified into two types [2]: explicit and tacit. Tacit knowledge is defined as personal, intangible and embedded knowledge. It deeply rooted in action, procedures, routines, commitment, ideals, values and emotions. Tacit knowledge always exists in the cognitive minds of people and is obtained through learning and experience. On the other hand, explicit knowledge is a systematic knowledge which is in written form such as books, articles and reports.”

Knowledge management is defined as a process of identifying, organizing and managing knowledge resources. This involves creating, generating, capturing, storing, sharing and using knowledge to support and improve individual performance [3]. As noted by Sheng and Raymond [4], “Organizations must consider how to transfer expertise and knowledge from experts who have it to novices who need to know.” That is, organization must give attention and need to effectively utilize knowledge based resource that already exists within the organization.

Knowledge sharing, the behavior of disseminating and transferring knowledge with other members within one’s organization, is a key enabler of knowledge management. Effective knowledge sharing involves the dissemination and transfer of knowledge as well as its retrieval and reuse [5]. The basic purpose of communicating knowledge with in a group is to utilize the available knowledge and improve group performance. In other words, individuals share what they get through learning and transmit what they knew to those who have interest and who have found the knowledge useful. According to Ming-Yu et.al [1], the value of knowledge expanded when it is shared. Therefore, if managed properly, knowledge sharing can greatly improve work-quality and decision-making skills, problem-solving efficiency as well as competency that will benefit the organization at large.

These days healthcare industry is working to become a knowledge-based community that connects hospitals, clinics, pharmacies, physicians, and customers for sharing knowledge, optimizing resources utilization and improving the quality of care. The success of healthcare depends critically on the collection, analysis, and exchange of clinical, billing, and other information or knowledge within and across organizational boundaries [6].

Knowledge sharing among medical practitioners is considered to be vital for improving the quality of patient care. In particular, tacit knowledge sharing amongst physicians and practitioner, such as the sharing of clinical experiences, skills or know-how, to have a significant impact on the quality of medical diagnosis and decisions making. From a healthcare Knowledge Management (KM) perspective, it is crucial to exploit and aid tacit knowledge sharing among clinical teams [7].

Patient centered care needs healthcare providers to collaborate and communicate with each other. This includes organizational management, clinicians, and all other staff that provide service to the patient. Through collaboration and communication the most comprehensive care for the patient will be better achievable [8].

1.1.2. Overview of St. Peter's Hospital

The current St. Peter's hospital was established in 1963 G.C as a TB treatment center for the nation. In the time of Haile Sellassie I, with the charity and goodwill of Knojit Anbenet, wife of Ras Abebe, the residence of the War Minister was given to Ministry of Health to serve as TB sanatorium. The house was renovated, furnished and equipped by the government. It was inaugurated by the Emperor in 2nd of February 1963 G.C. The Hospital started service with 100 beds, 3 expatriate physicians, a matron, 2 nurses and 11 patient care givers (total of 16 healthcare workers and 51 administrative staff). It has expanded to include female and pediatric wards and in 1968 G.C. was upgraded to a Hospital. The outpatient department in Mesalemia and inpatient department in Entoto merged in 2010 G.C. Starting from February 2009, the hospital started initiating second line treatment for Multi- Drug Resistance Tuberculosis patients as nation pilot site [9].

Currently, the Hospital has a total of 444 staffs and from this 210 are health care professionals. The hospital is mainly involved in the management of TB and TB/HIV patients, in addition internal medicine, pediatrics service, maternal and child health, HIV/AIDS treatment with VCT services, mental health and dental medicine is functional [9].

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].

In healthcare, having the right information and knowledge at the right time and place to the right person can become a very difficult challenge due to the sheer amount of ever-expanding knowledge. From public health perspective one of the key challenges facing the health care today is a call for urgent and considerable improvement in overall efficiency, effectiveness and quality of service [6].

Many healthcare organizations are facing lack of knowledge 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. Moreover, they cannot meet the requirements of knowledge capabilities in their professional activities, which is a big obstacle to improve the efficiency and quality of treatment. 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].

In most organizations people believe that knowledge hoarding is more beneficial than knowledge sharing. Since knowledge is a central resource of government services, effective knowledge

sharing among employees is a significant management challenge for providing excellent services to the public at all levels [12].

According to the estimate made by the US institute of Medicine around 98,000 patients die each year as result of preventable errors [10]. Similarly, a study conducted in two UK hospitals revealed that 11% of admitted patients experienced adverse events of which 48% of these events were most likely preventable if the right knowledge was applied [10]. The conclusion drawn by the above studies is that the under-utilization of healthcare knowledge contributes to incorrect clinical decisions and medical errors.

In hospitals of resource limited countries, knowledge and experience sharing are poorly practiced. The absence of this essential issue in hospitals is the main cause for the presence of various medical errors such as severe injury, miss diagnosis, wrong treatment, increased multi-drug resistance and unexpected deaths [14]. Previous studies [15, 13] done in Ethiopia indicated that information and experience sharing practice of health professionals is poor due to several reasons such as, lack of opportunities for knowledge sharing, not integrating knowledge sharing in the hospital work process and lack of supportive management. In most of the healthcare institutions healthcare providers simply work by referring to their handouts and remembering their school trainings [14].

Based on direct observation St. Peter's hospital face poor knowledge sharing among healthcare professionals. One of the problems that exist in the hospital is that the hospital does not have duly designed regular meeting that comprises of all healthcare professionals. Absence of these regular meetings has decreased the chance of updating their skills and quality of care given to patients. The other problem is that since the number of specialists is few, most patients are examined and treated by general practitioners and health officers. If the case of the patient requires additional consultation of specialists, the patient would be appointed for some other time. This may aggravate the condition of the patient and in the worst scenario may lead the patient to death. In addition to the above sited problems the hospital also faces staff turnover due to retirement and mobility. As the hospital does not have a mechanism to retain the tacit knowledge of this outgoing experienced professionals the valuable knowledge that would be of helpful would get lost.

Therefore, the aim of this research project is to explore contextual factors that drive better knowledge sharing environment among healthcare professionals in St. Peter's Hospital.

To this end this project attempts to answer the following study questions:-

1. What does the current knowledge sharing practices in St. Peter's Hospital look like?
2. What are the contextual factors driving knowledge sharing among healthcare professionals?
3. How contextual factors can be mapped to contextual knowledge sharing framework?

1.3. Objective of the Project

1.3.1 General Objective

The purpose of this project is to identify contextual factors affecting the current knowledge sharing practice among health professionals so as to design a contextual framework that enhances knowledge flow in St. Peter's Hospital.

1.3.2 Specific Objectives

To achieve the general objective, the following specific objective are formulated

- To identify current knowledge sharing practice among healthcare professionals in St. Peters Hospital
- To identify contextual factors that affect knowledge sharing practice in St.Peter's hospital.
- To map contextual factors into contextual framework for knowledge sharing practice among healthcare professionals in St. Peter's Hospital.

1.4 Significance of the Project

Knowledge is important resource of healthcare organization and most of this knowledge resides in the heads of health care professionals. In healthcare organizations, patient oriented care and medical decision depends mostly on experience and knowledge of health professionals.

Thus, facilitating the interaction, collaboration, sharing and making this knowledge available to healthcare professional will improve health care delivery and decision making.

This project will help in identifying contextual factors that affect knowledge sharing among healthcare professional in St. Peter's hospital. Identifying these factors will enable the hospital

administrator to take measure on the contextual factors and also the proposed contextual framework will help the hospital to design and implement healthcare knowledge management system which will enhance knowledge sharing practice of healthcare professionals and further improve quality of healthcare.

1.5 Scope and Limitation of the Project

Knowledge management covers knowledge creation, capturing, representation and finally sharing. However this project is going to be conducted in the context of knowledge sharing only. This project is conceptual in its nature and aims to propose contextual framework to drive knowledge sharing practice among health professionals in St. Peter's Hospital. The reason for selecting St. Peter's hospital in this project is that it is one of the referral hospitals under Ministry of Health especially in TB and MDR-TB cases. Thus, knowing the situation and factors affecting knowledge sharing is mandatory in order to design effective system that enhances knowledge sharing. In this project individual, organizational and technology factors affecting knowledge sharing are investigated and it is delimited to factors proposed in the conceptual framework of [39, 16, 20].

1.6 Organization of the Study

In order to explore the knowledge sharing practice in St. Peter's Hospital, this project is organized in to five chapters. The first chapter deals with background of the study, statement of the problem, objective, significance and scope of the study. The second chapter presents the review of the related literature in the area of knowledge sharing and discuss related works that asses the practice of knowledge sharing. The third chapter discusses the methodology followed for data collection, data analysis and interpretation. In chapter fourth chapter the finding, data interpretation and discussion is presented. Finally, fifth chapter brings the project to an end by mapping contextual; factors into contextual framework and by giving conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

Nowadays, information and knowledge is the force powering our societies and our economy.

The success of a society and economy depends on how well they enable these valuable assets to be shared, how well they learn from the knowledge they hold, and how they use it to create new value. Knowledge is a central resource of government service [16]

In this information age, knowledge is the key for a business success, just as important as oil or coal during the industrial age [17]. Because of this, managing knowledge has become an important agenda for most organizations [18].

2.1 Knowledge and its Type

Knowledge is a know-how gained through experience. It is the combination of facts, analysis, trainings, and lessons learned that comprise information and knowledge for an individual [19]. Knowledge is an important strategic resource for all organizations. It could help organizations to gain competitive advantage [20].

“In the knowledge-based era, knowledge is the most precious asset and the foundation of a firm’s competitive edge. It originates individual’s intelligence but exists in the routines, procedures, systems, software, practice and norms of the organization, which are difficult to imitate [21].”

“Knowledge in organizations is mainly classified into two types [22]: explicit and tacit.

Explicit knowledge is knowledge that can be captured and written down in documents or databases. Explicit knowledge can further be categorized as either structured or unstructured. Documents, databases, and spreadsheets are examples of structured knowledge, because the data or information in them is organized in a particular way for future retrieval. In contrast, e-mails, images, training courses, and audio and video selections are examples of unstructured knowledge because the information they contain is not referenced for retrieval. Tacit knowledge is the knowledge that people gain through experience and store in their heads. It is much less concrete than explicit knowledge. Tacit knowledge is considered more valuable because it provides context for people, places, ideas and experiences.”

Tacit and explicit knowledge are complementary, this means both types of knowledge are crucial to knowledge creation. Knowledge is created not only from either tacit or explicit but through interactions between tacit and explicit knowledge. Competitive advantage will only be gained if organizations value their tacit knowledge as explicit knowledge [23].

2.2 Knowledge Management

“Knowledge Management” is a process used by organizations and communities to improve how business is conducted by leveraging data and information that are gathered, organized, managed, and shared [24]. As defined by WHO [25], knowledge management is 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.

Knowledge management is about applying the collective knowledge of the entire workforce to achieve specific organizational goals. The intention of knowledge management is not necessarily to manage all knowledge, but just the knowledge that is most important to the organization. It is about ensuring that people have the knowledge they need, where they need it, when they need it- the right knowledge, in the right place, at the right time and for the right individual [22].

“The current concept of Knowledge Management (KM), however, emerged in the early 1990s within various fields like business administration, public policy, information systems management, library and information sciences [26]. KM is viewed as a way of providing the right information and knowledge with the potential of achieving superior competitive advantage. The discipline of knowledge management has four major components [26]; people, process, technology and content

- **People:** are those who create, share, and use knowledge, and who collectively encompass the organizational culture that nurtures and stimulates knowledge sharing. Peoples are primary because they implement KM processes as part of their daily work and help shape a knowledge sharing organizational culture [27].
- **Processes:** is the method to acquire create; organize share and transfer knowledge; In order to improve knowledge sharing, organizations often need to make changes to the way their internal processes are structured, and sometimes even the organizational structure itself [26].

- **Technology:** is the mechanism that store and provide access to data, information, and knowledge created by people in various locations [26]. Technology is often a crucial enabler of knowledge management – it can help connect people with information, and people with each other, but it is not the solution. And it is vital that any technology used “fits” the organization’s people and processes – otherwise it will simply not be used [22].
- **Content:** can be viewed as an evolution of data –any kind of item including unstructured and not necessarily discrete. Examples of content are image, free text, streamed video clips and also data items (i.e. discrete structured items that can reside in and fully managed by data base system.) [28].

2.3. Knowledge Management in Healthcare

The primary and basic components of healthcare are information and knowledge. Being a practitioner involves using up-to-date medical knowledge and patient-related information to deliver the best possible care. Making the knowledge available to practitioners when they need it and improving the knowledge is very crucial [29]. In health care, knowledge is the main resources of the organizations, as it enables the organization to achieve best medical results [20]. The success of a medical care depends on how effectively and wisely knowledge is being used to improve the health care process [30].

Healthcare organizations are highly tacit knowledge environments. Healthcare professionals’ tacit knowledge is the most valuable source of their “experiential know-how” acquired in critical situations of patient management. The importance of tacit knowledge in healthcare industry is well recognized as it is “certainly, about “what really works and how to make it work” rather than explicit knowledge of “how things should work” [31].

Knowledge management (KM) initiatives have emerged in the business sector, public sector and more recently in healthcare. Healthcare is an information-rich industry; medical knowledge is expected to double during a professional lifetime [5]. And it 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 [26].

Knowledge management in health care is “aligning people, processes, content and technologies to optimize information, collaboration, expertise, and experience in order to drive organizational performance and growth” [32]. Within healthcare, knowledge management is about capturing the knowledge that is critical to the organization. Knowledge in healthcare includes both the experiences and understanding of practitioners (tacit knowledge) and the information available inside and outside the organization such as, medical guidelines (explicit knowledge). Continuously improving the knowledge and making it accessible to practitioners when they need it, is critical for improving the quality of care delivered [30].

Just as we manage our organization’s key tangible assets, such as finance, human resource and fixed assets, important medical knowledge need to be actively managed. Healthcare takes an active approach to Medical knowledge management by executing a series of strategies to improve how knowledge is managed – including a branding strategy focused on mobilizing awareness and support of the knowledge management initiatives [6].

Thus, managing knowledge in this industry is an enormous task. KM holds great promise for improving healthcare delivery and, more critically, for dealing with information overload suffered by physicians. It can facilitate the interaction, collaboration, and sharing of knowledge among physicians to improve patient care [5].

It is thus clear that healthcare can profit from many advantages that KM provide, such as; improved patient care, safety and satisfaction, team-building across organizational boundaries and more informed decision making by learning from others and building on individual experiences etc. Therefore, the healthcare sector needs to embrace KM strategies, processes, tools and techniques. This can support healthcare organizations to create greater value by delivering higher healthcare quality with optimal cost effectively [30].

2.4 Knowledge Management Life Cycle

As shown in figure 2.1, Knowledge management life cycle consists of four processes [34]: namely, knowledge creation, knowledge structuring, knowledge dissemination and knowledge application

2.5.1 The Knowledge Creation Process

The knowledge creation process is concerned with of creating new tacit and explicit knowledge through encouraging interactive relation with individuals from diverse background [33]. The process of knowledge creation 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. [34].

2.5.2 The Knowledge Structuring Process

The process of knowledge structuring is about defining, storing, categorizing, indexing, and linking digital objects such as documents and images to knowledge units [33]. Mapping the existing and available knowledge (including expertise and skills) in terms of its context, relevance, and locations helps in the classification of the knowledge into taxonomies. Storing the knowledge in properly indexed and inter-linked knowledge repositories such as company yellow pages of expertise and knowledge, skills inventory, best practices inventory and lessons learned inventory are then performed [34].

2.5.3 The Knowledge Dissemination Process

The knowledge dissemination process primarily involves knowledge sharing and collaboration. It is the diffusion of knowledge to improve the work of the system and decision making processes [33]. Knowledge sharing is done using different means, some of which are automatic and other on manual, such as training and education, company intranet, communities of practice, external or internal benchmarking, documentation and newsletter, and cross-functional teams [34].

2.5.4 The 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 (for example, workflow), providing job aids (for example, customer support) and training to bring people up to speed quickly [34].

