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

ASSESSMENT OF KNOWLEDGE SHARING PRACTICES  
OF HEALTH CARE PROFESSIONALS IN HOSPITALS  
UNDER ADDIS ABABA HEALTH BUREAU

TIRUALEM YALEW

JUNE, 2011

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A Thesis Submitted to the School of Graduate Studies of Addis Ababa  
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By

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# Declaration

I declare that the thesis is my original work and has not been presented for a degree in any other university.

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Date

This thesis has been submitted for examination with my approval as university advisor.

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Date

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## Acronyms

<b>AAHB</b>	Addis Ababa Health Bureau
<b>AAU</b>	Addis Ababa University
<b>AOR</b>	Adjusted Odds Ratio
<b>COR</b>	Crude Odds Ratio
<b>Epinfo</b>	Epidemiological information (Software)
<b>FMOH</b>	Federal Ministry of Health
<b>ICT</b>	Information Communication Technology
<b>KM</b>	Knowledge Management
<b>KMS</b>	Knowledge Management Systems
<b>KS</b>	Knowledge Sharing
<b>MCH</b>	Maternal and child health
<b>MDG</b>	Millennium Development Goal
<b>NGO</b>	Nongovernmental Organization
<b>SPSS</b>	Statistical Package for Social Sciences (Software)
<b>WHO</b>	World Health Organization
<b>FDRE</b>	Federal Democratic Republic of Ethiopia

## **ABSTRACT**

**Background:** - Knowledge is the most important strategic resource in organizations, and its management is critical to organizational success. Knowledge sharing is a social interaction culture, involving the exchange of employee knowledge, experiences, and skills through organization. However there is no previous study that assesses the knowledge sharing practice in AA. Therefore the purpose of this study is to assess the knowledge-sharing practices and identify factors that affect knowledge sharing practices among health professionals.

**Objective:** -To investigate the level and factors associated with knowledge-sharing practice among health care professionals in public hospitals of Addis Ababa.

**Methods:**-A cross-sectional study with both quantitative and qualitative methods was conducted among 5 hospitals under Addis Ababa Health Bureau from May to June 2011 G.C. Total of 318 respondents were selected using simple random sampling technique. The data were collected using self administered structured questionnaire and to supplement the quantitative study in-depth interviews were also conducted. The data were entered and cleaned using Epiinfo version 3.5.1 and analyzed using SPSS version 16. Frequencies and percentages were used to describe the study population and Logistic regression with 95% confidence interval was used to assess the presence and degree of association between dependent and independent variables.

**Result:** - The study revealed that 50.3% of the respondents were engaged in active knowledge sharing practice. More than half (57.2%) of the respondents were not satisfied with their job, and 69% of participants report the absence of motivational schema in their health institutes. Over all 72% of respondents are willing to share their knowledge. The factors that were independent predictors of knowledge sharing were job satisfaction, very high level of motivation, extrinsic motivation, use of communication channel and the presence of knowledge sharing opportunity. Those respondents who were satisfied with their job were more likely to share their knowledge than the others with the odds ratio, AOR[95%CI] 1.73[1.00-2.98], who had high level of motivation were more likely to share their knowledge than the others with the odds ratio, AOR[95%CI] 3.38[1.04-11.00], and those respondents who were extrinsically motivated were more likely to share their knowledge than the others with the odds ratio, AOR[95%CI] 1.75[1.02-2.99].The respondents who used communication channels were more likely to share their knowledge than the others with the odds ratio , AOR[95%CI] 3.05[1.71-5.45] and who had knowledge sharing opportunity were more likely to share their knowledge than the others with the odds ratio, AOR[95%CI] 2.89[1.70-4.90].

**Conclusion and Recommendation:** - From this study most of the respondents were aware of the importance of knowledge sharing but only half of respondents were engaged on active knowledge sharing practice, and the factors that were independent predictors of knowledge sharing were job satisfaction, high level of motivation, extrinsic motivation, use of communication channel, the presence of knowledge sharing opportunity. So stake holders (AAHB, the hospitals) should device a way for strengthen knowledge sharing practice through improving all the hinderers of knowledge sharing.



# CHAPTER ONE: INTRODUCTION

## 1.1 Background

The rising interest in considering knowledge as critical asset of an organization has led to an increasing interest in knowledge management systems (KMSs) in the healthcare sector (1). According to Davenport and Prusak (2) “knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information”. Essentially there are two types of knowledge: Implicit and Explicit. Implicit knowledge is the knowledge or know-how that is in people’s heads; their experiences. This knowledge is rarely documented and is usually communicated using informal methods such as group discussions, meetings, conferences, etc. On the other hand explicit knowledge can be expressed in formal and systematic language and can be shared in the form of data, scientific formulae, specifications, manuals and so forth (3).

Knowledge management refers to all management activities necessary for the effective creation, capturing, sharing, and managing of knowledge. World Health Organization (WHO) defines knowledge management as “a set of principles, tools and practices that enable people to create knowledge, and to share, translate and apply what they know to create value and improve effectiveness” (4). Knowledge creation, sharing and dissemination are the main activities in knowledge management (5). “In the knowledge management manner of speaking, knowledge-sharing(KS) can be regarded as a systematically planned and managed activity involving a group of like-minded individuals engaged in sharing their knowledge resources, insights, and experiences for a defined objective”(6). Health care KS can be characterized as the explicitation and dissemination of context-sensitive healthcare knowledge by and for the health care (decision-makers) sector through a collaborative communication medium (6).

Health care knowledge-sharing is practiced for a variety of reasons, including clinical decision-making, patient education vis-à-vis patient empowerment programs, practitioner’s education and experience enhancement, health care policy-making, clinical protocol and guideline formulation, public health and community support for patients, and disseminating clinical research findings (6).

There are many ways to perform knowledge sharing. People can share knowledge in the form of documents or through discussions which involve conversations and interactions (7). To better leverage the existing knowledge, knowledge sharing also involves the combination of various levels of expertise so that new organizational knowledge can be created (8).

Knowledge is created and shared through interaction between tacit and explicit knowledge. Nonaka and Takeuchi (9) argued that organizations cannot create knowledge without individuals. Unless individual knowledge is shared with other individuals and groups, the unshared knowledge is likely to have limited impact on organizational effectiveness. In general, people expect to gain more insights and understanding about concepts or practical applications, thereby improving learning and expertise.

In September 2000, the member states of the United Nations adopted the Millennium Declaration (10). The attainment of these health-related Millennium Development Goals (MDGs) depends on turning scientific knowledge into effective action for people's health through bridging the "know-do" gap. Many of the solutions to health problems of the poor exist, but are not applied. This is called the "know-do" gap - the gap between what is known and what is done in practice. The discipline of knowledge management (KM) aims to bridge this gap. Starting with the premise that local problems have local solutions, effective KM in health can provide the knowledge necessary for local innovation on an equitable basis, and then create new local knowledge that is fed back into a dynamic self regenerative process (10).

The notion of knowledge sharing has attracted much attention from both researchers and practitioners in the field of knowledge management. Many studies have been done to identify factors that affect knowledge sharing. Several best practices have also been uncovered in organizations that exhibited systematic knowledge sharing phenomena. However, there are still gaps in our understanding of why and when knowledge sharing occurs. Many questions related to the dynamics of knowledge sharing remain unanswered. For example why are some incentive schemes designed to promoting knowledge sharing highly effective in some organization but fail in others? For this reason the purpose of this study is seek to understand the knowledge sharing

practices of health care professionals and to identify factors that affects knowledge sharing in hospitals under Addis Ababa Health Bureau and this will enable organizations to proactively take measures to enhance knowledge sharing that will improve organizational effectiveness and the quality of health service provision.

## **1.2 Statement of the Problem**

Knowledge management systems (KMSs) provide the healthcare sector with systematic means of managing knowledge more effectively. However, to achieve the potential benefit of KMSs, knowledge must be shared. Knowledge sharing allows the healthcare organizations to make better use of the expertise and skills of their healthcare professionals and enables healthcare professionals to implement their best practices and to create new ideas so that high quality healthcare services can be delivered (1).

Medicine is a rapidly growing field with different specialties opening each time and no single individuals can know everything about all the specialties. So sharing of knowledge among specialties is mandatory to give quality health care services. Previous study conducted showed that there was poor knowledge sharing practices among health professionals and the sharing of knowledge is an individual effort in many cases and it is not systematized in the practices of the hospitals. The value of knowledge sharing processes and tools are not considered essential to delivering excellent service in health care as it is in some businesses (11).

Some of the 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. When a health professional or medical organization fails to share knowledge effectively, all perform below their potential.

Retirement and mobility of experienced and knowledgeable health care professional leads to loss of knowledge. According to the 2002 report of Addis Ababa Health Bureau 100 health professionals are leaving the hospitals per year due to various reasons i.e., retirement, external transfer, death and personal reasons (12). This indicates that there is high rate of health professional turnover. Unless the hospitals which are under AAHB facilitate the sharing of their

knowledge with others this mobility of experienced and knowledgeable health care professionals will obviously lead to loss of knowledge.

In the health care system, the problem of poor knowledge sharing does have immense implications beyond what is already mentioned. Losing the opportunity of knowledge sharing may lead to medical error like incorrectly managing patients. In fact, Knowledge sharing is no longer a "nice to have" process; actually, it becomes a "must have" skill. Therefore, strengthening knowledge systems by sharing information and experience could produce a dynamic, innovative effect in the areas where health issues are most critical (13).

How to motivate employees to share their knowledge is the most difficult activity of knowledge management (14). Therefore there is no previous study conducted in Addis Ababa, so exploring and identifying factors affecting knowledge sharing are exclusively important. Hence, it will be the aim of this research to explore health professionals' knowledge sharing practices and identifying the factors that affects knowledge sharing among health professionals. This will help organizations to take appropriate measures in order to enhance health professional's knowledge sharing practices and achieve organizational success.

### **1.3 Significance of the Study**

Knowledge is now being seen as the most important strategic resource in organizations, and the management of this knowledge is considered critical to organizational success (15). The study will help to understand the process of knowledge sharing among health professionals in those hospitals under Addis Ababa health bureau and will identify factors that encourage or discourage knowledge sharing in the hospitals. Once the factors affecting knowledge sharing are identified, the outcome will enable organizations to take appropriate measures in terms of strategic approach and policy development for enabling health professionals share their knowledge and achieve high quality health services.

## **1.4 OBJECTIVES OF THE STUDY**

### **1.4.1 General Objective**

The general objective of this study is to assess the knowledge-sharing practices of health care professionals in all hospitals under Addis Ababa Health Bureau.

### **1.4.2 Specific Objectives**

The specific objectives of the study are:-

- To assess the level of knowledge sharing practices among health care professionals.
- To identify the key factors facilitating or hindering knowledge sharing among health care professionals.

## **1.5 The Scope of the study**

Knowledge management is a wide area to study. It encompasses knowledge creation, capturing, representation and finally sharing for an organizational success. The study investigated the knowledge sharing practices of health care professionals in hospitals under Addis Ababa health bureau. Due to time and logistic reasons some of the variables that have the potential to affect knowledge sharing were not included. Other hospitals not under AAHB were not included in this study.

