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KNOWLEDGE SHARING AMONG HEALTH PROFESSIONALS: THE CASE OF FELEGE HIWOT REFERAL HOSPITAL

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Knowledge Sharing Among Health Professionals: The Case of Felege Hiwot Referal Hospital

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DEDICATION

This work is dedicated to the Lord of the Worlds, The Merciful One, the Compassionate One, and Master of the Day of Doom.

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Abstract

Background: Organizations that implement knowledge sharing are raising the quality and availability of care and increasing operational efficiency. There is a "know-do" gap: the gap that exists between what we know and what we do in practice. As a result, failure to share knowledge compromises performance. Ineffective routines are continued, new approaches are not explored, and opportunities to improve efficiency are overlooked so assessing status of knowledge sharing and factors affecting it necessary.

Objective: The objective of the study is to investigate the knowledge-sharing behavior of health care professionals so as to identify factors that affects knowledge sharing and propose possible solution to enhance organizational effectiveness and improve the quality of health service provision.

Methods: A facility based cross-sectional study employing both quantitative and qualitative methods are used from March to April 2010 G.C. A self administered questioner is distributed to a total of 196 health professional working in Felege Hiwot Referal Hospital during the data collection period. To supplement the quantitative study, data is also collected by interviewing the department heads, observation and document analysis. The data is cleaned, coded and fed to SPSS version 16, and then the data was analyzed so as to achieve the objective of the study.

Result: The finding shows majority of the respondents are not frequently engaged in knowledge sharing activity .The result also shows, there is lack of formal and informal knowledge sharing opportunities. The hospital has no infrastructures which help to facilitate knowledge sharing. The majority of respondents are not motivated to share knowledge due to lack of incentives and poor management support of the KS activity of the hospital.

Conclusion: knowledge sharing is one of the strategic tools that the hospital should use to improve its performance. The management should give a great attention to it and plan in advance like any activity. The hospital should make ready the necessary infrastructures and implement the incentive mechanism to motivate staff and monitor its performance routinely and take corrective actions accordingly.

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Acronyms

AAU …… Addis Ababa University

ANRS…….. Amhara National Regional State

ANRHB……Amhara National Regional State Health Bureau

DHI…….. Department of Health Informatics

FMOE……. Federal Ministry of Education

FOI…….. Faculty of Informatics

FOM…….Faculty of Medicine

HMIS……Health Management Information System

IT……..Information Technology

ICT……Information Communication Technology

KM……...Knowledge Management

KS…… Knowledge Sharing

MCHD…….....Maternal and Child Health Department

MDGs……Millennium Development Goals

OPD……..Out Patient Department

OR……Operation Room

WHO ……World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

The 21st century economy is considered as the knowledge economy [59]. Near the beginning of this century WHO (World Health Organization) celebrated its 100th anniversary. During these years there were various improvements in human health that extensively change the health of the populations of the member states. These improvements are the result of the generation, sharing and application of knowledge to address emerging problems. In spite of these successes, there is a big difference in health for which the knowledge already exists but only needs to be made available and applied. This problem is known as the Know-Do Gap [59]. It is with this background that members of the United Nations take on the Millennium Declaration in September 2000.

Out of the 8 Millennium Development Goals (MDGs), three are directly related with health, namely: to reduce child mortality, improve maternal health and combat AIDS, malaria, TB and other diseases [61]. The achievement of these health-related MDGs depends on turning scientific knowledge into effective action for people's health through bridging of the "know-do" gap: the gap that exists between what we know and what we do in practice, and between scientific potential and health realization. The failure to rapidly put existing and new knowledge into practice, in the broader context of building health systems, is a key challenge for the health community.

The health care organizations are increasingly becoming a knowledge-based area that depends on knowledge sharing activities to improve the quality of care [34]. Knowledge sharing is the process of exchanging and communicating knowledge between employees in an organization. Healthcare organizations are under pressure, struggling to cope with rising costs and battling barriers to efficiency [40]. At the same time, they're trying to improve patient care and outcomes. Organizations that implement knowledge sharing are raising the quality and availability of care, increasing operational efficiency, and reducing healthcare costs.

In the process of sharing knowledge, people are the primary entity. This is because knowledge usually exists in the mind of individuals [80]. The process of sharing knowledge often starts at the individual level, and expands to the group level and the organizational level. Such a process of sharing organizational knowledge facilitates the exchange of working experiences, technical know-how and individual insights between and among individuals. Knowledge sharing increases the organizational knowledge and improves the capability of its employees for performing their jobs better.

Understanding the process of knowledge sharing between individuals is one step toward a better understanding of knowledge sharing as a whole in organizations. However, there are significant barriers to knowledge sharing and reapplication [77]. First, relevant knowledge may not exist. Or, else, it may exist in formats where people are unaware of it or cannot find it. Second the knowledge may exist in people's heads but it cannot be tapped. Existing knowledge may simply go unused.

Health professionals can view what they know in two fundamentally different ways: competitively or cooperatively [25]. The competitive view treats knowledge as something for each individual to accumulate and expend in order to achieve a strategic advantage over others. By contrast, the cooperative view treats knowledge as something to be practice jointly and reaches its full value only when it is shared. Some professionals view knowledge in competitive terms. They suppose that knowledge should be used as a lever to raise their own level of achievement. In their view, the more widely they share what they know, the less valuable it becomes. As a result, a tendency develops to hoard knowledge rather than to share it.

Considering the importance of knowledge sharing, the hospital should investigate ways to increase the use of knowledge it already possesses. One step towards realizing this goal is to identify factors that affect knowledge transfer in organizations. Once knowledge transfer is understood in this organizational context, managers might be able to implement strategies to improve organizational efficacy through better knowledge management.

1.2 Statement of the Problem

In today's rapidly changing healthcare environment, health institutions (hospital, clinics) optimize their chance of success not by telling health care professionals what to do, but by enabling them to make informed decisions [25]. There is no health professional that knows everything he or she needs to know. As a result, failure to share knowledge compromises performance. Ineffective routines are continued, new approaches are not explored, and opportunities to improve efficiency are overlooked. The common reason is not the required knowledge does not available within the organization, but members of the organization fail to share what they know. Besides, some people do not appreciate what they need to know, while others do not recognize the value of the knowledge they possess to others.

Based on direct observation and interview conducted with specialists working in the Felege Hiwot Referal Hospital, there are some types of knowledge sharing exist in each department in some way or another. However, such practices are not integrated into the work flow of the hospital. The sharing of knowledge is an individual effort in many cases and it is not systematized in the practices of the hospital. The management of the hospital does not believe that knowledge sharing processes and tools are essential to deliver quality service in the health care.

Based on a study conducted to asses the health professionals turn over in the hospital, there is a high rate of staff turnover i.e. 30% of health professionals are leaving the hospital in five years period only [38]. The retirement and mobility of experienced and knowledgeable health care professionals lead to loss of knowledge since the hospital does not facilitate the sharing of their knowledge with others. Even for the health professionals that stay within the hospital, the full extent of their knowledge are not realized and utilized because the hospital does not create a formal and informal opportunities for the individuals to share their knowledge with others in the organization.

In view of the fact that the hospital has few specialists having many duties and responsibilities such as teaching health officer students and managing patient in the different department of the hospital, most of the patients coming to the hospital are

examined and treated by the general practitioners. If the case of the patient needs consultation with specialists, the patient will be appointed for some other time. The absence of timely management of the patient will aggravate the serious ness of the disease or results in patient death. Whether or not the patients are getting appropriate medical cares are determined partly by the current skill of the general practitioners. So there should be ways that update the skill of these health professionals.

The common mechanism health professionals get informed with new treatment guide line and other medical findings through training programs prepared by other organizations like non governmental organizations. Even though health professionals are getting these chances, they are not sharing what they get from the training to the hospital staff when they comeback to the hospital.

Currently, the hospital management gives much attention in solving patient complaint by decreasing waiting time of patient rather than improving the quality of health service through different knowledge sharing mechanisms. The management does not understand well what will happen when the health professionals are not having the required knowledge at the right time. As a matter of fact when health professionals and the hospital fail to share knowledge effectively, both groups perform below their potential. This failure can undermine everything a department is involved in, including patient care.

When professionals cannot find a particular piece of actual information they need in time to make the right decision or take the correct action, a better idea goes unused. In medicine, the problem is more than we can expect; losing the opportunity to share may lead to medical error. So, in health care organization knowledge sharing is no longer a **"nice to have"** process; actually, it becomes a **"must have"** skill [56].

For this reason, this paper is seek to understand the practice of knowledge sharing by caring out cross-sectional study with the general objective of investigating the knowledge-sharing behavior of health care professionals so as to identify factors that affects knowledge sharing.

The study attempts to answer the following research questions:

- How the knowledge sharing status among the health professionals?
- Are there proper resources (money, time, infrastructure including information communication) allocated for enhancing knowledge sharing?
- What are the existing challenges in performing efficient and effective knowledge sharing?
- What are the possible solutions for the factors affecting knowledge sharing in the hospital?

1.3 Objective of the Study

1.3.1 General objective

The objective of the study is to investigate the knowledge-sharing behavior of health care professionals at Felege Hiwot Referal Hospital so as to identify factors that affect knowledge sharing.

1.3.2 Specific objectives

In order to achieve the above general objective, the study has the following specific objectives.

- To have conceptual understanding and share experiences of other studies through reviewing related literature (such as books, articles and the Internet).
- To assess existing knowledge sharing practices among health professionals by investigating the purpose of sharing knowledge and the communication channels preferred for sharing.
- To understand the trends of knowledge sharing among health professional
- To analyze and interpret the collected data using questioner and interview.
- To identify the key factors and challenges involved in knowledge sharing among the health care professionals.
- To provide concluding remarks and further research directions for future researchers in the area.

1.4 Significance of the Study

Knowledge is the most important strategic resource in organizations, and the management of this knowledge is critical to organizational success [39]. If organization has to get the most out of the knowledge they possess, they have to understand how knowledge is shared within the organization.

The study helps to understand the process of knowledge sharing between the health professionals in this hospital which is one step toward a better understanding of knowledge sharing as a whole in organizations based on which more practical methods proposed for enabling health professional's share their knowledge and achieve high quality health service.

The study identifies factors that encourage or discourage knowledge sharing in the hospital. Once the factors affecting knowledge sharing is understood in this organizational context, we suggest better ways or strategies to implement better knowledge sharing.

In view of the fact that the world is moving into a "knowledge economy", the performance of organizations will depend on the acquisition, sharing and application of knowledge [32]. This study can suggest better ways to improve the knowledge sharing activity among the health professionals so as to achieve enhanced service to the public and greater organizational performance. The study recommends to health care organizations like Felege Hiwot Referral hospital to design motivational scheme so as to correctly and efficiently induce employees to share their knowledge.

1.5 Scope and Limitation of the Study

The finding of the research would be more fruitful if it is conducted widely by including other different health organizations in different region of Ethiopia. But due to time, labor and money constraints, it is out of the reach of the student researcher to include other health care organizations. Therefore, the study is delimited to treat the problems in Felege Hiwot Referal Hospital under the Amhara National Regional Health Bureau.

Knowledge management is a wide area to study. It encompasses knowledge creation, capturing, representation and finally sharing for an organizational success. However, the scope of the study is also delimited to knowledge sharing. The study investigates the knowledge sharing phenomenon in Felege Hiwot Referal hospital. This is because knowing the state of knowledge sharing enable to proactively take measures for designing an effective system that enhance knowledge management.

The limitation of this study is that the variables proposed in the conceptual model of Zawiyah et.al. [84] in the organizational dimension (work process) are not assessed because of limitation of time.

1.6. Organization of the Study

This paper is organized into five chapters. The first chapter deals with the back ground of the study, the statement of the problem, objective, scope and limitation 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. The findings, data interpretation and discussion are presented in chapter four. Finally, the fifth chapter brings to an end of this survey research with summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Knowledge management is the process through which organizations generate value from their intellectual and knowledge-based assets [19]. Most often, generating value from such assets involves sharing them among employees, departments and even with other companies in an effort to devise best practices. It's important to note that the definition says nothing about technology; while knowledge management is often facilitated by information technology, technology by itself is not knowledge management.

According to Chan [9] knowledge management (km) = $(p + k)^s$

Where:

P= people (carrier of knowledge);

+=technology (information technology help construct and improve knowledge management);

K=knowledge (includes; data, information, skills and wisdom);

S= sharing (knowledge sharing determines the extent to which knowledge management functions).

In order to comprehend knowledge sharing, it is necessary to understand the concept of knowledge. How is knowledge different from information? and how is information different from data?

2.2. The knowledge Spectrum

Data, information, knowledge and wisdom can be viewed as part of a continuum, one leading into another, each the result of actions on the preceding, with no clear boundaries between them. [15]

1) **From fact to data:** This transformation allows individuals and organizations to develop instruments to represent, collect, record, and store discrete facts about

reality [78]. Data is a set of discrete symbols or signs used to express facts about events. Still, data tells nothing about why or how these events happen and they do not contain explanations or interpretations of the eventual changes of events [52]. Data is a number or word or letter without any context [19]. It may have multiple meaning which requires further processing to use it for decision making.

2) **From data to information (also called "know-what"):** This transformation allows individuals and organizations to process and organize data in order to create a message, such as by producing reports [78]. What makes a collection of data information is the understanding of the relationships between the pieces of data or between the collection of data and other information.

3) **From information to knowledge (also called "know-how"):** This transformation allows individuals and organizations to interpret information in order to derive an action [78]. As figure 2.1 depicts, when one is able to realize and understand the patterns and their implications, then this collection of data and information becomes knowledge [17]. Embracing a wider sphere than information, knowledge includes perception, skill, training, commonsense and experience. It is the sum total of our perceptive process that help us to draw meaningful conclusion.

   The two key points that make knowledge distinct from information and data are the following [32]. First, knowledge exists in the human mind, and second, knowledge is a framework for evaluation. If, for example, a heart surgeon writes down instructions for performing a new transplant procedure on a piece of paper, the contents of the paper (i.e., information) will become knowledge when read by another heart surgeon who understands the context and decides how to apply it. It remains information when read by a non-surgeon who understands only the general concept of a heart transplant, and it becomes data when viewed by a person who does not understand the concept or else who does not speak the language in which it is written.

4) From knowledge to wisdom

Wisdom is the application of knowledge as contained in human judgment centered around certain criteria or values that are generally accepted by the culture or society [15]. It is the ability to understand the fundamental principles that govern the patterns representing knowledge. This understanding enables us to know what the knowledge itself is.

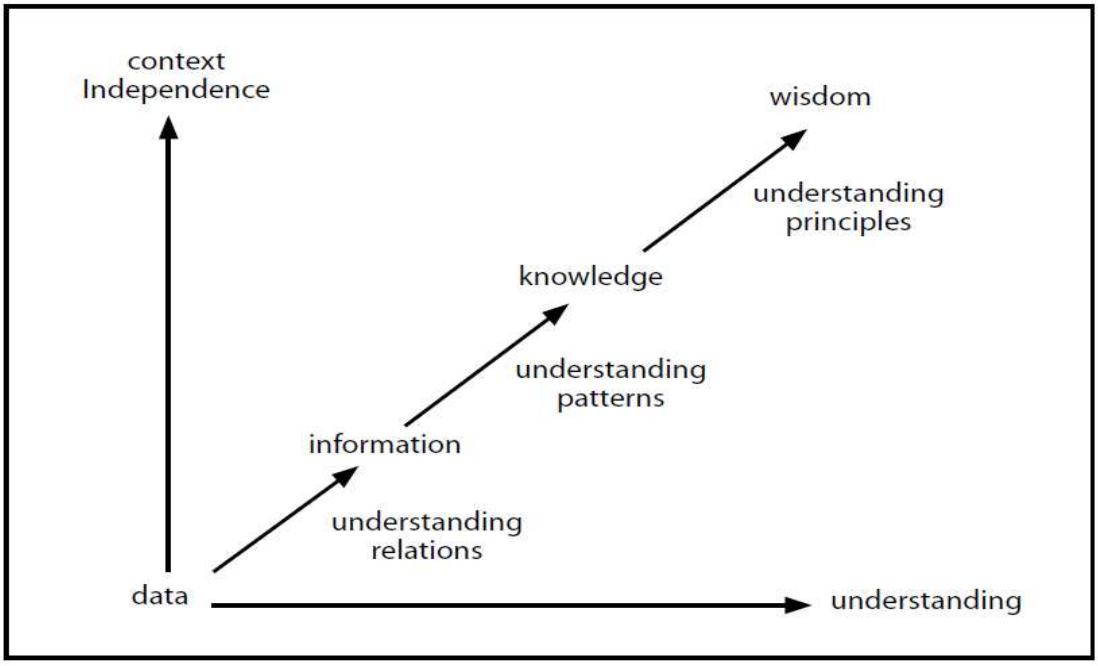

Figure 2.1 The knowledge Spectrum [19]

2.3. The characteristics of knowledge

Knowledge is defined as a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and updating new information gained from experience and education [52]. It originates and applied in the minds of experts. In organizations, it often becomes embedded not only in documents or repositories (database) but also in organizational routines, processes, practices, cultures and norms.

Knowledge carries characteristics that increase or decrease its value. In the field of public health, one can associate four value-increasing characteristics with knowledge [78]:

- The deployment of knowledge is possible at the same time in multiple sites around the world;
- knowledge increases in value when used by multiple knowledge holders;
- Knowledge brings increasing returns (instead of diminishing returns as tangible assets may) — the more we use it, the better we use it and the better are the outputs and outcomes;
- Knowledge creates future opportunities — using knowledge improves learning which, in turn, creates opportunities for future action and interventions.

Conversely, knowledge also carries value-decreasing characteristics that public health officials need to consider [78]:

- Knowledge assets are more difficult to manage than tangible assets such as medical equipment;
- Investments in knowledge assets aimed at developing or improving public health programs and interventions are risky due to their role in the early stages of innovation;
- Knowledge assets are difficult to measure and value them because, collecting solid evidence on knowledge investment and returns from investments in public health programs and interventions is usually not easy.

2.4. Types of knowledge.

Knowledge is an essential asset that has become more important than land, labor or capital in today's economy **[**16**]**. In organizational terms, knowledge is generally thought of as being 'know how', 'applied information', 'information with judgment' or 'the capacity for effective action'**.**

In general, there are two types of knowledge [19]: tacit knowledge and explicit knowledge. Both types of knowledge can be produced as a result of interactions or innovations. They can be the outcome of relationships or alliances. Both tacit and explicit knowledge enable organizations to respond to novel situations and emerging challenges.