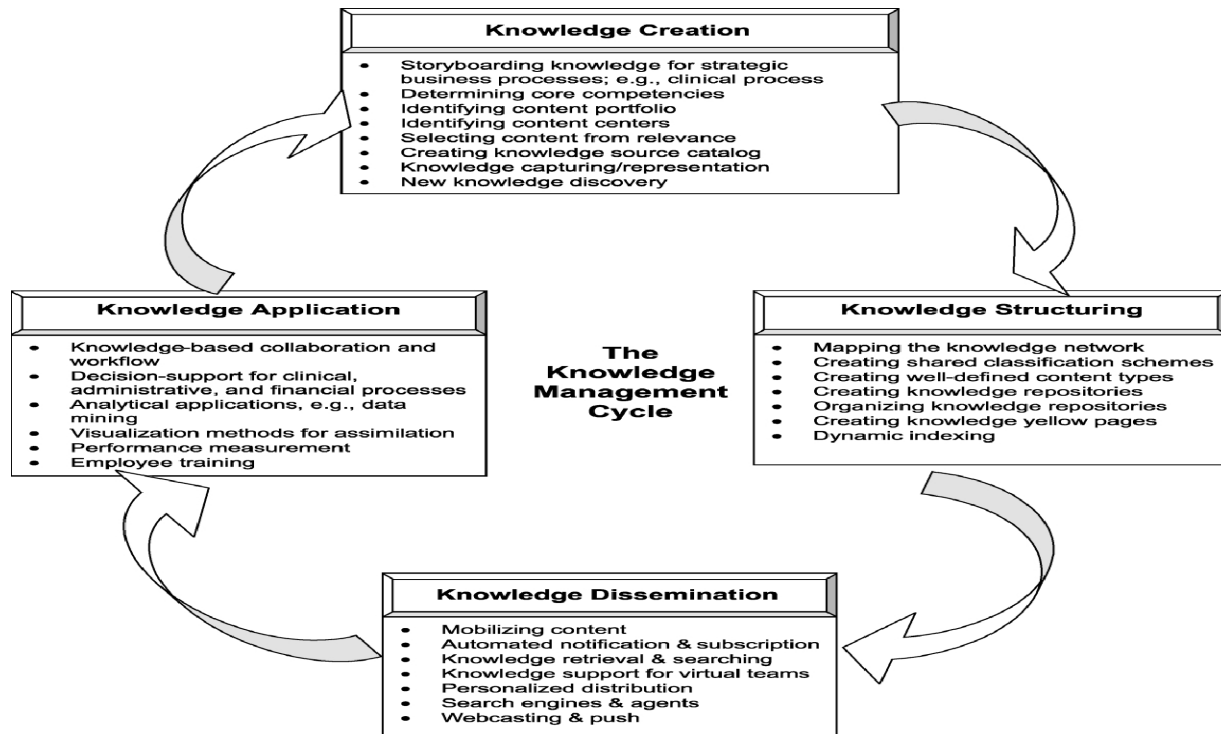


Figure .2.1 The knowledge management cycle [34]

2.5 Knowledge Sharing (KS) Model

Model is a reality representation. Models could be used to improve understanding on factors affecting KS in organizations [16]. There are different models in knowledge management but in this study the researcher considered a model that is relevant for knowledge sharing in an organization this is szulanski’s model of knowledge transfer

2.5.1 Knowledge Transfer Model

Szulanski’s model discusses the concept of internal stickiness which is concerned with the difficulty of transferring knowledge within the organization.

Szulanski presents four factors that affect knowledge transfer [35]: characteristics of the knowledge transferred, of the source, of the recipient, and of the context in which the transfer takes place.

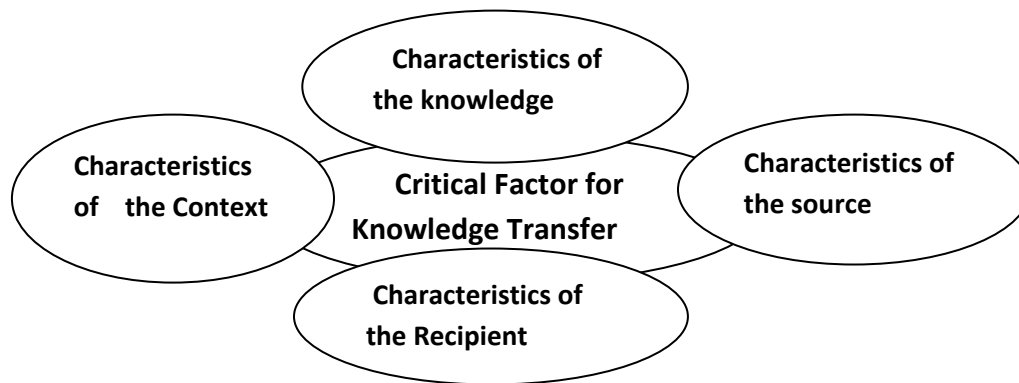


Figure 2.2 Critical Factors for Knowledge Transfer based on Szulanski’s model of 1996 [35]

Characteristics of the Knowledge Transferred

This factor covers the characteristics of the knowledge that is to be transferred. The characteristics of the knowledge transferred includes whether the information is concrete or abstract. Information could be sticky or leaky, where sticky information is difficult to transfer and to turn it into knowledge while leaky information has an opposite character. The same is true for tacit and explicit knowledge, where knowledge containing tacit dimensions tends to be tricky to pass on while explicit knowledge is more fact driven and hence easier to transfer. This different characteristic of the knowledge implies that the communication methods must be adjusted accordingly. When one is dealing with tacit knowledge it is argued that extensive personal interaction is required for a successful transfer to take place.

Characteristics of the Source of Knowledge

There are numerous factors that affect the transfer of the knowledge from the source to the recipient. One factor that often is highlighted is the motivation of the source in transferring the focal knowledge. In various cases, the knowledge source might show a lack of motivation in sharing their knowledge due to fear of losing ownership and a higher position. This is more likely to occur if the knowledge source is not rewarded enough for transferring hard won knowledge and might hence result in the source being unwilling to dedicate time and resources to facilitate the transfer. Reward for knowledge transfer can take of different forms and often be abstract. Another critical factor is trustworthiness and credibility of the source. If the source is not considered credible it will be more difficult to convince the receivers to make use of the

knowledge that is transferred. Trustworthiness and credibility is something that could be facilitated in various ways however, displaying an understanding of the recipient and their interest is critical in enhancing the trust.

Characteristics of the Recipient of Knowledge

Motivation is a critical factor also for the recipient of knowledge. Lack of motivation among recipients to absorb and make use of outside knowledge is rather common and implies difficultness to successfully transfer knowledge between the parties. An additional critical factor in the process of knowledge transfer is the recipients' absorptive capacity which is explained as their ability to value, assimilate and apply new knowledge. Another of the recipient's abilities is their so called retentive capacity. Retentive capacity reflects the recipients' ability to institutionalize the utilization of new knowledge. Absorbing new knowledge is one step, but if the knowledge is not retained and used, the knowledge transfer in itself is useless.

Characteristics of the context

The organizational context is another factor that affects the success of knowledge transfer. One more specific aspect of this dimension includes the relationship between the source and the recipient. The relationship between the source and the recipient does further include how well and to what frequency the two parties are interacting and communicating with each other. When the knowledge to be transferred contains tacit components, a tight relationship with numerous individual is needed in order to facilitate the transfer. A forceful relationship between the source and the recipient would hence complicate the knowledge transfer.

2.6 Knowledge Sharing in an Organization

The key to the success of any knowledge management is the communication among individuals, particularly on sharing knowledge among the individuals. Knowledge sharing is individual's willingness and readiness to share their knowledge with others. Yet, effective knowledge sharing among individuals depends on the individuals' knowledge sharing behaviors [20].

In broader perspective, knowledge sharing refers to the communication of all types of knowledge including explicit knowledge (information, know-how and know-who) and tacit knowledge

(skills and competency). It is the fundamental means through which employees can contribute to knowledge application, innovation, and ultimately the competitive advantage of the organization) [12].” It involves two or more parties and there has to be a source and a destination. Generally, in the transfer of something, someone will gain it and someone else will lose it. However, knowledge which is regarded as an intangible asset is different from tangible assets. Tangible assets tend to depreciate in value when they are used, but knowledge grows when used and depreciates when not used. This means that knowledge will keep on growing whenever a person shares the knowledge that he/she has; when someone transfers their knowledge, they do not lose it [37].

One of the major barriers 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 [38]. 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 [4]. Knowledge sharing is the key to organizational productivity. Once knowledge is created there is an economy of scale that results from its sharing – both because more than one individual can use knowledge at the same time and because shared knowledge stimulates the creation of new knowledge [39].

From a healthcare knowledge management (KM) perspective it is vital to harness and facilitate tacit knowledge sharing among clinical teams [31] and 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 [40]

2.7 Factor Affecting Knowledge Sharing

A number of factors impact employees’ perceptions of a knowledge sharing culture. The identified factors can be broadly categorized into three groups: organizational factors individual or human factors and technological factors.

2.7.1 Individual/ Human Factors

Individual factors have been known of their significant impact on knowledge sharing behavior in organization [3]. Individuals are the heart of organizational knowledge creation because, individuals create and share knowledge. Without individuals (employees), knowledge will not be invented in an organization [16]. Some individual factors that have been cited by different studies as having significant influence on employees knowledge sharing are listed below.

2.7.1.1 Willingness

Willingness to share knowledge is the ability of employee to actively communicate with colleagues (i.e. knowledge donating) and actively consult with colleagues to learn from them (i.e. knowledge collecting). Since knowledge sharing is a voluntary act, willingness of employees is mandatory [41].

2.7.1.2 Trust

Environment of trust is a prerequisite to knowledge sharing. As trust is closely related to knowledge sharing, organization should provide an environment that enable employees to trust each other, work together, to be motivated to share knowledge and involve in discussion. Such an environment is deem necessary since trust and openness could encourage active knowledge sharing behavior by means of improving communication speed by giving mandate to organizational members to share the knowledge they possess[3].

2.7.1.3 Awareness

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 important of knowledge sharing considered as an attitude that every employee should have including the top management [42]

2.7.1.4 Reciprocity

Reciprocity is deemed beneficial because of its close relation with feelings of personal responsibility, appreciation, and trust. When individuals engage in knowledge sharing, they expect that their request for knowledge in the future will be granted by their peers. Moreover, reciprocity is considered as an obvious motivator of an individual's knowledge contribution [43].

2.8.1.5 Intrinsic Benefit

- **Altruism(enjoyment in helping others)**

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 benefit 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 [23].

- **Knowledge Self-efficacy**

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 inclined to share knowledge with others [21].

2.7.1.6 Personality

Personality is one of the impediments 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 [42].

2.7.2 Organizational Factors

KS is the core of KM in organizations. The ability to share knowledge between organization units and departments contribute immensely to the performance of the organization [16]. However, Organization's culture affects the ability of its members to retrieve and store information, and ability to absorb and share knowledge (absorptive capacity) [44] and also organizational structure influences KS. A flexible organizational structure encourages knowledge sharing and collaboration across boundaries within the organization, while a rigid structure often has the unintended consequence of inhibiting such practices [16]. Factors related to organizational culture and structure are listed below.

2.7.2.1 Openness

The presence of openness within an organization encourages active knowledge sharing behavior by means of improving communication speed by giving mandate to organizational members to share the knowledge they possess [3].

2.7.2.2 Group Interaction

KS occurs within organization through social networks. Social networks indicate communications, dialogue, and individual or group interactions that support and encourage knowledge-related employee activities. The ties among individuals within social networks can facilitate KS and enhance knowledge sharing capability among employees in organization [16].

2.7.2.3 Supportive Leadership

Knowledge sharing does not happen automatically in a team and the team's leader has an essential role to play in making it happen. Leadership plays a key role in promoting and cultivating knowledge sharing behavior and has also strong impact on the knowledge sharing [20].

2.7.2.4 Extrinsic Benefit

Organizational rewards such as promotion, bonus, and higher salary have been shown to be positively related to the frequency of knowledge contribution. It is believed that incentive and reward systems encourage knowledge management activities among employees and has important role as an enabler [21].

2.7.2.5 Organizational Office Layout

Today, 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. [16].

2.7.2.6 Work Process

The KSC 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. The best way to make people capable to share, which is to contribute knowledge as part of their work process [42].

2.7.3 Technological Factor

ICT tools are defined as tools such as e-mail, groupware and computer-based information systems that facilitate knowledge sharing [42]. 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 [23].

2.9 Related Works

There are a number of studies conducted internationally and locally to investigate knowledge sharing practice and factors that influence knowledge sharing.

A study conducted by Gebretsadik et al. [40], on Knowledge sharing practice among healthcare professional of public hospitals and its associated factors in Mekelle, Northern Ethiopia used 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. In this study the researchers categorized factors affecting knowledge sharing into three factors: individual, organizational and technological factors. Based on the finding the study concluded that supportive managers in the hospital, the open communication among healthcare professionals related to job issues, the presence of knowledge sharing opportunity in the hospital, salary increment as important incentive to encourage employees, professionals motivation to transfer knowledge were the significant predictors that affect healthcare professionals knowledge sharing practice in the hospitals under study.

A study conducted by Adem [15], on knowledge sharing among professionals a case in Felege Hiwot hospital conducted a facility based cross sectional study using both qualitative and quantitative methods. The finding of the study showed that knowledge sharing opportunity,

communication channel, motivation, resource allocation and high educational level were found to be independent predictor of knowledge sharing and the study concluded by pointing that the management should give a great attention to knowledge sharing and that the hospital should make the necessary infrastructures and incentive mechanism to motivate staffs.

A study conducted by Tirualem [58], on assessment of knowledge sharing practices of healthcare professionals in hospitals under Addis Ababa health bureau conducted cross sectional study using both qualitative and quantitative methods. The finding of the study showed that job satisfaction, very high level of motivation, extrinsic motivation ,use of communication channel and presence of knowledge sharing opportunity were independent predictor of knowledge sharing and the study concluded by pointing that stake holders should device a way for strengthen knowledge sharing through improving all the hinderers of knowledge sharing.

A case study conducted in Sweden by Rexpil and Persson [29], on knowledge management process to support evidence based practice in healthcare used a qualitative research method with interviews as main data collection technique to identify factor affecting knowledge sharing in Swedish healthcare system. Accordingly, the study identified the following factors,(i) lack of collaborative relationship with practitioners from other unit within the organization, (ii) lack of common space where they could share experience, gain new insight and create new tacit knowledge through interaction with other practitioners, (iii) lack of culture among nurses and assistant nurses to share knowledge and collaboration between departments within the organization which this kind of culture is to be more inherent among physicians and (iv) lack of motivation for capturing ,sharing and applying knowledge due to poor wage, lack of career opportunity, (v) lack of recognition ,work condition and lack of support from manager.

A study conducted in Malaysia on knowledge sharing practice by Rahman [45], adopted descriptive survey research method and studied 400 researchers and officers from 6 research institutes within the National Institute of Health (NIH). The finding of this study showed hindering factors to knowledge sharing as lack of teamwork, lack of communication channels, lack of encouragement, lack of knowledge and skill as an obstruction to practicing Knowledge sharing , lack of trust to peers and lack of training as a factor that might hinder knowledge sharing. Besides that lack of trust towards management is another hindrance factor to be

considered. On the contrary, 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.

A case study conducted in a large public hospital in Thailand, by Bordoloi and Islam [46], on Knowledge Management Practices and Healthcare Delivery. They followed A Contingency Framework and used personal interviews, document reviews and observation as data collection method for the case study and identified four primary contingency factors that affect the impact of knowledge management practices on healthcare delivery. These factors include the following. One, physician characteristics (A Physician's technical skills, training, experience and a physician's subjective norms have an effect on their knowledge sharing behavior). Two, ailment characteristics(Ailments, the patients present themselves with, can be characterized in terms of complexity of the symptoms and urgency of treatment Combinations of these factors lead the healthcare organization making choices towards adoption of knowledge management tools and putting their focus on specific performance measures. Three, Organizational IT infrastructure and finally, Organizational processes (Implementation of knowledge management in healthcare delivery is dependent on leadership, culture, organizations operating procedures and policies also impact the use of knowledge management methods and tools.) Through literature analysis and a case study, this paper concluded by pointing that administrators in healthcare delivery organizations have to be mindful that adoption of KM practices would be dependent on leadership, IT infrastructure (and integration) and supporting policies. As physicians within healthcare delivery organizations normally gain experience through a mentor-apprentice route, an organizational culture that promotes and rewards such behaviour would be beneficial.