## **1.6 Organization of the study**

This thesis has five chapters. The first chapter deals with the introduction of the study, the statement of the problem, objective and scope of the study. The second chapter presents literature review 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, discussion and strength and limitation of the study are presented in chapter four. Finally, the fifth chapter brings to an end of this survey research with, conclusion and recommendations.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Knowledge Management**

Knowledge management is a concept in which an enterprise gathers, organizes, shares, and analyzes its knowledge in terms of resources, documents, and people skills. One of the central aims with knowledge management in the organization is to leverage the knowledge of individuals and teams so that this knowledge becomes available as a resource for the entire organization and supports the organization in becoming more competitive (16). Knowledge generation, codification and sharing from an individual level into an organizational are three main aims of Knowledge Management. This thesis mainly concentrates on the third of these and on issues such as enabling and stimulating the process of knowledge sharing.

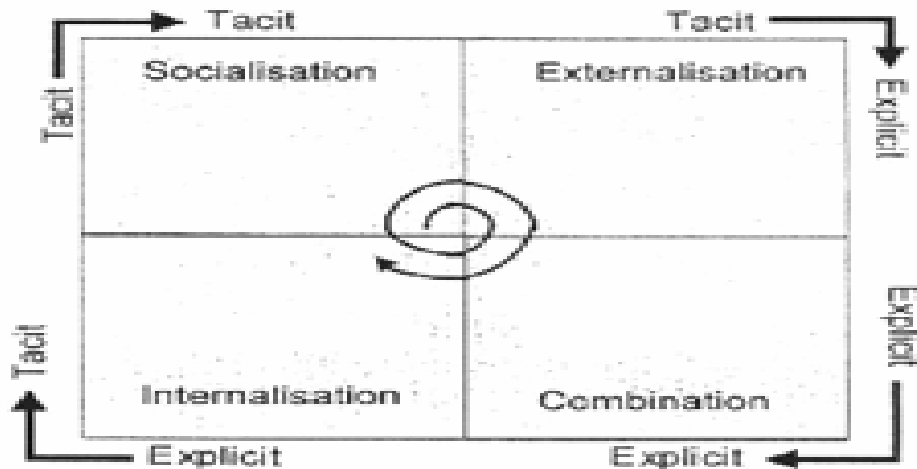
It is very important for the firms to manage the existing knowledge in a proper way. Companies tend to focus on knowledge workers and other creative thinkers that can make a difference in the company (17). However, it is rather difficult to create a culture that values learning, because people often have a limited interest in knowledge sharing, being occupied with other activities.

### **2.2 Forms of knowledge**

As described in the introduction part explicit (codified) knowledge can be easily understood because it can be codified and carried out through formal and methodical language in books, archives, databases and libraries (18) where as Tacit (implicit) knowledge can hardly be formalized and transmitted because it is closely connected to individuals as it bases on intuition, values and viewpoints that were developed through experiences (18).

Nonaka and Takeuchi (19), also stress these characteristics as they state that tacit knowledge is personal and context-specific depending on acquired knowledge, beliefs, emotions and personal skills. Organizations incorporate tacit knowledge in organizational routines. Zack (7) argues that tacit knowledge is the foundation for sustainable competitive advantages of an organization as it is difficult to formalize and thus hard to be imitated.

According to Nonaka and Takeuchi (19), knowledge sharing is a process of interactions between explicit and tacit knowledge. The interactions between tacit and explicit knowledge lead to the creation and sharing of new knowledge. The combination of the two categories makes it possible to conceptualize four conversion patterns.



**Figure- 1. Nonaka’s (1995) Model of Knowledge Creation Processes**

In the following we give characteristics of each process (19):

- **Socialization** – This is the first mode of the knowledge creation processes. The tacit knowledge is transformed through a socialization process between individuals. The process of transferring ideas directly to or have them challenged by fellow employees is a way to share and create personal knowledge. In short, the key to gain tacit knowledge is through experience and social interaction, for instance, apprenticeship, informal meetings outside the workplace, interacting with customers and suppliers.
  
- **Externalization** – This is a process of articulating tacit knowledge to explicit knowledge that is codifiable, comprehensible and modifiable. This means that the individual’s intentions, norms and beliefs then become integrated with the group’s knowledge. This can be done by different techniques such as metaphors and analogies, ideas can be expressed through images or words as well as concepts and figurative language.
  
- **Combination** – This is a process of converging explicit knowledge to more complex and systematic set of explicit knowledge. For instance concepts can be put into also called “knowledge system”, which can be achieved by meetings, documenting and computer networks. The knowledge is combined, edited or processed to form new knowledge.

- **Internalization** – This is a process of embodying explicit knowledge to tacit knowledge explicit knowledge is shared throughout the organization and then converted into tacit knowledge by individuals. This requires the individual to identify knowledge relevant for him/herself within the pool of organizational knowledge. It is very much related to learning by doing, for example through; training programs, simulations and experiments.

## **2.3 Possibility to share knowledge**

Hansen (20) puts forward two ways of managing knowledge often utilized by the consulting industry: codification and personalization.

### **2.3.1 Codification**

The codification strategy means that knowledge is codified, stored in databases or information systems where it can be accessed by other actors within the organization. Other tools for codification could be training, emails, meetings etc. The codification is described as extracting knowledge from the individual which makes it possible to access for other organizational members.

This method is more feasible for firms with more standardized problems where reusing knowledge keeps costs down. When a product or package based on knowledge is created, it can be utilized over and over again to generate revenue. Hansen suggests that IT can be used to gather and distribute codified knowledge (20).

### **2.3.2 Personalization**

This strategy is characterized by utilization of personal contacts. Technologies like computers are not used to store knowledge but to provide possibilities for actors in the company to contact each other. The solution to a problem is reached by communication between different organizational actors. This form of knowledge sharing is costly in time and in pecuniary resources. The process cannot be systematized and is thus hard to make more efficient. On the other hand firms applying this strategy can most often charge more for their services. For firms with a personalization strategy, more informal information channels are beneficial. These could be social relationship; build of trust, friendship and respect etc. IT has a different role here in comparison to the codification approach as it is primarily used for direct communication (20).

In personalization, dialogue is an important tool. Ballantyne (21) and Tsoukas & Vladimirou (22) emphasize that it is not enough to have knowledge it must also be disseminated to the members of the organization. Thus it is important to create explicit rules and principles. Because of the dynamic nature and the constant flux of knowledge and information, these should just serve as guidelines to shape the collective understanding and facilitate the emergence of learning through practice.

#### **2.4. Importance of KM in the Public Healthcare Sector**

The importance of knowledge management in the health care environment is increasingly understood, and now medical textbooks, journals, patient records and other reference materials are widely consulted in the development of care guidelines and treatment protocols in order to compile medical knowledge into operational form (4). Knowledge sharing as a subset of knowledge management has been given high priority and expressively stated in organization's information policy. For a nonprofit organization like government agency, knowledge sharing represents ways to increase continuous performance, and is thought to improve customers and employees satisfaction (23).

Hospitals can generate massive amounts of 'knowledge-rich' healthcare information that comes from inside and outside of the healthcare environment and is indispensable for its proper functioning (24).

Abidi(1) categorizes the different types of knowledge in healthcare as including tacit and explicit knowledge of healthcare practitioners, healthcare related documents, data, processes, workflows, experiences and lessons learnt. This information includes electronic medical records, clinical trial data, hospital records, administrative reports and benchmarking findings (1). Knowledge is therefore considered a critical resource in the provision of healthcare (25).

Van Beveren states that healthcare organizations could be viewed as a collection of professional specialists who contribute to the delivery of patient care and often they work in discrete divisions within the organization, thus leading to a fragmentation in the delivery of care (26). This has a profound effect on knowledge sharing throughout the organization. With such a vast amount of information to be accessed, shared and utilized by healthcare professionals, one of the key objectives of KM in hospitals is to insulate its knowledge from degeneration. This is achieved for

example through the capturing and sharing of the tactical expertise and experience of individual workers. Hospitals are however also facing major problems in communication and collaboration. Abidi describes health care organizations as ‘knowledge poor’ because the massive amount of information generated is rarely transformed into a strategic decision-support resource. Effective decision making and awareness within hospitals depends on the access and usage of the available information (1).

## **2.5 Knowledge Sharing in an Organization**

Knowledge sharing is a human act and is considered critical to organizations (27). In organizations, the biggest value of knowledge that can be achieved is when it is shared because it can help to increase job performance and facilitate new knowledge creation (28). Knowledge sharing can also increase intellectual capital, change individual competitiveness, change organizational competitiveness and reduce cost (29).

Knowledge sharing occurs at 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. A number of studies have demonstrated that knowledge sharing is essential because it enables organizations to enhance innovation performance and reduce redundant learning efforts (30).

A survey of 48 government officers in three selected central agencies in Putrajaya shows Knowledge sharing among employees improve their service delivery to the general public sector in Malaysia (31).

Another study in Norway by Andreassen (32) indicated that the best way to improve public sector performance is through increasing the organizational effectiveness. To improve organizational effectiveness, knowledge sharing can play a role (33).

Scarborough (34) had recognized four groups of reasons for knowledge sharing in organizations, and labeled them using the following four metaphors: 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); and fortress (sharing knowledge as a source of protection against external threats). One of the first reasons for reluctance to share knowledge is information hoarding (“knowledge is power, why share it?”). Knowledge-hoarding behavior could be peculiar to specific organizational or professional culture norms (for example, knowledge sharing could be limited among members of highly competitive professional groups, like sales people working on commission), or even encouraged by misalignment between an organization’s KM strategies and incentive schemes (35).

## **2.6 Factors Influencing 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. Riege (36) identified three dozens of factors affecting knowledge sharing and categorized them into three factors: individual, organizational and technological.

At the individual level, some of the barriers identified by Riege (36) are general lack of time to share knowledge, apprehension of fear for job security, low awareness on the benefits of KS, differences in experience level, lack of contact time and interaction, poor verbal and interpersonal skills, age differences, gender differences, lack of social network, difference in education levels, lack of trust in people, fear of not receiving recognition, lack of trust in knowledge source accuracy and cultural differences.

At the organizational level, Riege (36) outlined several major organizational barriers to KS as unclear/missing integration between KM initiatives into company's goals, lack of leadership and

managerial direction, shortage of formal and informal spaces, lack of transparent rewards and recognition system, unsupportive corporate culture, low priority on knowledge retention on experienced staffs, shortage of appropriate infrastructure, deficiency of company resources for adequate KS practices, environment/layout of work area, hierarchical organization structure and size of business unit.

Finally, among the technology barriers highlighted by Riege (36) are lack of integration of IT systems processes, lack of technical support, lack of maintenance of integrated IT systems, people's unrealistic expectation on IT, lack of compatibility between diverse IT systems processes, restriction due to mismatch between need requirements and IT system, people's reluctance to use IT systems and lack of training for familiarization of IT systems and processes.

Ipe (15) Based on a review of theory and research related to knowledge sharing has been identified the major factors that influence knowledge sharing between individuals in organizations are the nature of knowledge, motivation to share, opportunities to share, and the culture of the work environment. Such factors are significant by themselves but do not exert their influence on knowledge sharing in isolation. All are interconnected with each factor influencing the other in a nonlinear fashion.