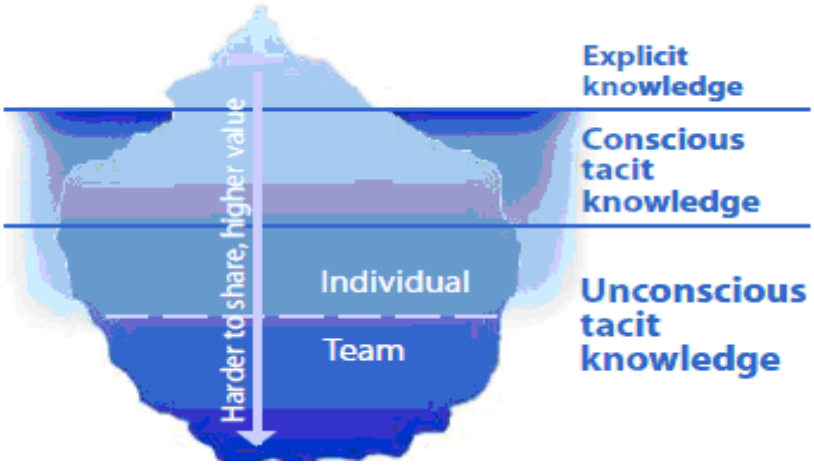

Figure 2.2 The knowledge iceberg [4]

Tacit knowledge is personal [19], which is stored in the heads of people. It is accumulated through study and experience. Tacit knowledge grows through the practice of trial and error and the experience of success and failure. Tacit knowledge is deeply rooted in action, procedure, routines, commitment, values and emotions. As shown in figure 2.2, tacit knowledge 'indwells' in a comprehensive cognizance of the human mind and body. It is intangible and not easy to articulate, making it difficult to share with others. Tacit knowledge can be shared and communicated through various activities and mechanisms. Activities include conversations, workshops, on-the-job training and the like. Mechanisms include, among others, the use of information technology tools such as email, groupware, instant messaging, web portal and related technologies.

Explicit knowledge comprises of knowledge that is codified, documented and archived on a paper or paperless media (like database) [19]. These include knowledge assets such as reports, memos, business plans, drawings, patents, trademarks, customer lists, methodologies, and the like. They represent an accumulation of the organization's experience kept in a form that can readily be accessed by interested parties and replicated if desired. In many organizations these knowledge assets are stored with the help of computers and information technology. Explicit knowledge has a tangible dimension that can be more easily captured, codified and communicated. It can be processed, transmitted and stored relatively easily.

2.5. Interaction between types of knowledge

Knowledge creation and transfer are achieved by interaction among individuals and in the course of interactions, different kinds of knowledge conversion take place [19]. The process of knowledge creation is based on a double spiral movement between tacit and explicit knowledge.

Personal knowledge can become organizational knowledge through the dynamic interaction between tacit knowledge and explicit knowledge [19]. This dynamic process is the essence of knowledge creation in an organization. This interaction between the two types of knowledge brings about the four modes of knowledge conversion, also called the SECI (socialization, Externalization, Combination and Internalization) model, as shown in figure 2.3 [36].

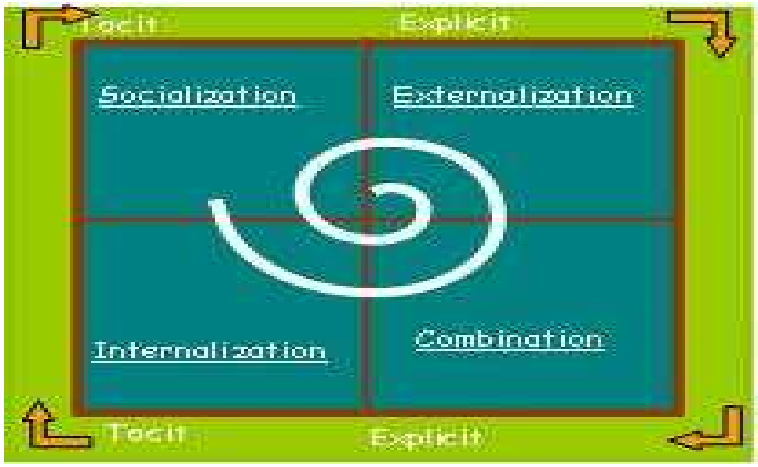

Figure 2.3 The four modes of knowledge conversion

1-Socialization (Tacit to Tacit): Socialization is the process of creating common tacit knowledge through shared experiences. In socialization, a field of interaction is built where individuals share experiences and space at the same time [19]. Through this process common unarticulated beliefs and embodied skills are created and developed. In socialization, the tacit knowledge of one person is shared and transmitted to another person and it becomes part of the other person's tacit knowledge. People share their

expertise in informal social settings through stories, analogies, drawings, and personal experiences [36].

2-Externalization (Tacit to Explicit): The knowledge shared in social settings is documented and converted into explicit knowledge that is shared through publicly accessible media (such as articles, books and audiovisual materials) [36]. Here the tacit knowledge in the brains of experts are articulated and expressed as concepts or drawings, thus becoming explicit knowledge that can be further studied and refined [19].

3-Combination (Explicit to Explicit): Combination is a process of assembling new and existing explicit knowledge into a systemic knowledge [19]. For example a researcher can assemble an array of previously existing explicit knowledge in order to prepare a new set of specifications for a prototype of a new product. What commonly occurs is the combination of a newly created concept with existing knowledge to produce something tangible (e.g., a new product model). Individuals receive new knowledge and combine it with their own experience and former knowledge to expand their knowledge base [36].

4-Internalization (Explicit to Tacit): As individuals continue to use what they have learned, they internalize the knowledge [36]. It becomes part of their set of beliefs and expertise that dictate their new behavior. An excellent example of this is "learning by doing or using" [19]. Explicit knowledge that is available in the form of multimedia (audio, image and video) facilitates the internalization process. The use of operating manuals for various medical instrument or equipment is a quintessential example of explicit knowledge that is used for internalization. The instructions are learned and become part of the person's tacit knowledge.

The SECI (socialization, externalization, combination, and internalization) model used to describe the cyclical process of converting tacit knowledge to explicit knowledge and back again to tacit knowledge in the form of new knowledge. So understanding this cycle is helpful to practice successful knowledge sharing.

2.6. Knowledge Management (KM) Concepts

There is no universally accepted definition of knowledge management [19]. But there are numerous definitions of experts. Put very simply, knowledge management is the conversion of tacit knowledge into explicit knowledge and sharing it within the organization. Technically, knowledge management is the process through which organizations generate value from their intellectual and knowledge based assets. Defined in this manner, it becomes apparent that knowledge management is concerned with the process of identifying, acquiring, distributing and maintaining knowledge that is essential to the organization.

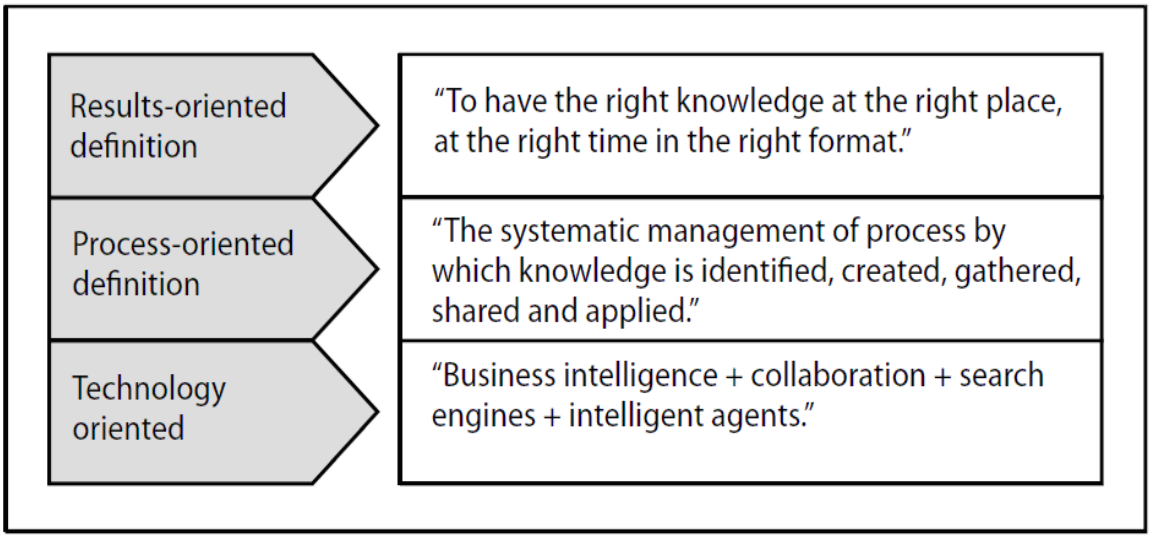

Figure 2.4 Classification of knowledge management definition [19].

If one considers knowledge management in the broadest context, then there are different definitions of knowledge management [19]. All the definitions mention the same idea but, as shown in the figure 2.4, each one focuses on a particular aspect of knowledge management. Thus a result oriented definition looks knowledge management from the expected output side, where as processes oriented definition describe knowledge management from the step by step process involved starting from knowledge generation to dissemination. A technology oriented definition attaches knowledge management with enabling technology to enhance knowledge usage.

2.7. Knowledge sharing/transfer

Knowledge creation, sharing and dissemination are the main activities in knowledge management [54]. Being part of knowledge management process, knowledge sharing is the exchange of experience, events, thoughts or understanding of concepts. In general, people expectations from knowledge sharing are to gain more insights and understanding about concepts or practical applications, thereby improving learning and expertise.

Knowledge sharing refers to the capacity to make available pertinent knowledge to others within an organization, a program, a project or an intervention [78]. Knowledge sharing is more demanding than knowledge reporting. Reporting involves disseminating information through codified formats (such as an IT system) to target groups within a public health organization. By contrast, sharing implies person-to-person interactions during which one individual converts his or her (individual and often tacit) knowledge into a form that can be understood by other members in the organization. Knowledge sharing is a social process that may lead to the emergence of communities of practice.

Knowledge can be shared by the organization with its employees (e.g., through memos and instructions) and also between employees of the organization (e.g., through group discussions and internal meetings) as well as with people outside the organization (e.g., through attending seminars and workshops) [19]. The goal of knowledge sharing should be focused on making knowledge available in meaningful ways and encouraging researchers, policymakers, and service providers to work together in ways that will incorporate new knowledge as it arises and sharing in the creation of knowledge [74].

2.7.1. Knowledge Sharing within an Organization

Despite the difficulties associated with knowledge management, researchers and practitioners alike have come to believe that knowledge transfer within an organization might represent a low-cost alternative to the creation, codification, and capture of new knowledge [48]. One practitioner [62] put it this way: "We used to say knowledge is power. Now we say sharing is power".

Knowledge sharing enables employees to share their insights and experiences in order to allow faster and more cost effective project completions [21]. Employees can draw upon the experiences of others in their pursuit of finding solutions to problems. Redundancy of work is decreased as employees are not re-creating knowledge [3]. The overall results are cost and time savings, which is the creation of value for the organisation.

Numerous organizations are now focusing on knowledge management and particularly on the establishment of an appropriate workplace environment for facilitating knowledge sharing [20][28]. Knowledge sharing can be viewed as a form of organizational innovation that has the potential to generate new ideas and develop new business opportunities through socialization and learning processes of knowledge workers [41].

According to Yang [81], the ultimate goal of acquiring and sharing knowledge is the transfer of all individual experience and knowledge to organizational capabilities. The more the individual intellectual capital is transferred to organizational assets, the greater the degree of strength of organizational effectiveness and consequently enhances the outcomes of organizational learning.

In order to facilitate learning and knowledge sharing, organizations must provide support, resources, and a clear mandate that encourages employees to share their knowledge with others [27]. Moreover, knowledge sharing occurs at both the individual and organizational levels. For individual employees, knowledge sharing is talking to colleagues to help them get something done better, more quickly, or more efficiently. For an organization, knowledge sharing is capturing, organizing, reusing, and transferring experience-based knowledge that resides within the organization and making that knowledge available to others in the business.

2.7.2 Mechanisms for individuals to share their knowledge in organizations

Bartol and Srivastava [5] identify four major knowledge sharing mechanisms for individuals to share their knowledge in organizations.

The first mechanism for knowledge sharing is one in which employees contribute their ideas, information, and expertise to a database [5]. A second mechanism of knowledge sharing is formal interactions. These could take place within teams or work units or across people working in different teams, departments, divisions, etc. The third mechanism of knowledge sharing is during informal interactions. Organizations hope that these experts share their knowledge when other employees approach them .Example of informal sharing mechanism informal water cooler chats.

The last mechanism of knowledge sharing is the establishment of communities of practice (CoP) wherein employees within an organization communicate on topics of their interest in a non-routine, personal, and unstructured system [9]. It may be advantageous for organizations to provide technological support for CoP so that knowledge that is not captured through databases could emerge in interactions among people tied by mutual interests.

These four knowledge sharing mechanisms are not mutually exclusive [5]. Even if organizations may emphasize one over the other, all of these systems are important for the organization in tapping individual knowledge for collective use.

2.7.3 Strategic approaches to knowledge sharing

Hansen et al. [30] introduce two strategic approaches to knowledge sharing; the codification strategy and the personalization strategy.

The codification strategy is best used when problems are uniform, non-customized and non-creative [30]. Firms pursing this kind of strategy can use IT in codifying knowledge through “people-to-document” approach which captures and extracts knowledge from the person who developed it, makes irrelevance specific information, documents and stores it on electronic databases. The economic benefit that arises from this kind of knowledge management strategy comes from the reuse characteristic of knowledge stored in electronic databases [30]. Although investment in IT infrastructure to host such knowledge sharing databases is costly, the unit cost per usage is low since knowledge stored can be easily retrieved and reused over and over again.

The personalization strategy emphasizes on individuals interactions and dialogues as a mean to share knowledge [30]. In personalization strategy knowledge is not codified and stored on databases but rather it is transferred and created through mentoring with experienced members within companies. This suggests that communications, between members of the organizations who follow personalization strategy, are highly encouraged through various means such as meetings, telephone calls, e-mails and video conference.

Putting an equal emphasis on both knowledge management strategies is not recommended [30]. The management should focus dominantly on either one of the approaches based on firms' competitive advantages. It is crucial that the management correctly employs the right knowledge management approach that will enhance firm's competitive advantages. However, a total emphasis on either one is not recommended either. Firms should always remain a balance between the two approaches as suggested by Hansen et al [30] as an 80:20 mix between the chosen strategy and the supportive strategy.

The above studies show that knowledge sharing is the main factor in creating innovational organization. However, these studies also point out that lack of understanding by the organization on the factors that affect the implementation of knowledge sharing.

2.7.4. Factors affecting knowledge sharing

Since knowledge is one of the most important strategic resources in any organization. An organization should investigate ways to increase its use of the knowledge it already possesses. One step towards realizing this goal is to identify factors that encourage or discourage knowledge transfer in organizations. Once knowledge transfer is understood in this organizational context, managers might be able to implement strategies to boost organizational efficacy through better knowledge management.

Scarbrough [66] had identified four groups of reasons for knowledge sharing in organizations, and labeled them using the following four metaphors: web, ladder, torch and fortress.

- Web (knowledge sharing as a means of establishing connections with others in the organization);
- Ladder (sharing knowledge in the pursuit of status and career advancement);
- Torch (sharing knowledge by following examples of leaders);
- Fortress (sharing knowledge as a source of protection against external threats).

In a study conducted on the final-year undergraduate students of a business school in Hong Kong identifies the important factor of a successful knowledge-sharing system [47]. The first and most important step to take is building trusting relationships. Moreover, a healthy culture should be fostered among students that learning from others and sharing what you know with others is the right thing to do and an effective way of improving study. Whether in class or after class, students should be provided with adequate opportunities for face-to-face discussions without the presence of instructors so that they can actively share knowledge during these discussions. Frequent formal seminars are not an effective approach for sharing knowledge because they hardly communicate with each other to exchange opinions and thoughts during the seminars.

Research related to knowledge sharing and changing work relationships among professionals in health care has begun to emerge in 2003 G.C. Ryu et al. [65] proposed a model for knowledge sharing behavior using existing theories in social psychology. In their study, the authors showed how social psychology theories—including the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) can be used to explain the knowledge sharing behavior of physicians. The study found physicians' subjective norms—i.e. their beliefs about how people they care about will perceive the behavior in question—to have the strongest total effect on their willingness to share knowledge. Also, attitude and perceived behavioral control—i.e., people's perceptions of their ability to perform a given behavior—were found to have a significant effect on physicians' knowledge sharing behavior. The study shows the importance of creating an environment in which physicians can have positive subjective norms and attitudes towards knowledge sharing.

Another study conducted to present and tests the key factors of knowledge sharing behavior of employees of the manufacturing companies in Malaysia [83]. The multiple regression analysis shows that reward system, culture, trust and technology are significant elements of knowledge sharing behavior of the employees in the organization in the two states in Malaysia. The model explains 32 percent of the variance in companies' knowledge sharing behavior. They suggest that with an increased sample size, a more detailed empirical analysis among the independent variables e.g. gender, race, working experiences, educational level that have multiple categories can be performed and need to be reported in a future study.

A study conducted in an American based multinational company (MNC) in Malaysia about knowledge sharing, barriers to knowledge sharing, and strategies to promote knowledge sharing [76]. The results show that most of the respondents agreed that there is a knowledge sharing strategy and there is a growing awareness of the benefit of knowledge sharing in the organization. However, it was worrying to know that 22 percent responded negatively to the statement that knowledge sharing is important to the organization. Also, 27 percent of the respondents were also not willing to share knowledge. The study points out that the most effective method to promote knowledge sharing was to link it with rewards and performance appraisal. Top management support was also vital to ensure the success of knowledge sharing in the organization.

In a study conducted in South Africa for the development of a knowledge sharing construct to predict turn over intension [42]. The study contributed to a greater understanding of the importance of knowledge sharing in hospitals and amongst professional nurses. Professional nurses see opportunities to share (like attending conferences, seminars an training) as a pre-requisite to share, almost as a social-exchange process to "give something because you received something". There is a significant negative relationship between knowledge sharing and turnover intentions. It clearly indicated that managers can indeed plan strategies and interventions to provide professional nurses with opportunities to share such as training courses, workshops and sharing in informal settings. It is, however, clear that employers must create a conducive organizational culture that meets the pre-requisites to ensure a willingness to share.

This study suggests three potential problems that occur if hospitals and nursing employers neglect the importance of knowledge sharing. Firstly, there is the possibility of losing the professional nurses' knowledge. Secondly professional nurses did not pass on important knowledge before they left their hospitals, knowledge creation and retention processes, such as orientation/induction and training programs, might be ineffective. Moreover, these departing professional nurses might take their knowledge to a competing hospital or other company. Thirdly, the shared knowledge needs to be stored; otherwise the knowledge could be lost when employees leave the job.