A study conducted in Jordan by Alhalhouli, Hassan and Abualkishik [20], on An Updated Model to Enhance Knowledge Sharing among Stakeholders in Jordanian Hospitals Using Social Networks used interview survey and interviewed randomly selected five doctors, nurses and pharmacists in government, military and private sectors. In this study the researcher categorized factor hindering knowledge sharing in to individual, organizational and technological. The individual barriers that hinder stakeholders from sharing their knowledge include: a lack of time,

past mistakes, experience, lack of interaction, education, ownership and cultural differences. On the other hand, organizational barriers that influence the knowledge sharing are: lack of leadership, shortage of formal and informal spaces to share, existing corporate culture, deficiency of company and physical work environment. And the technological barriers that impact the knowledge sharing among stakeholders are: unrealistic expectations of employees, lack of compatibility, mismatch, reluctance to use IT systems, lack of training and lack of communication. Finally, based on the finding from the interview survey the researchers developed a conceptual model to reduce the barriers faced by stakeholders in the Jordanian hospitals and enhance knowledge sharing behavior and motivate them to share their knowledge with their coworkers.

A study conducted by Noor and Salim [16], in Malaysia proposed a conceptual model for Factors Influencing Employee Knowledge Sharing Capabilities. The study reveals that individual factors such as awareness about the importance of knowledge sharing, altruism or “enjoyment in helping others and an individual’s personality plays a significant role in KS. Organizational culture factors like clear understanding of organizational vision and goals among employees, high level of trust among employees, and high level of social networks among employees positively influences employee KSC. The organizational structure such as office layout of the organization, the contribution of knowledge as part of the work process and the implementation of incentive and reward system in organization also positively influences employee KSC. And, technology factors that positively influence employees KSC include comprehensive ICT infrastructure in organization, the IT applications usage in organization and the level of end-user focus toward the IT applications.

A case study conducted by Okoroji, Velu and Sekaran [44], in Malaysia explore Knowledge Sharing among Medical and Non-Medical Staff. The study used descriptive and a quantitative survey-based method. The Identified factors include organizational barriers as the lack of formal and informal activities to cultivate KS, lack of reward and recognition, inadequate IT system, existing organizational culture not supporting KS sufficiently, lack of clarity on the existence of KS strategy and KS culture, and physical environment was not considered a hindrance to KS. Individual barriers to knowledge sharing include lack of interaction between those who need knowledge and those who can provide it, poor communication and personal skills, the lack of

trust and lack of time and seeing “knowledge as a power” was not considered a hindrance to KS. This study also revealed that there was reasonable display of awareness of the importance of knowledge sharing and a general willingness to share by the staffs, however, the contrary perception by respondents that the importance of KS was not adequately communicated by the management. Lastly, this study gave a concluding remark as it is important that as the concept of KS in organizations continues to gain relevance, adequate insight about how it can be encouraged, improved and implemented should be sought and given the heavy tacit endowment in the hospital setting, effective KS remains a major process in ensuring a successful hospital system.

A study conducted by Ismail and Yusof [3], on the Impact of Individual Factors on Knowledge Sharing Quality used descriptive and quantitative survey method. The respondents for the study were selected by using stratified simple random sampling technique. By using this method the researchers proposed theoretical framework of relationship between individual factors and knowledge sharing quality and identified that individual factors affecting knowledge sharing as awareness, trust and personality

The review of existing literatures on knowledge sharing revealed that different factors affect knowledge sharing practice in different organization worldwide. As there is no previous research project work available that evaluates knowledge sharing practice of healthcare providers in St. Peter’s Hospital, this research project will evaluate and identify contextual factors that affects knowledge sharing practices of healthcare professionals in St. Peter’s hospital and finally propose contextual framework for enhancing knowledge sharing.

CHAPTER THREE

METHODOLOGY

Research methodology is systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedure by which researcher go about their work of describing, explaining and predicting phenomena and its aim is to give the work plan of research [48].

3.1 Study Area

The study was conducted in St. Peter's TB Specialized Hospital. St. Peter's hospital is one of the hospitals under the authority of Ministry of Health (MOH). The hospital was established in 1963 G.C. and it has a total of 444 staffs and from this 210 are health care professionals. St. Peter's Hospital in addition to giving effective diagnosis and treatment to TB and Multi Drug Resistance Tuberculosis (MDR-TB), it also provides other services like internal medicine, pediatrics service, maternal and child health, HIV/AIDS treatment with VCT services and dental medicine.

3.2 Study Design

Both quantitative and qualitative study with cross sectional study design was conducted. Conducting research using both quantitative and qualitative helps to discover something that would have been missed if only a qualitative or a qualitative approach had been used and gives superior evidence of the result. Cross sectional study design was selected because the researcher can collect all the needed data at single point in time; it's cheaper and can be conducted with limited time period than longitudinal studies.

3.3 Source Population

The source population was all healthcare professionals who are employees of St.Peter's Hospital. There are a total of 210 healthcare professionals such as Specialists, Medical Doctor, doctorate of dental, Physiotherapist, Nurses, Health officers, Pharmacists, Sanitarians, Midwifery's , Anesthetist, Laboratory technicians, health educators, mental health professionals, occupational health, emergency obstetrics officers and public health professionals.

3.4 Study Population

Since the source population is relatively small quantitative study was conducted by including all healthcare professionals. For the qualitative study key informant interview was conducted with department heads.

3.5 Sample Size

The sample size for the Quantitative study was 210. However, at the time of data collection only 191 healthcare professionals participated in the study. For the qualitative study key informant interview was conducted with seven department heads. These departments are pharmacy, imaging, outpatient, inpatient, laboratory, emergency and maternal and child health.

3.6 Sampling Procedure

The list of all health professionals was retrieved from the human resource department of St. Peter's Hospital, this was used as a sample size for quantitative study and for the qualitative study respondents who serve as department heads were selected using judgmental sampling technique. Judgmental sampling is used because it is the only viable sampling technique in obtaining information from very specific group of people.

3.7 Data Collection

Quantitative Method

Structure questionnaires were adopted from related articles [39, 16, 20, 15] and some modification was made with objective of this project. The questioner was prepared in English and was pretested on 11 (5%) respondents in St. Paul's hospital on similar population groups prior to the actual data collection. The structured questionnaires was distributed and collected by 2 data collectors. Prior to data collection one day training was given for data collectors on how to collect the data and other related procedures, and during the data collection continuous follow up and supervision was made by principal investigator throughout the data collection.

Qualitative Method

Semi-structured interview guide was used to guide the qualitative data collection. A total of 6 key informant interviews were conducted with department heads. The principal investigator collected the qualitative data through taking notes and each in-depth interview was conducted in

Amharic for ease of communication and the transcripts were later translated in to English and finally were summarized for writing up.

3.8 Data Processing and Analysis

Quantitative data was initially entered and cleaned using EPI-info Version 3.5.1 and exported to SPSS version 16.0 for analysis so as to achieve the objective of the project. Univariate analysis was used to describe the study participants. Before using linear regression analysis the normality of the outcome variable was checked.

Bivariate analysis was used to assess the association between dependent variable and independent variables. Multivariate analysis was used to examine the relationship between multiple independent variables and dependent variable.

For the qualitative study the data collected by semi structured interview was analyzed manually by the principal investigator.

3.9 Data Quality Management

- Questionnaire and semi structured interview guide was used.
- Training was given to data collectors for one day about the content of the questionnaire
- Problem encountered at the time of data collection was reported and appropriate action was taken
- The questionnaires were checked for missing value and inconsistency. Questionnaires that have more than 5% missing value were excluded from the study.
- The qualitative data collection was conducted by the principal investigator to avoid any miss understanding.

3.10 Conceptual Framework

The framework for this study is derived from different studies [39, 16, 20, 15] conducted in the area of factors affecting knowledge sharing. This framework was used to decide on the independent variables.

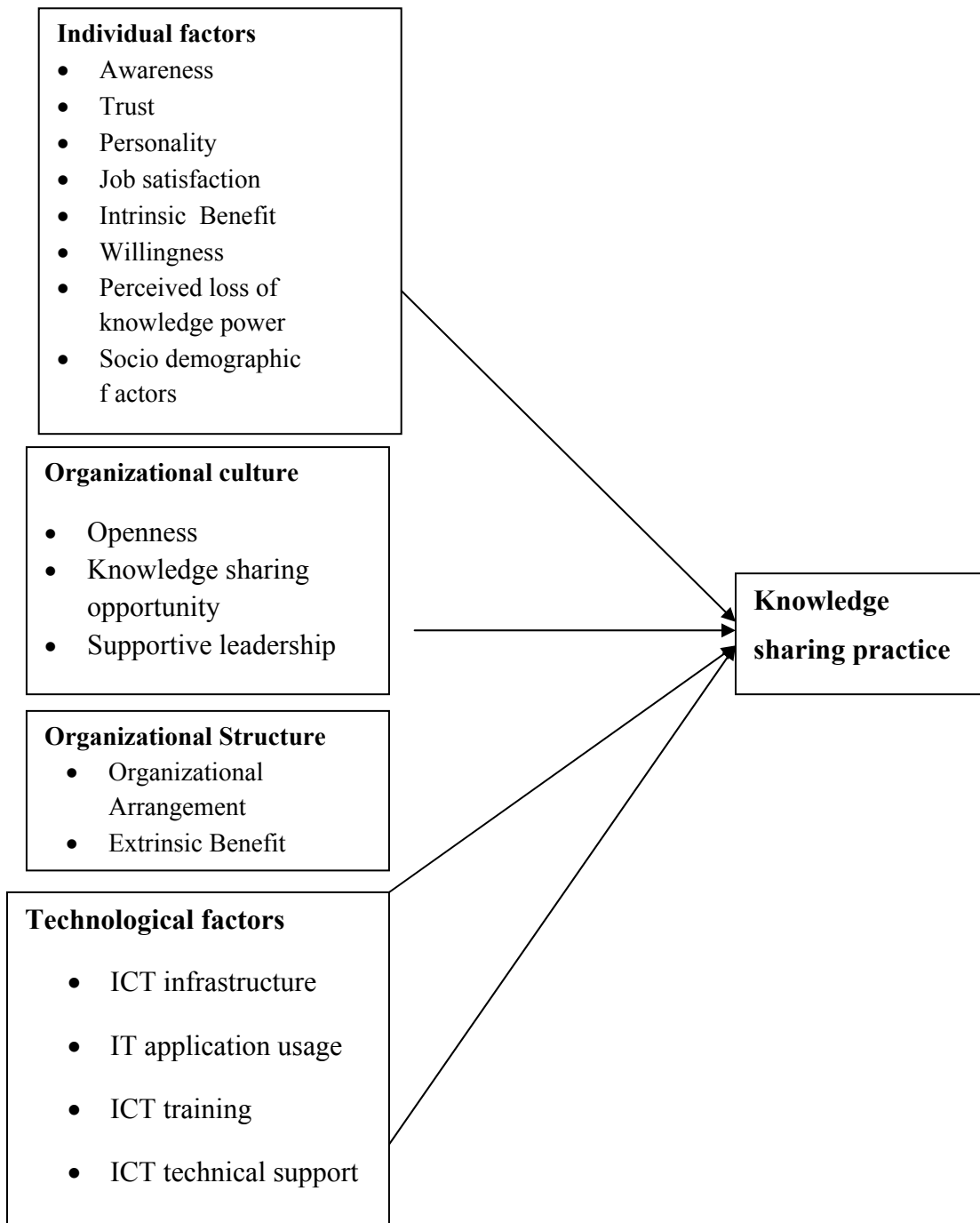


Figure 3.1 A conceptual framework for evaluating knowledge sharing adopted from [39,16,20,15]

3.11 Operational Definition

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.

Willingness is participant's readiness to explain their experience and skills to colleagues and to get additional knowledge how to perform a task from them.

Trust is defined as the degree to which employees trust 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.

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

Job satisfaction is the degree to which an individual is satisfied with his/her own daily work.

Perceived loss of knowledge power- is individual's perception that knowledge sharing would reduce personal competitiveness and waste time or increase work load.

Extrinsic benefit is benefit that participants gain from knowledge sharing such as carrier advancement, bones, acknowledgement or recognition.

Supportive Leadership:-is the degree to which managers encourage knowledge sharing in the organization, consult team members to make decision and solve problem and encourage new idea and learning from failure.

Organizational Arrangement: - is the degree to which an organization 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.

Openness is the degree to which employees including superiors communicate openly with each other.

Knowledge sharing opportunity is the presence of formal and informal knowledge sharing opportunity within the organization.

Information communication technology is the degree to which employees actively use ICT and the presence of ICT infrastructure, experts and training within the hospital

3.12 Study Variables

Based on the conceptual framework, knowledge sharing practice was identified as dependent variable and awareness, trust, personality, job satisfaction, intrinsic benefit, socio demographic variables, willingness, perceived loss of knowledge power, openness, knowledge sharing opportunity, supportive leadership, organizational arrangement, extrinsic benefit and technological factor as independent variables.

Dependent Variable

- Knowledge sharing practice

Independent Variable

- Trust
- Willingness
- Awareness
- Job Satisfaction
- Benefit (Intrinsic and Extrinsic)
- Knowledge Sharing Opportunity
- Personality
- Information Communication Technology
- Supportive Leadership
- Openness
- Organizational Arrangement.
- Socio demographic Characteristics

3.13 Measurements

Knowledge sharing practice was measured by using one close ended question with a response option ranging from never to always. Knowledge sharing has a potential response score ranging from 1-5 and high score shows high knowledge sharing practice.

Willingness was measured by three close ended questions and the response option was likert scale ranging from strongly disagree to strongly agree. Willingness has a potential response score ranging from 3-15 and high score shows high willingness.

Trust was measured by Four 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 high trust.

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

Awareness was measured by four close ended questions and the response option for each question was likert scale ranging from strongly disagree to strongly agree. Awareness has a potential response score ranging from 4-20 and high score shows high awareness.

Intrinsic benefit was measured by two close ended questions and the response option for each question was likert scale ranging from strongly disagree to strongly agree. Intrinsic benefit has a potential response score ranging from 2- 10 and high score shows high intrinsic benefit.

Job satisfaction was measured by one close ended question and the response option was likert scale ranging from strongly disagree to strongly agree. Job satisfaction has a potential response score ranging from 1-5 and high score shows high job satisfaction.

Perceived loss of knowledge power was measured by three close ended questions and the response option for each question was likert scale ranging from strongly disagrees to strongly agree. Perceived loss of knowledge power has a potential response score ranging from 3-15 and high score shows low individual perception of losing knowledge power.

Extrinsic benefit was measured by two close ended questions and the response option for each question was likert scale ranging from strongly disagree to strongly agree Extrinsic benefit has a potential response score ranging from 2-10 and high score shows high extrinsic benefit.

Supportive leadership was measured by three close ended questions and the response option for each question was likert scale ranging from strongly disagree to strongly agree. Supportive leadership has potential response score ranging from 3-15 and high score shows high supportive leadership.

Organizational arrangement was measured by two close ended questions and the response of each question was likert scale ranging from strongly disagree to disagree. Organizational arrangement has a potential response score ranging from 2-10 and high score shows better organizational arrangement

Openness was measured by two close ended questions and response of each question was likert scale ranging from strongly disagree to strongly agree. Openness has a potential response score ranging from 2-10 and high score shows high openness within the organization.

Knowledge sharing opportunity was measured with three close ended questions and the response of each question was likert scale ranging from strongly disagree to strongly agree. Knowledge sharing opportunity has a potential response score ranging from 3-15 and high score shows high knowledge sharing opportunity.

Information Communication Technology was measured by four close ended questions and the response of each questions was likert scale ranging from strongly disagree to disagree. ICT has potential response score ranging from 4-20 and high score shows low information communication technology usage and presence in the hospital.

3.14 Ethical Clearance

Prior to data collection appropriate ethical clearance was taken from ethical committee of the School of Public Health, Addis Ababa University. Further, concerned administrative bodies of the hospital under the study were informed about the study and formal letter was obtained.