As Hinds & Pfeffer (37) identified cognitive and motivational limitations towards knowledge sharing. Cognitive limitations are related to the way experts store and process information. It is often hard for experts to put their knowledge into words that are understandable to non-experts. They overestimate non-experts' information processing capability and basic knowledge level, and underestimate the time non-experts need to complete and understand certain tasks. Where cognitive limitations are related to an individual's ability to share knowledge, motivational limitations are related to their willingness to share knowledge. Different incentives and disincentives for this willingness are distinguished by Hinds & Pfeffer, such as team level rewards, internal competition, status differences, degree of formalization and the individual's relationship to the organization. With regard to this latter influence on people's willingness to share, Hinds & Pfeffer point towards trust as an important variable. The extent to which coworkers are trusted to reciprocate favors (i.e., provide their knowledge in return) and the

organization is trusted not to use provided knowledge against an individual, determines this individual's willingness to actively share knowledge with others inside this organization. Orlikowski (38) for instance, describes how in a very competitive environment, distrust in others inhibited the sharing of information.

Robert's (39) investigation of how ICT contributes to knowledge sharing, points out the importance of trust especially as a prerequisite for the transfer of implicit knowledge.

Theory of Planned Behavior (TPB) proposed by Ajzen (40) a widely-accepted theory in social psychology has been applied in many researches for studying knowledge sharing behavior. According to this theory, intention to perform a behavior is the direct determinant and the most important determinant of actual performance of such behavior. It is believed that the stronger intention to engage in a behavior, the more likely should be its performance. The individual employee's intention to share knowledge can be predicted with high accuracy from the attitudes toward knowledge sharing behavior, the subjective norms regarding knowledge sharing, and the perceived behavioral control over knowledge sharing. First, attitude is an individual's positive or negative behavioral belief about performing a specific behavior. Second, subjective norm is the individual's perception that most people who are important to him or her think he or she should or should not perform the behavior in question. Last, perceived behavioral control refers to the degree to which an individual feels that performance or nonperformance of the behavior in question is under his or her volitional control.

Numerous scholars and practitioners claim that motivational factors can facilitate successful knowledge sharing. Szulanski (35) 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 (41) found that motivational factors were negatively correlated with knowledge sharing. In another study of 27 Korean organizations (42) 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 (43). Another study conducted in 50 large organizations in Taiwan which

examined the influence of individual factors (enjoyment in helping others and knowledge self-efficacy), organizational factors (top management support and organizational rewards) and technology factors (information and communication technology use) on knowledge sharing processes. The findings of the study indicate that both enjoyment in helping others and knowledge self-efficacy were strongly associated with employee willingness to share knowledge. The result implies that employees who feel pleasure in sharing knowledge and thus helping others tend to be more motivated to donate and collect knowledge with colleagues. Additionally, a sense of the competence and confidence of employees may be a requirement for employees to engage in knowledge sharing. That is, employees who believe in their ability to share organizationally useful knowledge tend to have stronger motivation to share knowledge with their colleagues. Related to organizational factors, top management support was effective for employee willingness to donate and collect knowledge with colleagues, but organizational rewards were not. The findings also indicate that perceptions of top management encouragement of knowledge sharing influence employee willingness to share knowledge. Moreover, the results show a positive significant relationship between ICT use and knowledge collecting, but no significant relationship with knowledge donating. This finding might also be caused by the fact that investing in ICT alone is not enough to facilitate knowledge donating, because ICT can provide access to knowledge, but access is not the same as using or applying knowledge. That is, knowledge sharing involves social and human interaction, not simply ICT usage (44).

In a study conducted in Taiwan to examine the role of both extrinsic (expected organizational rewards and reciprocal benefits) and intrinsic (knowledge self-efficacy and enjoyment in helping others) motivators in explaining employee knowledge sharing intentions. Based on a survey of 172 employees from 50 large organizations in Taiwan, three motivational factors (reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others) were significantly associated with employee knowledge sharing attitudes and intentions. However, expected organizational rewards did not significantly influence employee attitudes and behavior intentions regarding knowledge sharing (45).

Demographic factors and knowledge sharing quality Changes in demography are one of the factors that affect knowledge sharing and knowledge transfer in public services (46).

A study conducted in Malaysia to find out the differences among government officers' knowledge sharing quality in terms of demographic factors. A survey of 48 respondents using questionnaire as data collection method was conducted. Previous studies indicated that there were mix results on the relationship between demographic factors and knowledge sharing. The early assumption of the study was that demographic variables would have a significant relationship with knowledge sharing quality among public sector employees. However, the results in this study indicated that demographic factors (gender, age, level of education, job position and tenure of service) have no significant impact on knowledge sharing quality except workplace. This shows knowledge sharing quality among employees does not influenced by demographic factors. This study concludes that demographic factors have no significant impact on knowledge sharing quality among public officers in central agencies in Malaysia (46).

The role of the information technology in sharing knowledge has been a center of debate (47). While some investigators are of the opinion that knowledge management (KM) initiatives could be successful without using IT tools (48), other researchers 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 (47).

In study conducted to assess the use of IT by New Zealand healthcare organizations illustrated that most of the responding organizations use IT for knowledge sharing. It was reported that 83% of respondents used email for exchanging documents as attachments, 78% of respondents published documents and 72% of respondent's accessed documents on networks. Teleconferencing, videoconferencing and email lists were reported as being used by more than 50% of responding organizations; however, use of electronic discussion forums and blogs was reported in less than 50%, publishing contact details were used by less than 50% of respondents (49).

The key determinant of the success of knowledge management systems is the willingness of people to use the technological tools to share and contribute their knowledge to systems and access the contributions of others (50). Efforts to maximize use of the existing IT for knowledge

sharing in organizations can benefit from an understanding of the ways in which organizations use IT to share knowledge (49).

One of the factors that affect knowledge sharing is the individual level; this is particularly significant as the heart of any effective change is the people themselves (51). Changing people's behavior seems to be most difficult especially promoting Knowledge sharing among employees (42).

In a study conducted in Malaysian public agencies to identify barriers that affect knowledge sharing quality, some of the barriers are Individual factors (i.e., awareness, trust and personality) these factors correlate significantly with knowledge sharing quality (52). Personality seems to be the most significant predictor on the quality of knowledge sharing, followed by trust and awareness. It is evident that any fundamental change should start from the people. Without the appropriate personality, awareness and trust, knowledge sharing in public sector will all in vain. Continuous awareness programmes could help to change worker's personality, increase their awareness and build trust among themselves (52).

In a study conducted in Bahirdar Felegehiwot hospital to assess the knowledge sharing behavior among health professionals with cross-sectional study employing both quantitative and qualitative. In the descriptive study part the majority of the respondents are not frequently engaged in knowledge sharing activity, 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. In that study knowledge sharing opportunity, communication channel, motivation, resource allocation, and high education were found as an independent predictor of knowledge sharing practice (11).

## Conceptual framework

The arrows in the diagram show interactions between the variables. As depicted in the diagram knowledge sharing is affected by individual, organizational, and technological factors.

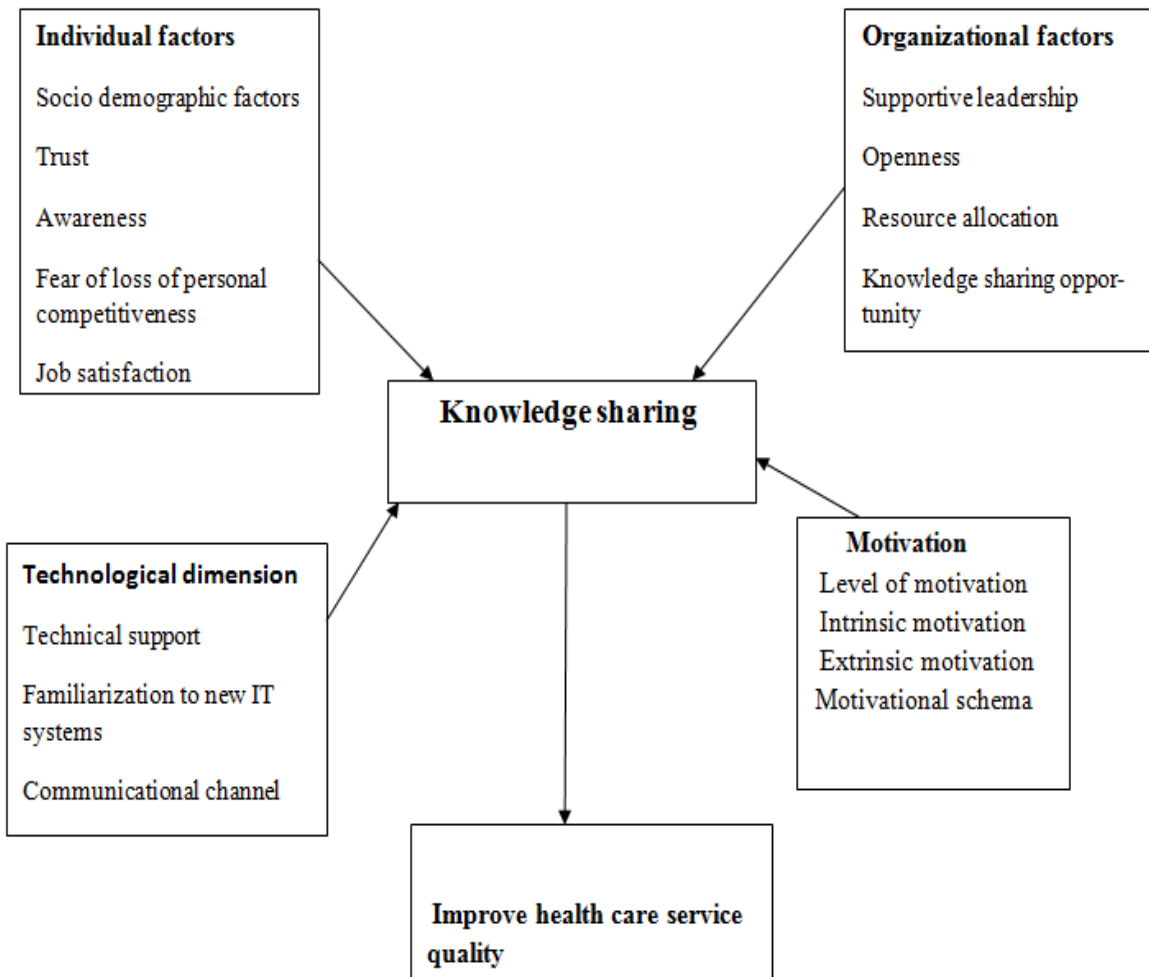


Figure -2 Conceptual frame work to analyze the determinants of knowledge sharing

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Study Area**

The study was conducted in Addis Ababa, which is the capital of Federal Democratic Republic of Ethiopia with a population of 2, 738,248 (53). Addis Ababa is divided in to 10 administrative sub cities and 99 Kebeles. There are 38 hospitals in Addis Ababa, among these, 10 are owned by Government (5 of them are administered by Federal Ministry of Health (FMOH) and 5 are under Addis Ababa Health Bureau(AAHB) and the rest 28 are NGO and Private owned hospitals. In addition, 27 government owned Health centers, 19 higher, 103 medium and lower private owned clinics are found in Addis Ababa (54). The reason for selection of Addis Ababa was as to the knowledge of the researcher there is no previous study in this area and there is high professional variability in hospitals than health centers and there were a total of 1167 health care professionals like Nurses, Medical doctor/general practitioners, specialists,, Dentist, Health officer Laboratory technician/technologists, Pharmacists , Anesthetists, Health assistants, physiotherapists , x-ray technicians and sanitarian working in hospitals under Addis Ababa health bureau.