The study also points out interaction between organizational culture and knowledge sharing in the final model to predict turnover intentions clearly show the importance of organizational culture as a pre-requisite to share knowledge. It is recommended that nursing employers not only create opportunities to share, but also the incentives to learn and to study, as well as the time to socialize with fellow colleagues as knowledge sharing is an interpersonal process where reciprocal expectations and trust certainly plays an important role. Professional nurses who have the opportunity to share their knowledge, have opportunities to gain new knowledge, view their surroundings as favorable and expect certain positive outcomes to share, will satisfy their social, esteem and self-actualization needs and may therefore be less inclined to leave their hospitals.

Based on a review of theory and research related to knowledge sharing, Ipe [39] has identified the major factors that influence knowledge sharing between individuals in organizations includes: the nature of knowledge, motivation to share, opportunities to share, and the culture of the work environment.

The reason why individual employees decide whether to actively participate in knowledge sharing activities are currently not well understood [76]. Therefore, this research aims to contribute to the general understanding of the factors determining the success of knowledge sharing in organizations in general and to the organization under study in particular.

Based on the previous studies conducted in different organizations, the presence of the following factors in an organization (or among the employees) will result in better knowledge sharing activity in the organization.

2.7.4.1. Employee motivations

Individuals need to be motivated to invest time in sharing knowledge with their colleagues either by articulating the knowledge in a form in which it can be absorbed and utilized by others or by explaining the knowledge through time consuming dialogue [37]. Besides carrying the cost of sharing, individuals might feel that they lose economic value and hence bargaining power when they share their knowledge. In that sense knowledge sharing requires time and carries a threat of loss of power or status. The individual who is engaged in knowledge sharing with another individual in the same organization will likely increase the competitive pressure by enabling others to perform the same function as her/himself.

Employees can be motivated both intrinsically and extrinsically [19]. Intrinsic motivation is more difficult to induce than extrinsic motivation. Intrinsic motivation arises from within individuals and is related to the content of their work, organizational goals and the alignment of these with individual objectives. Individuals are said to be intrinsically motivated when they undertake an activity because it satisfies their immediate needs. Intrinsically motivated people are ideally motivated by working with self-defined goals and fulfilling tasks.

Individuals are said to be extrinsically motivated when they satisfy their needs indirectly, primarily through financial compensation [19]. Extrinsic motivation constitutes incentives for behaving in a certain way based on the use of a price system. Extrinsic motivation can be achieved through human resources management practices such as financial compensation or promotion. Money generally provides satisfaction independent of the actual activity. When tasks are not complex, it is generally sufficient to motivate employees extrinsically. But when tasks are complex, such as the development of a new

technology or product, both intrinsic and extrinsic motivation will be required to promote knowledge sharing.

Lin [35], on his study on the factors affecting knowledge sharing has identified that employee extrinsic (reciprocal benefits) and intrinsic (knowledge self-efficacy and enjoyment in helping others) motivators as determinants of employee knowledge sharing attitudes and intentions. Szulanski [71] on his study on intra-firm transfer of best practices found that the sender's lack of motivation is one of the barriers to knowledge transfer. Other studies, however, have documented different results. On the basis of data from four Korean organizations Bock and Kim [7] found that motivational factors were negatively correlated with knowledge sharing. In another study of 27 Korean organizations Bock et al. [8] concluded that anticipated extrinsic rewards exert the negative effect of individuals' knowledge-sharing attitudes.

It was believed that extrinsic motivation is a short-term approach and cannot create a lasting commitment to sharing knowledge [46]. Moreover, extrinsic motivation is also inappropriate if the knowledge shared is mainly tacit in nature [58].Empirical studies on the role of employee motivation for knowledge sharing report mixed results. The lack of consistency in results reported in the literature may be ascribed to the fact that the operationalization of the variables capturing motivation substantially differs from one study to another. In addition to that, empirical studies usually do not distinguish between extrinsic and intrinsic motivators.

In the knowledge-based era, how to motivate employees to share their knowledge is the most difficult activity of knowledge management. The results of this study offer useful implications to health care organizations in Ethiopia to correctly and efficiently induce employees to share their knowledge.

2.7.4.2. Organizational culture

Culture is a term that encompasses the values, attitudes and behaviours of an organisation [69], and is an overarching mechanism, constraining all other aspects of organisational life. An organisation's culture affects knowledge management initiatives, and guides

employees regarding knowledge sharing behaviours. Greengard [24] offers the solution of creating a culture change to once and for all eradicate the idea that knowledge is power, which was identified as one of the most important obstacles to knowledge sharing.

Culture practices reflect how the organizations view and facilitate both learning and innovation, including how it encourages employees to build the organizational knowledge base in ways that enhance values for the customers [43].

A knowledge sharing culture can also be described as one where people share openly and individual's willingness to teach and mentor others, where ideas are freely challenged, and where knowledge gained from various sources is utilised [70]. A culture of knowledge sharing is one where teamwork and trust are valued [3]. The organization's culture is one that acknowledges the existence of friendly and open atmosphere within the bureau whereby individuals (particularly those with the greatest level of experience and expertise) make themselves freely available to share information and knowledge, so that people find it easy to ask questions and contribute ideas [31].

Ladd and Mark [48] point out that there are four basic organizational cultures that needs much attention.

I. Openness to Change/Innovation

This organizational culture fosters human-to-human contact and stress similarities between individuals [48]. In addition, this culture promotes self-actualization, which is likely to increase individual knowledge.

II. Task-Oriented

This organization culture increases the convergence of the goals shared by an organization and its membership [48]. Also, an organization that stresses quality and attention to detail would likely attempt to maximize knowledge transfer efficiency (i.e., minimize depreciation).

III. Bureaucratic

This organization culture discourages interpersonal communication is likely to diminish relational channels [48]. Also, a culture that encourages dependence is likely to discourage the pursuit of individual knowledge. A bureaucratic culture would be negatively correlated to a high knowledge transfer environment.

IV. Competition/Confrontation

As with the bureaucratic culture type, competitive/confrontational cultural types tend to discourage interpersonal relationships [48]. For these reasons an organization with a competition/confrontation culture would be negatively correlated to a high knowledge transfer environment.

It is extremely important that organisations create a culture of knowledge sharing. This way the organisation would not be dependent on the knowledge of a few employees rather everyone in the corporation would benefit from the knowledge the firm has enabled.

2.7.4.3. Trust

Trust is defined as positive expectations, such as integrity, capability, truthfulness, goodwill and ability that employees have about the competence and reliability of fellow employees as well as the organization [72]. It is a set of beliefs about the other party (trustee), which lead one (trustor) to assume that the trustee's actions will have positive consequences for the trustor's self.

In today's knowledge economy, scholars and researchers have placed trust as an important facilitator and determinant in a knowledge-sharing culture [72] as an employee require the existence of trust in order to respond openly and to share knowledge .A culture of trust seems to be required to encourage the application and development of knowledge within an organization. Therefore, trust in the context of culture leads to the increased overall knowledge sharing within organizations.

Trust is an implicit set of beliefs that the other party will behave in a dependant manner and will not take advantage of the situation [14] "Why do strong ties between coworkers appear to facilitate knowledge sharing?" The study carried out by the Institute for Knowledge-Based Organizations results suggest that the "magic ingredient" that links strong ties and knowledge sharing is trust. The study points two specific types of trust that are instrumental in the knowledge sharing process: benevolence-based trust and competence-based trust.

The benevolence-based trust describes as an individual will not intentionally harm another when given the opportunity to do so [14]. Competence-based trust on the other hand describes a relationship in which an individual believes that another person is knowledgeable about a given subject area. Either type of trust can exist independently [14]. The above study revealed that knowledge exchange was more effective when the knowledge recipient viewed the knowledge source as being both benevolent and competent [14].

In the literature specifically examining the relationship between trust and knowledge sharing, Nahapiet and Ghoshal [72] argue that trust affects knowledge sharing through creating and enhancing the necessary conditions for knowledge sharing to take place. Undeniably, conditions such as employees' ability to collaborate and cooperate with each other depends highly upon trust as open reciprocity and sharing of knowledge will not freely occur without it [63].

2.7.4.4. Social Structures

Social structure is defined as the "patterned or regularized aspects of the relationships existing among participants in an organization" [67]. Encouraging and stimulating the development of social interaction culture has a positive effect on employees' knowledge sharing attitude [26]. When employees are embedded in a strong social network, they are motivated to share knowledge with colleagues [51].

Understanding the various social structures in the organizations will help to better analyze the knowledge sharing that occurs—or needs to occur—and design interventions

to address those needs. There are six types of social structures commonly in existence in organizations today [67]: work groups, project teams, strategic communities, learning communities, CoPs, and networks.

I. Work Group

Work groups are conceived of as groups of individuals in an organization who work together on a regular basis to attain common goals [67]. As professional knowledge tends to be more tacit than explicit, there are more opportunities for members of the group to share professional knowledge.

II. Project Team

Project teams are typically cross-functional and organized to complete a specific project or task, and their members are selected by management [67]. Object based knowledge and book knowledge are the primary types shared in project teams.

III. Strategic Community

Strategic communities are formalized structures that consist usually of a limited number of experts within the organization who share a common, work related interest [67]. These communities are intentionally created by the organization to achieve certain business goals. Because they may be either learning or product oriented, these communities primarily share object-based and practical knowledge.

IV. Learning Community

Learning communities are structures that provide space for learning and sharing knowledge [67]. Learning communities are not necessarily goal specific and hence, there is less need to share book, know-who, coordinating, or object-based knowledge. Furthermore, learning communities share more professional and practical knowledge, because professional growth can be a common reason for forming a learning community.

V. Community of Practices (CoPs)

Although there are many definitions of CoPs, the basic notion is that communities of practice are groups of people who share a common passion or purpose and who interact with the intent to share knowledge. CoPs share more professional and cultural knowledge

[67].The inherently tacit nature of these types of knowledge suggests that these social structures would benefit from increased personalization strategies, such as peer observation and mentoring, coaching, and face-to-face meetings.

VI. Informal Network

Human behavior is embedded in social networks that facilitate the flow of knowledge and other resources between individuals and groups [67]. A network is a set of actors, or a node, which is connected by ties. Actors may be individuals, teams, organizations, etc.

Informal networks in organizations provide space through which acquisition, sharing, and creation can take place [67]. Although many types of knowledge may be shared through informal networks, most often explicit knowledge is the easiest shared. The know-who and book knowledge are primarily shared through informal networks.

2.7.4.5. Information communication technology (ICT) including knowledge sharing tool

The role of the information technology (IT) in sharing knowledge has been a center of debate. While some investigators [33][53] are of the opinion that knowledge management (KM) initiatives could be successful without using IT tools, other researchers [45] have, however, identified IT as a variable that could impact knowledge sharing for the fact that technology is one of the important pillars of knowledge management.

A study in South Korea by Kim and Lee [45] also found that both employees' usage of IT applications and friendliness of the IT systems significantly impact employee knowledge-sharing capabilities. Furthermore, researchers identified advanced information and communications technology (ICT) applications and network systems as the primary driver of organizational knowledge sharing [60].

Appropriate communication tools are needed to enhance the sharing of knowledge. Communication is the process of sharing information or knowledge while scaling up aims to provide' more quality benefits to more people over a wider geographical area more quickly, more equitably and more lastingly [44]. These communication tools can be used to create a full, rich learning experience and sense of community for their members.

Generally, there are two types of communication tools known as synchronous and asynchronous communication tools [44]. Synchronous tools enable real-time communication and collaboration in a "same time different place" mode. These tools allow people to connect at a single point in time, at the same time. The primary drawback of synchronous tools is that, by definition, they require same-time participation -different time zones and conflicting schedules can create communication challenges. In addition, they tend to be costly and may require significant bandwidth to be efficient. Examples of synchronous tools are shown in Table 2.1.

Table 2.1 Synchronous communication tools [44].

Tool	Useful for	Drawbacks
Audio conferencing	Discussions and dialogue	Cost, especially when international participation is involved
Web conferencing	Sharing presentations and information	Cost, bandwidth; may also require audio conferencing to be useful
Video conferencing	In-depth discussions with higher-touch interactions	Cost, limited availability of video conferencing Systems
Chat	Information sharing of low complexity issues	Usually requires typing, "lower touch" experience
Instant messaging	Ad hoc quick communications	All users must use compatible system, usually best for 1:1 interactions
White boarding	Co-development of ideas	Cost, bandwidth; may also require audio conferencing to be useful
Application sharing	Co-development of Document	Cost, bandwidth; may also require audio conferencing to be useful

Table 2.2 Asynchronous communication tools [44].

Tool	Useful for	Drawbacks
Discussion boards	Dialogue that takes place over a period of time	May take longer to arrive at decisions or Conclusions
Web logs (Blogs)	Sharing ideas and comments	May take longer to arrive at decisions
Messaging (e-mail)	One-to-one or one-to-many communications	May be misused as a "collaboration tool" and Become overwhelming
Streaming audio	Communicating or teaching	Static and typically does not provide option to answer questions or expand on ideas
Streaming video	Communicating or Teaching	Static and typically does not provide option to answer questions or expand on ideas
Narrated slide Shows	Communicating or teaching	Static and typically does not provide option to answer questions or expand on ideas
"Learning objects" Web-based training	Teaching and training	Typically does not provide option to answer Questions or expand on ideas in detail
Document libraries	Managing resources	Version control can be an issue unless check in / check-out functionality is enabled
Databases	Managing information & Knowledge	Requires clear definition and skillful Administration
Web books	Teaching and training	Not dynamic and may lose interest of users
Surveys and polls	Capturing information and trends	Requires clear definition and ongoing Coordination
Shared Calendars	Coordinating activities	System compatibility
Web site links	Providing resources	May become outdated and "broken"

Asynchronous tools enable communication and collaboration over a period of time through a "different time-different place" mode [44]. These tools allow people to connect together at each person's own convenience and own schedule. Asynchronous tools are useful for sustaining dialogue and collaboration over a period of time and providing people with resources and information that are instantly accessible, day or night. Asynchronous tools possess the advantage of being able to involve people from multiple time zones. Table 2.2 presents tools used for asynchronous communication.

According to Nonaka and Takeuchi [57] often the preferred way of transferring any information is through face – to – face communication using voice and body language (socialization). This is especially true in forms of education or learning that depend on apprenticeship. Apprenticeship is a knowledge sharing system whereby a junior acquires tacit knowledge by working alongside an 'expert'.

Technology tools for knowledge sharing include electronic bulletin boards, discussion forums, knowledge directories, groupware, databases, intranets, intelligent search engines, personal web pages, electronic mail, virtual conference rooms, libraries, corporate yellow pages, among many others [1][6][10][21]. E-learning is a training tool which can be used to train employees to use the knowledge sharing systems, and to recognize knowledge sharing behaviours [79]. Recently a new technology, Blogs, is a new medium for social interaction and discourse and it has been argued that it has an emerging role in the sharing and building of knowledge [75].

There is a very clear relationship between technology and knowledge sharing [63]. One must remember that information technology makes possible the connections that enable knowledge sharing, but it does not motivate employees to share their knowledge. Technology should be viewed as an enabler of knowledge sharing. While organisations can put the tools in place, there is no guarantee that employees are going to use them, or use them effectively, so there is still a human aspect to the knowledge sharing tools.

2.7.4.6. Management Support

One of the most important conditions under which people are willing to share their knowledge is visible support of senior management [22]. Senior managers should also be seen as committed to the knowledge sharing efforts and to role model this behavior.

Recently, researchers and practitioners increasingly have acknowledged that the success of knowledge sharing initiatives fundamentally depend on the existence of senior managers promoting knowledge sharing environment [29]. A survey by Lin and Lee [29] also found that attitudes of senior managers towards knowledge sharing behavior positively influenced intentions to encourage knowledge sharing.

A lack of time to share knowledge, whether it is to enter knowledge into a repository, or for informal interactions, was previously identified as a knowledge sharing obstacle [63]. It is not a question of the employees' lack of motivation per se, but rather that other matters have been identified as priorities. Organizations need to make it quick and easy to share knowledge. Management should identify knowledge sharing as a priority, and allow employees sufficient time to share knowledge.

Management should create an environment where open communication is encouraged [22] and should take the time to explain to the employees the value of sharing knowledge. Organizations with a more sophisticated view of knowledge management are making great efforts to persuade staff that effective knowledge sharing can make their jobs easier and more satisfying, and can enhance their reputations. It is useful to ensure that the purpose and reason of knowledge sharing is clarified and understood by everyone involved.

An extensive review of existing academic and professional literature on knowledge sharing revealed that there is limited research work on knowledge sharing in health organization world wide. As to the researcher knowledge level no research work are available that attempt to evaluate the practice of knowledge sharing in the organization of Ethiopia. Hence, the present research is the first attempt to assess knowledge sharing behavior of health professional.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The research method is a strategy to describe how a data is collected and analyzed, how the experiment is conducted and how the conclusion is drawn in a research process. The selection of research approach is an important stage which influences the way data is collected, analyzed and which are ultimately crucial to the outcome of the study [55].

There are three research approaches researchers can follow when conducting a research; the qualitative, the quantitative and mixed approach [13]. The qualitative research approach is an unstructured approach and aims to understand a phenomenon by collecting, analyzing and interpreting data through personal experiences and observations with the emphasis on unique, while the quantitative research is a structured approach which refers to counting and measuring data . In quantitative research data is quantified and expressed in numbers. Qualitative research helps people to have a worldview of the studies as it simulates their experiences and observations of the world.

The research methodology can be classified according to their purpose [23]. These are exploratory, descriptive and explanatory. Exploratory studies seek to explore what is happening and to ask questions about it. They are particularly useful when not enough is known about a phenomenon. It is help to decide whether it is worth researching the issue or not. Descriptive study provides a picture of a phenomenon as it naturally occurs. This may, indeed, by purely descriptive but it may comprise a normative study, comparing the data against some standard. Explanatory study is correlative in nature, with the emphasis on discovering causal relationships between variables.

3.2. Study area

The study is conducted in Bahir-Dar Special Zone which is one of the eleven zones in the Amhara Regional State, which is located in the North Western part of Ethiopia. Bahir-Dar town is the capital city of the Amhara Regional State. This town is recently recognized as one of the tourist attraction area in the country and hosting a number of gusts from many areas in the country and other parts of the world. Bahir-Dar Special Zone is located 565kms from Addis Ababa and bounded by South Gondar in the north, West Gojjam in the East and South & Lake Tana in the Western part.