During data collection, each respondent was informed about the purpose, scope and expected outcome of the project and appropriate informed written consent was taken from the respondents. Anyone who was not willing to participate was excluded from the study and during the interview, respondents who were interested to avoid specific question or discontinue the interview were allowed to do so.

CHAPTER FOUR

DISCUSSION OF STUDY RESULTS

In this study, both quantitative and qualitative studies are undertaken using questionnaire and interview to assess knowledge sharing practice at St. Peter’s hospital.

4.1 Result of Quantitative

4.1.1 Socio-demographic Characteristics of the Respondents

A total of 191 questionnaires were distributed among the study participants. Of the total distributed questionnaires, 185 (96.8%) were complete and returned back for analysis and 4(3.1%) questionnaires having missing value were ignored. Details of demographic profile of respondents are presented in table 4.1.

Table4. 1 socio-demographic characteristics of respondents in St. Peter’s Hospital, 2015, Addis Ababa, Ethiopia, n=185

Characteristics	Number	%
Gender		
Female	93	50.3
Male	92	49.7
Educational Level		
Diploma	38	20.5
First degree	112	60.5
Doctorate degree in medicine	24	13.0
Masters Degree	7	3.8
Certificate of Specialty	4	2.2
Profession		
Nurse		
Laboratory technician	83	44.9
Medical Doctor	27	14.6
Pharmacist	21	11.4
Health officers	12	6.5
Radiographers	8	4.3
Midwifery	7	3.8
Specialists	5	2.7
Dental Doctors	3	1.6
Others*	3	1.6
	14	7.6

(Others* include health educators, mental health professionals, sanitarians, occupational health, Physiotherapists, emergency obstetrics officers and public health professionals)

Among 185 respondents 50.3% are females. Mean age of the respondents is about 31 years with standard deviation of 8. 79.5% of the respondents have first degree and above and 20.5% have diploma. By profession 44.9% are nurses and 11.4% are medical doctors. Respondents who participated in this study have a mean working experience of about 8 years and standard deviation of 9 and mean salary of 4115 birr and standard deviation of 1704 birr.

4.1.2 Knowledge Sharing Practice of Study Participants

Assessing knowledge sharing practice of study participants helps in determining the states of knowledge sharing in the hospital and also helps in proposing a way to improve the knowledge sharing practice. The result of the study shows that knowledge sharing practice having a range of 4 mean score of 2.61 and standard deviation of 1.17.

4.1.3 Knowledge Sharing Mechanisms within St. Peter’s Hospital

Using knowledge sharing mechanisms such as face to face communication, observation, internet and phone enhance the sharing of knowledge. Unless these mechanisms are available within the hospital, healthcare professionals will not be able to practice knowledge sharing.

Table.4.2: presence of knowledge sharing mechanism within St. Peter’s Hospital, 2015, Addis Ababa, Ethiopia.

Knowledge sharing mechanisms	Response of study participants	
	Yes N (%)	No N (%)
Face to Face communication	126 (68.1)	59 (31.9)
Observation	62 (33.5)	123 (66.5)
Internet	25 (13.5)	160 (86.5)
Phone	27 (14.6)	158 (85.4)
Both face to face communication and observation	12 (6.5)	173 (93.5)
Combination of all of this mechanisms	10 (5.4)	175 (94.6)
None of this mechanisms	23 (12.4)	162 (8.6)

The result showed that 68.1% respondents use face to face communication for sharing knowledge, 33.5% use observation, 13.5% of the respondents use internet such as e-mail and 14.6 use phones.

4.1.4 Documentation

Documenting of working practice facilitates sharing of clinical data and procedures among healthcare professionals.

The finding of the result shows that majority of the respondent's 72.4% document their working practice and procedures whereas 27.6% respondents do not document their working practice. Among those respondents who document their working practice 86.6% use writing manual such as patient chart for documentation.

4.1.5 Motivation

Motivation of healthcare professionals is determinate of their engagement in knowledge sharing practice so, knowing the level of motivation and preferred motivational schema is important.

To assess the motivational level of respondents towards knowledge sharing, respondents were asked to rank their level of motivation in to very low, low, medium, high and very high. Accordingly, 37.8% study participants have medium level of motivation, 42.7% of the respondents have very high/high level of motivation and the rest 19.3% have very low/low level of motivation.

This shows that most of the respondents 57.2% have medium and below motivation to share their knowledge. The respondents were further asked for the presence of motivational scheme in the hospital and 66.5% of them responded that there is no motivational scheme whereas 33.5% of the respondents agree on the presence of motivational schema within the hospital. When respondents were asked what motivational schema motivate them most in order to improve their contribution, most of the healthcare professionals who participated in the study 42.1% prefer acknowledgement for their contribution, 41.1% prefer good working environment, 40.6% prefer career development as incentive for their contribution and chance of promotion and monetary incentive are the least preferred motivational scheme by study participants.

4.1.6 Factors Affecting Knowledge Sharing

4.1.6.1 Individual Factor

4.1.6.1.1 Willingness to Share Knowledge

76% of the respondents are willing to share their knowledge and get additional knowledge from their colleagues and willingness has a range of 12 with mean score of about 11.71 and standard deviation of 2.51

4.1.6.1.2 Awareness

83.6% respondents have awareness of the importance of knowledge sharing and further more awareness has range of 16 with a mean score of 16.54 and standard deviation 3.14.

4.1.6.1.3 Personality

71.7% of the respondents are extroverts, self confident and always cautious and furthermore personality of healthcare professionals has range of 12 with mean score of 11.3 and S.D 2.38.

4.1.6.1.4 Trust

Over all 66.6% of the respondents have trust on each other and moreover trust has range of 16 with mean score of 14.68 and standard deviation of 3.00.

4.1.6.1.5 Intrinsic Benefit

85.4% of the respondents get intrinsic benefit by sharing their knowledge and more over intrinsic motivation has range of 8 with a mean score of 8.17 and Standard deviation 1.66.

4.1.6.1.6 Perceived Loss of Knowledge Power

68.1% of the respondents do not perceive loss of knowledge power and in addition perceived loss of knowledge power has a range of 12 with mean score of 6.74 and S.D 2.92.

4.1.6.1.7 Job Satisfaction

Employees should be satisfied with their job in order to share their knowledge. So if employees are satisfied with their daily job, they will be involved in knowledge sharing practice. The result of

the study shows that 55.4% of the respondents are not satisfied with their current job. And Job satisfaction has a range of 4 with mean score of 2.68 and standard deviation of about 1.22.

Detail statistical description of individual factors is found in Annex I

4.1.6.2. Organizational Factor

4.1.6.2.1 Organizational Culture

4.1.6.2.1.1 Knowledge Sharing Opportunity

42.7% of the respondents stated that there is knowledge sharing opportunity within the hospital and furthermore, knowledge sharing opportunity has a range of 11 with a mean score of 9.0 and standard deviation of 2.6.

4.1.6.2.1.2 Openness

44.6% of the respondents believe that there is openness within the organization and openness has a range of 8 with mean score of 6.30 and standard deviation of 1.81.

4.1.6.2.1.3 Supportive Leadership

29.0% of the respondents believe that there is supportive leadership within the organization and in addition supportive leadership has a range of 12, mean score of 8.33 and standard deviation of about 2.85.

4.1.6.2.2 Organizational Structure

4.1.6.2.2.1 Extrinsic Benefit

66% of the respondents said that there is no extrinsic benefit for employees who sharing their knowledge and furthermore, extrinsic benefit has a range of 8 with mean score of 4.61 and standard deviation of 1.93.

4.1.6.2.2.2 Organizational Arrangement

45.1% of the respondents strongly agree and agree on the availability of good office layout and on presence of knowledge sharing in the work process and organizational arrangement have a range of 8 with mean score of about 5.4 and standard deviation 2.03.

4.1.6.3 Technological Factors

59.8% of the respondents said that there is lack of access to information communication infrastructure and technical support within the hospital and training regarding information technology familiarization to health professionals and IT has a range of 16 with a mean score of 13.66 and standard deviation of 2.92.

Detailed statistical description of organizational and technological factor is found on Annex I

4.1.7 Bivariate and Multivariate Analysis

In the bivariate analysis twelve variables were found to have association with knowledge sharing practice those are educational level, profession, willingness, trust, awareness, organizational arrangement, knowledge sharing opportunity, openness, supportive leadership, and personality and information technology. This variables having significant association in the bivariate are selected for further multivariate analysis. The result liner regression shows that from twelve variables, willingness and lack of information technology were found to be independent predictor of knowledge sharing that is knowledge sharing practice of healthcare professionals is by 0.10 score more in presence of willingness than absence with $A\beta(95\%CI):0.10[0.01,0.20]$ and knowledge sharing practice is by 0.07 score less when there is lack of information technology than presence of information technology with $A\beta(95\%CI): -0.07[-0.12, -0.01]$

Detailed statistical analysis is found on Annex I

4.2 Result of Qualitative Study

Key informant In-depth Interview

A total of 7 key informants drawn from department heads of pharmacy, Imaging, outpatient, inpatient, Laboratory, emergency and maternal and child health (MCH) departments and the medical director of the hospital were involved in the in-depth interview.

1. General understanding of knowledge sharing and knowledge sharing culture of the hospital

Respondents gave response to this question by saying that knowledge sharing is the sharing of knowledge gained from experience or from school learning to others and when they give

response to what is the knowledge sharing culture of the hospital most of them said that knowledge sharing differs from department to department and from person to person but in general the existing knowledge sharing culture is poor.

2. The importance of knowledge sharing among healthcare professionals

Most of the respondents said that knowledge sharing:

Helps to learn from failure, Staffs can get more knowledge with little time and Improves communication between staffs which will improve work process

In general the respondents concluded by saying that knowledge sharing will improve the quality of care given to the patient which further enhance the status of the hospital.

3. The current way of knowledge sharing mechanism that is implemented in the hospital

Most of respondents said that the common way of knowledge sharing is informal communication like face to face communication which is done orally when we face challenging cases. In addition to the informal communication there exists morning session, round and office hour consultation among physicians and specialists.

4. Knowledge sharing among employees is low what is/are the possible reasons

Lack of awareness of the importance of knowledge sharing , lack of time to share or gain knowledge from others, lack of adequate space where staffs can meet and lack of commitment among staffs

One of respondents said that some staffs prefer to do their work with the knowledge they have gained 20-30 years back from their school learning rather than asking others to know and people focus on blaming others rather than willing to share what they know and this has affected the care given to patients.

5. The existing challenge in implementing effective knowledge sharing

Most of the respondents said that the existing challenges are

Lack of technology (like internet) to upgrade our knowledge, lack of interest to share knowledge among staffs, lack of willingness to share and gain knowledge form others, lack of self confidence in some staffs which will make them not to take part in knowledge sharing activity, lack structured ways of knowledge sharing like regular meeting between different departments and professions

One of the respondents said that the main existing challenge that prevents us from sharing our knowledge effectively is the existing team spirit.

6. Measures the hospital should take in order to improve knowledge sharing

The respondents said that to improve knowledge sharing the hospital should create awareness about knowledge sharing, give frequent training in different clinical cases, provide recognition and empowerment for those who share their knowledge and should assign focal person that can facilitate knowledge sharing among staffs.

4.3 Discussion

The purpose of this project is to explore the current knowledge sharing practice among health professionals so as to develop contextual framework that enhance knowledge flow in St. Peter's Hospital.

“Knowledge sharing is a deliberate act that makes knowledge reusable by other professionals and users. In broader perspective, knowledge sharing refers to the communication of all types of knowledge including explicit knowledge (information, know-how and know-who) and tacit knowledge (skills and competency) [12]. Knowledge sharing is the key to organizational productivity. Once knowledge is created there is an economy of scale that results from its sharing – both because more than one individual can use knowledge at the same time and because shared knowledge stimulates the creation of new knowledge. Hence, with an effective sharing process an organization can develop its knowledge base and enhance its competitiveness [37].

Our study result shows that knowledge sharing practice of healthcare professionals having mean score of 2.61 and standard deviation of 1.17. But in the study conducted in Bahirdar knowledge sharing practice of respondents have a mean score of 2.4 [15]. Out of the total respondents 72.4% document their working practice this is lower than the result of the study conducted in Mekelle which was 85.2% [40].

Knowledge sharing could only occur when an individual is really interested in helping others to develop a new capability for action and it is the willingness of employees in an organization to share with their colleagues the knowledge they have acquired or created [3].

In this study 76% of the respondents were willing to share and get knowledge from their colleagues this was almost similar (77.4%) with result of the study conducted in Bahirdar. In the multivariate analysis willingness was found to be an independent predictor of knowledge sharing practices of healthcare professional but the study conducted in Bahirdar willingness showed significant association in crud analysis but did not show association after adjusting for other variable [15].

Knowledge is important resource of healthcare organization and most of this knowledge resides in the heads of health care professionals. In healthcare organization patient oriented care and medical decision depends mostly on experience and knowledge of health professionals. Thus healthcare organization should identify a way to increase the knowledge that resides within healthcare professionals. One of this ways is to investigate factors that affect knowledge sharing practice of healthcare professionals. Investigating these factors will enable the hospital administrator to take measure on the contextual factors and enhance knowledge sharing practice among healthcare professionals which will further improve quality of healthcare.

Noorazah. and Juhana [16], identified two basic factors to form the knowledge sharing capability of organization these are technical and nontechnical capability. Technological factors is classified as technical factor while individual, organizational (culture and structure) factors are classified as non technical factor, Mohd and Zawiyah.,[42] and Zaid T etal.[20], grouped factor affecting knowledge sharing in to three individual, organizational and technological. From individual factors trust, awareness, job satisfaction, personality and intrinsic benefit were considered in this study.

In this study 66.7% of the respondents have agreed on the presence of trust among each other, which is higher than the study conducted in Bahirdar Felege Hiwot hospital in which 59% of the respondents had mutual trust among coworkers [15]. This shows an improvement in knowledge sharing. On the study conducted in Malaysia ophthalmology hospital trust was found to be one of the major individual factors affecting knowledge sharing [44].

The other important individual factor was awareness. Awareness among individuals represents the first phase of KS initiative in organization. The awareness about the importance of knowledge sharing is considered as an attitude that every employee should have including the top management [16]. The result of this study showed that 83.6% of the respondents were aware of the importance of knowledge sharing this was almost similar with the result of the study conducted in Bahirdar hospital in which 88.7% had awareness [15]. In similar study conducted in Malaysian public agencies the result of multiple regression analysis indicated that awareness to be significant predictor of knowledge sharing quality [3].

Other important individual factor that affects knowledge sharing is personality of individual. Personality influences knowledge sharing. For instance, those individual who are extrovert, self-confident and feeling secured are more likely to share knowledge compared to those who are introvert, self-centered or security conscious [3]. The result of this study showed that 71.7% of the respondents were extroverts, self confident and always cautious. On the study conducted in Malaysian public agencies personality was the most significant predictor of knowledge sharing in the result of multiple regression analysis followed by trust and awareness [3].

Job satisfaction also affects knowledge sharing. In this study 31.9% of the respondents were satisfied with their current job, this was lower than the result of the study conducted in Mekelle in which 61.61% of the respondents were satisfied [40], but the finding of this study was nearly similar to the study conducted in Bahirdar in which 26.3 of the respondents were satisfied [15].

Other factor that affects knowledge sharing is the intrinsic benefit. When people think that their expertise can improve work efficiency and increase productivity, and when people gain satisfaction and joy by helping others they will be more inclined to share knowledge with others [21]. In this study 85.4% of the respondents get intrinsic benefit by sharing their knowledge. The

study conducted in Taiwan Intrinsic benefit was found to have significant association with knowledge sharing [41]

Other factor that affects knowledge sharing is perceived loss of knowledge power. As knowledge is regarded as of power, individuals might concern sacrificing the power. This shows that there is an adverse connection between lack of knowledge power and mind-set towards knowledge sharing [20], but this study showed that 68.1% of the respondents do not perceive loss of knowledge power by sharing their knowledge this is because of the fact that most of the respondents have of awareness of knowledge sharing. In similar study conducted in Jordan hospitals loss of knowledge power was found to be significant predictor of knowledge sharing attitude [43].