### **3.2 Study Design**

Cross sectional descriptive with some analytical study with both quantitative and qualitative study designs was used. A cross-sectional study is selected because it is relatively easy to conduct than longitudinal studies because the researcher can collect all the needed data at a single time.

### **3.3 Source Population**

The source population was all healthcare professionals who are the employees of hospitals under Addis Ababa Health Bureau.

### **3.4 Study Population**

The study population for the quantitative study comprises healthcare professionals who are the employee of hospitals under Addis Ababa health bureau and those selected during the sampling procedure.

For qualitative study different department heads of the hospitals were selected using purposive sampling method.

### **3.5 Sample Size**

#### **3.5.1 Quantitative Study**

A single population proportion formula was used to take the appropriate sample size.

$$n = \frac{Z (\alpha/2)^2 * p (1-p)}{d^2}$$

Where n= the desired sample size of respondent.

p= (P stands for the prevalence or proportion of important factors to be studied). In this study p is proportion of health care professionals involved in knowledge sharing behavior Z  $\alpha/2$ = confidence level, d= the margin of error and N=source population. Based on this formula with 95% CI, Z  $\alpha/2$ =1.96, p= 0.5, d =0.05. Substituting these gives 384, this sample was relatively in small population i.e. N=1167 which was N< 10,000 so estimate need some adjustments using  $n = n / 1 + n / N$  (55). Using this adjustment with 10% non respondent would give 318 respondents was used for quantitative study, and was proportionally allocated to each hospital.

#### **3.5.2 Qualitative Study**

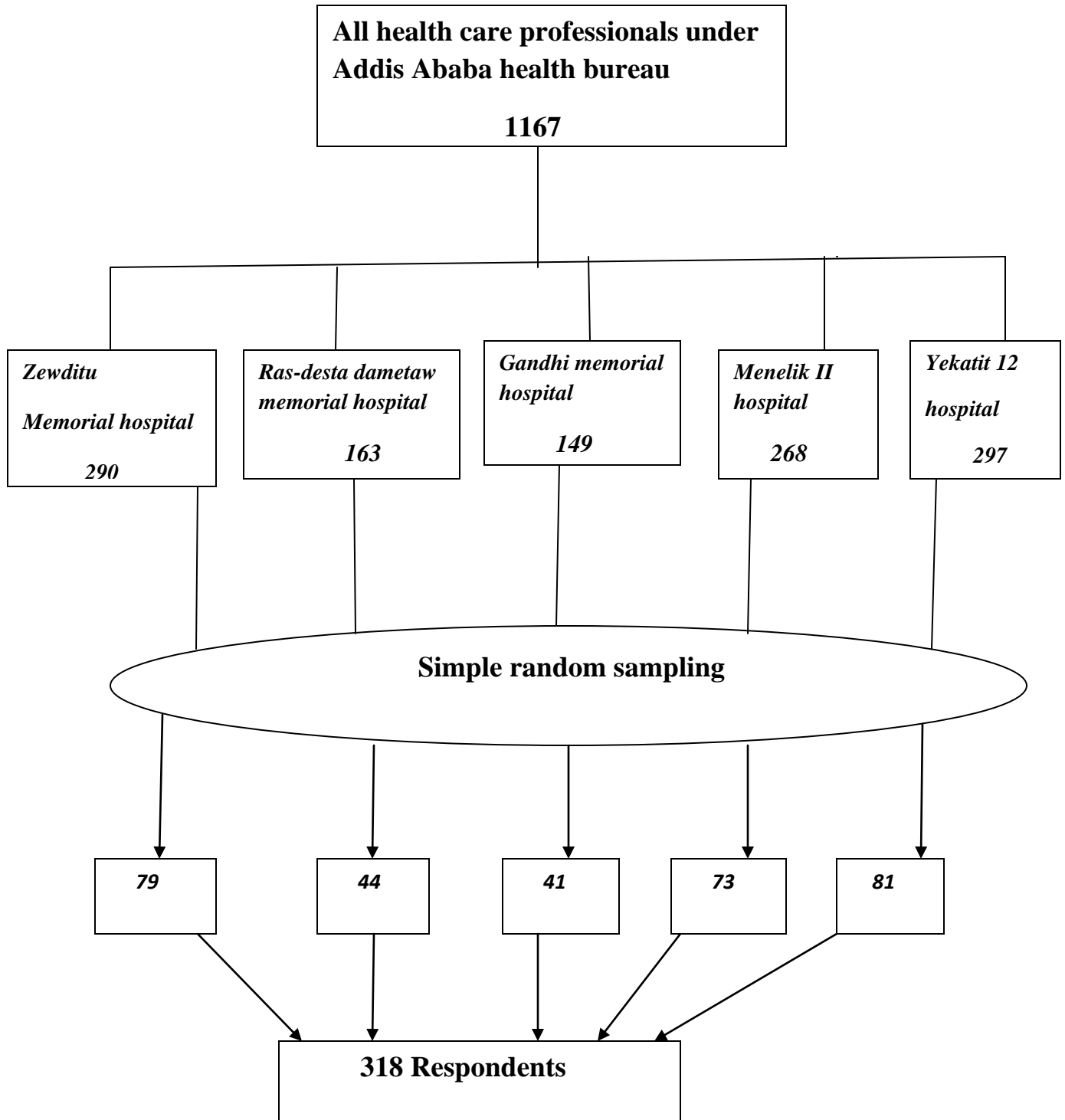
An in depth interview was conducted with 10 department heads of the hospitals until saturation level of information is reached.

### **3.6 Sampling procedure**

The list of all health professionals was retrieved from the human resource department of hospitals and this was used as the sampling frame for the quantitative study. For the quantitative study the total sample size was proportionally allocated to each hospital based on the number of health care professionals in each hospital then the respondents were selected from each hospital using simple random sampling by lottery method.

For the qualitative study respondents selected using purposive sampling technique only those who serve as the head of the departments of the hospitals were chosen for the qualitative study.

**3.6.1 Schematic presentation of the sampling procedure**



**Figure 3 Schematic presentation of the sampling procedure**

### **3.7 Data Collection**

The quantitative method was used for assessment part by using a self administered questionnaire, which is done on all the five hospitals in Addis Ababa health bureau. The qualitative method was used to further explore the results found from the quantitative study using semi structured interview with selected participants. Data collection methods used in the study were;-

#### **Quantitative method**

Structured questionnaires were adapted from other related articles (11, 36, 45, 46 and 52) and some modification was made in line with the objectives of this study. The questionnaire was prepared by English and pre-tested prior to the actual data collection on 16 (5%) respondents at Black Lion specialized hospital in similar population group and modified before actual data collection is commenced. The structured questionnaires were distributed and collected by 3 data collectors which were health professionals with experiences in data collection. One day training was given for data collectors on how to collect the data and other related procedures and continuous follow up and supervision was also made by the principal investigator throughout the data collection.

#### **Qualitative method**

Semi-structured interview guide was developed to guide the qualitative data collection. A total of 10 key informants were involved in the in-depth interview drawn from department heads of laboratory, pharmacy, medical ward and outpatient department, pediatrics ward and outpatient department, surgical ward, labour ward, maternal and child health unit. In-depth interviews were held until saturation and the average time taken was 30-45 minutes. The principal investigator collected the qualitative data through note taking and each in-depth interview was conducted in Amharic for ease of communication and the transcripts were later translated in to English and finally summarized for write up.

### **3.8 Data Processing and Analysis**

Quantitative data were initially entered and cleaned using EPI-info version 3.5.1 and exported to SPSS version 16.0 for analysis by the principal investigator. Frequencies were used for describing the study population in relation to relevant variables. Bivariate logistic regression analysis was done to assess the presence and degree of association between dependent and independent variables. Adjusted odd ratio using multivariate logistic regression model was used to control for possible confounding effects.

For the qualitative study, the Amharic data later translated in to English and was analyzed using thematic analysis, finally summarized for write up.

### **3.9 Data Quality Management**

Data quality was assured using different techniques:

- Properly designed questionnaires and semi structured interview guides were prepared, Moreover pre test was done in Black Lion specialized hospital prior to the study and corrections were made based on the feedbacks collected.
- Training was given to data collectors for one day about the contents of the questionnaire.
- Problems encountered at the time of data collection were reported immediately and appropriate action was taken.
- Frequent supervision was done by the researcher.
- The questionnaires were checked for missing values and inconsistency. Questionnaires that were found to have lots of missing values and inconsistencies excluded from the study and considered as non response.
- The qualitative data collection was conducted by the researcher for smooth communication; this clarified many ‘vague’ issues which would have been misunderstood or misrepresented had some other person other than the researcher conducted the interview.
- Double data entry was conducted for 15% of the total data.

### **3.10 Study Variables**

Different researchers identified as the most significant factors that facilitate or hinder knowledge sharing are trust, awareness, and levels of experience, age, gender, education levels, and technology factors and knowledge sharing opportunity (11, 36, 52, 56, 57 and 58).

Based on this input and the conceptual framework, knowledge sharing practice identified as a dependent variable and Information technology, awareness, trust, communication channel, willingness, resource allocation, supportive leadership, knowledge sharing opportunity, job satisfaction, motivation and socio demographic characteristics as independent variables.

#### **Dependant Variable**

- Knowledge sharing practice

#### **Independent Variables**

- Information technology
- Awareness
- Trust
- Communication channel
- Willingness
- Resource allocation
- Supportive leadership
- Socio-demographic characteristics
- Knowledge sharing opportunity
- Job satisfaction
- motivation

### 3.11 Operational definition

**Knowledge:** - experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information.

**Knowledge sharing:** - is the exchange of experience, events, thoughts or understanding of work related things that is used to improve their performance and to achieve quality health care services.

**Knowledge sharing practice:** - can be defined as level of how far one can do KS.

**Attitude toward knowledge sharing:** this is the degree to which a health professional has a favorable or unfavorable evaluation of performing the knowledge sharing practice.

**Subjective norm to knowledge sharing:** A health professional's perceived social pressure to perform or not to perform the knowledge sharing practice.

**Health care professionals:-** in this study include- specialists, general practitioners, dentists, health officers, nurses, laboratory technicians, pharmacists and pharmacy technicians ,radiographers, anesthetists, physiotherapists, sanitarians, health assistants .

**Trust:** defined as the degree to which an employee believes that sharing knowledge will benefit them, the degree to which they trust the knowledge of their coworkers, and the believe that they will not be exploited by any party in the organization.

**Awareness:-**defined as the degree that the respondents understand/know the importance of knowledge sharing in daily works.

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

**Intrinsic motivation:** - indicates the pleasure and inherent satisfaction derived from a specific activity like enjoying by sharing their knowledge to others.

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

**Communication channel:**-refers to channels used for knowledge sharing purpose including face to face communication, use of telephone, internet and use of manuals, bulletin boards, patient medical records.

**Willingness:**-refers to the participant's willingness to explain know how, experience or skills to their colleagues, and to get additional information and knowledge about how to perform the task colleagues tell me about it.

### 3.12 Measurements

**Knowledge sharing practice:**-Four closed ended questions were used and the response option was Likert scales ranging from strongly disagree to strongly agree. This scoring with the mean and above was considered as they have knowledge sharing practice and the value below mean score considered as not having knowledge sharing practice.