The Felege Hiwot Referal Hospital is one of the governmental hospitals under the ministry of health which was established in 1955 E.C during the regimen of Emperor Haile Selassie by the support of Germany government [2]. It started giving health service by Germany health professionals and continued for about eleven years. The major health services the hospital offer currently are the following: Medical, Surgical, Pediatrics, antenatal, delivery, postnatal, Immunization, Ophthalmic, Physiotherapy, Sanitation, Laboratory and Radiological services

The Felege Hiwot Referal Hospital is selected for this research because of two main reasons. First, the hospital has been experiencing a great loss of knowledge due high turnover of professionals. A vast number of experienced health workers are leaving the hospital for different purpose (transfer, education, etc.). The hospital report shows that 60 employees left the hospital within five years period [38]. In order to fill the vacant positions the regional Health Bureau has been assigning different kind of specialists (such as gynecologist, radiologist, ophthalmologist, surgeons and other health professional) as per the requirement of vacant job in the hospital. But, the new employees lack the prevailing knowledge of the company. So, a mechanism should be there that facilitates the transfer of knowledge from those who know to those who need the knowledge in order to cope up the way experienced professionals are doing their work. Hence it is necessary to study the practice of knowledge sharing in the hospital.

Table 3.1.The number and type of health institution in Amhara National Regional State[68]

Health institution	**Number**	**Owners**
Hospital	21	• 17 owned by regional health bureau • 1 federal ministry of education • 1 ministry of defense • 2 private
Health center	198	Governmental
Health post	2559	Governmental
Total	2778	

The Felege Hiwot Referal Hospital is selected purposively because:

- It is a governmental referral hospital.
- It serve as a training center for public health officers and other medical students at national /regional level
- The hospital has a good number of professionals as shown in table 3.1.

3.3. Study Design

Depending on the existing state of knowledge about a problem that is being studied, different types of questions may be asked which require different study designs. A cross-sectional study is easier to conduct than longitudinal studies because the researcher can collect all the needed data at a single time. In contrast, a researcher who conducts a longitudinal study must collect data over a lengthy period. Descriptive studies characterize the occurrence and distribution of problems by time, place and person. The wealth of material obtained in most descriptive studies allows the generation of hypotheses, which can then be tested by analytical or experimental designs [73]. Many cross-sectional studies do not aim at testing a hypothesis about an association, and are thus descriptive [49].They provides a prevalence rate at a particular point in time (point prevalence) or over a period of time (period prevalence) [73]. The study is cross-sectional descriptive study with some analytic component employing both quantitative method

such as self administered questioners and qualitative data collection methods such as interview, observation and document analysis.

3.4. Study population

The study population comprises all healthcare providers like specialist, general practitioner, health officers, nurses, etc. who are the employee of the Felege Hiwot Referral Hospital during the study period. Table 3.2 shows the number of health care providers in the hospital [2].

Sample Population: The sample population for quantitative study were comprises healthcare providers like specialists, general practitioners, nurses, etc. who are the employee of the Felege Hiwot Referral Hospital during the study period that fulfill the following inclusion and exclusion criteria.

- **Inclusion criteria** – Felege Hiwot Referal Hospital healthcare providers with a minimum qualification of diploma in health sciences with any years of experience.
- **Exclusion criteria** –Healthcare provider who does not fulfill the minimum qualification i.e. diploma in health sciences was excluded from the study.

To complement the quantitative data, qualitative data collected. To this end, an in depth interview conducted to the head of the different departments of the hospital.

Table 3.2 The number of health professionals in Felege Hiwot Referal hospital [2].

Profession	Qualification	Number
Specialist	Doctors	13
General practitioner	Doctors	19
Health officer	BSC	6
Pharmacist	BSC and Diploma	18
Nurses	BSC and diploma	102
Other	Certificate, Diploma and BSC	70
	Total	228

3.5. Sample size and sampling procedure

To decide on the sample size this study uses the following rule. The basic rule is, the larger the sample, the better. But such a generalized rule is not too helpful to a researcher who has a practical decision to make about a specific research situation [49]. Gay and Airasian [49] have offered the following guideline for selecting a sample size

- For small population (with fewer than 100 people or other units).there is little point in sampling) and hence it is better to survey the entire population
- If the population size is around 500, 50% of the population should be sampled
- If the population size is around 1500, 25% should be sampled
- Beyond a certain point (at about 5,000 unit or more) the population size almost irrelevant and a sample size of 400 should be adequate

Generally speaking, the larger the population, the smaller the percentage (but not the smaller the number) one need to get a representative sample [49]. To some extent, the size of an adequate sample depends on how homogenous or heterogeneous the population is – how alike or different its members are with respect to the characteristic of research interest. If the population is markedly heterogeneous, a larger sample will be necessary than if the population is fairly homogenous.

For quantitative study

According to the 2009/10 third quarter report of the hospital, there are 215 health professionals that fulfill the inclusion criteria for the quantitative study i.e. all healthcare providers who are the employee of the Felege Hiwot Referral Hospital with a minimum qualification of diploma in health sciences are included in the study .Thirteen health professionals are deducted from the study because they have no a minimum qualification of diploma in health sciences.

For qualitative study

To complement the quantitative data, qualitative data was collected. To this end, an in depth interview conducted with the head of the different departments of the hospital who are selected purposefully .The medical directors, the case managers and team leaders of

the different department i.e. medical, surgical, pediatrics, OPD, MCH, OR, Obstetrics, radiology, pharmacy, laboratory, Gynecology and ophthalmic department.

3.6. Data Collection Procedure

In this study two basic data collection procedure are employed from March to April 2010 G.C; first, quantitative study using self administered structured questionnaire and then qualitative study by using semi structured interview, observation and document analysis.

The self administered questioner was distributes to 196 health professionals working in the hospital at the time of data collection period. A total of 171 usable completed questioners were collected. This represents a response rate of 87 %.The data collection was made in the hospital in the presence of researcher's strong supervision.

After the data collection and analysis for the quantitative study is completed, interview with the medical director, 5 case managers and 7 team leaders are done. Besides observation and document analysis are done by the primary investigator to supplement the quantitative data collection method. Checklists (attached in annex III) are used for recording of information obtained from physical observation.

3.7. Data quality management

Data quality was assured by using different techniques such as:

- Training given to the data collectors for one day about the data collection techniques and tools
- Properly designed questionnaires and interview guides are used.
- Pretest conducted in Black Lion Referral hospital prior to data collection process in order to enable proper functioning of the questionnaire as per the desired objectives then data was collected using the amended questionnaires by trained and experienced personnel.
- The validity and reliability of the instrument checked. Both validity and reliability reflect the degree to which we may have error in our measurement [49]. The validity of a measurement is the extent to which the instrument measure what is supposed to measure Whereas, the reliability is the consistency with which a

measuring instrument yields a certain result when the entity being measured has not changed .

- To assess the reliability of the instruments, Cronbach's alpha [49] is used to examine the effect of each multiple scale item. The reliability of all the constructs exceed the recommended cut-off value (0.7)
- The content validity assessed. It refers to the representative ness of the items in the questionnaire. All constructs and their associated items in this study were designed according to the relevant literature. Therefore, the content validity requirement is fulfilled [49].
- The convergent validity was assessed by checking the item-to-total correlation scores [49]. To determine whether or not items in the same construct correlate highly with each other. All items in the questionnaire had an item-to-total correlation higher than 0.4, thus indicating convergent validity.
- Frequent supervision was done by the principal investigator. Problems encountered at the time of data collection was reported immediately and appropriate action were taken
- The questionnaires were checked for missing values and inconsistency. Questionnaires that were found to have lots of missing values were excluded from the study and considered as none responded. A total of 25 questioners excluded from the study.
- The qualitative data collection conducted by the principal investigator to avoid any miss understanding.
- During data entry, data was double entered using the SPSS package by the principal investigator and experienced data clerk. The data entered by two individuals are cross checked and corrected prior to analysis.

3.8. Data Analysis procedure

After the quantitative data is cleaned, coded and fed to SPSS version 16, and then the data was analyzed so as to achieve the objective of the study.

The three Steps of the data analysis are the following. [9]

Step 1: Univariate analysis

- Examine the distribution of each individual variable.

Step 2: Bivariate analysis

- Describe association between pairs of variables (only two variables).

Step 3: Multivariate analysis

- Use a statistical model called Regression (Linear or logistic) to examine the relationship between multiple independent variables & a dependent variable.
- This is done to gain insight into causal relationships (cause & effect).

For the qualitative part; data collected by structured interview analyzed manually by the principal investigator. Some quotes from the qualitative data that best explain the factors influencing the knowledge sharing was identified and presented by the participants own words in parallel with the quantitative information to give more insight for the study.

3.9. Ethical considerations

Ethical clearance obtained from the respective health informatics department, faculty of medicine, faculty of informatics and Addis Ababa University ethical committees. A formal letter was submitted to all the concerned bodies to obtain their co-operation. All participants' right to self-determination and autonomy respected. They are given any information they needed, verbally and in writing. Participation is voluntary and they could withdraw from the study at any time without explanation and without penalty or loss of benefit. The autonomy of each participant assured unless they needed assistance in filling out the questionnaire. In such cases, confidentiality is assured and no personal details are recorded or produced on any documentation related to the study.

CHAPTER FOUR

FINDINGS AND PRESENATION OF DATA

This section describes the important findings on the assessment of knowledge sharing among health professionals. The results of the study are presented and discussed component wise in the following section. The first part presents the univariate analysis which is descriptive analysis of each variable. The second part presents the bivariate and multivariate analysis which deals with the association between two or more variables. While the result of the qualitative study presented in parallel with the quantitative finding.

4.1 Univariate analysis

4.1.1 Demographic Findings

Demographic data is important to know the respondents gender, age and other related background information. It also helps to assess whether there is association between the background information and knowledge sharing activity of the health professionals. Summery of the result is presented in table 4.1.

Gender of the respondents show that most of them are female (58%), while 42% are male. Forty three percent of the respondents are between the age of 21-30 .The results further indicate that the next large majority of respondents (38.6%) are between the age of 31-40 years and about 11% are between 41- 50 years old, while 7% are between the ages of 51-60 years.

In terms of educational background, 40 % of the respondents have first degree and above, while the other 60% holds a college diploma and advanced diploma, mostly nurses. A majority (62.6%) has a working experience of six years and above, while 37.4% of the respondents are junior with 5 years or less working experience in health service.

In general, the demographic data indicates that respondents of the survey are educated and experienced.

Table 4.1 Demographic attributes of the respondents

Item	Frequency	Percentage	Cumulative Percentage
Gender			
Male	72	42%	42%
Female	99	58%	100.0%
Level of Education			
Diploma	95	55.6%	55.6%
Advance Diploma	8	4.7%	60.2%
First Degree	44	25.7%	86.0%
Doctorate Degree (MD)	14	8.2%	94.2%
Certificate of specialization	10	5.8%	100.0%
Age			
21-30	74	43.3%	43.3%
31-40	66	38.6%	81.9%
41-50	19	11.1%	93.0%
51-60	12	7.0%	100.0%
Years of experience			
$\leq$ 5 year	64	37.4%	37.4%
6-10 year	35	20.5%	57.9%
11-15 year	36	21.1%	78.9%
16-20 year	13	7.6%	86.5%
More than 20 years	23	13.5%	100.0%

4.1.2 Job satisfaction

A person who is satisfied with his daily job is more likely to engage in knowledge sharing than those that are not satisfied so an assessment is made to understand the job satisfaction of the respondents. The result is depicted in figure 4.1

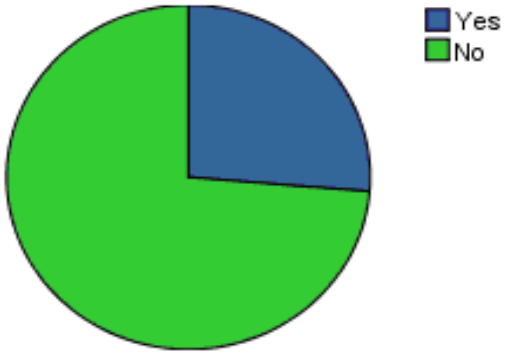

Figure 4.1 Job satisfactions of the respondents

The result shows that most of the respondents (73.7%) are not satisfied in working in the hospital. Further assessment is made as to why employees are not satisfied with their job the response is summarized in table 4.2.

Table 4.2 Causes of job dissatisfaction

No	**Response**	**Frequency**	**Percent**
1	Lack of attractive salary	115	44.2%
2	Inadequate opportunity for further education and training	75	28.8%
3	Lack of rewarded and recognition system	61	23.5%
4	Corporate culture	9	3.5%
	Total	260	100%

As shown in table 4.2 the major causes of this dissatisfaction are lack of attractive salary (44.2%) and this is followed by inadequate/or opportunity for further education and training (28.8%) as a second cause and lack of rewarded and recognition system (23.5%) as third cause.

4.1.3 Willingness to share

Knowledge sharing is voluntary and efficient knowledge sharing depends on the willingness of individuals to identify the knowledge they possess and to share knowledge when required. The results are summarized in table 4.3.

Table 4.3 Employers willing ness to share knowledge

Willingness to share	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Actively share work related knowledge with colleagues in the hospital	N	9	12	33	92	25	3.65
	%	5.3%	7%	19.3 %	53.8%	14.6%	
Get additional information and knowledge required to perform the task from colleagues	N	7	6	17	97	44	3.96
	%	4.1%	3.5%	9.9%	56.7%	25.7%	
Share knowledge and expertise with colleague in a meeting and training class	N	8	4	19	99	41	3.94
	%	4.7%	2.3%	11.1%	57.9%	24%	
Total score	N	24	22	69	288	110	3.85
	%	4.6%	4.2%	13.4%	56%	21.4%	

The findings shows, about 21.4% of the respondents strongly agreed, while 56 % of the respondents agreed. Whereas, 22.6% of the respondents are indifferent to strongly disagreement. Moreover, the mean of the distribution of responses is 3.85, which is close to “Agree”, indicating respondents’ agreement on their willingness to share knowledge. Therefore, it can be concluded that respondents are willing to share knowledge to the hospital staff.

4.1.4 Knowledge sharing behavior

Knowledge sharing is defined as the process of exchanging knowledge (skills, experience, and understanding) among researchers, policymakers, and service providers [50]. Unless we identify the fact that knowledge sharing among health professional is a frequently phenomenon or not, it is not possible to determine the status of knowledge sharing and propose better way to improve the knowledge sharing behavior of health professional.

Table 4.4 Employees knowledge sharing behavior

Knowledge sharing behavior	**Frequency**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**	**Mean Score**
Frequently sharing know-where(where certain knowledge exists) and know-whom (who hold the required knowledge)to the hospital staffs	N	21	35	70	26	19	2.92
	%	12.3%	20.5%	40.9%	15.2%	11.1%	
Frequently sharing know-how (skill) from work experiences with the hospital staffs	N	25	26	67	30	23	3.00
	%	14.6%	15.2%	39.2%	17.5%	13.5%	
Frequently sharing knowledge obtained from workshop and training to the hospital staffs	N	72	43	42	8	6	2.02
	%	42.1%	25.1%	24.6%	4.7%	3.5%	
Frequently sharing knowledge gained from news, magazines, and journals to the hospital staffs	N	92	41	30	6	2	1.74
	%	53.8%	24%	17.5%	3.5%	1.2%	
Total Score	N	210	145	209	70	50	2.42
	%	30.7%	21.1%	30.5%	10.2%	7.3%	

The finding shows majority of the respondents (82.3%) are not frequently engaged in knowledge sharing activity. On the other hand10.2% the respondents are often shares knowledge with only 7.3% of them always engage in knowledge sharing activity, as shown in Table 4.4, The mean of the distribution of responses is 2.4, which is close to 'Rarely'. In this respect, it can be concluded that most respondents are not having a knowledge sharing behavior.

4.1.5 Knowledge sharing opportunity

The presence o knowledge sharing opportunity is one of the determinant factors that affect knowledge sharing. The opportunities to share knowledge in organizations can be both formal and informal in nature. Formal opportunities include training programs, structured work teams, and technology-based systems that facilitate the sharing of knowledge. Informal opportunities include personal relationships and social networks that facilitate learning and the sharing of knowledge.

Table 4.5 knowledge sharing opportunity

Knowledge sharing opportunity	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Frequently share knowledge by holding periodic meetings in different teams	N %	100 58.5%	29 17%	32 18.7%	6 3.5%	4 2.3%	1.74
Availability of formal opportunity like training program, conference	N %	112 65.5%	40 23.4%	14 8.2%	3 1.8%	2 1.2%	1.50
Frequently share knowledge informally including water cooler chats	N %	58 33.9%	49 28.7%	34 19.9%	21 12.3%	9 5.3%	2.26
Total score	N %	270 52.6%	118 23%	80 15.6%	30 5.8%	15 2.9%	1.84

Accordingly, the finding of the research is that most of the respondents disagree with the availability of formal and informal knowledge sharing opportunities, as shown in table 4.5 about 75% of the respondents do not have knowledge sharing opportunity. Particularly, 23% disagreed and 52% even strongly disagreed on this aspect. Where as, about 3% of the respondents are strongly agreed on the availability of knowledge sharing opportunity. Moreover, the mean of the distribution of responses is found to be 1.84, which is close to the value of 'Disagree' in this case. This shows that lack of formal and informal opportunity to share knowledge.

4.1.6 Knowledge sharing channel

The presence of appropriate communication tools enhance the sharing of knowledge. Unless the communication channels are readily available, the employees are not frequently using it which leads to malfunction of the knowledge sharing activity of the hospital.

Table 4.6 Frequency of knowledge sharing by using the channel of communication

Communication Channel	**Frequency**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**	**Mean Score**
Face to face communication	N	39	35	55	32	10	2.64
	%	22.8%	20.5%	32.2%	18.7%	5.8%	
Phone	N	66	48	38	12	7	2.10
	%	38.6%	28.1%	22.2%	7%	4.1%	
Intranet and internet	N	141	16	10	3	1	1.29
	%	82.5%	9.4%	5.8%	1.8%	0.6%	
E- Mail	N	140	19	8	3	1	1.28
	%	81.9%	11.1%	4.7%	1.8%	0.6%	
Total Score	N	386	118	111	50	19	1.82
	%	56.4%	17.2%	16.2%	7.3%	2.8%	

Participants indicate the frequency with which they used each of the communication channels to share knowledge with in the organization. As shown in table 4.6, face to face communication is the commonly used method which has a mean score of 2.64. Tele phone is the next common method of communication channel with a mean score of 2.1. The use of information technology like Intranet, Internet and e-mail are the least used.

4.1.7 Documentation

The availability of documentation allows the hospital to effectively share data, procedures and performance reports which enhance avoiding of re-inventing the wheel and updating the knowledge of the company.