In addition to individual factors organizational factors are also explored to see the effect of organizational culture and organizational structure on knowledge sharing.

Organizational culture is more important because knowledge sharing needs a supporting organizational culture. An environment in which knowledge sharing is considered important, employees share willingly instead of being forced [47]. In this study from organizational culture factors such as opportunity, openness and supportive leadership are considered

KS occurs within organization through social networks. Social networks indicate communications, dialogue, and individual or group interactions that support and encourage knowledge-related employee activities. The ties among individuals within social networks can facilitate KS and enhance KS among employees in organization [16].

Our study showed that only 41.2% of the respondents agreed that there is knowledge sharing opportunity within the hospital in general but 49.7% of the respondents said that there is informal knowledge sharing opportunity. This is also supported by the qualitative study in which most of the respondents said that most of knowledge sharing is done informally and enough location and formal opportunity of knowledge sharing was lacking within the hospital and knowledge sharing was not found to be independent predictor of knowledge sharing but in the study conducted in Mekelle and Bahirdar [40,15], knowledge sharing opportunity was found to be independent predictor of knowledge sharing and also similarly, study done in Malaysia lack

of formal and informal knowledge sharing opportunity to share was found to be one of the barriers affecting knowledge sharing behavior of healthcare professionals [20].

The other factor is the presence of openness within the organization. A clear understanding of organizational vision and goal among employees has a positive influence in knowledge sharing [16] and also the presence of openness within organization encourages active knowledge sharing behavior by means of improving communication speed by giving mandate to organizational members to share the knowledge they possess [3].

Our study result showed that 44.6% of the respondents believe that there is open communication and that superior openly explains the company's policy and expectation to team members within the hospital. The result of this study was lower than the study conducted in Mekelle in which 68.8% of the respondents agreed and strongly agreed on the presence of open communication within the hospital [40], but our study result was nearly similar to the study conducted in Bahirdar which is 53.5% of the respondents agreed on the presence of openness within the hospital [15].

In this study supportive leadership in the organization is also investigated. The result of this study showed that; 29.0% of the healthcare professionals disagreed that there is supportive leadership within the organization. This was almost similar with the study conducted in Mekelle in which 61.64% of the respondents agreed that there is no supportive leadership that encourages knowledge sharing practice among healthcare professionals [40].

Organizational structure also influences KS. A flexible organizational structure encourages knowledge sharing and collaboration across boundaries within the organization, while a rigid structure often has the unintended consequence of inhibiting such practices. Organizational structure is capable of facilitating knowledge flow. The flow is shaped by the organization's policies, processes, system of rewards and incentives [16].

So extrinsic benefit was considered as one factor that motivates knowledge sharing when rewards exceeds its costs. This means that there should be some extrinsic rewards in exchange of knowledge sharing; only then individuals will share their knowledge [21]. In this study 66% of the respondents do not get extrinsic benefit for their contribution and 42.1% the respondents preferred acknowledgement as motivational schema to improve their knowledge sharing

practice. This was also supported by the qualitative study in which most of the respondents preferred acknowledgement and recognition for their effort of knowledge sharing activity. Similarly in the study conducted in Sweden lack of recognition was found as one factor [29]; On the contrary, a case study conducted in Malaysia respondents do not perceive lack of rewarding schema would hinder knowledge sharing [45].

The other factor is organizational arrangement such as office layout and presence of knowledge sharing in the work process and the result showed that 45.1% of the respondents agreed on the presence of good office layout and presence of knowledge sharing in the work process. The study conducted in Thailand, organizations operating procedures and policies was found as factor affecting knowledge management practice [46].

Information technology facilitates social interactions among various organizational levels and it is a powerful tool for enabling and coordinating the distribution of knowledge within and across organizational and geographical boundaries [36].

In this study concerning information technology 59.8% of the respondents agreed that there was lack of information technology infrastructure, training regarding information technology and that they were reluctant in using IT application in general but in particular 64.8% the respondents were not reluctant in using IT application and 60.5% the respondents agreed on the lack of IT application such as internet in the hospital and internet is found the least used (13.5%) knowledge sharing mechanism within the hospital. This was also supported by respondents of qualitative study in which lack information technology infrastructure was suggested as one of the existing challenge for effective knowledge share practice.

Lack of IT application was found to be independent predictor of knowledge sharing practice in the multivariate analysis, which was not similar to study conducted in Bahirdar and Mekelle [15,40] .

4.4 Findings of the Study

The result of this study showed that the presence of willingness among professionals improves knowledge sharing. Willingness to share knowledge is all about the ability of employee to actively communicate with colleagues (i.e. knowledge donating) and actively consult with colleagues to learn from them (i.e. knowledge collecting). Since knowledge sharing a voluntary act willingness of employees is mandatory [42]. As shown in figure 4.2, the existence of different factors influences willingness of employees to actively communicate and consult colleagues. So improving these factors will enhance willingness of professionals to share their knowledge

4.4.1 From Individual Factors

Commitment of employees in the organization is one of the key issues in making the employees to share their knowledge. Commitment is important because workers with high levels of organizational commitment are less likely to leave, are more likely to be highly motivated, and will probably be more willing to provide extra discretionary effort and be generally more willing to share their knowledge within the organization [49]. Therefore, the presence of high level of commitment among employees will improve willingness of employees in sharing their knowledge.

Trust is the most effective and least costly method that can encourage people to share their knowledge. Many people are willing to share their knowledge with others if they feel that the person is honest and can be trusted. Thus, high level of interpersonal trust correlates with high levels or willingness to knowledge sharing [49].

Enjoyment in helping others: individual may also receive intrinsic benefits from contributing. Individual may contribute their knowledge in communities because they perceive that helping others with challenging problems is interesting, and because it feels good to help other people. Thus, making employees happy and enjoy or convincing their self efficacy will improve their willingness to share knowledge [50].

Awareness at all levels of employees is the main component of successful implementation of knowledge management programme. Employees inclusive the top management should aware the

importance of knowledge sharing; therefore; if employees are aware they will be willing to share their knowledge [3].

An employee should feel satisfied with his daily jobs in order to be in knowledge transfer environment; if employees are satisfied with their job they will have willingness to share their knowledge [42]. In order to have willingness of knowledge sharing, employees should have communication skills either verbal or written. Employees, who can socialize, open minded and self confident are more willing to share their knowledge than those employees that do not have this kind of personality [3].

Employees are difficult to share their knowledge since they are worried of losing the knowledge that differentiates them from others. Employees are not willing to share their knowledge because they are afraid they may lose some of their power, reduce the opportunities of personal success (e.g. promotion, compensation), and acquire additional workload. Thus, eradication of knowledge hording among employees will improve willingness of knowledge sharing [51].

4.4.2 From Organizational Factor

4.4.2.1 Organizational Culture

Organization's culture affects the ability of its members to retrieve and store information, and ability to absorb and share knowledge (absorptive capacity). The different groups involved in KS in an organization have different programming of their minds that affects all daily routines. This heavy involvement of culture has led to the understanding that people and their cultural background are important in the concept of knowledge management [44].

The employees should interact more in order to gain knowledge. When employees communicate, it indirectly reduces the status differentials. This reducing nature of status differential may encourage social interaction among them which may increase the knowledge sharing. Employees will not share their knowledge willingly among all groups of the members if the organization is constrained by hierarchies and status differentiations among them. Thus, organization should encourage their employees to interact more [51]. So, the presence of open communication among employees and presence of formal (trainings, workshops meeting.) and informal interaction in the organization will improve willingness of employees to share their knowledge.

Willingness of Knowledge sharing within a team is not an automatic occurrence and that team leaders play a crucial role. Thus, encouragement of employees by leaders will improve their willingness of knowledge sharing [44].

4.4.2.2 Organizational Structure

Organizational structure also influences KS. A flexible organizational structure encourages knowledge sharing and collaboration across boundaries within the organization, while a rigid structure often has the unintended consequence of inhibiting such practices. Organizational structure is capable of facilitating knowledge flow. The flow is shaped by the organization's policies, processes, system of rewards and incentives [16].

People are more willing to share their knowledge, if they are assured that doing so is valuable and if they get recognition from the knowledge sharing process. Thus, giving reward and recognition to employees for their contribution will improve their willingness to share knowledge [51]. An organizational environment that encourages interaction among employees will improve willingness of knowledge sharing among employees; for example, a good office design and layout and adequate spacing within the organization. In addition to this, willingness to share knowledge will be more effective if knowledge sharing is included in the work process [16].

By considering these individual and organizational factors we can improve willingness of healthcare professionals to share their knowledge. Besides, ICT plays a great role for enhancing willingness of individuals in the knowledge sharing. But ICT that enables knowledge sharing is found to be lacking in the organization and also the result of our study shows that lack of ICT was associated with knowledge sharing among professionals. So to enhance knowledge sharing among health care professionals we propose the following framework depicted in figure 4.3, by taking into account the following requirements.

- The need for an easy to use and a one point access knowledge portal that facilitate knowledge creation, acquisition, sharing and search.
- The use of internet /extranet for creating a secured knowledge sharing environment.
- The need to create organizational memory such as clinical data base to retain knowledge sharing.

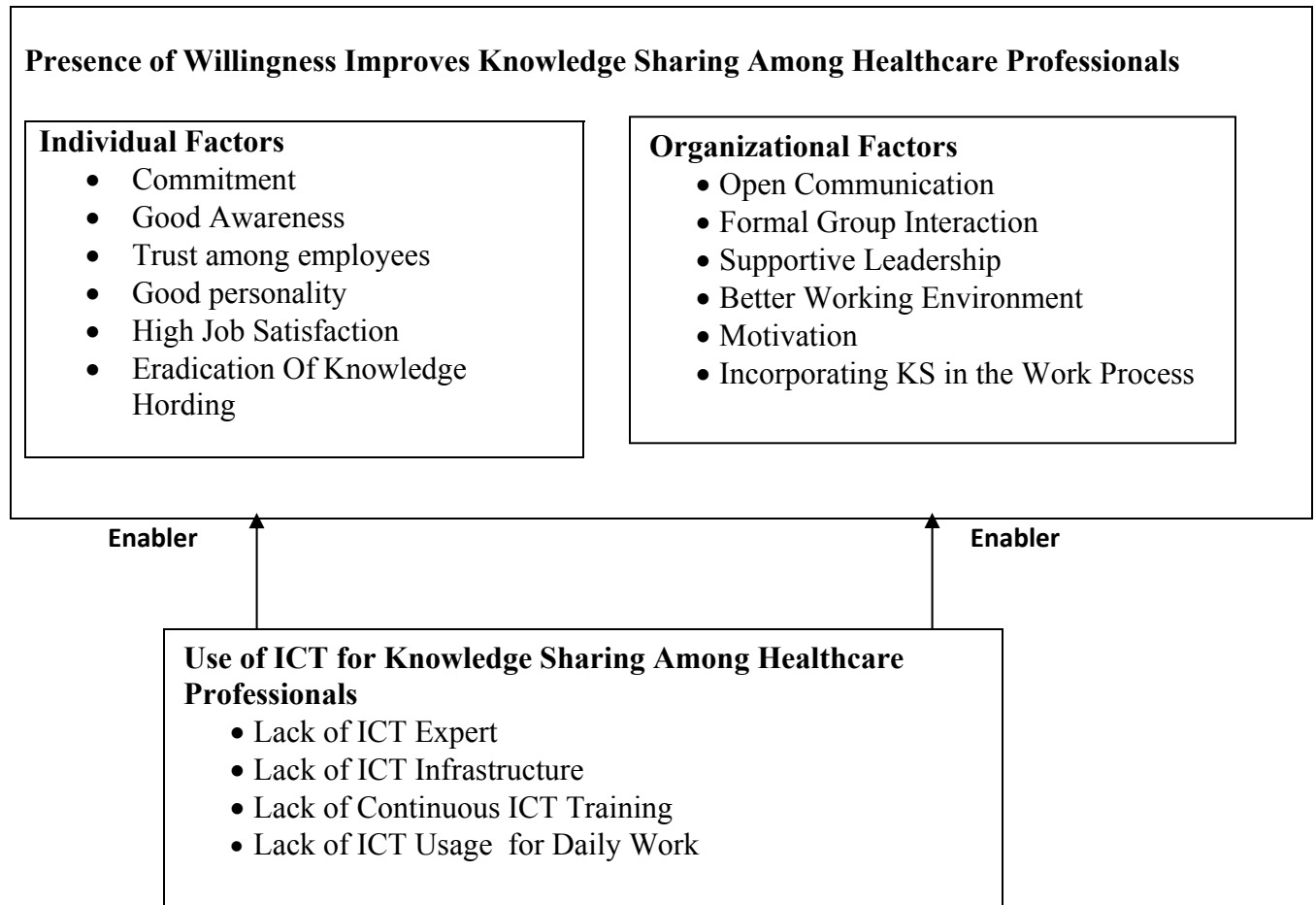


Figure 4.1 factors improving willingness of healthcare professionals in St. Peter’s hospital, 2015

4.4.3 Impact of ICT on Knowledge Sharing Barriers

IT/ICT is an element crucial to the linkage of information and knowledge integration in organizations. For organizations and industries to benefit better from their ICT enabled knowledge sharing implementations, they need to consider and evaluate their knowledge sharing implementations in context of ICT. ICT removes some of the existing knowledge sharing individual and organizational barriers [52].

ICT has rapidly changed the way organizational members communicate. For instance, it has significantly improved a manager’s ability to monitor individual’s performance, allowed employees to have more complete information to make faster decisions. Besides, ICT has made it possible for people in organizations to be fully accessible, anytime, regardless of where they are [53]. So by using ICT better working environment can be achieved. This in turn will bust job satisfaction and employees commitment towards achieving the organizational objectives.

An apparent benefit of using ICT based collaboration tools is that benefits of knowledge sharing come commercially advertised with these tools so minimum effort or responsibility lies on the management to communicate the benefits to the employees. The employees are as much aware of the benefits as is the management through commercial tools. So this tool enable in creating awareness on the importance of knowledge sharing among employees [52].

In order to have willingness of knowledge sharing, employees should have communication skills and should be sociable with their colleagues [3], ICT enabled knowledge sharing on portals and online communities is mostly writing driven which eliminates the barrier caused by poor speaking skills and makes individuals to interact and share knowledge easily. This will further improves personal interaction of those employees with introvert personality as well as motivate and increase employees desire to share their knowledge with others.

Non – economic incentives rely on the recognition of the knowledge sharing activity of an individual. Recognition lead to greater productivity and also personalized recognition is shown to be factor that speeds up knowledge flow and far outpaced finical incentives. The most straight forward means of offering soft reward is related to status and reputation is to thank and recognize knowledge contributor. This can be achieved through official practice like by documenting the authorship of resources on electronic information system. So through the use of ICT giving recognition is possible. This has also determined the success of internet discussion groups and found to be stimulator of discussion group participants [54].

Organization's culture affects the ability of its members to retrieve and store information, and ability to absorb and share knowledge (absorptive capacity) [44]. Organizational culture includes presence of social interaction and open communication among employees. ICT may be effective in lowering temporal, spatial, physical distance. When temporal distance refers to barriers in the present (e.g. problems in coordinating schedules) ICT may prove helpful in the form of Internet-based discussion groups or electronic meeting software (EMS). For instance, an electronic meeting concerning specific topics may be scheduled to run for a preset period. Participants may contribute to the discussion at a time when their schedule allows or their inspiration suggests. By leveling temporal and spatial barriers, ICT may also facilitate new organizational forms for knowledge sharing, such as virtual knowledge teams. So ICT helps in eliminating the

requirement of physical space as knowledge sharing is possible from office space and also enables employees to share any time of the day and improves social interaction among employees and also ICT based online portals helps in reducing communication gap between employees and management. This will help in resulting open communication among employees and the management [54].

Web portals and virtual knowledge sharing communities are more trustworthy and conducive. Trustworthy because knowledge shared is documented and visible to everyone with employees unique username which reduces personal fear of not sharing knowledge. So using ICT improves trust among employees. And also ICT based tools, gives more job security since every employee is assigned with a unique username and password and all shared knowledge is shown with employee's identity. This will make employees to feel more comfortable in sharing their knowledge without fearing for their ideas to be stolen and their job jeopardized. Thus, ICT improves knowledge hording behavior of employees [52].