**Information technology:**-Two closed ended questions were used and the response option was Likert scales ranging from strongly disagree to strongly agree. This scoring with the mean and above was considered as they have lack of technological support and the value below mean score considered as not having problem of technological support.

**Awareness:** - Three closed ended questions were used and the response option was Likert scales ranging from strongly disagree to strongly agree. This scoring with the mean and above was considered to have awareness about KS importance and the value below mean score considered as not to have awareness about KS importance.

**Trust:** - Three closed ended questions with Likert scales were used. This scoring with the mean and above was considered to have trust on their coworker's knowledge and the value below mean score considered as not having trust on their coworkers knowledge.

**Willingness:** - Two closed ended questions with Likert scales were used. This scoring with the mean and above was considered as they are willing to share and to ask knowledge from their colleagues and the value below mean score considered as they are not willing to share and to ask knowledge from their colleagues.

**Intrinsic motivation:** - Two closed ended questions with Likert scales were used. This scoring with the mean and above was considered as they had intrinsic motivation to share their knowledge to others and the value below mean score considered as they have not intrinsic motivation to share their knowledge to others.

**Extrinsic motivation:** - Four closed ended questions with Likert scales were used. This scoring with the mean and above was considered as they get extrinsic motivation when they share their knowledge to others and the value below mean score considered as they did not get extrinsic motivation when they share their knowledge to others.

**Resource allocation:** - Four closed ended questions with Likert scales were used. This scoring with the mean and above was considered as there are different resources for knowledge sharing activities and the value below mean score considered as there is no different resources for knowledge sharing activities.

**Supportive leadership:** - Three closed ended questions with Likert scales were used. This scoring with the mean and above was considered as there is supportive leadership for knowledge sharing activities within their organizations and the value below mean score considered as there is no supportive leadership for knowledge sharing activities within their organizations.

**Knowledge sharing opportunities:** - Three closed ended questions with Likert scales were used. This scoring with the mean and above was considered as there is knowledge sharing opportunities for knowledge sharing activities within their organizations and the value below mean score considered as there is no knowledge sharing opportunities for knowledge sharing activities within their organizations.

**Communication channel:** - Four closed ended questions with Likert scales were used. This scoring with the mean and above was considered as they use communication channels for knowledge sharing activities and the value below mean score considered as they do not use communication channels for knowledge sharing activities.

### **3.13 Ethical Consideration**

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

During data collection, each respondent was informed about the purpose, scope and expected outcome of the research, and appropriate informed written consents were taken from the respondents. Anyone who was not willing to participate was excluded from the study; and during the interview, respondents who were interested to avoid specific questions or discontinue the interview were allowed to do so. In order to establish anonymous linkage, only the codes, not the names of the respondents, were registered on the questionnaires.

## **CHAPTER FOUR: RESULTS**

### **4.1. Results of quantitative study**

#### **4.1.1 Socio-demographic characteristics of the respondents**

A total of 306 questionnaires with a response rate of 96 % were found valid and included in the analysis for quantitative study. Among those respondents 116 (37.99%) were males and 190(62.1%) were females. Regarding age of the respondents, 213(69.6%) were between the age group of 21-30 and 72(23.5%) between 31-40. More than half of the respondents, 180 (58.7%) had first degree and above where as 126 (41.2%) respondents had diploma and below. Concerning the professional categories of the respondents, 193(63.1%) were nurses, 40 (13.1%) were medical doctors, 20 (6.2%) were laboratory technicians and technologists, 16(5.2%) were pharmacy technicians and the rest 22(7.3%) were sanitarians, health officers, x-ray-technicians, anesthetists, physiotherapists and health assistants.

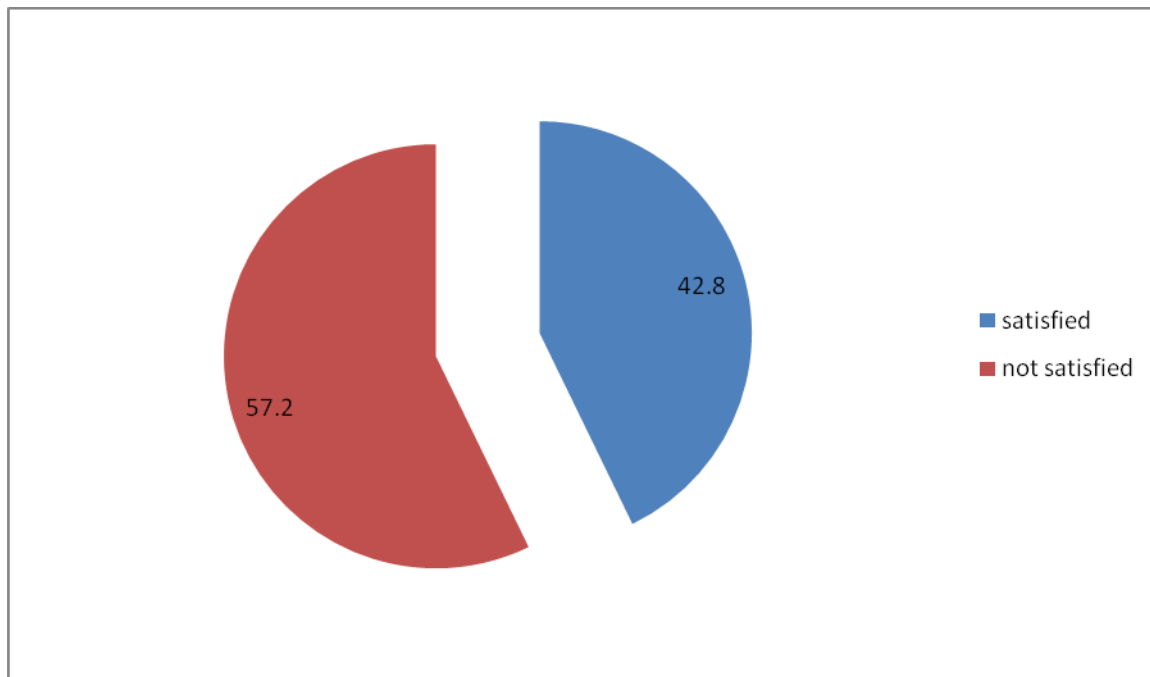
The majority 166(54.2%) respondents were working in their current profession or job title for less than 5 years. One hundred ninety eight (64.7%) respondents had salary above 1500, One third, 99(32.4%) respondents have salary between 1000-1499BIRR per month, whereas, 9(2.9%) of study participant had salary below 1000. (Table 1)

**Table: 1 socio demography characteristics of respondents in Hospitals under Addis Ababa health bureau, May 2011. (n=306)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Sex</b>		
Male	116	37.9
Female	190	62.1
<b>Age</b>		
21-30	213	69.6
31-40	72	23.5
41-50 yrs	17	5.6
51-60	4	1.3
<b>Educational level</b>		
Certificate	2	.7
Diploma	78	25.5
Advance diploma	46	15.0
First degree	124	40.5
Degree of doctor of medicine	39	12.7
Masters degree	1	.3
certificate of specialization	16	5.2
<b>Profession</b>		
Specialist	15	4.9
Medical doctor/general practitioner	40	13.1
Dentist	2	0.7
Health officer	5	1.6
Nurse	193	63.1
Pharmacist	16	5.2
Laboratory technician/technologist	20	6.5
Anesthetist	4	1.3
Physiotherapist	4	1.3
x-ray technician	3	1.0
Sanitarian	2	0.7
Health assistant	2	0.7
<b>Working experience</b>		
<=5 years	166	54.2
6-10 years	72	23.5
11-15 years	61	19.9
Above 16 years	7	2.3
<b>Current salary per month</b>		
up to BIRR 999	9	2.9
1000-1499	99	32.4
1500-1999	47	15.4
2000-2499	56	18.3
2500-3000	65	21.2
Above 3000	30	9.8

### 4.1.2 Job satisfaction

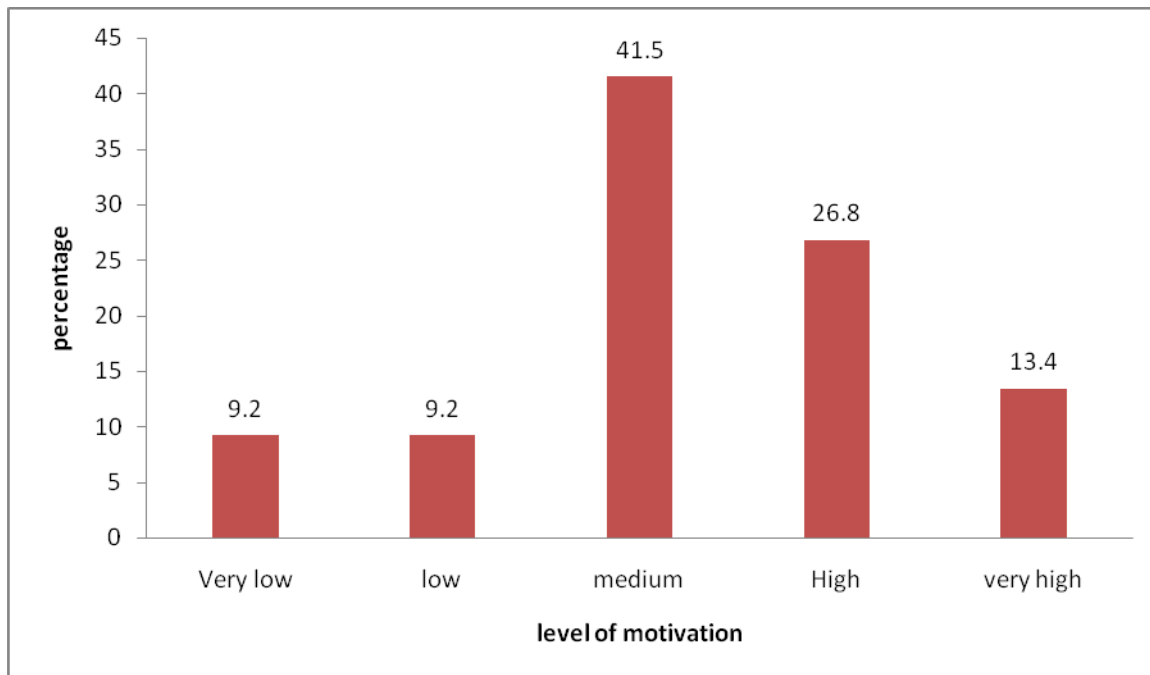
The result show that 175(57.2%) of the study participants reported that they were not satisfied with their current job (Figure.4). The cause of job dissatisfaction were lack of attractive salary (63.4%), inadequate opportunity for further education (62.9%) and lack of reward and recognition system for the work they did (46%). Among those 37.1% was due to both lack of attractive salary and inadequate opportunity for further education, 36% was due to lack of attractive salary and reward and recognition system for the work they did, whereas 29.1% were due to combination of lack of attractive salary, inadequate opportunity for further education and lack of reward and recognition system.