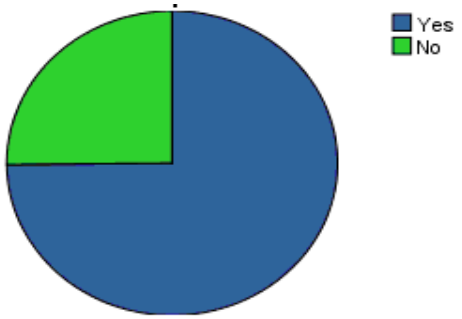

Figure 4.2 Documenting working practices and procedures

Table 4.7 Availability of documentation

Documenting working procedures	Frequency	Percent	Cumulative Percent
Yes	128	74.9%	74.9%
No	43	25.1%	100.0%
Total	171	100.0%	

Accordingly, the finding of the research is that most of the respondents agree with the availability of documentation as shown in figure 4.2. As per the detail in table 4.7, 74.9% of the respondents are documenting there working practice, where as, 25.1% of the

respondents do not document their working practice. Response regarding method of documentation by employee show that 96.1 % of the respondents use writing manual. This show that the main means of documenting knowledge of employee in the hospital is manual. This shows that in the hospital there is a good practice of documenting and codifying working procedures and practices using manual.

4.1.8 Resources allocation

Knowledge sharing is an important mechanism through which an organization can achieve its objective. In order to make knowledge sharing effective, there should be periodic plan, specific budgets, enough physical location and appropriate information communication technology infrastructures dedicated to acquire, organize and share knowledge in the organization.

Table 4.8 Resource allocation for knowledge sharing

Types of resources	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Periodic plan to acquire ,organize and share knowledge	N %	41 24%	58 33.9%	24 14%	34 19.9%	14 8.2%	2.54
Budgets dedicated to acquire ,organize and share knowledge	N %	62 36.3%	56 32.7%	22 12.9%	18 10.5%	13 7.6%	2.20
ICT infrastructures (internet, intranet, etc.)	N %	20 11.7%	30 17.5%	36 21.1%	68 39.8%	17 9.9%	3.19
There is enough physical location hall where staff can exchange knowledge	N %	33 19.3%	63 36.8%	22 12.9%	41 24%	12 7%	2.63
Total score	N %	156 22.8%	207 30.2%	104 15.2%	161 23.5%	56 8.1%	2.64

Accordingly, most of the respondents (53%) consider that the hospital are not assigning enough resources which includes specific budget, time, physical location and information communication infrastructure which is helpful to facilitate knowledge sharing. Particularly, 30.2% disagreed and 22.8% even strongly disagreed on this aspect. While, 31.6% of the respondents are agreed or strongly agreed on assignment of enough resources on knowledge sharing. As shown in the table 4.8, the mean of the distribution of responses is found to be 2.64, which is close to the value of 'Disagree'. This shows that the hospital not set aside resources like budget, time, ICT infrastructure and physical location which are essential for the success of knowledge sharing.

4.1.9 Incentives

The organizational members' motivation to share the knowledge they possess determines the knowledge sharing activity of the organization so assessing the level of motivation is important to know the condition and propose motivational scheme. The results are summarized in table 4.9.

Table 4.9 Level of motivation for knowledge sharing.

Scale	Response	Frequency	Percent	Mean Score
1	Very low	30	17.5%	2.6
2	Low	57	33.3%	
3	Medium	45	26.3%	
4	High	29	17.0%	
5	Very high	10	5.8%	
Total		171	100%	

Accordingly, most of the respondents of the hospital are not motivated for sharing their knowledge. About 33.3% of the respondents have low motivation and 17.5 % has even very low motivation to participate in the hospital knowledge sharing activity. This

constitutes a total of 50.8% are not motivated with this aspect. While 26.3% of the respondents are in medium motivation with only 22.8 % were motivated (high or very high) to share knowledge in the hospital. Moreover, the mean of the distribution of responses is found to be 2.6, which is closer to the value of 'Disagree'. In this regard, it is clear that most of the staffs are not motivated to share knowledge.

The above analysis show that employees of the hospital are not motivated to share their knowledge for organizational success. To know the reason of demotivation, the respondents are further asked for the existence of motivational scheme in the hospital.

Table 4.10 The presence of motivation scheme for sharing knowledge.

Motivational scheme	**Frequency**	**Percent**	**Cumulative Percent**
Yes	22	12.9%	12.9%
No	149	87.1%	100.0%
Total	171	100.0%	

Accordingly, most of the respondents of the hospital are not rewarded for sharing their knowledge. As shown in table 4.10, about 87% of the respondents disagreed on the availability of reward scheme in the hospital and while 12.9% of the respondents are agreed with the availability of rewards in the hospital. In this regard, it is clear that there are no incentive systems in the hospital for rewarding people when sharing their knowledge.

Knowledge sharing occurs when employees perceive that incentive of knowledge contribution exceeds costs required for knowledge sharing [82] thus, if there are appropriate rewards or incentive mechanisms such as bonus or career advancement, employees will be motivated to share their knowledge.

Table 4.11 The preference of Incentives for sharing knowledge.

Type of Incentives	**Frequency**	**V. Low**	**Low**	**Medium**	**High**	**V. High**	**Mean Score**
The monetary incentives (salary increment .etc.)	N	43	24	19	43	42	3.1
	%	25.1%	14%	11.1%	25.1%	24.6%	
Career development	N	45	26	25	39	36	2.97
	%	26.3%	15.2%	14.6%	22.8%	21.1%	
Chance of promotion	N	39	29	39	34	30	2,92
	%	22.8%	17%	22.8%	19.9%	17.5%	
Gaining status as expert	N	43	51	42	19	16	2.50
	%	25.1%	29.8%	24.6%	11.1%	9.4%	
Acknowledgement	N	33	15	49	53	21	3.08
	%	19.3%	8.8%	28.7%	31%	12.3%	
Total score							2.9

Accordingly, half of the respondents (50%) prefer monetary incentive at high and very high level. Acknowledgments of their contribution are their next preference, which accounts 43.9%. (see Table 4.11).In this regard we can conclude monetary incentives are the better preferred than other incentive mechanism followed by acknowledgement of contribution.

4.1.10 Factors affecting knowledge sharing

A question is also forwarded to respondents to identify factors that affect the knowledge sharing in the hospital. Questions related individual, organizational and technological dimension is assessed. Once these factors are understood in this organizational context, managers might be able to implement strategies to boost organizational efficacy through better knowledge sharing. Respondents indicated their agreement with given statements about these factors in the hospital.

4.1.10.1 Individual dimensions

In order for the hospital to fully leverage their knowledge-based assets, they must first understand factors that affect knowledge sharing at individual level. Four components of individual dimension included in the study: fear of loss of personal competitiveness, trust, awareness and job satisfaction.

4.1.10.1.1 Fear of loss of personal competitiveness

Some employees may believe that Sharing of knowledge may weaken their organizational position, power or status. More over, there is a fear amongst employees that sharing knowledge reduces job security because people are uncertain about the sharing objectives and intent of their senior management.

Table 4.12 displays the mean scores of the items in the 'Fear of loss of personal competitive ness' factor. The means show that respondents disagreement with the statements that "Hoarding knowledge can secure my job" (2.56) and "Exclusive ownership of knowledge would make me outstanding and important person in the organization" (2.37). The Agreement is lowest with the statement that "Sharing knowledge would waste my time or increase my work load" (1.98) and "Sharing knowledge would reduce my personal competitiveness" (2.02). Moreover, the total mean of the distribution of responses is found to be 2.23, which is closer to the value of 'Disagree'. In this regard, it is clear that most of the staffs have no fear of personal competitiveness. This further show that employees do not have fear of losing power if they share their knowledge.

Table 4.12 The fear of loss of personal competitiveness

Fear of loss of personal competitiveness	Frequency	S. Disagree	Disagree	Neutral	Agree	S. Agree	Mean Score
Sharing knowledge would waste my time or increase my work load	N	5	17	10	76	63	
	%	2.9%	9.9%	5.8%	44.4%	36.8%	1.98
Sharing knowledge would reduce my personal competitiveness	N	2	22	17	65	65	
	%	1.2%	12.9%	9.9%	38%	38%	2.02
Exclusive ownership of knowledge would make me outstanding and important person in the organization	N	8	31	22	65	45	
	%	4.7%	18.1%	12.9%	38%	26.3%	2.37
Hoarding knowledge can secure my job	N	10	43	20	58	40	
	%	5.8%	25.1%	11.7%	33.9%	23.4%	2.56
Total score	N	25	113	69	264	213	
	%	3.6%	16.5%	10.1%	38.6%	31.2%	2.23

4.1.10.1.2 Trust

The culture of trust in the workplace has been shown to have a strong and robust influence that act as an important force behind the sharing of knowledge .Team members require the existence of trust in order to respond openly and share their knowledge .By building a trust through the team members, knowledge sharing will become a habit and it will make the relationships between the members and the managers stronger.

Table 4.13 Employee trust on one another

Trust	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Mutual understanding among staff in the hospital	N	17	26	49	61	18	3.22
	%	9.9%	15.2%	28.7%	35.7%	10.5%	
Believe in other colleagues knowledge and competence in their area	N	12	14	43	75	27	3.53
	%	7%	8.2%	25.1%	43.9%	15.8%	
If I share knowledge with in my organization, my colleagues will feel very confident about my skills and capability	N	9	11	38	73	40	3.73
	%	5.3%	6.4%	22.2%	42.7%	23.4%	
If I share knowledge with my organization my colleagues will believe that I am very concerned about their welfare	N	6	19	44	67	35	3.62
	%	3.5%	11.1%	25.7%	39.2%	20.5%	
If I share knowledge with my organization my colleagues will believe that I try hard to be faire in dealing with others.	N	9	17	37	83	25	3.57
	%	5.3%	9.9%	21.6%	48.5%	14.6%	
Total score	N	53	87	211	359	145	3.53
	%	6.2%	10.2%	24.6%	42%	17%	

Accordingly, nearly half of the respondents mentioned that people in the hospital trust each other. The findings shows, 59% of the respondents considered that individuals have trust with each other. Specifically, 42% of the respondents agreed and 17% even strongly agreed on this aspect. The mean of the distribution of responses is found to be 3.53, which is midway between the value of ‘Agree’ and ‘neutral’. Hence, nearly half of the

respondents the hospitals are not having trust among each other. In this regard it can be said that nearly half of the people in the hospital have mutual trust that can enhance knowledge sharing by creating smooth knowledge sharing environment.

4.1.10.1.3 Awareness

According to Cong & Pandya [12] the main factor for the success of knowledge management is to increase awareness among employee at all levels in organization. The awareness about the importance of knowledge sharing is considered as an attitude that every employee should have including the top management.

Table 4.14 Awareness about knowledge sharing

Awareness	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Sharing knowledge would help me learn faster	N	7	5	10	75	74	4.19
	%	4.1%	2.9%	5.8%	43.9%	43.3%	
Sharing knowledge help gain new ideas, technologies, skills or techniques	N	4	3	8	72	84	4.34
	%	2.3%	1.8%	4.7%	42.1%	49.1%	
Sharing knowledge enable to be more innovative	N	3	5	7	81	75	4.29
	%	1.8%	2.9%	4.1%	47.4%	43.9%	
Knowledge sharing help to avoid repeat the same mistake	N	6	8	9	68	80	4.22
	%	3.5%	4.7%	5.3%	39.8%	46.8%	
Total score	N	20	21	34	296	313	
	%	2.9%	3%	4.9%	43%	45.7%	4.26

A high proportion of the respondents are aware of the importance of knowledge sharing. As you see in the table 4.14, about 88.7 % of the respondents are aware that knowledge sharing is important. Particularly, 43% agreed and 45.7% strongly agreed on this aspect. Where as, 4.9% of the respondents are indifferent and only 5.9% disagreed. Furthermore, the mean of the distribution is found to be 4.26 which are nearest to the value of 'Agree'. Therefore, it is clear that employees of the hospital are aware of the fact that knowledge sharing is helpful not only to the hospital but also to the health professionals.

4.1.10.1.4 Job satisfaction

Engstrom [18] stated that to be in knowledge transfer environment, an employee should feel satisfied with his daily jobs. A satisfied employees share ideas and best practices to their colleagues which result in the improvement of the overall team performance.

Table 4.15 Employees' job satisfaction.

Job Satisfaction	Frequency	Percent
Yes	45	26.3%
No	126	73.7%
Total	171	100.0%

Most of the health professionals are not satisfied with the current job .as you see in table 4.15, about 74% disagree with the satisfaction of the current job, where as only 26% are satisfied with the current job.

4.1.10.2 Organizational dimension

One of the key issues of sharing knowledge in an organizational context is related to the right corporate environment and conditions. In organizational dimension, three variables are included which are supportive leadership, team work and perceived openness.

4.1.10.2.1 Supportive leadership

One of the most important condition under which people are willing to share their knowledge is visible support of senior management. Senior managers should also be seen as committed to the knowledge sharing efforts and to role model this behavior.

Table 4.16 Leaders' and managers' encouragement in knowledge sharing

Supportive leadership	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Supervisor (head) encourage team members to share idea/suggestions freely	N %	9 5.3%	48 28.1%	43 25.1%	60 35.1%	11 6.4%	3.09
Supervisor consult team members to make decision and solve problem	N %	8 4.7%	47 27.5%	48 28.1%	54 31.6%	14 8.2%	3.11
Superior's approval is required before sharing knowledge with colleagues	N %	32 18.7%	39 22.8%	38 22.2%	45 26.3%	17 9.9%	2.86
We have to adhere strictly to our supervisors' order and or instructions	N %	32 18.7%	37 21.6%	36 21.1%	46 26.9%	20 11.7 %	2.91
Total score							3.1 & 2.88

Table 4.16 presents the mean scores of the items in the 'Supportive leadership' factor. The means show that most of respondents with 3.09 mean score are indifferent about Supervisors (head) encouragement of team members to share idea/suggestions freely within the hospital and with 3.11 mean score that Supervisor consult team members to make decision and solve problem. . Therefore, it is clear that respondents are not satisfied by the support of leaders and managers in sharing their knowledge and experience.

The Agreement is lowest with mean score of 2.91 and 2.86 to adhere strictly to supervisors' order and superior's approval before sharing knowledge with colleagues respectively. Therefore, it is clear that the leadership style is not autocratic which inhibit open communication and knowledge sharing among staff.

4.1.10.2.2 Team work

The team is a group of people used to identify and solve specific problems. The presence of team work is an effective way to share knowledge with others. A culture of knowledge sharing is one where teamwork and trust are valued.

Table 4.17 Team work for knowledge sharing.

Team work	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Our organization encourage team work	N	12	22	26	95	16	3.47
	%	7%	12.9%	15.2%	55.6%	9.4%	
Most of the people I work with are cooperative and open to share knowledge	N	6	29	24	96	16	3.51
	%	3.5%	17%	14%	56.1%	9.4%	
People in the organization I work with resolve disagreement cooperatively	N	9	21	37	89	15	3.47
	%	5.3%	12.3%	21.6%	52%	8.8%	
I would rather cooperate with colleague than compete with them	N	7	13	22	106	23	3.73
	%	4.1%	7.6%	12.9%	62%	13.5%	
Total score	N	34	85	109	386	70	3.54
	%	4.9%	12.4%	15.9%	56.5%	10.3%	

The findings shows, the highest proportion of the respondents agree that people in the hospital are cooperative and work as a team .As you see in table 4.17, 66.8% of the

respondents considered that individuals enjoyed sharing and learning from others as a team. Specifically, 56.5% of the respondents agreed and 10.3% even strongly agreed on this aspect. The mean of the distribution of responses is also found to be 3.54, which is almost in between the value of 'Agree' and 'Neutral'. Hence, employees of the hospital believe in working as a team.

4.1.10.2.3 Perceived openness

In order to flourish a knowledge sharing culture in an organization, it is important to create a climate of trust and an environment of openness where continuing learning are valued, appreciated and supported by everyone in the organization.

Table 4.18 Openness to share knowledge.

Perceived openness	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Communication among my colleagues is very open on job related issue	N	6	10	36	91	28	3.73
	%	3.5%	5.8%	21.1%	53.2%	16.4%	
My superior openly explains the purpose of the company's policies, rules and expectations to team members	N	7	51	49	47	17	3.09
	%	4.1%	29.8%	28.7%	27.5%	9.9%	
Total score	N	13	61	85	138	45	3.41
	%	3.8%	17.8%	24.8%	40.3%	13.2%	

Accordingly, majority of the respondents have positive response on the employee's openness on job related issue. About 74.3% of the respondents considered that communication is open among the health professional. Specifically, 53.2% of the respondents agreed and 16.4% even strongly agreed on this aspect. On the other hand, 5.8% disagreed and 3.5% strongly disagreed on the openness on job related issue. As you see in table 4.18, the mean distribution of responses is also found to be 3.73, which is

close to the value of 'Agree'. Therefore, there is open communication among health professionals on job related issue.

Most of the respondents with 3.09 mean score are indifferent about superior explanation about the purpose of the company's policies, rules and expectations to team members openly. Accordingly, it can be concluded that there is lack of openness between employee and heads of the hospital.

4.1.10.3 Technological dimension

Information communication technology is an infrastructure which supports the information platform for creating, accessing, organizing and distributing knowledge.

Table 4.19 ICT usage by employees of the hospital

ICT usage	**Frequency**	**S. Disagree**	**Disagree**	**Neutral**	**Agree**	**S. Agree**	**Mean Score**
Employees make extensive use of electronic storage (such as databases) to access knowledge	N %	38 22.2%	52 30.4%	39 22.8%	32 18.7%	10 5.8%	2.56
Employees use knowledge networks (such as e-mail, intranet….)	N %	38 22.2%	59 34.5%	36 21.1%	26 15.2%	12 7%	2.50
There is lack of technical support (internal or external) and maintenance	N %	16 9.4%	22 12.9%	32 18.7%	67 39.2%	34 20%	3.47
There is lack of training regarding employee familiarization of new IT	N %	11 6.4%	16 9.4%	26 15.2%	68 39.8%	50 29%	3.76
Total score							2.53 & 3.6

Accordingly the majority of the respondents agree that everyone in the hospital has no access to the knowledge network (internet and e-mail). About 52.6% considered that everyone has no access to knowledge network. Particularly, 30.4% disagreed and 22.2% strongly disagreed on this aspect, while 22.8% are indifferent. Furthermore, the mean of the distribution is found to be 2.5, which is closer to the value of 'disagree'. Therefore, it can be concluded that respondents of the hospital has no access to knowledge network.

As you see in table 4.19, the means score in technical support show that respondents agree with mean score of 3.47 that there is lack of technical support (internal or external) and immediate maintenance of integrated information technology systems that obstructs work routines and communication flows in the hospital.

Most of the respondents with mean score 3.76 notes that there is lack of training regarding employee familiarization of new information technology systems and processes. In this regard, it is clear that there is lack of access to information technology, technical support and training regarding information technology familiarization to the health professionals.

4.2 Bivariate analysis for quantitative study

Bivariate analysis is second step in analysis. It is analysis made to test the presence of relationship between two variables.