4.5 Proposed Contextual Framework

As depicted in figure 4.3 a three stage framework is designed to facilitate knowledge sharing among employees in St. Peter's hospital.

1. Knowledge Portal

Portal is a one point access user interface that provides secure, customizable, personalizable, and integrated access to dynamic information from a variety of sources, in a variety of source formats, wherever it is needed. Knowledge Portal (KP) as a type of portal that purposely supports and stimulates knowledge transfer, knowledge storage and retrieval, knowledge creation, knowledge integration, and knowledge application (i.e., the processes of knowledge management) by providing access to relevant knowledge artifacts [55].

Repository-oriented components and functionalities of a KP include knowledge organization system which is represented by a system responsible for codifying and classifying knowledge artifacts from different sources. Access to knowledge repositories of the organization, search function for knowledge retrieval, integrated access to various software tools and variety of services. Offer communication and collaboration tool to support knowledge transfer this tools include email, shared documents writing space, net meeting and video conferences.

Personalization and role management which is used to predetermine knowledge flows to specific user groups. Personalization can help to avoid an overload of information and save browsing time. The last component involves unified interface. It represents the visual contact with a user and provides direct access to relevant features of the portal [56].

2. Intranet and extranet

Intranet and extranet are infrastructure of the KMS that allow access from anywhere and at any time to the knowledge captured and stored in the repositories.

Intranet is a private computer network that uses internet protocols, network connectivity and the public telecommunication system to securely share part of an organization's information or operations with employees and extranet can viewed as part of a company's intranet that is extended to users outside the organization [57].

3. Knowledge repositories

The bottom layer in knowledge management architecture is where repositories are installed. Repositories are storage devices that hold explicit and tacit knowledge and the rules associated with them [57].

Since, the knowledge required for healthcare is complex the implemented system should have databases like the content and expert database. The content database will be created from patient record database, documents such as clinical reports and guidelines and expert database will be created from clinical experts by facilitating focus group discussion and interviews with experts. 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.

Proposed Framework for Knowledge Sharing

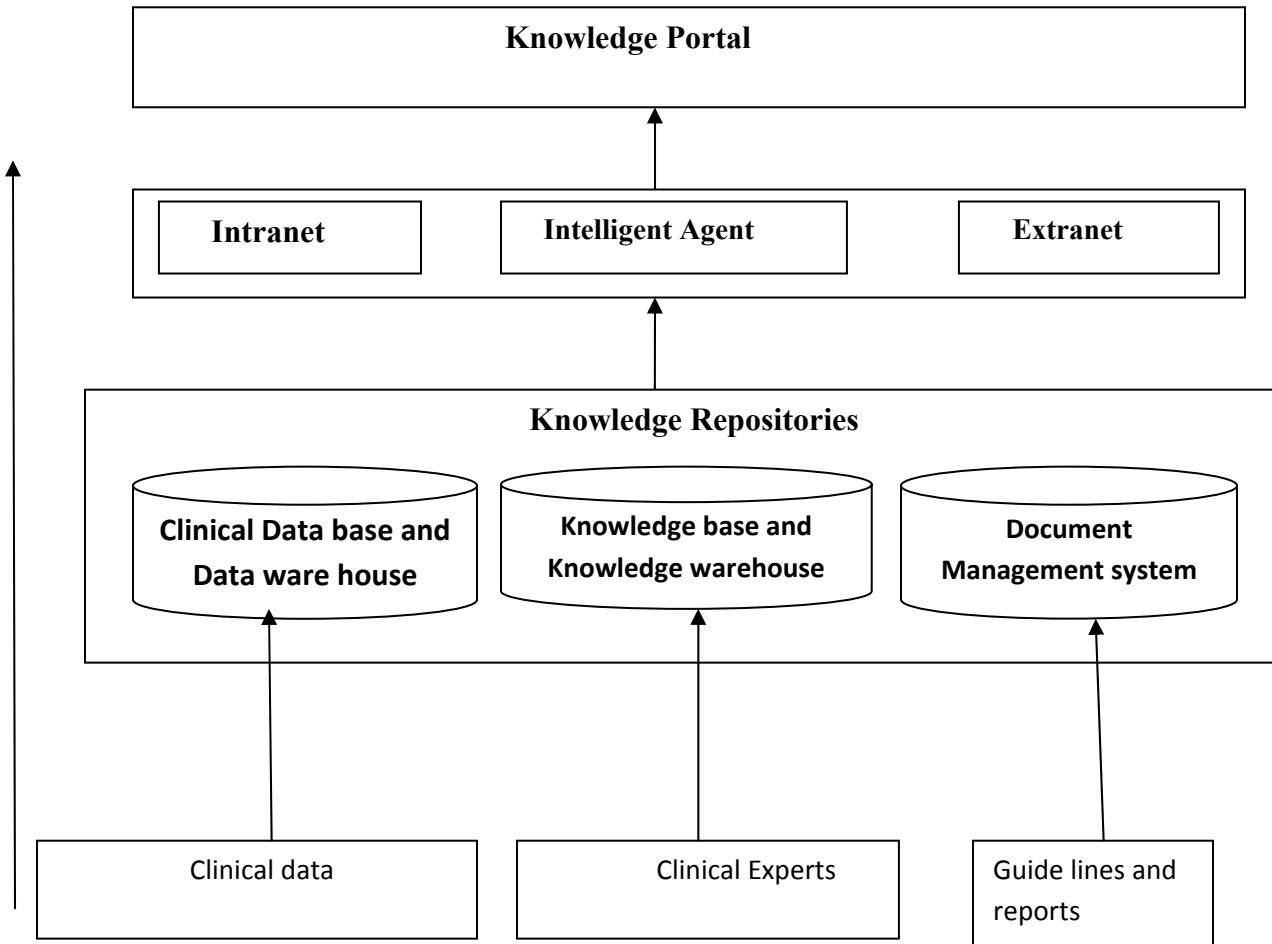


Figure 4.2 proposed contextual framework for enhancing knowledge sharing among healthcare professional in St. Peter’s Hospital, 2015

4.6 Knowledge Sharing Framework Evaluation

Evaluation of a framework is all about checking whether the proposed knowledge sharing framework is aligned with the expectation of end users. In order to evaluate the proposed framework, healthcare professionals from different departments were interviewed.

The interviewed professionals confirmed that the proposed knowledge sharing framework has ability to reduce medical errors and miss diagnosis by easing access existing knowledge resources, since we can manage our patients by referring to the existing knowledge databases problem of appointing patient for consultation of specialists and interruption of specialists by simple question will be solved and also it serves as an additional communication channel for

sharing knowledge. The main challenge that users specified is that the supporting infrastructures and ICT experts are lacking and suggested that the hospital should facilitate supporting ICT infrastructure and experts and should implement the proposed framework

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

Knowledge sharing is both important for organization and healthcare professionals. Hence, sharing knowledge among healthcare professionals will increase job performance and facilitate creation of new knowledge which will further help healthcare organization improve the quality of healthcare delivery and produce more desirable work outcome.

The study in St.Peter's hospital shows that most of healthcare professionals are aware of the importance of knowledge sharing and have appropriate personality for knowledge sharing but they are not engaged in knowledge sharing frequently. Formal opportunity like training, regular meeting among staffs are not to the highest level and communication technology infrastructures like internet are absent in the hospital, which shows, internet is the least used knowledge sharing mechanism within the hospital.

A significant number of healthcare professionals are not satisfied with their current job. The cause for dissatisfaction is lack of attractive salary, inadequate opportunity future education lack of reward and recognition for their effort.

The study shows that there is absence of organizational motivation within the hospital for knowledge sharing and majority of the respondents prefer acknowledgement and also there is minimal support from leaders for knowledge sharing activity among healthcare professionals.

Majority of respondents point out that there is absence of good office layout and absence of knowledge sharing in the work process of the hospital

Factors that were identified as independent predictor of knowledge sharing are willingness and information technology. This shows that presence of these factors improves knowledge sharing and absence will hinder knowledge sharing activity of healthcare professionals. Hence, the contextual framework is designed to enable information technology play its part in enhancing knowledge sharing in the hospital.

5.2 Recommendations

- Healthcare professionals should be able to use other knowledge sharing mechanisms like internet and they should be able to create social network with colleagues. ICT infrastructure such as internet that can facilitate knowledge sharing should be provided by the hospital and also the hospital should use the proposed contextual framework as base and design healthcare knowledge management system.
- The management of the hospital should encourage knowledge sharing practice among health professionals.
- Knowledge sharing should be included in the work process and there should be good office lay out such as open space within the organization that encourages knowledge sharing.
- The hospital should encourage those healthcare professionals who share their knowledge by acknowledging and giving recognition.
- The hospital should facilitate formal opportunities for knowledge sharing like regular meeting among different professions and departments.

6. References

1. Ming-Yu C, Jessica s and Pei M, ,Knowledge Sharing in Academic Institutions: a Study of Multimedia University Malaysia, *Electronic Journal of Knowledge Management*, 2008: 7 (3), 313 - 324
2. Noorazah N. and Juhana S., The Influence of Theories on Factors Affecting Knowledge Sharing and Its Relationship with Innovation and Organizational Performance Knowledge Management International Conference , Johor Bahru, Malaysia, 2012
3. Mohd B. and Zawiyah M., The Impact of Individual Factors on Knowledge Sharing Quality, Malaysia ,*Journal of Organizational Knowledge Management*, 2010(2010), 1-13
4. Sheng W ,Raymond A., Knowledge sharing: A review and directions for future research, *Human Resource Management Review*, 2010, (20), 115–131
5. Nor'ashikin A., Alexei T., and Dick W., Determining the KMS Success Factors for Healthcare, Massey University, New Zealand, Palmerton North, 2009
6. B. Stroetmann and A. Aisenbrey, Medical knowledge management in healthcare industry, *World Academy of Science, engineering and technology*,2012, 6 (64),557-562
7. Sirous P., Social Media and Tacit Knowledge Sharing: physicians' perspectives and experiences , PhD thesis, Queensland University of technology, Australia,2014
8. John V. , "Does health care for knowledge management?", *Journal of Knowledge Management*, 2003, 7(1) 90 – 95
9. St. Peter's hospital, 50th Anniversary Article, Ethiopia, 2014
10. Syed S. health knowledge management : The art of possible, Faculty of Computer Science, Dalhousie University, Canada, 2008
11. Rizwan S. Knowledge Management and Clinical Framework for Cross Country Healthcare Organization, Msc thesis, Blekinge Institute of Technology, Sweden, 2009
12. Mohd B. and Zawiyah M. Demographic Factors and Knowledge Sharing Quality among Malaysian Government Office, *Communication of the International Business Information Management Association* , 2009, (9), 1-8

13. Mulusew A., Gashaw K. and Abera K., Information Need and Seeking Behavior Among Health Professionals Working at Public Hospital and Health Center in Bahirdar, Ethiopia, BMC Health Service Research, 2013: 13:534
14. Mulusew A. Knowledge and Experience Sharing Practice Among Health Professionals in Hospitals under the Addis Ababa Health Bureau, Ethiopia, BMC Health Service Research, 2014,14:431
15. Adem A. Knowledge Sharing Among Health Professionals The Case of Feleghiwot Referral Hospital Bahirdar, Msc thesis, Addis Ababa University, Addis Ababa, Ethiopia, 2010
16. Noorazah N. and Juhana S. Factors Influencing Employee Knowledge Sharing Capabilities in Electronic Government Agencies in Malaysia, International Journal of Computer Science, 2011, 8(4),106-114
17. Oye N.D, Mazleena S. and Noorminshah A., Knowledge Sharing in Workplace: Motivators and Demotivators, International Journal of Managing Information Technology, 2011, 3(4), 71-84
18. Faizuniah P. and Aizzat M. Assessing the Relationship between Organizational commitment and Knowledge Sharing Behaviour, Malasian Management Journal, 2009, 13 (1 /2), 35-50
19. Edward T. Knowledge Management Implementation in The Healthcare Industry, University of Massachusetts Lowell, Lowell, 2014
20. Zaid T., Zainuddin. H. and Abdallah M. An Updated Model to Enhance Knowledge Sharing among Stakeholders in Jordanian Hospitals Using Social Networks, Middle-East Journal of Scientific Research, 2013, 18 (8): 1089-1098
21. Yu-Chung H., Ya-Hsueh C., Factors Affecting Knowledge Sharing Behavior: A Content Analysis of Empirical Findings, Department of Accounting and Information Technology, National Chung Cheng University, Taiwan, 2009
22. ABC of Knowledge Management, NHS National Library for Health: Knowledge Management Specialist Library Contributor, UK, 2005
23. Hussin J. *, Ziad H., Bassam H., Rola A., Ale J. and Nouri B., Knowledge Sharing: Assessment of Factors Affecting Employee' Motivation and Behavior in the Lebanese Organizations, Journal of Scientific Research & Reports, 2014, 3(12): 1549-1593

24. Association of State and Territorial health Office, Knowledge Management for Public Health, Seattle, Washington, Association of State and Territorial health Office,2005
25. Anders L., Knowledge Management as a Tool in Healthcare System Optimization-The Case of Narsjukvaran Osterlen, Msc thesis, Nordic School of Public Health,Danmark,2006
26. O.A Bolarinwa, A.G Salaudeen and T.M Akande, Overview of Knowledge Management Application in Healthcare, Delivery of Developing Country, Academic Research International, 2013, 3(3),38-45
27. Adrienn Kols, Managing Knowledge to Improve Reproductive Program, Johns Hopkins Bloomberg School of Public Health ,Center for Communication Program, Baltimore, Maryland, 2004
28. Erez Krispin, Designing a Knowledge Management System, Openify Publication, Israel, 2006.
29. Hanif R. and Anne P., Knowledge Management Process to support Evidence Based Practice in Healthcare- A Swedish Case Study, Sweden,2014
30. Nadeem M.,Aquil B., Zain A. and Kasinf R., Data and Knowledge Management in Designing Healthcare Information System, International Journal of Computer Application, 2012, 50(2), 34-39,
31. Sirous P. ,Jason W and Helen P. Potentials of Social media for Tacit Knowledge Sharing Amongst Physicians: Preliminary Finding, 2^{3rd} Australian conference on Information System, Australia, 2012
32. Janet G, Knowledge Management in Healthcaare,Apem Publication, 2005, 31(3),10-14
33. Ehsan B. Mohammad M., Hani S., Zeinab S. and Mahmoud M. A case study of implementing knowledge Management system in healthcare in Malaysia, International Journal of Research in Management & Technology (IJRMT), 2012, 2 (5), 487-494,
34. Ranjit B. Knowledge management-enabled health care management systems: capabilities, infrastructure, and decision-support, Expert Systems with Applications, ,(2003), (24), 59–71
35. Marcus L. and Erik Ö,Critical Factors for Communication and Knowledge Transfer, , Msc thesis, Uppsala University, Sweden, 2009
36. Lkujiro N.,Ryoko T. and Noboru K. SECI, Ba and leadership: a unified model of dynamic knowledge creation, Long Range Planning, 2000,(33),55-34