**Figure 4: Job satisfaction of health professionals in hospitals under Addis Ababa health bureau, 2011.**

### 4.1.3 Motivation

Respondents classified their level of motivation to wards knowledge sharing in to five: Very low, low, medium, high, and very high. Accordingly 127 (41.5%) study participants had medium motivation, 123(40.2%) respondents have high/very high motivation and the rest 56(18.4%) respondents had low/very low motivation to share their knowledge to their hospital staff. (Figure .5)



**Figure. 5 Level of motivation of the respondents in hospitals under Addis Ababa health bureau, 2011.**

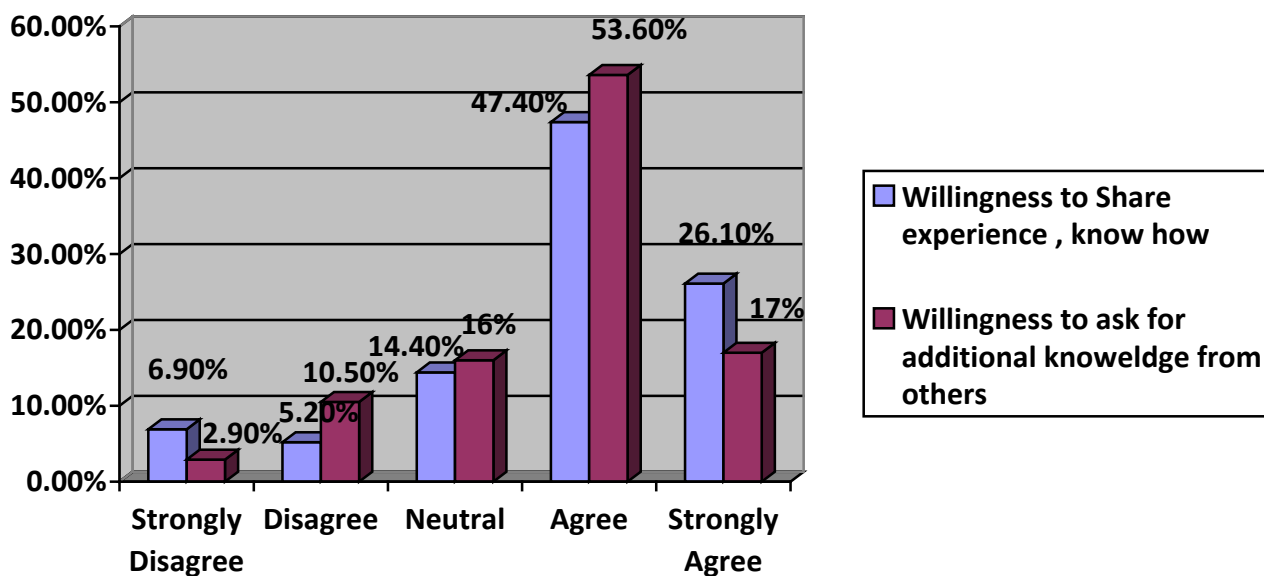
#### **4.1.3.1. Presence of Motivational scheme and health professionals' preference to motivational scheme for knowledge sharing**

Two hundred eleven (69%) health professionals responded that there is no motivational scheme in their hospital while 95(31%) of the respondents agreed on the presence of motivational scheme for knowledge sharing within their organization like acknowledgement of their contribution, reward and other.

As figure (5) shows most of the respondents had medium motivation to share their knowledge to others, so with the thinking that knowing their preference of motivational scheme will help to design appropriate motivational scheme that would help to improve their motivation towards knowledge sharing, so the respondents were asked for their preference of motivational scheme. As the result shows that half of the respondents 150(49%) prefer acknowledgement of their contribution at high level while 140 (45.8%) respondents prefer good working environment at high level as their motivating factor for knowledge sharing where as both salary increment and chance of promotion is the least preferred motivational schema for knowledge sharing .

#### **4.1.4 Willingness to share knowledge**

The finding shows that 225 (73.5%) respondents were willing to share their knowhow, experience, or skills to their colleagues. On the other hand 216 (70.6%) of the respondents were willing on asking colleagues to get additional information and knowledge, 49(16 %) were indifferent and 41 (13.4%) respondents were not willing to ask. Overall majority of the respondents 72.1% respondents are willing to share and to ask knowledge from their colleagues. (Figure 6).



**Figure 6. Employee willingness to share and ask knowledge from their hospital staff in hospitals under Addis Ababa Health bureau, 2011.**

#### **4.1.5. Knowledge sharing practices**

The result showed that almost half (50.3%) of the respondents share their knowledge among their hospital staff whereas (49.7%) of the respondents did not share their knowledge to their hospital staff. Those respondents who share their knowledge, most of their knowledge sources were workshops, trainings, guidelines and books.

#### **4.1.6. Knowledge sharing opportunity**

One hundred thirty two (43.2%) respondents disagreed/strongly disagreed on the presence of formal opportunity like trainings, seminars and workshop within the hospital for knowledge sharing whereas 51(16.7%) are indifferent. On the other hand 165 (53.9%) respondents disagreed/strongly disagreed on the presence of periodic meeting for knowledge sharing within their hospital whereas 65(21.2%) respondents are indifferent. Accordingly 174 (56.8%) respondents share their knowledge informally, whereas 95(31%) respondents do not share their

knowledge informally. Overall 42.7% respondents disagreed/strongly disagreed on the availability of formal and informal opportunity for knowledge sharing.

**Table .2: Presence of knowledge sharing opportunity in hospitals under Addis Ababa Health bureau, 2011. (n=306)**

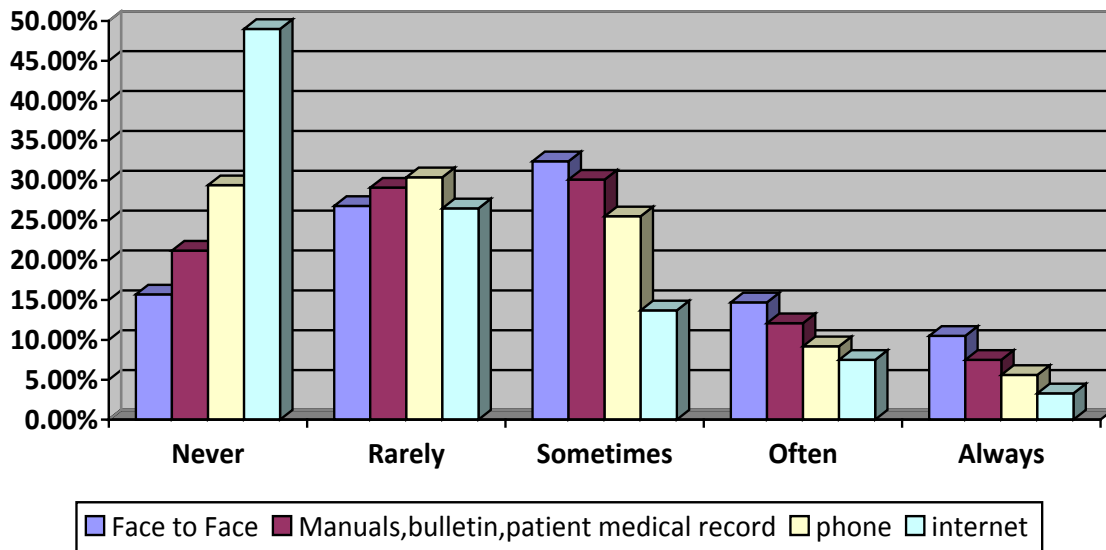
Knowledge Sharing opportunity	Frequency					
		S. disagree	Disagree	neutral	Agree	S. Agree
Formal opportunities like training program and workshop within the hospital for knowledge sharing	N	88	44	51	111	12
	%	28.8%	14.4%	16.7%	36.3	3.9%
Periodic meetings for knowledge sharing	N	75	90	65	66	10
	%	24.5%	29.4%	21.2%	21.6	3.3%
Sharing your knowledge informally (including water cooler chats)	N	80	15	37	158	16
	%	26.1%	4.9%	12.2%	51.6%	5.2%
Total score	N	243	149	153	335	38
	%	26.5%	16.2%	16.7	36.5%	4.1%

### 4.1.7. Knowledge sharing channel

As shown in Figure (7), 77(25.2%) of the respondents use face to face knowledge sharing channel frequently; 99(32.4%) of the respondents use sometimes; 82(26.8%) use this channel rarely, and 48(15.7%) never use this channel.

The second frequently used channel is manuals and patient medical records which are used by 60 (19.6%) of the respondents, 92(30.1%) of the respondents use this channel sometimes while 89(29.1%) rarely and 65(21.2%) never use this channel.

The third frequently used channel is phone which is used by 45(14.8%) of the respondents, 93(30.4%) use rarely, 90 (29.4%) never use this channel and 78 (25.5%) of the respondent use this channel sometimes. The least frequently used knowledge sharing channel is internet which is used by 33 (10.8%) of the respondents, 150(49%) of the respondents never use this channel, 81(26.5%) use rarely and 42(13.7%) of the respondents use this channel sometimes.



**Figure 7. Frequency of knowledge sharing using communication channels in hospitals under Addis Ababa Health bureau, 2011.**

#### **4.1.8. Documentation**

The finding of the result show that majority of health care professionals 234 (76.5 %) document their working practices where as 72 (23.5%) do not document their working practices on patient charts and log books.

#### **4.1.9. Factors affecting knowledge sharing**

##### **4.1.9.1. Individual dimension**

There are a number of factors related to individual dimension that encourage or discourage knowledge sharing. But for this study trust, awareness, fears of loss of personal competitiveness, level of motivation were considered.

##### **4.1.9.1.1 Trust**

Two hundred eleven (68.9%) respondents have trust on their coworkers knowledge, whereas 58(19%) are indifferent and 37(12.1%) respondents were not having trust on their coworkers knowledge.

On the other hand, 202(66%) respondents agreed/strongly agreed with getting help from their co-workers when they get difficulties at work, 60(19.6%) were in different and the rest 44(14.4%) respondents disagreed/strongly disagreed on getting help from their co-workers when they get difficulties at work. While 200 (65.4%) respondents agreed/strongly agreed with the statement that If I share knowledge with in my organization my colleagues will believe that I am very concerned about their welfare, 71 (23.2%) were neutral and the rest 35(11.4%) disagreed/strongly disagreed on this statement. overall majority 66.7 % of the respondents agree on the presence of trust among employees within their organization.

**Table 3 Employees trust within the hospitals under Addis Ababa Health bureau, 2011. (n=306)**

<b>Trust</b>	<b>Frequency</b>	<b>S. Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>S. Agree</b>
Trust knowledge of co-workers	N	8	29	58	139	72
	%	2.6%	9.5%	19%	45.4%	23.5%
My co-workers help me when I got difficulties at work	N	10	34	60	137	65
	%	3.3%	11.1%	19.6%	44.8%	21.2%
If I share knowledge with in my organization my colleagues will believe that I am very concerned about their welfare	N	9	26	71	140	60
	%	2.9%	8.5%	23.2%	45.8%	19.6%
Total score	N	27	89	189	416	197
	%	2.9%	9.7%	20.6%	45.3%	21.4%

#### 4.1.9.1.2 Awareness

The finding shows that 257 (84 %) respondents were aware of the importance of knowledge sharing in their daily works, whereas 30 (9.8 %) are indifferent and 19(6.2%) respondents did not have awareness on the importance of knowledge sharing in their daily works.

Two hundred fifty two (82.4%) respondents agreed/strongly agreed that knowledge sharing help to acquire new ideas, techniques and skills, where as 28(9.2%) are indifferent and 26(8.5%) disagreed/strongly disagreed on this aspect.