In order to make the variables ready for further analysis, the different questions representing a single variable summed up. For this reason likert scale often called summative scale. The summed response for the different variable checked for there distribution. Since the results indicate that they are not normally distributed, applying non parametric statistical tests like Kruskal-Wallis test is necessary. The test variable is knowledge sharing while the grouping variables (independent variables) are gender, age group, profession, experience, department, salary and educational status. The results of the analysis are presented for each category with the corresponding significance value and chi-square, degree of freedom, and confidence interval in table 4.20 and 4.21.

Table 4.20 Kruskal-Wallis Test result for knowledge sharing in each profession

Ranks

	Profession	N	Mean Rank
Knowledge sharing	Medical doctor	25	125.62
	Laboratory technician	17	88.59
	Physiotherapist	2	129.25
	Nurse	86	76.40
	Pharmacist	17	89.24
	Sanitarian	2	82.50
	X-ray technician	2	42.00
	Anesthtist	4	56.00
	Dentist	1	152.00
	Health officer	2	74.50
	Medwifery	10	73.65
	psychiatric nurse	3	67.67
	Total	171	

Test Statistics[b,c]

			Knowledge sharing
Chi-Square			27.223
Df			11
Asymp. Sig.			.004
Monte Carlo Sig.	Sig.		.001[a]
	95% Confidence Interval	Lower Bound	.001
		Upper Bound	.002

As table 4.20 shows, at p=0.004 (<0.05) there is statistical significance difference between the knowledge sharing activity of the different professionals. The dentist with the highest mean score (152) while the x-ray technician the lowest (42).

Table 4.21 Kruskal-Wallis Test result for knowledge sharing for demographic variables.

Variable	Category	Number	Mean rank	Chi-square	d.f	Sig.	Confidence Interval	
Gender	Male	72	98.57	8.12	1	0.004	0.003	0.006
	Femal	19	76.86					
Age group	21-30	74	93.13	3.79	3	0.3	0.291	0.309
	31-40	66	81.62					
	41-50	19	85.16					
	51-60	12	67.46					
Highest educational level	Diploma	95	74.86	21.9	4	0.000	0.000	0.000
	Advance Diploma	8	82.19					
	First degree	44	88.75					
	Doctorate degree	14	133.46					
	Specialist	10	116.30					
Working experiences	≤ 5 years	64	100.38	17.81	4	0.000	0.000	0.001
	6-10	35	81.04					
	11-15	36	91.93					
	16-20	13	69.62					
	≥ 20	23	53.52					
Salary	≤ 1000	57	73.65	16.78	4	0.002	0.001	0.002
	1001-2000	73	81.99					
	2001-3000	24	99.71					
	3001-4000	15	125.07					
	≥ 4000	2	126.75					
Department	Medical	15	80.43	11.75	7	0.102	0.096	0.108
	Surgical	20	86.80					
	Gynycological and obstetric	22	72.95					
	Pediatrics	17	70.53					
	Opthalmic	4	108.50					
	Out patient	41	77.46					
	Operation room	12	41.54					
	Pharmacy	19	77.37					

As shown in the table 4.21, at P=0.285 (>0.05) there is no significant difference in knowledge sharing activity of the different age group of the health professionals. The test also show that at p= .109 (>0.05) there is no statistical significance difference in the knowledge sharing activity of the different department of the hospital. Whereas there is a statistical significance difference in knowledge sharing activity between/among the different sex, working experience, current salary and educational status.

At p =0.004 (<0.05) females has the lower mean score (76.86), while males has a higher mean score (98.57). The knowledge sharing activities with the current salary of the health professional have statistically significant difference. At p=0.002 (<0.05) those health professionals with the current salary less than 1000br. has a lowest mean score (73.65), where as those with the highest salary (more than 4000br.) has the highest mean score (126.75).

The result also shows that at p=0.000 (< 0.05) there is statistical significance different between the knowledge sharing activity of the different educational back ground of the health professional. The diploma holders have the lowest mean rank (74.86) by contrast the specialists have the highest mean score (116.30). The figure 4.3 depicts as the health professional educational status increases the knowledge sharing activity also increases.

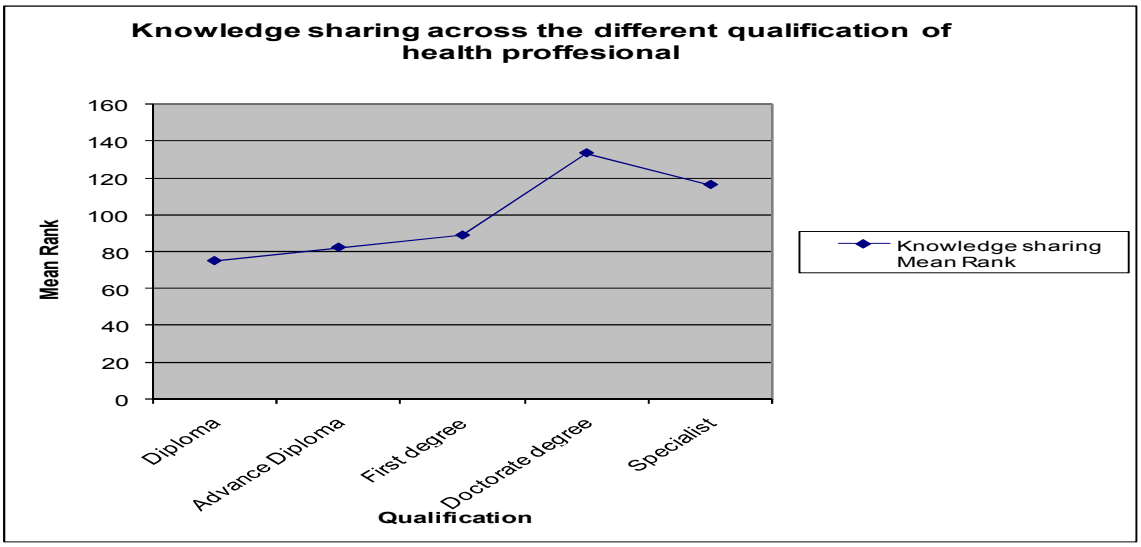

Figure 4.3 Knowledge sharing across the different educational status

There is an inverse relation between the working experience and knowledge sharing activity of the health professionals (see figure 4.4).As the years of experience of the health professional increase, the knowledge sharing activity decrease. As table 4.1 shows, at p = 0.001 (<0.05) those health professionals with a work experience of greater than 20 years has the lowest mean score (53.52) while those with work experience less than 5 years has a highest mean score (100.38).

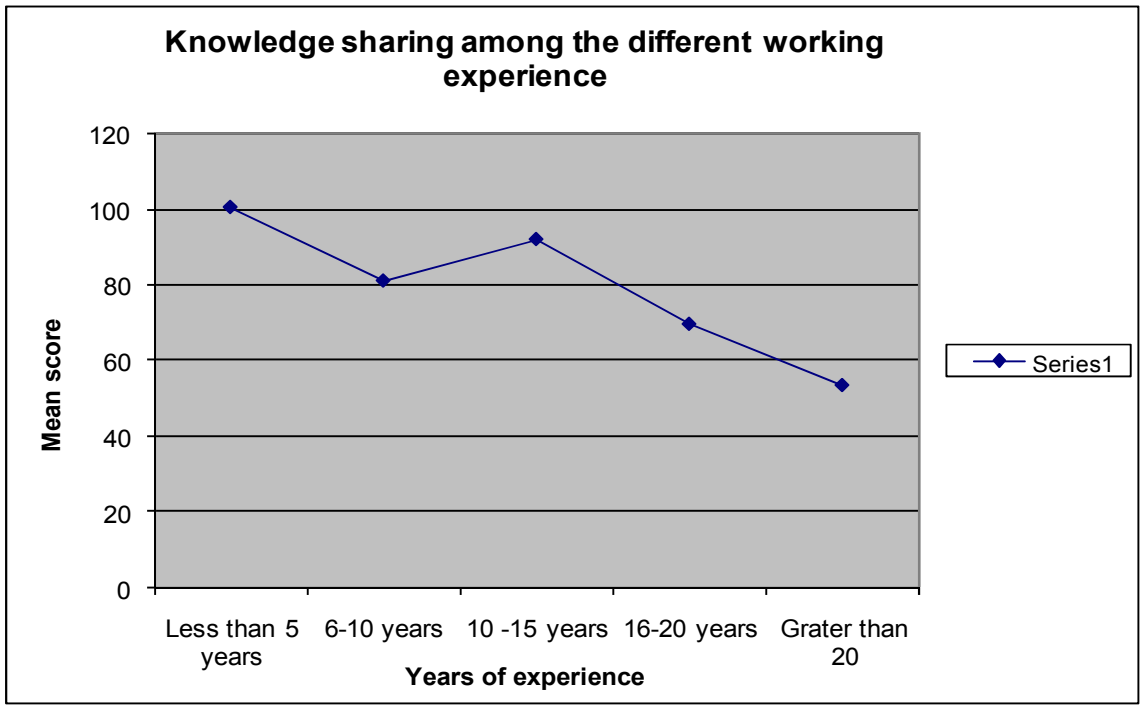

Figure 4.4 Knowledge sharing across the different years of experience

Generally we can conclude that there is no statistically significance difference in knowledge sharing activity among the different age group and department however, there is a statistical significance difference in knowledge sharing between/among the different sex, profession, working experience, current salary and educational status.

Once we asses the association between the demographic variable and knowledge sharing, the next step is to asses the association between the individual, organizational and technological factors to the knowledge sharing activity. Since one variable measured by two or more questions, the summated response forms each variables.

Assessing the association between these variables and knowledge sharing by applying different statistical test is difficult with out transforming these summated likert scale. These likert scales variables are dichotomized. In other words, rather than analyze variable with many levels collapsing levels to only two levels (0 — disagree (collapses 1, 2, 3) and 1 — agree (collapses 4, 5)). This has the effect of increasing the degrees of freedom in the sample, which in turn, allows smaller differences to be found significant. The existence of a relationship can be verified with a chi-squared test. After dichotomizing the variables, Chi-square test, P-value, Risk and Confidence Interval estimate are done for each variable to asses their strength of association with the variable knowledge sharing. The following dependant and independent variables are dichotomized according to the above rule.

Dependant variables

- Knowledge sharing

Independent variables

- Fear of loss of personal competitiveness
- Trust
- Awareness
- Supportive leadership
- Team work
- Openness
- Information technology
- knowledge sharing opportunity
- Communication channel
- Willingness
- Resource allocation

Table 4.22 The association between independent and dependant variable

Variable	Reference / group	Chi-Square Tests			Risk estimate		
		Value	df	Asymp.Sig.	RR	CI	
Job satisfaction	No/yes	.205	1	.651	.759	.352	1.636
Documentation	No/Yes	.794	1	.373	.567	.206	1.560
Fear of loss of personal competitiveness	No/Yes	.002	1	.963	1.027	.336	3.136
Trust	No/Yes	1.599	1	.206	.432	.136	1.371
Awareness	No/Yes	.965	1	.326	1.807	.630	5.184
Supportive leadership	No/Yes	.011	1	.916	.887	.430	1.831
Team work	No/Yes	.000	1	1.000	.938	.378	2.325
Openness	No/Yes	1.601	1	.206	.548	.242	1.242
Information technology	No/Yes	.631	1	.427	.685	.283	1.657
KS opportunity	No/Yes	23.707	1	.000	.132	.076	.228
Communication Channel	No/Yes	8.830	1	.003	.222	.109	.454
Willingness	No/Yes	7.490	1	.006	-	-	-
Resource allocation	No/Yes	7.945	1	.005	.340	.167	.690
Motivation	No/Yes	8.946	1	.003	.320	.159	.644

As you see in the table 4.22 from the dichotomized variables knowledge sharing opportunity, communication channel, willing ness, resources allocation and motivation are found to have a statistical significance association with knowledge sharing. The results of the relative risk indicates that the probability of knowledge sharing activity is 7.5 times better in the presence of knowledge sharing opportunity, 4.4 times better in the presence of communication channel, 3 times better in the presence of motivation and 2.9 times better the presence of resource allocation than the absence of each factor respectively.

The association found in the bivariate analysis may be confounded by other factor so we need further statistical test that rule out such confounding factors.

4.3 Multivariate analysis

Multivariate analysis is the process of examining the effects of two or more independent variable on the dependent variable simultaneously. It allows us to control for alternative effects and thus assess the extent of spuriousness (confounding, mediating and interacting effect) and gains a more sophisticated view of social reality

Ten variables having a significance association in the bivariant analysis are selected for further multivariate analysis. These variables are

- Gender
- profession
- Working experiences
- salary
- Educational status
- Knowledge sharing opportunity
- Communication Channel
- Willingness
- Resource allocation
- Motivation

The result of forward method of logistic regression as shown in table 4.23 at step five indicates that educational status, knowledge sharing opportunity, motivation, communication channel and resource allocation are having a statistically significant association with the knowledge sharing activity. The odds of knowledge sharing in health professionals holding a doctorate degree 24 times better than those holding diploma. The presence of a knowledge sharing opportunity makes knowledge sharing 30 times better than the absence of knowledge sharing opportunity. The proper resource allocations for knowledge sharing make knowledge sharing 5 times better than not allocated proper resource. The presence of employee motivation makes the knowledge sharing 4 times better the absence motivation.

Table 4.23 Multivariate analysis for the dependant and independent variables

Variables in the equation	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
Educational status			13.866	4	.008			
Educational status(advance diploma)	1.711	1.191	2.063	1	.151	5.532	.536	57.082
Educational status (First degree)	-.290	.786	.136	1	.713	.748	.160	3.496
Educational status (Doctorate degree)	3.184	.926	11.826	1	.001	24.144	3.933	148.233
Educational status (Specialist)	1.587	1.261	1.583	1	.208	4.890	.413	57.949
KSopportunity1(1)	3.418	1.027	11.081	1	.001	30.520	4.078	228.389
Resourceallocation1(1)	1.713	.695	6.078	1	.014	5.548	1.421	21.661
Motivation(1)	1.396	.616	5.126	1	.024	4.037	1.206	13.514
Com. Channel1(1)	2.444	1.130	4.677	1	.031	11.518	1.257	105.504
Constant	-4.006	.705	32.317	1	.000	.018		

4.4. Summery of the findings in the univariate, bivariate and multivariate analysis

4.4.1 Univariate analysis

- From individual factors there are awareness about the importance of knowledge sharing, willingness of employee to share knowledge and there is no fear of loss of personal competitive ness where as there is no job satisfaction ,lack of trust and motivation.
- From organizational factors there is team work and openness among employee where as lack of infrastructure, openness between employee and leaders, leadership support, knowledge sharing opportunity and incentive scheme.
- From technological factors lack of ICT infrastructure, ICT utilization and ICT training.

4.4.2 Bivariate analysis

- From demographic variables age group and department has no any statistical significant association with the knowledge sharing activity where as gender ,profession, experience,

salary and educational status are having statistical significant association with the knowledge sharing activity.

- From the dichotomized variables knowledge sharing opportunity, communication channel, willing ness, resource allocation and motivation are found to have statistical significant association with the knowledge sharing activity where as fear of loss of personal competitive ness, trust, awareness, open ness and information technology are found to have no statistical significant association with knowledge sharing.

4.4.1 Multivariate analysis

- The result of multiple logistic regressions as shown in the table 4.24 show that educational status, knowledge sharing opportunity, resource allocation, communication channel and motivation are found to have a statistical significant association with the knowledge sharing activity.

Table 4.24 Crude and adjusted odds ratio for variables having a statistical significant association

Variables	**Crude O.R**	**Adjusted O.R**
KS opportunity	33.88 (6.6-172.7)	24.144(3.933-148.233)
Comm. channel	8.875(2.198-35.833)	11.518(1.257-105.504)
Motivation	4.068(1.673-9.896)	4.037(1.206-13.514)
Resource allocation	3.71(1.5546-8.901)	5.548(1.421-21.661)
Highest education	2.632 (1.105-6.272)	24.144(3.933-148.233)
Willingness.	0.202(1.118-1.291)	Not available in the model

4.5 Discussion

The objective of the study was to asses the knowledge sharing behavior of health care professional so as to identify factors affecting knowledge sharing and propose better ways to improve the hospital knowledge sharing activity.

An individual said to be having a knowledge sharing behavior when the person actively participate in sharing of organizational relevant information, idea, suggestion and expertise with another. In this respect, the result shows that most of the respondents are not having a knowledge sharing behavior or are not frequently engaged in knowledge sharing activity.

As with most problems, it is difficult to determine the solution if one is not aware of the underlying issue or the obstacles that one may face in trying to solve the problem, as such, an understanding of the factors affecting knowledge sharing in organisations is required in order to explore strategies to encourage knowledge sharing.

There are many factors affecting knowledge sharing activity of any organization. For the convenience of this discussion, Zawiyah and Mohd [84] and Andreas Riege's [64] model are used, consisting of individual, organizational and technological factors affecting knowledge sharing.

4.5.1 Individual Factor

Knowledge sharing is voluntary and efficient knowledge sharing depends on the willingness of individuals to identify the knowledge they possess and to share knowledge when required. The findings of this study indicate that the majority of the health professionals are willing to participate in knowledge sharing activity of the hospital.

Earlier studies have demonstrated that employees often resist sharing their knowledge [81], and that knowledge does not flow easily even when an organization makes a concerted effort to facilitate knowledge exchange [71]. One of the first reasons for reluctance to share knowledge is information hoarding ("knowledge is power, why share it?") [66].the result of the study indicates that the majority of respondents have no fear of loss of personal competitiveness.

If employee are not aware that knowledge sharing helpful to others and to the organization, they may not participate in knowledge sharing activity. The result of the study indicates most of the respondents are aware that knowledge sharing is important for the professional and the achievement of the organizational goal. One of the respondents indicate that "As patient care and management in a hospital set up is a team work, knowledge sharing is and must be a natural process for the optimum care of the patient because you can not work alone". The other health professional indicate that "as medical science and treatment modalities are changing frequently getting this knowledge and sharing it is very important". the other respondent indicate that "Both the patient and the health professional will be benefited because patient care will be improved, the health professional will get knowledge that will helpful for his carrier''.the result of the study indicate that most of the respondents are aware of the fact that knowledge sharing is helpful for both the health professional and for the hospital.

Employees require the existence of trust in order to respond openly and to share knowledge. The study result shows that half of (59%) of the respondents have mutual trust. There is still gap between the health professional in building trust among them. Many studies suggests that in order to facilitate knowledge sharing among individuals, building trusting relationships is the first and most important step to take. Such trust can be built and strengthened via gradual mutual understanding. Therefore, there should be various opportunities and occasions for health professionals to get to know each other. In this way, improved trust due to good understanding can raise the psychological barriers to communication and can then increase the knowledge sharing activity of the professionals.