37. Hadi T., Soroosh E. and Shiva H., Studying the effective organizational factors on knowledge sharing between employees of governmental organizations in Isfahan province, Iran, *Interdisciplinary Journal of Contemporary Research in Business*, 2011, 3(5), 920-930
38. Feng-Chuan L., PhD; Kai-Lin C.; Minston C. and Hsu-Min T. Team Innovation Climate and Knowledge Sharing among Healthcare Managers: Mediating Effects of Altruistic Intentions, *Chang Gung Med J*, 2012, 3(5):408-419,
39. Sherry D., John C., Bashoret I. and victor R. Organizational practice that foster knowledge sharing : validation across distinct national culture, *international journal of an emerging transdisipline*, 2010, (13), 140-163
40. Teklit G., Gebremeskel M., Kidane T., and , Wondwossen T., Knowledge sharing practice and its associated factors of healthcare professionals of public hospitals, Northern Ethiopia ,Mekelle, *American Journal Of Health Research*, 2014,2(5): 241-246
41. Hsiu-Fenlin, Knowledge sharing and firm innovation capability :an empirical study, *international journal of manpower* 2007, 28(3/4), 315-332
42. Mohd B. and Zawiyah M., Factors Affecting Knowledge Sharing in Public Organizations in Malaysia, Faculty of Technology and Information Science, Malaysia, 2006
43. Zaid T., Zainuddin H. and Chen S. Factors Affecting Knowledge Sharing Behavior among Stakeholders in Jordanian Hospitals Using Social Networks, *International Journal of Computer and Information Technology*, 2014, 03(05),919-928
44. Tun H. and Brickfields A. College Exploring Knowledge Sharing Among Medical and Non-Medical Staff: A Case Study Of An Ophthalmology Hospital In Malaysia, *African Journal of Business Management*, 2013, 7(35), 3545-3558,
45. Ramlee A., Knowledge Sharing Practices: A Case Study at Malaysia's Healthcare Research Institutes, *Asia-Pacific Conference Library & Information Education & Practice*, Malaysia,2012
46. Prantik B. and Nazrul I. , Knowledge Management Practices and Healthcare Delivery: A Contingency Framework , Bangkok, Thailand, *Electronic Journal of Knowledge Management*, 2012, 10 (1), 110-120

47. Mobashar R, Ahmad K, B Mahmood and Rohani S. Review of Factors Affecting Knowledge Sharing Behavior, International Conference on E-business, Management and Economics, 2010, (3), 223-227,
48. Rajasekar S., Philominathan P. and Chinnathambi V. ,Research Methodlogy, version 3, India, 2013
49. Syed S. and Zain A. Assessing knowledge sharing behavior among employees in the SMEs : empirical study, International Business Research, 2009, 2(2), 115-122
50. Szu-Yuan S., Terasa L., Hao-Fan C., Chang-Yao W. and Pei-Ju C., Influence on Willingness of Virtual Community's Knowledge Sharing: Based on Social Capital Theory and Habitual Domain world academic of Science, Engineering and Technology, 2009, (29), 142-149
51. Adel I., and Peter C., The motivation to share knowledge of the employees in the telecommunications service provider in Indonesia, International conference on social science and humanity, IACSIT press, Singapore, 2011
52. Ahmed S. and Rana A. ICT enabled knowledge sharing barriers, Msc thesis Malarda University, 2010
53. G.O Ofori and R.E Kommey, Utilization of ICT in knowledge management at the Ghana Volta River Authority, 2013, 5(3), 91-102.
54. Haze H. The knowledge trap an intranet implementation in corporate environment, PhD thesis, Napier University, Edinburgh, 2004.
55. Claudia L. and Kevin C., Knowledge Portal: Comments, Functionalities, and Deployment Challenges, Syracuse University, School of Information Studies, Orlando, 2012
56. Peter K., Knowledge portal : A tool to support scholastic honesty program, 8th international Workshop on Knowledge Management, Bratislava Slovakia, 2013
57. Elias M. and Hassan M., Knowledge Management, Pearson Education, Inc., India, 2001.
58. Tirualem Y. Assessment of Knowledge Sharing Practices of Healthcare Professionals in Hospitals under Addis Ababa Health Bureau, Msc thesis, Addis Ababa University, Ethiopia, 2011.

7 Annex

Annex I Detail Statistical result of factors affecting knowledge sharing and bivariate and multivariate analysis

4.1.6 Factors Affecting Knowledge Sharing

4.1.6.1 Individual Factor

4.1.6.1.1 Willingness to Share Knowledge

Effectiveness of knowledge sharing depends on the willingness of individual to share and gain knowledge from others. The results are summarized in table 4.4

4.1.6.1.2 Awareness

Awareness about the importance of knowledge sharing by individuals is mandatory. Since individuals who are not aware of its importance will not practice knowledge sharing.

Table 4.3 presence of willingness to share and awareness of knowledge sharing among healthcare professionals of St. Peter's hospital,2015,Addis Ababa, Ethiopia n=185

Willingness to share	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
Willingness to share knowledge and experience with colleagues	N (%)	5(2.7)	13(7)	20(10.8)	87(47.0)	60(32.4)
Willingness to share knowledge in training and meeting	N (%)	2(1.1)	15(8.1)	28(15.1)	94(50.8)	46(24.9)
Get additional knowledge from colleagues about how to perform a task	N (%)	4(2.2)	22(11.9)	24(13.0)	89(48.1)	46(24.9)
Total Score	N (%)	11(2.0)	50(9.0)	72(13.0)	270(48.6)	152(27.4)
Awareness						
Awareness of the importance of knowledge sharing in daily work	N (%)	4(2.2)	12(6.5)	12(6.5)	88(47.6)	69(37.3)
Gain new ideas, technologies, skills or techniques by sharing knowledge	N (%)	3(1.6)	15(8.1)	13(7.0)	82(44.3)	72(38.9)
Knowledge sharing helps not to repeat the same mistake	N (%)	2(1.1)	21(11.4)	8(4.3)	66(35.7)	88(47.6)
Knowledge sharing helps to learn faster	N (%)	4(2.2)	13(7.0)	15(8.1)	73(39.5)	80(43.2)
Total Score	N (%)	13(1.8)	61(8.2)	48(6.4)	309(41.8)	309(41.8)

The finding shows that 79.4% respondents are willing to share their knowledge with their colleagues whereas 10.8% of the respondents are in different. On the other hand 75.7% respondents are willing to share their knowledge in meeting and training where as 15.1% of the respondents are in different and 73% of the respondents agree on getting additional knowledge from their colleagues and 13% of the respondents are indifferent. Over all 76% of the respondents are willing to share their knowledge and get additional knowledge from their colleagues and willingness has a range of 12 with mean score of about 11.71 and standard deviation of 2.51

As shown above on table.4.4, 84.9% of the respondents are aware of the importance of knowledge sharing in their daily work. 83.2% of the respondents agree that knowledge sharing would help them in acquiring new ideas and skill. 83.3% of the respondents are aware that knowledge sharing would help them not to repeat the same mistake as their colleagues and 82.7% of the respondents agree that knowledge sharing would help them to learn faster. Over all 83.6% respondents have awareness of the importance of knowledge sharing and further more awareness has range of 16 with a mean score of 16.54 and standard deviation 3.14.

4.1.6.1.3 Personality

Individuals who are sociable, open-minded and have self confidence are likely to practice knowledge sharing so, knowing the personality of individual is important in determining his/her commitment in knowledge sharing.

4.1.6.1.4. Trust

Trust is closely related to knowledge sharing. Employees need the existence of trust on each other in order to share their knowledge. Thus, presence of trust among employees makes knowledge sharing more practicable.

Summary result of personality and trust is presented below

Table 4.4. Healthcare professional's personality and trust on one another in St.

Peter's hospital, 2015, Addis Ababa, Ethiopia n=185

Personality	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
Extrovert personality	N (%)	2(1.1)	26(14.1)	27(14.6)	76(41.1)	54 (29.2)
High self confidence	N (%)	5(2.7)	15(8.1)	24(13.0)	93 (50.3)	48(25.9)
Always cautious	N (%)	2 (1.1)	32(17.3)	24(13.0)	94(50.8)	33(17.8)
Total Score	N (%)	9(1.6)	73(13.2)	75(13.5)	263(47.4)	135(24.3)
Trust						
A believe that co-workers are knowledgeable and competent in their area	N (%)	4(2.2)	19(10.3)	41(22.2)	86(46.5)	35(18.9)
A believe that co-workers will use the shared knowledge properly	N (%)	3(1.6)	17(9.2)	40(21.6)	103(55.7)	22(11.9)
Sharing my knowledge will make my colleagues to believe that I am concerned about their welfare	N (%)	2(1.1)	28(15.1)	44(23.8)	92(49.7)	19(10.3)
Sharing my knowledge will make my colleagues to feel confident about my skill and capability	N (%)	2(1.1)	18(9.7)	29(15.7)	105(56.8)	31(16.8)
Total score	N (%)	11(1.5)	82(11.1)	154(20.8)	386(52.1)	107(14.5)

As shown in table 4.5 above, 65.4% of the respondents have trust on the knowledge of their co-workers. 67.6% of the respondents agree to the statement if I share my knowledge with co-workers they are likely to use the knowledge properly. 60.0% of the respondents strongly agree and agree to the statement that if I share my knowledge in my organization my colleagues will believe that I am concerned about their welfare and 73.6% of the respondents strongly agree and agree on sharing my knowledge will make colleagues to feel confident about my skill and capability. Over all 66.6% of the respondents have trust on each other and moreover trust has range of 16 with mean score of 14.68 and standard deviation of 3.00.

As shown in the table 4.5, 70.3% of the respondents have extrovert type of personality and 27(14.6%) are indifferent. 76.2% of the respondents have high confidence and 13.0% are indifferent. 68.6% of the respondents are always cautious and 13.0% of the respondents are indifferent. Over all 71.7% of the respondents are extroverts, self confident and always cautious

and furthermore personality of healthcare professionals has range of 12 with mean score of 11.3 and S.D 2.38.

4.1.6.1.5 Intrinsic Benefit

When individuals gain confidence in what they do and feel happy by helping others, they are likely to be involved in knowledge sharing. Thus, internal motivation is important for effective knowledge sharing.

4.1.6.1.6 Perceived loss of knowledge power

Some individuals are worried of losing their knowledge that differentiates them from others so; they face difficulty in sharing their knowledge.

Table 4.5. Presence of intrinsic benefit and perceived loss of knowledge power in Healthcare professionals of St. Peter’s hospital, 2015,Addis Ababa, Ethiopia n=185

Intrinsic Benefit	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
My experience can improve work efficiency and increase productivity	N (%)	3(1.6)	15(8.1)	6(3.2)	89(48.1)	72(38.9)
Enjoy helping others by sharing my knowledge	N (%)	2(1.1)	15(8.1)	13(7.0)	102(55.1)	53(28.6)
Total Score	N (%)	5(1.4)	30(8.1)	19(5.1)	191(51.6)	125(33.8)
Perceived loss of knowledge power						
Sharing knowledge would reduce personal competitiveness	N (%)	74(40.0)	66(35.7)	10(5.4)	27(14.6)	8(4.3)
Sharing my knowledge would waste my time or increase my work load	N (%)	74(40.0)	70(37.8)	9(4.9)	25(13.5)	7(3.8)
Exclusive ownership of knowledge would make me outstanding	N (%)	40(21.6)	54(29.2)	34(18.4)	48(25.9)	9(4.9)
Total Score	N (%)	188(33.9)	190(34.2)	53(9.6)	100(18.0)	24(4.3)

The finding of the result shows that 87.0% of the respondents strongly agree and agree that their experience can improve work efficiency and increase productivity and 3.2% of the respondents are indifferent. On another hand 83.7% of the respondents enjoy by helping others and 7.0% of the

respondents are indifferent. In general 85.4% of the respondents get intrinsic benefit by sharing their knowledge and more over intrinsic motivation has range of 8 with a mean score of 8.17 and Standard deviation 1.66.

As the result shows that 140(75.7%) of the respondents do not believe that knowledge sharing would reduce personal competitiveness. 144(77.8%) do not believe that sharing knowledge would waste time or increase work load. 94(50.8%) of the respondents strongly disagree and disagree that exclusive ownership of knowledge would make outstanding. Over all 68.1% of the respondents do not perceive loss of knowledge power and in addition perceived loss of knowledge power has a range of 12 with mean score of 6.74 and S.D 2.92.

4.1.6.1.7 Job Satisfaction

Employees should be satisfied with their job in order to share their knowledge. So if employees are satisfied with their daily job, they will be involved in knowledge sharing practice.

The result of the study shows that 55.4% of the respondents are not satisfied with their current job, 31.9% are satisfied and 14.6% are indifferent. The cause of job dissatisfaction is 77.2% due to lack of attractive salary, 42.4% is due to inadequate opportunity for further education and 28.3% is due to lack of reward and recognition system for the work you did.

Among those 13% is due to both lack of attractive salary and inadequate opportunity for further education, 12% is due to inadequate opportunity for further education and lack of reward and recognition system for the work you did and 13% is due to lack of attractive salary, inadequate opportunity for further education and lack reward and recognition system for the work you did. Job satisfaction has a range of 4 with mean score of 2.68 and standard deviation of about 1.22.



Fig4.1. Job satisfaction of healthcare professionals in St. Peter’s Hospital, 2015, Addis Ababa, Ethiopia

4.1.6.2. Organizational Factor

4.1.6.2.1 Organizational Culture

4.1.6.2.1.1 Knowledge Sharing Opportunity

Opportunity of knowledge sharing in an organization can both formal and informal. The presence of these opportunities helps employees to update their knowledge

4.1.6.2.1.2 Openness

Presence of open communication among employees and leaders in an organization encourages active knowledge sharing as openness communication speed.

Table4.6. Presence of Knowledge sharing opportunity and openness within St. Peter’s Hospital, 2015, Addis Ababa, Ethiopia n=185

Knowledge Sharing Opportunity	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
periodic meeting in which different teams, department may participate	N (%)	25(13.5)	62(33.5)	30(16.2)	58(31.4)	10(5.4)
formal opportunity like training and workshop within the hospital	N (%)	16(8.6)	51(27.6)	41(22.2)	66(35.7)	11(5.9)
informal knowledge sharing practice	N (%)	15(8.1)	40(21.6)	38(20.5)	81(43.8)	11(5.9)
Total Score	N (%)	56(10.1)	153(27.6)	109(19.6)	205(37.0)	32(5.7)
Openness						
Communication among my colleagues is very open on job related issues	N (%)	8(4.3)	42(22.7)	32(17.3)	80(43.2)	23(12.4)
My superior openly explains the purpose of the hospital’s policies, rules and expectation	N (%)	13(7.0)	62(33.5)	48(25.9)	48(25.9)	14(7.6)
Total Score	N (%)	21(5.7)	104(28.1)	80(21.6)	128(34.6)	37(10.0)

As shown above, 47.0% of the respondents strongly disagree and disagree on the presence of periodic meeting in which people working in different teams, departments may participate. 36.2% of the respondents suggested that there is formal opportunity like training program and workshop within the hospital that allow employees to share knowledge and 49.7% said that there is no informal opportunity that helps employees to share knowledge. Over all 42.7% of the respondents stated that there is knowledge sharing opportunity within the hospital and furthermore, knowledge sharing opportunity has a range of 11 with a mean score of 9.0 and standard deviation of 2.6.

As shown in table4.7, above 55.6% of the respondents believe that communication among colleagues is very open on job related issues. 33.5% of the respondents strongly agree and agree that their leader openly explains the purpose of the company’s policies, rules and expectation to team members. Over all 44.6% of the respondents believe that there is openness within the organization and openness has a range of 8 with mean score of 6.30 and standard deviation of 1.81.

4.1.6.2.1.3 Supportive Leadership

Leaders play a key role in the presence of effective knowledge sharing within Organization. So, encouragement of employees by leaders will improve their knowledge sharing practice.

Table 4.7. Managers encouragement of knowledge sharing in St. Peter's Hospital, 2015, Addis Ababa, Ethiopia n=185

Supportive Leadership	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
Managers of the hospital encourage knowledge sharing	N (%)	24(13.0)	63(34.1)	47(25.4)	42(22.7)	9(4.9)
Managers of the hospital encourage new idea and focus on learning from failure	N (%)	17(9.2)	62(33.5)	53(28.6)	44(23.8)	9(4.9)
Managers of the hospital consult team members to make decision	N (%)	21(11.4)	62(33.5)	45(24.3)	46(24.9)	11(5.9)
Total Score	N (%)	62(11.2)	187(33.7)	45(26.1)	132(23.8)	9(5.2)

As shown in table 4.8 above, 27.6% of the respondents strongly agree and agree that managers of the hospital encourage knowledge sharing with colleagues. 28.7% of the respondents reported that managers of the hospital encourage new idea and focus on learning from failure. 30.8% of the respondents believe that managers consult team members to make decision and solve. Over all 29.0% of the respondents believe that there is supportive leadership within the organization and in addition supportive leadership has a range of 12, mean score of 8.33 and standard deviation of about 2.85.