On the other hand 252 (82.4%) respondents agreed/strongly agreed with the statement that knowledge sharing would help me not to repeat the same mistake, where as 24(7.8 %) are indifferent and 30(9.8%) respondents were disagreed/strongly disagreed on this issue. Overall majority 82.9% of the respondents were aware of the importance of knowledge sharing.

**Table. 4: Employees Awareness under Addis Ababa Health bureau hospitals, 2011. n= 306**

Awareness	Frequency	S. Disagree	Disagree	Neutral	Agree	S. Agree
knowledge sharing is important in daily works	N %	9 2.9 %	10 3.3 %	30 9.8 %	126 41.2 %	131 42.8 %
knowledge sharing help to acquire new ideas, technologies, skills or techniques	N %	15 4.9 %	11 3.6 %	28 9.2 %	129 42.2 %	123 40.2 %
Knowledge sharing would help me not to repeat the same mistake	N %	13 4.2 %	17 5.6 %	24 7.8 %	112 36.6 %	140 45.8 %
Total score	N %	37 4%	38 4.2%	82 8.9%	367 40%	394 42.9%

#### 4.1.9.1.3 Fear of loss of personal competitiveness

As shown in table 5, 205(67%) respondents did not believe that sharing knowledge would reduce their personal competitiveness, where as 70(22.9%) respondents believe that sharing knowledge would reduce their personal competitiveness and 31(10.1%) were indifferent.

Two hundred thirty seven (77.5%) respondents disagreed/strongly disagreed on the statement that sharing knowledge would waste time or increase work load where as 43(14%) respondents agreed/strongly agreed and 26(8.5%) were indifferent to this point.

While 138(45.1%) respondents disagreed/strongly disagreed on the idea of exclusive ownership of knowledge would make me outstanding, 108(35.3%) respondents agreed/strongly agreed and the rest 60(19.6%) indifferent to this issue. In general majority, 63.2% of the respondents did not have fear of loss of personal competitiveness as a result of knowledge sharing.

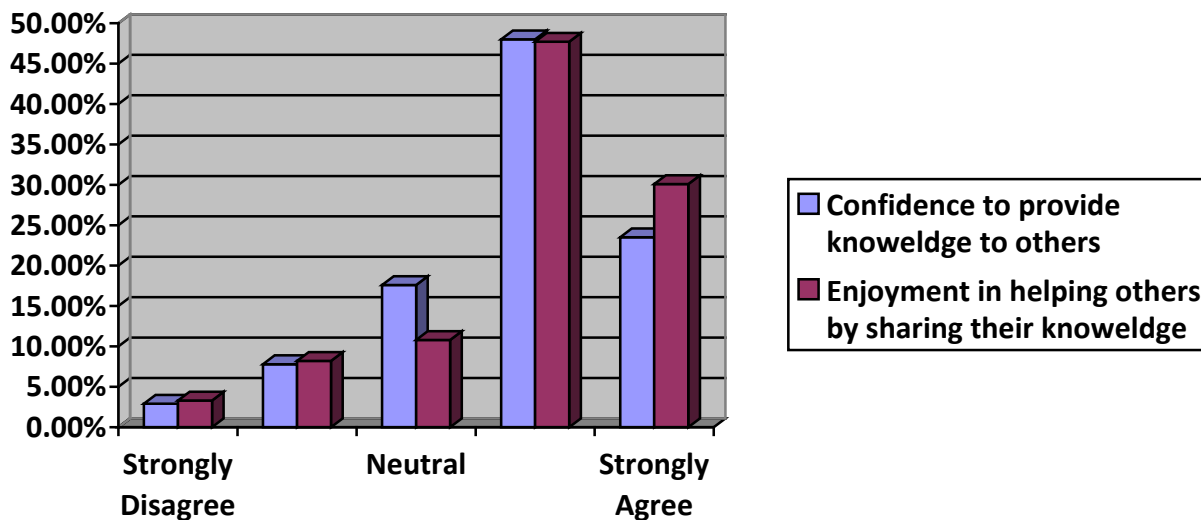
**Table 5 Employees Fear of loss of personal competitiveness within selected hospitals in Addis Ababa, 2011. (n=306)**

Fear of loss of personal competitiveness	Frequency	S. Disagree	Disagree	Neutral	Agree	S. Agree
Sharing knowledge would reduce my personal competitiveness	N	98	107	31	44	26
	%	32 %	35 %	10.1 %	14.4%	8.5 %
Sharing knowledge would waste my time or increase my work load	N	107	130	26	27	16
	%	35 %	42.5 %	8.5 %	8.8 %	5.2 %
Exclusive ownership of knowledge would make me outstanding	N	63	75	60	56	52
	%	20.6 %	24.5 %	19.6 %	18.3%	17 %
Total score	N	268	312	117	127	94
	%	29.2%	34%	12.7%	13.8%	10.2%

#### 4.1.9.1.4 Intrinsic motivation

Two hundred nineteen (71.5 %) respondents have confidence in their ability to provide knowledge to others within the organization. Whereas 33(10.7 %) respondents did not have and 54(17.6%) were neutral for their confidence to provide knowledge to others.

On the other hand 238(77.8 %) respondents enjoy in helping colleagues by sharing knowledge, where as 33(10.8%) were indifferent and 35(11.5%) respondents did not enjoy it. Overall the majority 74.7% of the respondents had intrinsic motivation to share their knowledge to others.



**Figure 8 Intrinsic motivations of health care professionals in hospitals under Addis Ababa health bureau, May 2011.**

#### **4.1.9.1.5 Extrinsic motivation**

As the result shows that 49(16%) respondents share their knowledge frequently to show their skill to others; whereas 77(25.2%) never share their knowledge to show their skill to others.

Sixty eight (22.3%) respondents get admiration frequently when they share their skill and knowledge to others but 63(20.6%) respondents never get admiration.

While 42(13.7%) respondents share their knowledge frequently to get more chance of promotion, 111(36.3%) respondents never share their knowledge to get more chance of promotion.

One hundred sixty five (53.9%) respondents never get appropriate financial value when they share their knowledge to others, while 29(9.5%) respondents get appropriate financial value frequently when they transfer their knowledge to others. Overall only 15.4% of the respondents frequently get extrinsic motivation to share their knowledge to others.

**Table 6 Extrinsic motivation of health care professionals in hospitals under Addis Ababa health bureau, 2011. (n=306)**

<b>Extrinsic motivation</b>	<b>Frequency</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
Sharing knowledge to get more chance to show your skill to others	N %	77 25.2%	86 28.1%	94 30.7%	26 8.5%	23 7.5%
Getting admiration for your job when u teach or share your skills	N %	63 20.6%	96 31.4%	79 25.8%	36 11.8%	32 10.5%
Sharing your knowledge to get more chance of promotion	N %	111 36.3%	89 29.1%	64 20.9%	26 8.5%	16 5.2%
Receiving appropriate financial value when you transfer your know how to others	N %	165 53.9%	66 21.6%	46 15%	22 7.2%	7 2.3%
Total score	N %	16 34%	337 27.5%	283 23.1%	110 9%	78 6.4%

## 4.1.9.2 Organizational dimension

### 4.1.9.2.1- Supportive leadership

The finding shows that 201 (65.6 %) respondents disagreed/strongly disagreed on the presence of manager's encouragement of knowledge sharing within the organization, whereas 85(27.8%) respondents agreed/strongly agreed and 20(6.5%) were indifferent.

Two hundred six (67.4%) of the respondents reported that there is no managerial encouragement of employees to suggest ideas for new opportunities while 85(27.7%) agreed/strongly agreed and the rest 15 (4.9%) respondents were indifferent.

One hundred seventy three (56.5%) respondents disagreed/strongly disagreed on the presence of consultation from managers to team members to make decision and solve problem within the hospitals while 97 (31.7%) respondents agreed/strongly agreed and 36 (11.8%) were neutral. Overall 63.2% of the respondents disagreed/strongly disagreed on the presence of supportive leadership in their hospitals.

**Table 7 Managers encouragement for knowledge sharing in hospitals under Addis Ababa health bureau, 2011. (n=306)**

<b>Supportive leadership</b>	<b>Frequency</b>	<b>S.Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>S. Agree</b>
Managers Encourages knowledge sharing with colleagues within the organization	N %	95 31 %	106 34.6 %	20 6.5 %	59 19.3 %	26 8.5 %
Encourages employees to suggest ideas for new opportunities	N %	88 28.8 %	118 38.6 %	15 4.9 %	65 21.2 %	20 6.5 %
Consults team members to make decision and solve problem within the organization	N %	72 23.5 %	101 33 %	36 11.8 %	70 22.9 %	27 8.8 %
<b>Total score</b>	N %	255 27.8%	325 35.4%	71 7.7%	194 21.1%	73 7.9%

#### 4.1.9.2.2 Openness

As shown in the table below 197(64.3%) respondents reported that there is open communication among colleagues on job related issues, whereas 66(21.5%) respondents disagreed/strongly disagreed and 43(14.1%) were neutral.

One hundred thirty four (43.8 %) respondents agreed/strongly agreed on their leaders communication openness, while 74(24.2%) respondents were indifferent, 98(32.1%) disagreed/strongly disagreed on their leaders communication openness. Overall 54% of the respondents agreed/strongly agreed on the presence of open communication within their organization.

**Table 8 Employees Openness for knowledge sharing in hospitals under Addis Ababa health bureau, 2011. (n=306)**

<b>Openness</b>	<b>Frequency</b>	<b>S. Disagree</b>	<b>Disagree</b>	<b>neutral</b>	<b>Agree</b>	<b>S. Agree</b>
Communication among my colleagues is very open on job related issue	N 197	16	50	43	143	54
	%	5.2 %	16.3 %	14.1 %	46.7 %	17.6%
my superior openly communicates the purpose of the organization rules to team members	N 134	28	70	74	108	26
	%	9.2 %	22.9 %	24.2 %	35.3 %	8.5 %
<b>Total</b>	N 306	44	120	117	251	80
	%	7.2%	19.6%	19.2%	41%	13%

#### **4.1.9.2.3 Resource allocation**

As shown in table 9,170(55.5%) respondents reported that there is no specific budget dedicated to acquire, and share knowledge in the hospital where as 70(22.9%) are indifferent and 66(21.6%) respondents agreed/strongly agreed on the availability.

One hundred sixty eight (54.9 %) respondents reported that there is no periodic plan to acquire and share knowledge, whereas 63(20.6 %) respondents were indifferent and 75(24.5%) respondents agreed/strongly agreed on the availability of periodic plan for knowledge sharing.

While 203(66.3%) respondents reported that there is no information communication technology infrastructures for knowledge sharing, 65(21.3%) respondents agreed/strongly agreed and 38(12.4%) respondents were indifferent.

One hundred eighty five (60.4%) respondents disagreed/strongly disagreed, 74(24.1%) agreed/strongly agreed and 47(15.4 %) respondents were indifferent on the availability of enough location or hall within the organization for knowledge sharing. In general more than half, 59.3% of the respondents disagree/strongly disagree on the availability of different resources within their hospitals for knowledge sharing.