The other important factor which determines the knowledge sharing activity of any organization is whether or not the staff is motivated to share. Individuals need to be motivated to spend time and effort in participating in the knowledge sharing activity of the hospital. The result of the study show that the majority of the respondents are not motivated to share knowledge.

Engstrom [18] states that to be in knowledge transfer environment, an employee should feel satisfied with his daily jobs. The result shows that most of the respondents are not satisfied in their hospital work. The major causes of this dissatisfaction are lack of attractive salary, inadequate/or opportunity for further education or training and lack of rewarded and recognition system.

4.5.2 Organizational factors

Providing an appropriate infrastructure and sufficient resources to facilitate knowledge sharing practices is the basis of a successful knowledge management program. But sharing practices are often doomed to fail before they begin due to the absence of basic infrastructure and sharing capabilities. The result of this study shows that the hospital do not at all set aside resources like budget, time, ICT infrastructure and physical location which are essential for the success of knowledge sharing. There is no hall in each department where staff can meet and share knowledge. The other important thing about organizational facility affecting knowledge sharing is poor facilities such as shortage/absence of medical equipment that limit to practice knowledge transfer in the hospital.

Knowledge sharing should be incorporated in the annual planning of the hospital as other day to day activities. The organization should assign appropriate time, person and other necessary resources in advance. For any knowledge sharing activity to take place there should be an opportunity where the knowledge donor and receiver interact. These opportunities to share knowledge can be both formal and informal in nature. The formal opportunity include training program, structured team and technology based system that facilitate sharing of knowledge where as informal opportunities include personal relationships and social networks that facilitate learning and the sharing of knowledge. The study result shows that there is lack of formal and informal opportunity to share knowledge.

During interview one of the respondents said that with in the hospital there is no opportunities of knowing new research/updated knowledge. Knowing the updated new research is just based on the interest of individuals. As most respondent during interview indicate the opportunities that the staff gain recent medical knowledge are through training conducted by other organizations, through internet and rarely some bulletins are prepared and send from professional associations.

In the hospital there are two knowledge sharing opportunities i.e. morning session and round on daily base. During these sessions difficult cases are presented and discussion about the appropriate management of the patients presented by specialists as necessary. Most respondents mention that due to time restriction, morning session is a problem solving session rather than academic or knowledge sharing session. The other draw back of morning session is only

physicians are allowed to participate. During daily round, a specialist, a general practitioner, nurses and health officer students are participated. If the case of the patient is interesting or difficult cases which the specialist believe that discussing about this case helpful for students, additional time allocated for that case.

Although morning session and daily round are a good opportunities for sharing knowledge between the health professionals about the cases, they are not effective due to the fact that health professionals are overwhelmed with other duties and responsibilities which result in time constraint to discuss about the cases to the staff. The hospital should take knowledge sharing as a priority and arrange enough time to the health workers either to search for new knowledge or share what they already know in the employees daily work life.

One obstacle to knowledge sharing is lack of open communication. Accordingly to this study it can be concluded that majority of the respondents agreed on the communication openness among employees on job related issue where as there is lack of openness between employee and heads of the hospital. One respondent said that “Having a good communication is not considered as a good for a job in our leader. When you have coffee you discuss about work but our management does not think as it a good opportunity to share knowledge. They think that we are wasting time”.

The presence of teamwork increases the possibility that team members would share their knowledge. As a professional knowledge tends to be more tacit than explicit, team work is a good opportunity for members to share knowledge. The majority of the respondents (66.8%) considered that individuals are working as a team. As one of the respondents says “In medicine the job is done in group or team; so knowledge sharing will upgrade the theoretical and practical knowledge of the team members with the ultimate goal of providing good care to the patient”.

One of the most important conditions under which people are willing to share their knowledge is visible support of management [22]. Therefore, it is clear from the study that respondents are not satisfied by the support of leaders and managers in sharing their knowledge and experience. One of the respondents says that “The boss has to come closer to the employee since what we talk in corridor is helpful for the hospital”. The management has to understand the formal and informal ways of knowledge sharing mechanisms and arrange conditions that facilitate socialization. The

management should implement reward and recognition system to motivate the hospital staff. One of the respondents said that to make employee ready to learn, incentive should be in place. The other respondent makes clear that "Involving and getting the commitment of senior physician in sharing knowledge through different incentive is necessary". The other respondent says "We have to push higher authority to widen the service of internet and telemedicine".

The hospital management has to arrange conditions where those who participate in formal seminar or training abroad should share the knowledge gained when they come back to the hospital. When new findings are coming to the practice, the hospital should arrange periodically discussion forum, case presentations and grand round where every body in the hospital participates. The other respondent mention important point is that "Current knowledge should be a requirement to practice". Once the health professional are graduated and assigned to work, he can work with that skill as long as he wants. So there should be a way of evaluating his current skill as a requirement to continue in the work.

Whether knowledge sharing takes place in an organization depends to a great extent on individual organizational members' motivation to share the knowledge they possess [37]. The result of the study makes clear that most of the staffs are not motivated to share knowledge. It may be the result of the absence of any motivational scheme for encouraging knowledge sharing. Individuals need to be motivated to invest time in sharing knowledge with their colleagues either by articulating the knowledge in a form in which it can be absorbed and utilized by others or by explaining the knowledge through time consuming dialogue [37].

Whether to implement intrinsic or extrinsic incentives in an organization is controversial; so we ask the respondents to comment on the incentive mechanism that motivate them to share their knowledge. Accordingly, first priority is given to monetary incentives, followed by acknowledgment of their contribution and carrier development. The chances of promotion and gaining status as expert have less preference. This will show that to create better knowledge sharing environment there is a need to design better monetary incentive scheme.

4.5.3 Technological factor

Even if ICT is an enabler to knowledge sharing, the preferred way of transferring any information is through face to face communication using voice and body language

(socialization). The study result shows that the frequency of using all channel of communication is very low due to the fact that knowledge sharing activity is also low. The result also shows face to face communication is the commonly used method, followed by telephone in the hospital.

The different departments of the hospital have no any computer. The computers and internet service limited to the small library only. The hospital management does not understand well the importance of having IT-based communication among staff. The professionals with access to communication channels can get the required knowledge easily which can help them to deliver quality service to the patient or decreasing medical errors. In this hospital there is no telephone, internet and intranet service in all departments. The only easily available way the staff can share knowledge is face to face communication. The study result indicates that there is no ICT infrastructure, lack of training about the IT familiarization to health professionals and low utilization of information communication technology.

CHAPTER FIVE

SUMMARY, CONCLUTIONS AND RECOMMENDATIONS

5.1 Summary

The main purpose of this study is to investigate the knowledge-sharing behavior of health care professionals so as to identify factors that affects knowledge sharingTo this end, basic questions are raised which addressed areas such as knowledge sharing activity, willing ness to share, knowledge sharing opportunity, documentation, resource allocation, knowledge sharing channel, incentives and factors affecting knowledge sharing.

The study is conducted in Felege hiwot hospital under the Ministry of Health. The subject of the study is Health professionals of the organization. For the quantitative part all health professionals participated where as in the qualitative study subjects selected on the basis of purposive sampling. Data are obtained from all respondents through questionnaire, interview, observation and document analysis.

The data obtained in quantitative study are analyzed using univariate, bivariate and multivariate statistical techniques where as, the qualitative data are thematically analyzed. Accordingly, the following major findings are identified.

The study disclosed that most respondents are not having a knowledge sharing behavior. In order to assess the factors that are contributing to this low knowledge sharing performance we classify the factors as individual, organizational and technological.

At individual level the factors that are assessed include willingness, fear of loss of personal competitiveness, awareness, trust and motivation. The findings from this study indicate that the majority of the health professionals are willing to participate in knowledge sharing activity of the hospital. The second factor assessed is information hoarding behavior. The result indicates that the majority of respondents have no fear of loss of personal competitiveness.

The other individual factor assessed is awareness about the knowledge sharing importance. The result clearly show most of the respondents are aware of the importance of knowledge sharing for the achievement of professional and hospital goal. The study result also shows that nearly

half of (59%) of the respondents have mutual trust. So there is still gap between the health professional in building trust among them.

The other important factor which determines the knowledge sharing activity at individual level is staff motivation. The result of the study show that the majority of the respondents are not motivated to share knowledge. The last individual factor assessed to have an effect on knowledge sharing is job satisfaction. The result shows that most of the respondents are not satisfied in their hospital work. The major causes of this dissatisfaction are lack of attractive salary.

At organizational level the factors that are assessed include infrastructure, knowledge sharing opportunity, open ness, teamwork, leadership support and incentives. The result of this study shows that the hospital does not assign resources like budget, time, infrastructure and physical location which are essential for the success of knowledge sharing. There is no conference hall in each department where staff can meet and share knowledge.

The study affirmed that there is lack of formal and informal opportunity to share knowledge. There is no system of knowing new research/updated knowledge coming in to practice. Although there are two knowledge sharing opportunities i.e. morning session and round on a daily base, due to time and participation restrictions, they become problem solving means rather than academic or knowledge sharing session. The study also shows that there is a work load that creates a shortage of time either to search for new knowledge or share what they already know.

The majority of the respondents agreed on the communication openness and team work among employees on job related issue where as there is lack of openness between employee and heads of the hospital. Most of the respondents are not satisfied by the support of leaders and managers in sharing their knowledge and experience.

The result of the study makes clear that most of the staffs are not motivated to share knowledge. It could be the result of the absence of incentives for encouraging knowledge sharing. The professionals asked their preference of incentives for their knowledge sharing effort. Half of the respondents prefer monetary incentive. Acknowledgments of their contribution and carrier

development are their next preference. The chances of promotion and gaining status as expert have less preference.

At technological level the factors that are assessed includes ICT infrastructure, training about the IT familiarization and utilization of ICT. The study shows that there is no ICT infrastructure in the hospital. There is also lack of training that help IT familiarization of health professionals and low utilization of information communication technology.

The result of this study discloses face to face communication is the commonly used method, followed by telephone. According to the majority of the respondents there is a good practice of documenting working procedure and practice.

5.2 Conclusions

Knowledge sharing is very important for both the health professionals and the hospital. For the health professional it provides the opportunity to enhance their skills by working together and sharing knowledge while improving their own performance. At the organizational level, knowledge sharing improves organizational performance through increasing efficiency, productivity, quality, innovation and better decision making, Furthermore; employees are able to acquire new knowledge if they share their knowledge with colleagues.

The study in this Hospital points out that knowledge sharing should be considered as a priority area that needs much greater efforts and attention. Even if the health professional are willing to participate in knowledge sharing activity there are no formal opportunities like training program, seminars prepared by the hospital to make knowledge sharing viable among staff. Besides due to work over load and/or time shortage the chance of informal communication which is the best opportunity for the transfer of tacit type of professional knowledge is also so low.

The communication channels are vital for proper functioning of knowledge sharing. The information and communication technology is not developed in the hospital. Vast majority of the employees does not have access to these technologies. Generally the communication infrastructure is not developed well. The only commonly employed channel of communication in the hospital is face to face communication.

Knowledge sharing should be planned in advance and appropriate resources should be assigned like any other activity the hospital is performing. The hospital has no any plan to prepare a knowledge sharing session, no specific budget allocated and no resource are assigned for use in the knowledge sharing activity.

Since knowledge sharing is a voluntary activity, staff should be motivated to share knowledge. The result of the study indicates most of the staffs are not motivated to share knowledge. The study also indicates there is no motivational scheme in the hospital designed to encourage staff for their knowledge sharing activity.

For any knowledge sharing activity to be effective, the management of the organization should be committed to its successful implementation. The study indicates the management of the hospital does not support the knowledge sharing activity of the hospital. The mangers should facilitate and organize conditions where the staff can interact and exchange knowledge either formally or informally.

Those list of problems identified with in the Felege Hiwot Referral Hospital show that stronger and more systematic efforts are needed in order to make the hospital a place where knowledge is shared efficiently so that the skill of the health professionals improved. This will further result in improving the service quality and the performance of the organization.

To the researcher knowledge, the study is new in its kind that no other similar knowledge sharing study has been done in Ethiopia yet especially in health sector. Thus, it will be a valuable base line data for future research assessing knowledge sharing practices in the country.

5.3 Recommendations

The following recommendations are given based on this study of knowledge sharing with a view to further enhance knowledge sharing in Felege Hiwot Referal Hospital, in particular and in health sector, in general.

The management of the hospital has to give appropriate support and encouragement to the knowledge sharing activity. They should devote their time and effort to increase the knowledge sharing activity of the hospital by taking appropriate measures which can improve the knowledge sharing activity of the hospital.

Knowledge sharing is the most important strategic tool to improve the performance of the hospital by enabling the health professionals' skill to give the best quality health service. So the hospital management should give prior attention to knowledge sharing and align knowledge management strategy to the business strategy of the hospital.

For effective knowledge sharing there is a need to design knowledge management system that encompasses knowledge creation, knowledge representation and knowledge sharing

Most of health professionals are having work overload which creates time shortage to participate in the knowledge sharing activity of the hospital. The hospital should use web technology so that staffs can easily create, organize, search and access new knowledge at any time.

The hospital should arrange a formal knowledge sharing opportunity like regular meeting, seminar, and work shop where staff can share knowledge by assigning appropriate resources (time, budget and infrastructure like meeting place, communication tools, especially modern IT infrastructures).

The hospital should create a condition where the socialization of staff increases by preparing different ceremonies. These are a good way of developing trust among them and increase the chance of informal opportunity to knowledge transfer.

The hospital should promote and encourage health professionals to share knowledge by designing and implementing appropriate motivational scheme that encompasses both monetary and non monetary incentives.

Similar studies need to be done in other sectors like agriculture, finance and education to know their status in knowledge management and knowledge sharing for organizational success.

References

1- Alavi M. and D. Leidner. (2001). Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. MIS Quarterly, 25(1): 107-136.

2- Andarge Atinaf. (2009). Bahirdar Felege-Hiwot Referral Hospital; Third Quarter Report from January to March.

3- Arora R. (2002). Implementing Knowledge Management. Journal of Knowledge Management, 6 (3): 240-249.

4- Bartholomew D. (2005).Sharing Knowledge, at www.**knowledge**board.com/download/2520/**SharingKnowledge**1.pdf (accessed on October 27,2009)

5- Bartol K. and Srivastava A. (2002). Encouraging Knowledge Sharing: The Role of Organizational Reward Systems. Journal of Leadership and Organizational Studies, 9(1):64-76.

6- Bender S. and A. Fish. (2000). The Transfer of Knowledge and the Retention of Expertise: The Continuing Need for Global Assignments. Journal of Knowledge Management, 4 (2):125-137.

7- Bock G. and Kim Y. (2002). Breaking the Myths of Rewards: An Exploratory Study of Attitudes about Knowledge Sharing. Information Resources Management Journal, 15(2): 14-21.

8- Bock G., Zmud R., Kim Y. and Lee J. (2005). Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social Psychological Forces, and Organizational Climate. MIS Quarterly, 29(1): 87-111.

9- Chan W. (2008). Study of Influential Factors on Knowledge Sharing and Its Effect on Performance in Air Traffic Control System. at http://dspace.cityu.edu.hk/bitstream/2031/5545/2/fulltext.html (accessed on December 2, 2009).

10- Chase R. (1997). The Knowledge Based Organization: An International Survey, The Journal of Knowledge Management, 1(1): 38-49.

11- Christensen P. (2007). Knowledge Sharing: Moving away from the Obsession with Best Practices. Journal of Knowledge Management, 11(1): 36-47.

12- Cong X. and Pandya K. (2003). Issues of knowledge management in the public sector. Electronic Journal of Knowledge Management, 1(2): 25-33.

13- Creswell J. (2002).Research design (2nd edition). London: Sage publication.

14- Daniel Z., Rob C., Lisa C. and Eric L. (2002). Trust and Knowledge Sharing: A Critical Combination, at https://www-935.ibm.com/services/au/igs/pdf/g510-1693-00-cpov-trust-and-knowledge-sharing.pdf (accessed on December 27, 2009).

15- Debons A., Horne E. and Cronenweth S. (1988).Information science: an Integrated View. Boston: G.K.Hall & Co.

16- Dubois N. and Wilkerson T.(2008).Knowledge Management: Background Paper for the Development of a Knowledge Management Strategy for Public Health in Canada, at www.nccmt.ca/pubs/KMforumReport_EN.pdf (accessed on October 27,2009).

17- Elias M. and Hassan M. (2004). Knowledge Management. Upper Saddler River, New Jersey: Pearson Education, Inc.

18- EngstromT. (2003). Sharing Knowledge through Mentoring: Performance Improvement, 42(8):36-42.

19- Filemon A. and Uriarte Jr. (2008). Introduction to Knowledge Management. Jakarta, Indonesia: Published by the Asean Foundation.

20- G.Widen-Wulff and M. Ginman. (2004). Explaining Knowledge Sharing in Organizations through the Dimensions of Social Capital. Journal of Information Science 30(5): 448–458.

21- Geraint J. (1998).Share Strength. People Management, 4 (16): 44-47.

22- Goman C. (2002).What Leaders can Do to Foster Knowledge Sharing. Knowledge Management Review, 5(4):10-11.

23- Gray D. (2004). Doing research in the real world. London: sage publication.

24- Greengard S., (1998). Will Your Culture Support Knowledge Management? Workforce, 77 (10): 93-94.

25- Gunderman R, and Chan S. (2003). Knowledge Sharing in Radiology, 229 (2):314–317.

26- H.F. Lin and G.G. Lee. (2006). Effects of Socio-Technical Factors on Organizational Intention to Encourage Knowledge Sharing. Management Decision, 44 (1):74–88.

27- H.F. Lin, H.S. Lee, and D.W. Wang. (2008). Evaluation of Factors Influencing Knowledge Sharing based on a Fuzzy AHP Approach. Journal of Information Science 35 (1) : 25–44.

28- H.F. Lin. (2007). A Stage Model of Knowledge Management: an Empirical Investigation of Process and Effectiveness. Journal of Information Science, 33(6): 643–659.

29- H.F.Lin and G.G. Lee. (2004). Perceptions of Senior Managers toward Knowledge-Sharing Behavior. Management Decision, 42 (1): 108–125.

30- Hansen M., Noharia N. and Tierney T. (1999). What's Your Startegy for Managing Knowledge? Harvard Business Review, 77(2): 106-116.

31- Hariharan A. (2002). Knowledge Management: A Strategic Tool .Journal of Knowledge Management Practice, at www.tlainc.com/articl46.htm (accessed on December 2,2009).

32- Health Information Strategy Steering Committee (HIS).(1998).Vision and Strategy for Knowledge Management and IM/IT for Health Canada, at http://www.providersedge.com/docs/km_articles/Health_Canada's_Vision_and_Strategy_for_KM.pdf (accessed on October 17,2009).

33- Hislop D. (2002). Mission Impossible? Communicating and Sharing Knowledge via Information Technology. Journal of Information Technology, 17:165-77.