4.1.6.2.2 Organizational Structure

4.1.6.2.2.1 Extrinsic Benefit

Some peoples are involved in knowledge sharing if they get reward and recognition for the contribution they made. So motivating individuals extrinsically will improve knowledge sharing with an organization.

4.1.6.2.2 Organizational Arrangement

For knowledge sharing to be practiced successfully there should be conducive working environment with open spacing where employees can share knowledge and also knowledge sharing must be included in the work process.

Table 4.8. Presence of extrinsic benefit and conducive organizational arrangement for knowledge sharing in St. Peter’s Hospital, 2015, Addis Ababa, Ethiopia. n=185

Extrinsic Benefit	Frequency	s. disagree	Disagree	Neutral	Agree	S. agree
Acknowledgement and recognition for the individual who share their knowledge.	N (%)	29(15.7)	66(35.7)	38(20.5)	39(21.1)	13(7.0)
Incentive and reward such as promotion, bones for individual who share their knowledge	N (%)	86(46.5)	63(34.1)	10(5.4)	15(8.1)	11(5.9)
Total Score	N (%)	115(31.1)	129(34.9)	48(12.9)	54(14.6)	24(6.5)
Organizational Arrangement						
There is good office layout such as open space that encourage knowledge sharing	N (%)	26(14.1)	67(36.2)	36(19.5)	46(24.9)	10(5.4)
Knowledge sharing is included in the work process	N (%)	21(11.4)	53(28.6)	42(22.7)	63(34.1)	6(3.2)
Total Score	N (%)	47(12.7)	120(32.4)	78(21.1)	109(29.5)	16(4.3)

The finding of the result shows that 28.1% of the respondents said that there is Acknowledgement and recognition for employees who share their knowledge. 14.0% of the respondents said that there is incentive and reward such as promotion, bones for employees who share their knowledge. Over all 66% of the respondents said that there is no extrinsic benefit for employees who sharing their knowledge and furthermore, extrinsic benefit has a range of 8 with mean score of 4.61 and standard deviation of 1.93.

And also as shown in the table 4.9 above result shows that 30.3% of the respondents strongly agree and agree that there is good office layout (such as open space) that encourages knowledge sharing. 37.3% of the respondents strongly agree and agree that knowledge sharing is included in

the work process. Over all 45.1% of the respondents strongly agree and agree on the availability of good office layout and on presence of knowledge sharing in the work process and organizational arrangement have a range of 8 with mean score of about 5.4 and standard deviation 2.03.

4.1.6.3 Technological Factors

ICT is important for enabling and improving knowledge sharing among employee.

Table 4.9 Information communication technology presence and usage in St. Peter's Hospital, 2015, Addis Ababa, Ethiopia n=185

Technological Factors	Frequency	S. disagree	Disagree	Neutral	Agree	S. agree
Reluctant in using IT application such as internet, intranet, e-mail. when facing problem	N(%)	31(16.8)	60(32.4)	29(15.7)	56(30.3)	9(4.9)
There is lack of ICT infrastructure (internet, intranet)	N(%)	14(7.6)	35(18.9)	24(13.0)	64(34.6)	48(25.9)
There is lack of technical support and maintenance of integrated IT system	N(%)	15(8.1)	16(8.6)	19(10.3)	92(49.7)	43(23.2)
There is lack of training regarding new IT system and process	N(%)	17(9.2)	17(9.2)	20(10.8)	85(45.9)	46(24.9)
Total Score	N(%)	77(10.4)	128(17.3)	92(12.5)	297(40.1)	146(19.7)

The finding shows that 49.2% of the respondents are not reluctant in using IT application when facing problem. 60.5% of the respondents strongly agree and agree on the lack of IT application such as internet within the hospital. 72.9% of the respondents suggested that there is lack of technical support and maintenance of integrated IT system in the hospital.

70.8% of the respondents reported that there is lack of training regarding employee familiarization of new IT system and process. Over all 59.8% of the respondents said that there is lack of access to information communication infrastructure and technical support within the hospital and training regarding information technology familiarization to health professionals and IT has a range of 16 with a mean score of 13.66 and standard deviation of 2.92.

4.1.7.1 Bivariate Analysis

Bivariate analysis is second step in the analysis and it is done to test the presence of association between two variables. In this study in order test the presence of association between variables linear regression analysis was used and before using linear regression analysis different question representing single variable were summed up and normality of the outcome variable was checked and found to be normally distributed. In addition to the above those variables having more than two categories such as gender, profession are change in to dummy variable in which one category is omitted and became reference category against which the effect of the other category /categories are assessed.

Table 4.10. Association of socio-demographic characteristics and knowledge sharing in St. Peter's Hospital,2015, Addis Ababa, Ethiopia

Characteristics	Crud β[95% CI]	P-value	Adjusted β[95% CI]	P- value
Gender				
Female	1			
Male	-0.12[-0.46 ,0.22]			
Age	-0.07[-0.27 , 0.01]			
Educational level				
Diploma	1			
First Degree	0.14[-0.28 , 0.57]			
Masters Degree	0.25[-0.69 , 1.19]			
Doctorate degree of medicine	0.64[0.04 , 1.24]	0.03	0.15[-0.39, 0.69]	
Specialist	1.14[-0.63, 2.35]			
Profession				
Medical Doctor	1			
Nurse	-0.63[-1.19 , -0.07]	0.02	-0.006[-0.411 , 0.40]	
Laboratory	-1.01[-1.67 , -0.34]	0.03	-0.34[-0.88, 0.18]	
Pharmacy	-0.46[-1.29 , 0.36]			
Others	-0.47[-1.08, 0.13]			
Work experience	-0.008[-0.02, 0.01]			
Salary	0.00[0.00 , 0.00]			

Table4. 11 Association between selected variables with knowledge sharing in St. Peter’s Hospital, 2015,Addis Ababa, Ethiopia

Variables	Crud β [95%]	P- value	Adjusted β [95%]	P-value
Job satisfaction	0.13[-0.008 , 0.27]			
Willingness	0.12[0.05 , 0.19]	0.00	0.10[0.01, 0.20]	0.02
Trust	0.08[0.02 , 0.13]	0.00	0.54[-0.13, 0.26]	
Awareness	0.09[0.03 , 0.14]	0.00	0.10[-0.06, 0.08]	
Personality	0.10[0.38 , 0.17]	0.00	0.48[-0.38, 0.13]	
Intrinsic Benefit	0.71[-0.03 , 0.17]			
Perceived loss of knowledge power	-0.01[-0.06, 0.04]			
Extrinsic Benefit	0.60[-0.02 , 0.14]			
Organization Arrangement	0.15[0.07, 0.23]	0.00	0.06[-0.03, 0.16]	
Openness	0.16[0.07 , 0.25]	0.00	-0.01[-0.13, 0.10]	
Supportive leadership	0.12[0.06 , 0.18]	0.00	-0.01[-0.13, 0.10]	
Knowledge sharing opportunity	0.10[0.05 , 0.15]	0.00	0.03[-0.02, 0.98]	
Lack of Technology factors	-0.08[-0.13 , -0.02]	0.00	-0.07[-0.12 , -0.01]	0.01

From socio demographic characteristics educational level and profession were significantly associated with knowledge sharing where as gender, age; working experience and salary were not significantly associated with knowledge sharing. From the selected independent variables willingness, trust, awareness, organizational arrangement, knowledge sharing opportunity, openness, supportive leadership, personality and information technology were found to have significant association with knowledge sharing where as job satisfaction, intrinsic benefit, perceived loss of knowledge power and extrinsic benefit were not found to have significant association with knowledge sharing.

i.e. those healthcare professionals who have doctorate degree in medicine are by 0.25 score more to practice knowledge sharing than those professionals having diploma, those healthcare professional who are nurses are by 0.63 score less to practice knowledge sharing than medical doctors and those healthcare professionals who are laboratory technicians are 1.01 score less to practice knowledge sharing than medical doctors.

The probability of knowledge sharing is by 0.12 score more in the presence of willingness, by 0.08 score more in presence of trust among professionals, by 0.09 score more in the presence awareness, by 0.1 score more in the presence of personality that is extrovert, self confident and always cautious, by 0.15 score more in the presence of conducive organizational arrangement, by 0.12 score more in the presence of knowledge sharing opportunity, by 0.16 score more in the presence of openness, by 0.12 score more in the presence of supportive leadership than absence of the all the above factors respectively and the probability of knowledge sharing is by 0.08 score less when there is lack of information technology.

4.1.7.2 Multivariate analysis

Multivariate analysis is process used to examine the effect of two or more variables on the dependent variable simultaneously.

Twelve variables having a significant association in the bivariate analysis are selected for further multivariate analysis. The result liner regression shows that from twelve variables, willingness and lack of information technology were found to be independent predictor of knowledge sharing that is knowledge sharing practice of healthcare professionals is by 0.10 score more in presence of willingness than absence with $A\beta$ (95%CI):0.10[0.01,0.20] and knowledge sharing practice is by 0.07 score less when there is lack of information technology than presence of information technology with $A\beta$ (95%CI): -0.07[-0.12 , -0.01]

Annex-I I Information Sheet

My name is Shehira Faruk. I came from Addis Ababa University and I am currently conducting a project for the partial fulfillment of master's degree in health informatics. The purpose of this research project is to design contextual framework for enhancing knowledge sharing practice among health care professionals in St.Peter's hospital

I would like to ask you some questions related to the topic I mentioned above and all of your responses to questions will be kept strictly confidential throughout the project. Participation in this project is voluntary and you can choose not to answer any individual question or all of the questions. We look forward for your full participation as 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 participation /non participation or refusal to answer question will have no effect now or in the near future on services that you or any member of the family may receive.

May I get your permission to continue?

Yes Go to the consent form

No stop

Annex III-Consent form

I have been informed that this questionnaire is part of research project that propose theoretical framework for knowledge sharing practice among health care professionals in St.Peter's Hospital. I have been told that the project will help in better understanding of the situation of knowledge sharing practice among healthcare professionals and understanding the situation will help in designing intervention program to alleviate the knowledge sharing problems for future which will benefits all health professionals and health care organization. In addition I have been told about how the data collection will proceed. I clearly understand that my participation/non participation, or refusal to answer questions will have no effect now or in the future on service that I or any members of my family may receive from health services providers. At last I am assured that confidentiality of my response is maintained. Therefore, I am consented to participate in the study by signing this form

The study participant's Signature_____

Date_____

Annex- IV 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. Your gender?

A. Male

B. Female

2. Your age in complete year? _____

3. Your highest educational level?

A. Specialist

B. Medical Doctor

C. Masters Degree

D. Doctorate Degree

E. First Degree

F. Diploma

4. Your profession?

A. Medical Doctor

E. Dentist

I. Sanitarian

B. Nurse

F. Pharmacist

J. Health officer

C. Midwifery

G. Anesthetist

Other Specify _____

D. Laboratory technician

H. Physiotherapist

5. Your work experience in the health organization in a year? _____

6. Your current Salary (per month)? _____

7. I am satisfied with my current job?

A. strongly Disagree

B. Disagree

C. Neutral

D. Agree

E. Strongly Agree

8. If your answer for Question number 7 is “strongly Disagree” or “Disagree” which of the following is/are the cause of dissatisfaction (possible to choose more than one answer)?

A. In adequate / no opportunity for further education and training

B. Lack of attractive salary

C. Lack of rewarded and recognition system for the work you did

D. Other Specify _____

Part 2 Questions related to Knowledge sharing

2.1 How frequently do you share know-how with the hospital staffs?

- A. Never B. Rarely C. Sometimes D. Often E. Always

2.1. What is the current knowledge sharing practice that is implemented in the hospital?

(Possible to choose more than one answer)

- A. face to face communication with colleague's C. using internet (such as e-mail)
B. Observation D. Using phone. E. Other Specify _____

2.2 Do you document working practices?

- A. Yes B. No

2.3 If your answer is "yes" to question number 2.2 which of the following ways are used for documentation **(possible to chose more than one answer)**

- A. Writing Manual B. Discussion forum C. Database/knowledge base D. Web portal

2.4 How do you feel motivated to transfer your knowledge?

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

2.5. Is their motivational scheme in the hospital to motivate knowledge sharing?

- A. Yes B. No

3. How important are the following incentives for you in order to improve your knowledge sharing attitude? Please tick one answer only(√)	Very Low	Low	Medium	High	Very High
3.1	Good working environment				
3.2	Monetary incentives				
3.3	Career Development				
3.4	Chance of promotion				
3.5	Gaining states as expert				
3.6	Acknowledgement of your contribution				
4. Please read and indicate the extent of your agreement with each of the statement below according to the scale provided. Please tick(√) one answer only	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4.1	I am willing to explain my work related knowledge and expertise with my colleagues				
4.2	I am willing to explain my knowledge and expertise in meeting and training				

4.3	If I need additional information and knowledge how to perform a task my colleagues are likely to tell me about it					
4.5	I believe that my co-workers are knowledgeable and competent in their area					
4.6	If I share my knowledge with co-workers they are likely to use the knowledge properly					
4.7	If I share knowledge with my organization my colleagues will believe that I am concerned about their welfare					
4.8	If I share knowledge with my organization my colleagues will feel very confident about my skill and capability					

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4.9	I am aware of the importance of knowledge sharing in my daily work					
4.10	I believe that I would gain new idea, technology, skill or technique as result of sharing knowledge					
4.11	Knowledge sharing would help me not to repeat the same mistake as happened to my colleagues					

4.12	I believe that sharing knowledge would help me to learn faster					
4.13	I am an extrovert type of person (like to know what is happening, socialize and open-minded)					
4.14	My self confidence is high					
4.15	I am always cautious					
4.16	I believe that my experience can improve work efficiency and increase productivity.					

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4.17	I enjoy helping colleagues by sharing my knowledge					
4.18	In my organization there is acknowledgement and recognition of effort for individuals who are committed to sharing their knowledge					
4.19	Sharing knowledge would reduce my personal competitiveness					

4.20	Sharing my knowledge would waste my time or increase my work load					
4.21	Exclusive ownership of knowledge would make me outstanding					
4.22	In my organization there is incentive and reward such as promotion, bonus, and higher salary for individual who share their knowledge					
4.23	In my organization there is good office layout that encourage knowledge sharing					

4.24	In my organization knowledge sharing is included in the work process					
4.25	In my organization there is enough location (hall) within the hospital where staffs can socialize and exchange knowledge					
		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree

4.26	In my organization there is periodic meeting in which people working in different teams, departments may participate					
4.27	There are formal opportunity like training program and workshop within the hospital that allow employees to share knowledge					
4.28	In my organization there is informal knowledge sharing practice					
4.29	Communication among my colleagues is very open on job related issues					
4.30	My superior openly explains the purpose of the company's policies, rules and expectation to team members					
4.32	Managers in our organization encourage knowledge sharing with colleagues					
4.33	Managers in my organization encourage new idea and focus on learning from failure					
4.34	Managers in my organization consult team members to make decision and solve problem					

		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
4.35	I am reluctant in using IT application when I face problem					
4.36	In my organization there is lack of Information communication technology infrastructure (internet, intranet) that allow employee to share knowledge.					
4.37	In my organization there is lack of technical support and maintenance of integrated IT system which obstacles work routines and communication flow.					
4.38	In my organization there is lack of training regarding employee familiarization of new IT system and process					

Annex V Interview Guide

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 is/are the current ways of knowledge sharing implemented in the hospital?
4. Knowledge sharing among employees is low what the possible reasons?
5. What is/are the existing challenge in implementing effective knowledge sharing?
6. What Measures the hospital should take in order to improve knowledge sharing?

Annex VI

Knowledge Management System requirement

Requirements	High	medium	low
ICT infrastructure (Desktop, server, Router)	√		
ICT experts	√		
ICT training for end users	√		
Broad band internet connectivity	√		
Web brother(internet explorer or Firefox)	√		
User friendly portal interface	√		
Databases for storage of healthcare knowledge	√		
groupware to provide a medium for knowledge works to communicate	√		
Knowledge discovery tools such as data mining	√		

Declaration

I declare that this project is my original work and it has not been presented for a degree in any other University. All the material sources used in this study are duly acknowledged

Shehira Faruk

This project has been submitted for examination with our approval as university advisors

Dr. Million Meshesha

Dr. Eshetu Girma