34- Hsia T., Lin L., Wu J. and Tsai H. (2006) A Framework for Designing Nursing Knowledge Management Systems. Interdisciplinary Journal of Information, Knowledge, and Management, Vol-1:13-22 at www.ijikm.org/Volume1/IJIKMv1p013-022_**Hsia**02.pdf (accessed on October 27, 2009).

35- Hsiu-Fen Lin (2007).Effects of Extrinsic and Intrinsic Motivation on Employee Knowledge Sharing Intentions. Journal of Information Science, 33(2):135-149. http://www.cais-acsi.ca/proceedings/2007/bergeron_2007.pdf (accessed on December 27, 2009).

36- http://www.careacademy.org/learningresources/ks.asp (accessed on October 23,2009).

37- Husted K., Michailova S. and Minbaeva D. (2005). Knowledge Sharing and Organizational Performance: the Role of Extrinsic and Intrinsic Motives. The 8th International Human Resource Management Conference, in Cairns, Australia, at http://kmap2005.vuw.ac.nz/papers/Sharing%20and%20Org%20Performance_K%20Husted.pdf (accessed on October 23, 2009).

38- Ibrahim Y., Ifa A., Jemal S. and Jemila O. (2008). Health professional turnover in Felege Hiwot Referal Hospital.

39- Ipe M. (2003). Knowledge Sharing in Organizations: A Conceptual Framework. Human Resource Development Review, 2(4):337-359.

40- Ironworks consulting. (2008).The Future of Healthcare Knowledge Sharing, at www.sundanceresearch.net/wp**healthcare**.pdf (accessed on October 23,2009).

41- J. Darroch and R. McNaughton (2002). Examining the Link between Knowledge Management Practices and Type of Innovation. Journal of Intellectual Capital 3(3): 210–222.

42- Jacobs E. and Roodt G. (2007).The Development of a Knowledge Sharing Construct to Predict Turnover Intentions. Aslib Proceedings: New Information Perspectives, 59(3) : 229-248.

43- Jager M. (1999). The KMAT: Benchmarking Knowledge Management. Library Management, 20(7):367 – 372.

44- Julia Ashley. (2003).Synchronous and Asynchronous Communication Tools, at http://www.asaecenter.com/PublicationsResources/articledetail.cfm?ItemNumber=13572 .

45- Kim B. and Lee S. (1996). Logistics Information's Role within an IT Systems Architecture in a World-Class Organization. Logistics Information Management, 9(3):19-26.

46- Kohn A. (1993). Why Incentive Plans cannot Work**.** Harvard Business Review, 74(5): 54-63.

47- Kwok S. (2005).Critical Success Factors for Effective Knowledge Sharing in Group Learning, at http://celt.ust.hk/tlsymp04/paper/pl02_kwok_ismt.pdf (accessed on October 21, 2009).

48- Ladd A. & Mark A. (2002).An Investigation of Environmental Factors Influencing Knowledge Transfer. Journal of Knowledge Management Practice, at www.tlainc.com/articl38.htm (accessed on October 23, 2009).

49- Leedy P. and Ormrod J. (2005). Practical Research Planning and Design 8th Edition, Upper Saddle River, New Jersey: Pearson Education, Inc.

50- Lily Tsui. (2006). A Hand Book on Knowledge Sharing. Diffusion of Innovations (5th Ed.). New York, NY: Free Press accessed, at http://www.ice-rci.org/research_ops/Knowledge_Sharing_Handbook.pdf (accessed on October 21, 2009).

51- M. Huysman and D. de Wit. (2004). Practices of Managing Knowledge Sharing: Towards a Second Wave of Knowledge Management. Knowledge and Process Management 11(2): 81–92.

52- Mandruleanu A. (2008). Knowledge Dynamics. Revista Informatica Economică, 4(48):117-121.

53- Mohamed M., Stankosky M. and Murray A. (2006). Knowledge Management and Information Technology: Can They Work in Perfect Harmony? Journal of Knowledge Management, 10(3):103.

54- Mustafa E. (2009).The Impact of Learning Culture and Information Technology Use on Knowledge Sharing: A Case of King Fahd University of Petroleum and Minerals (KFUPM) Students. 17th European Conference on Information Systems. at www.ecis**2009**.it/papers/ecis**2009**-0037.pdf (accessed on October 23,2009).

55- Myers D. & Avison D. (2003). Qualitative Research in Information Systems. Great Britain: Athenaeum Press Ltd.

56- Naima H. (2007). Physicians' Attitudes towards Knowledge Transfer and Sharing. Competitiveness Review, 17(4):248-260.

57- Nonaka I. & Takeuchi H. (1995). The knowledge-creating company: how Japanese companies create the dynamics of innovation. New York: Oxford University Press.

58- Osterloh M. and Frey B. (2000).Motivation, Knowledge Transfer, and Organizational Forms, Organization Science, 11(5): 538-550.

59- Pan American Health Organization (2005). Information and knowledge Sharing at Pan American Health Institution, at www.paho.org/english/dd/ikm/Task-Force_eng_final.pdf (accessed on October 23, 2009).

60- Pan and D.E. Leidner.(2003).Bridging Communities of Practice with Information Technology in Pursuit of Global Knowledge Sharing. Journal of Strategic Information Systems, 12(1): 71–88.

61- Pang T. (2004). Bridging the Know-Do Gap, at http://www.inclentrust.org/pdf/inclennews/July%202004/Turning%20scientific%20knowledge.pdf (accessed on October 27, 2009).

62- Pederson C. (1998). Management of Knowledge New IT 'Craze.' Computing Canada, 24(27):19-21.

63- Ramirez A. (2007). To Blog or Not To Blog: Understanding and Overcoming The Challenge Of Knowledge Sharing. Journal of Knowledge Management Practice, 8(1) at www.tlainc.com/articlsi2.htm (accessed on October 23, 2009).

64- Riege A. (2005) .Three-Dozen Knowledge-Sharing Barriers Managers must consider. Journal of Knowledge Management, 9 (3):19-33.

65- Ryu S., Ho S., & Han I. (2003). Knowledge Sharing Behavior of Physicians in Hospitals. Expert Systems with Applications, 25(1):113-121.

66- Scarbrough H. (2003). Why Your Employees don't Share What They Know. KM Review, 6(2):16-20.

67- Selena S. and Wendy E. (2009).Exploring Knowledge Sharing in Social Structures: Potential Contributions to an Overall Knowledge Management Strategy. Advances in Developing Human Resources, 11(3): 290-306.

68- Shewangizaw Bereda, et.al. (2009). HMIS Scale up Pre Assessment Report.

69- Smith E. (2001). The role of tacit and explicit knowledge in workplace. Journal of Knowledge Management, 5(4):311-321.

70- Smith H. (2003) Instilling a Knowledge-Sharing Culture. Queen's Centre for Knowledge-Based Enterprises, pp1-17, at www.business.queens.ca/kbe accessed (accessed on October 3, 2009).

71- Szulanski G. (1996). Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within the Firm. Strategic Management Journal, 17(1):27-44.

72- Tan Nya Ling, Lim Ying San and Ng Tuan Hock (2009).Trust: Facilitator of Knowledge-sharing Culture, at www.ibimapublishing.com/journals/CIBIMA/.../table.html (accessed on October 3, 2009).

73- The Health Department of the Ethiopian Science and Technology Commission (2005). Proposal Writing for Health and Health-Related Research.

74- Tsui L. (2006). Handbook on Knowledge Sharing: Strategies and Recommendations for Researchers, Policymakers, and Service Providers, at www.fcrss.org/kte_docs/**Knowledge_Sharing_Handbook**%202%20.pdf (accessed on October 3, 2009).

75- Vaast E., R. Boland, E. Davidson, S. Pawlowski, and U. Schultze. (2006). Investigating the "Knowledge" in Knowledge Management: A Social Representation Perspective. Communications of the AIS, 17:314-340.

76- Wai C., Manjit S. and Kishore K. (2009). Knowledge Sharing in an American Multinational Company based in Malaysia. Journal of Workplace Learning, 21(2): 125-142.

77- Wasko M. and Faraj S. (2000). It is What One Does: Why People Participate and Help Others in Electronic Communities of Practice. Journal of Strategic Information Systems, 9:155-173.

78- WHO. (2006).The Knowledge-Value Chain: a Conceptual Framework for Knowledge Translation in Health, 84(8): 597-602, at www.who.int/entity/bulletin/volumes/84/8/06-031724ab/en/ (accessed on October 13, 2009).

79- Wild R., K.A. Griggs and T. Downing. (2002). A Framework for e-learning as a Tool for Knowledge Management, Industrial Management and Data Systems, 102 (7): 371-380.

80- Xiong S. and Deng H. (2008).Critical Success Factors for Effective Knowledge Sharing in Chinese Joint Ventures. 19th Australasian Conference on Information Systems, PP-1089-1098, at www.bsec.canterbury.ac.nz/acis2008/Papers/acis-0203-2008.pdf (accessed on October 3, 2009).

81- Yang J. (2007).The Impact of Knowledge Sharing on Organizational Learning and Effectiveness. Journal of Knowledge Management, 11(2): 83-90.

82- Yu-Chung H. and Ya-Hsueh C. (2009). Factors Affecting Knowledge Sharing Behavior: a Content Analysis of Empirical Findings, at www.myacme.org/ACMEProceedings09/p19.pdf (accessed on October 24,2009)

83- Zaini A., Zahariah M., Noormala A. and Syed S. (2009). Assessing Knowledge Sharing Behaviour among Employees in SMEs: An Empirical Study. International business research 2(2):115-122.

84- Zawiyah M. and Mohd B. (2008). Knowledge Sharing Models: Do They Really Fit Public Organizations? at www.tlainc.com (accessed on January,2010).

ANNEX I. QUESTIONAIRE

Structured questionnaire for the assessment of knowledge sharing among health professionals: the case of Felege Hiwot Referal Hospital, Amhara Region.

Part 1: Demographic profile of the respondent

Please tick (√) the given boxes or write in the space provided that represent your most appropriate answer.

1. Please indicate your gender?

□ Male □ Female

2. Your age group?

□ Less than 20 year □ 21-30 year □ 31-40 year

□ 41-50 year □ 51-60 year □ More than 60 year

3. Please indicate your highest educational level?

□ Diploma □Advance Diploma □ First Degree

□ Masters Degree □ Doctorate Degree □ Specialist

4. Profession?

□ Medical doctor □ Laboratory technician □ physiotherapist

□Nurse □ Pharmacist □ Sanitarian

□ X-ray technician □ Anesthetist □ Ophthalmologist

□ Dentist □ Other specify……..

5. Working experiences in health organization?

□ ≤ 5 year □ 6-10 year □ 11-15 year

□ 16-20 year □ 20 years and above

6. Working department ----------

7. Current Salary (per month)?

□ Up to BR. 1000 □ BR.1001-BR.2000 □ BR.2001-BR.3000

□ BR.3001-BR.4000 □ More than BR.4000

8. Are you satisfied with the current job?

□ Yes □ No

9. If your answer for question number 21 is "No" 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 reward and recognition system for the work you did

D) Corporate culture (the way we do things around here)

E) Other specify_____

Part 2: Knowledge sharing questions

	Please read and indicate the frequency of knowledge sharing with each of the statement below according to the scale provided. Please tick (√) one answer only.	***Never***	***Rarely***	***Sometimes***	***Often***	***Always***
10	How frequently did you share know-where (where certain knowledge exists) and know-whom (who hold the required knowledge) to the staffs?					
11	How frequently did you share what you know (know how) from work experiences with the hospital staffs?					
12	How frequently did you share knowledge obtained from workshop and training to the hospital staffs?					
13	How frequently did you share knowledge gained from news, magazines, and journals to the hospital staffs?					
14	How frequently did you share knowledge by holding periodic meetings in which people working in different teams, department may participate?					

		Never	*Rarely*	*Sometimes*	*Often*	*Always*
15	Are there formal opportunity like training program and workshop within the hospital that allow employee to share knowledge?					
16	How frequently did you share your knowledge informally (including water cooler chats) when other employees approach you?					
17	How frequently did you share knowledge with colleagues in the past 12 month by using E- Mail?					
18	How frequently did you share knowledge with colleagues in the past 12 month by using Face to face communication?					
19	How frequently did you share knowledge with colleagues in the past 12 month by using Intranet and internet?					
20	How frequently did you share knowledge with colleagues in the past 12 month by using Phone?					

21. Do you document working practice and procedure?

□ Yes □ No

22. If yes, which of the following ways are used for documentation (possible to choose more than one answer)?

□ Writing Manual □ Discussion forum □ Database/knowledge base □ Web portal

23. How much do you feel motivated to transfer knowledge in the hospital?

□ Very Low □ Low □ Medium □ High □ Very High

24. Is there motivational scheme in the hospital to motivate knowledge sharing practice?

□ Yes □ No

	How important are the following incentives for you in order to improve your knowledge sharing attitude?	***Very Low***	***Low***	***Medium***	***High***	***Very high***
25	The monetary incentives (salary increment .etc.)					
26	Career development					
27	Chance of Promotion					
28	Gaining status as expert					
29	Acknowledgement of your contribution					

	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***
30	I actively share work related knowledge with colleagues in the hospital.					
31	If I need additional information and knowledge about how to perform the task, colleagues are likely to tell me about it.					
32	I share my knowledge and expertise with colleague in a meeting and training class.					
33	There is periodic plan to acquire, organize and share knowledge in the hospital.					
34	There is a specific budget dedicated to acquire, organize and share knowledge in the hospital.					

		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
35	There are information communication technology infrastructures (internet, intranet, etc.) in the hospital that allow employee to share knowledge.					
36	There are enough physical location within the office (Hall) where staff can socialize and exchange knowledge.					
37	Hoarding knowledge can secure my job.					
38	Sharing knowledge would waste my time or increase my work load.					
39	Sharing knowledge would reduce my personal competitiveness.					
40	Exclusive ownership of knowledge would make me outstanding and important person in the organization.					
41	There is mutual understanding among staff in my organization.					
42	I believe that other colleagues are knowledgeable and competent in their area.					
43	If I share knowledge with in my organization, my colleagues will feel very confident about my skills and capability.					
44	If I share knowledge with in my organization my colleagues will believe that I am very concerned about their welfare.					
45	If I share knowledge with my organization my colleagues will believe that I try hard to be faire in dealing with others.					
46	I believe that sharing knowledge would help me learn faster.					

		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
47	I believe that I would gain new ideas, technologies, skills or techniques as a result of sharing knowledge.					
48	I believe that I would be more innovative if I share knowledge.					
49	Knowledge sharing would help me not to repeat the same mistake as happened to my colleague.					
50	Supervisor (head) encourages team members to share idea/suggestions freely within organization.					
51	Supervisor consults team members to make decision and solve problem.					
52	Superior's approval is required before sharing knowledge with colleagues.					
53	We have to adhere strictly to our supervisors' order and/or instructions for our work.					
54	Our organization encourages team work.					
55	Most of the people I work with are cooperative and open to share knowledge.					
56	People in the organization I work with resolve disagreement cooperatively.					
57	I would rather cooperate with colleague than compete with them.					
58	1. Communication among my colleagues is very open on job related issue					
59	My superior openly explains the purpose of the company's policies, rules and expectations to team members.					

		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
60	In my organization employees make extensive use of electronic storage (such as databases) to access knowledge.					
61	In my organization employees use knowledge networks (such as e-mail, intranet, community of practices, and so on) to communicate with colleagues in the hospital.					
62	In my organization there is lack of technical support (internal or external) and immediate maintenance of integrated IT systems obstructs work routines and communication flows.					
63	In my organization there is lack of training regarding employee familiarization of new IT systems and processes.					

64. If you have any comment, please specify.

_____

_____

_____

_____

_____

Thank you very much for your cooperation

ANNEX II. INTERVIEW GUIDE LINE

Interview guide line to assess knowledge sharing among health professionals: the Case of Felege Hiwot Referal Hospital, Amhara Region

1. What is your perception of the term "knowledge sharing"?
2. Please explain the importance of Knowledge sharing among health professional for the success of the hospital objective?
3. How the staff learned about a recent researches coming to the practice?
4. Knowledge sharing among employee is low, what are the possible reasons?
5. The presence of formal opportunity like training program or informal opportunity (time to chat) to share knowledge with in the hospital is very low. What is the possible reason?
6. The staff turnover is high which lead to loss of knowledge. What system the hospital implemented to prevent this loss?
7. In reaction to mistakes occurring, guidelines are established to prevent future problems. If not why?
8. What are the existing challenges/ problems in implementing efficient Knowledge sharing (In terms of facilities, human resource, communication channel, attitude, and skill of the staff,) and How influential are the challenges
9. What measures the hospital or department should take to improve the sharing of knowledge /experience among staffs?

ANNEX III. CHECKLIST

Checklist for recording of physical observation for Assessment of Knowledge Sharing among Health Professionals: The Case of Felege Hiwot Referal Hospital, Amhara Region

1. Department Name_____
2. The practice consists of (number and type of staff)

   _____

   _____

   _____
3. The type of service given

   _____

   _____

   _____

   _____

   _____
4. Availability of hall Yes No
5. The office design allows people to share knowledge. Yes No
6. The practice performed in team work Yes No
7. Availability communication tools:

	Items	Quantity	Accessible to all staff	Accessible at any time
1	Computer			
2	Internet			
3	Intranet			
4	Phone			
5	Other specify			

Knowledge artifact		✓/✗
I. Educational materials in print as well as electronic		
1	Magazines	
2	Medical literature	
3	Current practice brochures	
4	Other specify	

ANNEX IV: INFORMATION SHEET

Dear respondents:

I am working with Adem Agmas who is currently conducting this study as a partial fulfillment of master program in health informatics in Addis Ababa University at department health informatics.

The objective of the study is to investigate the knowledge-sharing behavior of health care professionals so as to identify factors that affects knowledge sharing and propose possible solution to enhance organizational effectiveness and improve the quality of health service provision.

We, therefore kindly request you to fill this questionnaire that will help in investigating the issues. Your co-operation is very helpful. Your name will not be written on the questionnaire and all the information you will provide will be kept strictly confidential. You will be facing no harm by participating and you are also not obligate to answer any question you don't wish to answer.

Consent Form

Considering the information you get from the general information sheet, we would like to thank you in advance for spending some time with us in answering the questions related to the issues.

Sincerely,

Adem Agmas
Health Informatics Department
Addis Ababa University

ANNEX V: DECLARATION

I, the undersigned, declare that this is my original work and has never been presented in this or any other University and that all the source materials used for this thesis have been duly acknowledged;

Name: _____

Signature: _____

Place: _____

Date of Submission: _____

The thesis has been submitted for examination with my approval as a University advisor.

Name: _____

Signature: _____

Date: _____