**Table 9 Resource allocation for knowledge sharing in hospitals under Addis Ababa health bureau, 2011.n= (306)**

<b>Resource allocation</b>	<b>Frequency</b>	<b>S. Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>S. Agree</b>
Specific budget dedicated to acquire & share knowledge	N %	83 27.1 %	87 28.4 %	70 22.9 %	43 14.1 %	23 7.5 %
Periodic plan to acquire and share knowledge in the hospital	N %	65 21.2 %	103 33.7 %	63 20.6 %	51 16.7 %	24 7.8 %
Information and communication technology infrastructure (internet, intranet) for knowledge sharing	N %	112 36.6 %	91 29.7 %	38 12.4 %	44 14.4 %	21 6.9 %
Enough location (hall) within the office for knowledge sharing	N %	83 27.1 %	102 33.3 %	47 15.4 %	54 17.6 %	20 6.5 %
<b>Total score</b>	N %	343 28%	383 31.3%	218 17.8%	192 15.7%	88 7.2%

### 4.1.9.3. Technological dimension

One hundred sixty-six (54.2 %) respondents reported that there is lack of technical support and immediate maintenance of integrated IT systems within the organization, in contrast to this 90(29.4%) respondents reported that there is no lack of technical support and immediate maintenance, the rest 50(16.3%) were in different.

One hundred ninety one(62.4%) respondents reported that there is lack of training regarding employee familiarization of new IT systems within the organization whereas 52(17%) are indifferent, and 63(20.6 %) respondents disagreed on this point. In general more than half, (58.3%) responded that there is lack of access to familiarization and training to new it systems and technical support regarding information communication technology in the hospitals.

**Table 10 Information and Communication Technology usage among health care professionals in Hospitals under Addis Ababa health bureau, 2011 (n=306)**

<b>ICT usage</b>	<b>Frequency</b>	<b>S. Disagree</b>	<b>Disagree</b>	<b>neutral</b>	<b>Agree</b>	<b>S. Agree</b>
Lack of technical support & immediate maintenance of integrated IT systems	N	38	52	50	105	61
	%	12.4 %	17%	16.3	34.3 %	19.9 %
Lack of training regarding employee familiarization of new IT systems and processes	N	28	35	52	112	79
	%	9.2 %	11.4 %	17 %	36.6 %	25.8 %
<b>Total score</b>	N	66	87	102	217	140
	%	10.8%	14.2%	16.7%	35.5%	22.8%

#### **4.1.10. Bivariate and multivariate analysis on determinants of knowledge sharing practices of health professionals**

##### **Bivariate Analysis**

Crude analysis of socio demographic variables like sex, age, educational level, profession, work experience and salary did not show statistical association with knowledge sharing on binary logistic regression (Table 11) where as Bivariate logistic regression analysis for the selected independent variable revealed that Job satisfaction, level of motivation, trust, supportive leadership, resource allocation, knowledge sharing opportunity, extrinsic motivation and communication channel were significantly associated with knowledge sharing practices of health care professionals ( $p < 0.05$ ). On the other hand Awareness, intrinsic motivation, willingness to share and technological dimension were not significantly associated with knowledge sharing practices of health care professionals (Table-12 a & b).

##### **Multivariate Analysis**

A multivariate analysis involving all associated variables was also performed to identify independent predictors of knowledge sharing practices of health professionals. Job satisfaction, level of motivation, knowledge sharing opportunity, extrinsic motivation, and communication channel were found to be independent predictors of knowledge sharing practices. I.e. The odds of knowledge sharing practices of health professionals 1.73 times more likely in health professionals who were satisfied with their current Job than who were not satisfied, with AOR (95% CI): 1.73[1.00-2.98], Health professionals with high level of motivation 3.38 times more likely to practice knowledge sharing than who had low level of motivation with AOR (95% CI): 3.38[1.04-11.00]. Those professionals who had knowledge sharing opportunity 2.89 times more likely to practice knowledge sharing than who have not knowledge sharing opportunity with AOR (95% CI): 2.89 [1.70-4.90]. The odds of knowledge sharing practice of health professionals 3.05 times more likely in health professionals who had extrinsic motivation than who had not, with AOR (95%CI: 3.05[1.71-5.45] and Those professionals who use communication channels 1.75 more likely to practice knowledge sharing than who had not use communication channel with AOR (95%) CI: 1.75 (1.02-2.99) (Table 12 a & b).

**Table 11 Association between socio demographic variable and knowledge sharing in Hospitals under Addis Ababa health bureau, 2011 (n=306)**

Variables	Knowledge sharing practice		COR[95%CI]
	Yes N[%]	No N[%]	
<b>Sex</b>			
Male	61[52.6]	55[47.4]	1.16[0.73-1.84]
Female	93[48.9]	97[51.1]	1
<b>Age</b>			
21-30	112[52.6]	101[47.4]	1
31-40	30[41.7]	42[58.3]	0.64[0.38-1.1]
>40	12[57.1]	9[42.9]	1.20[0.49-2.97]
<b>Educational level</b>			
Diploma	38[47.5]	42[52.5]	1
Advance Diploma	29[63]	17[37]	1.89[0.90-3.96]
First Degree	55[44]	70[56]	0.87[0.50-1.53]
Degree of Doctor of Medicine	21[53.8]	18[46.2]	1.29[0.60-2.78]
Specialization	11[68.8]	5[31.2]	2.43[0.77-7.64]
<b>Profession</b>			
physician	32[58.2]	23 [41.8]	1
Others	122[48.6]	129[51.4]	0.68 [0.64-1.80]
<b>Work experience</b>			
< 5 years	83[50.0%]	83[50.0%	1
6-10 years	35[48.6%]	37[51.4%]	0.946[0.54-1.65]
11-15 years	32[52.5%]	29[47.5%]	1.10[0.61-1.99]
>15 years	4[57.1%]	3[42.9%]	1.33[0.29-6.14]
<b>Current salary</b>			
Up to birr 999	6[66.7%]	3[33.3%]	1
1000-1499	53[53.5%]	46[46.5%]	0.57[0.136-2.43]
1500-1999	21[44.7%]	26[55.3%]	0.40[0.09-1.81]
2000-2499	26[46.4%]	30[53.6%]	0.43[0.10-1.91]
2500-3000	27[41.5%]	38[58.5%]	0.36[0.08-1.58]
Above 3000	21[70.0%]	9[30.0%]	1.12[0.24-5.73]

**Table 12.a Association between selected variable and knowledge sharing in hospitals under Addis Ababa health bureau, 2011**

Variables	Knowledge sharing		COR[95%CI]	AOR[95%CI]
	Yes N[%]	No N[%]		
<b>Job satisfaction</b>				
Yes	81[61.8%]	50[38.2%]	<b>2.26[1.42-3.60]**</b>	<b>1.73[1.00-2.98]*</b>
No	73[41.7%]	102[58.3%]	<b>1</b>	<b>1</b>
<b>Level of motivation</b>				
Very low	10[35.7%]	18[64.3%]	<b>1</b>	<b>1</b>
Low	11[39.3%]	17[60.7%]	1.17[0.394-3.44]	0.79[.21-3.09]
Medium	60[47.2%]	67[52.8%]	1.612[0.69-3.76]	1.49[0.53-4.19]
High	48[58.5%]	34[41.5%]	<b>2.541[1.04-6.18]*</b>	2.12[0.70-6.46]
very high	25[61.0%]	16[39.0%]	<b>2.812[1.04-7.61]*</b>	<b>3.38[1.04-11.00]*</b>
<b>Trust</b>				
Yes	91[58.3%]	65[41.7%]	<b>1.93[1.23-3.05]**</b>	1.521[0.89-2.59]
No	63[42.0%]	87[58.0%]	<b>1</b>	<b>1</b>
<b>Awareness</b>				
Yes	86[53.4%]	75[46.6%]	1.30[0.83-2.04]	1.27[0.73-2.19]
No	68[46.9%]	77[53.1%]	<b>1</b>	<b>1</b>
<b>supportive leadership</b>				
Yes	77[63.6%]	44[36.4%]	<b>2.46[1.53-3.94]**</b>	1.47[0.83-2.61]
No	77[41.6%]	108[58.4%]	<b>1</b>	<b>1</b>
<b>Intrinsic motivation</b>				
Yes	110[52.1%]	108[47.9%]	1.22[0.79-2.15]	1.10[0.57-2.11]
No	40[45.5%]	48[54.5%]	<b>1</b>	<b>1</b>
<b>Resource allocation</b>				
Yes	64[53.8%]	55[46.2%]	<b>1.67[1.03-2.69]*</b>	1.30[0.76-2.21]
No	65[41.1%]	93[58.9%]	<b>1</b>	<b>1</b>
<b>Lack of Technological</b>				
Yes	91[49.2%]	94[50.8%]	<b>1</b>	<b>1</b>
No	63[52.1%]	58[47.9%]	1.12[0.71-1.78]	1.34[0.76-2.37]
<b>Willingness to share knowledge</b>				
Yes	99[50.5]	97[49.5]	1.02[0.64-1.63]	1.24[0.66-2.32]
No	55[50.0]	55[50.0]	<b>1</b>	<b>1</b>

**Table 12.b Association between selected variable and knowledge sharing in hospitals under Addis Ababa health bureau, 2011.**

<b>Knowledge sharing opportunity</b>				
<b>Yes</b>	101[67.3%]	49[32.7%]	<b>4.00[2.49-6.44]**</b>	<b>2.89[1.70-4.90]**</b>
<b>No</b>	53[34.0%]	103[66.0%]	<b>1</b>	<b>1</b>
<b>Extrinsic motivation</b>				
<b>Yes</b>	100[64.1%]	56[35.9%]	<b>3.18[1.99-5.07]**</b>	<b>1.75[1.02-2.99]*</b>
<b>No</b>	54[36.0%]	96[64.0%]	<b>1</b>	<b>1</b>
<b>Communication channel</b>				
<b>Yes</b>	97[72.9%]	36[27.1%]	<b>5.48[3.31-8.94]**</b>	<b>3.05[1.71-5.45]**</b>
<b>No</b>	57[33.1%]	116[66.9%]	<b>1</b>	<b>1</b>

\*p-value <0.05

\*\*significant association at p-value <0.01

## **4.2 Result of qualitative study**

### **Key Informant in-depth interview**

A total of 10 key informants, drawn from department heads of laboratory, pharmacy, medical ward and opd, pediatrics ward&opd, surgical ward, labour ward, maternal and child health unit were involved in the in-depth interview.

### **General understanding of knowledge sharing and knowledge sharing culture within the organization**

Responding to this issue, majority of the respondents stated that knowledge sharing is the sharing of knowledge gained from experience and training to other people. They also stated the existence of is poor knowledge sharing culture in their organization.

### **Main ways of sharing knowledge within the hospitals**

During the interview some respondent indicate the opportunities that the staff gain recent medical knowledge are through training conducted by other organizations, and rarely some bulletins prepared and send from other nongovernmental organizations. And in the hospital morning session and ward rounds are good opportunities for sharing knowledge between the health professionals about the cases but morning sessions mostly attended by physicians only. However as most of the respondents say most of the time there is informal way of knowledge sharing, these means that when somebody wants to know about something, he or she would ask someone else for it and they get what they want to know.

### **The value and culture of knowledge sharing at your hospital**

Most of the informants said that Knowledge sharing depends on the character of individuals. There are individuals in our hospital with positive attitude for knowledge sharing and who ask other people with more experience to get additional knowledge. They do it even if they are highly qualified.

One informant said that:-

*“There are individuals who do not want to ask for knowledge even if they do not know the thing involved. Because of that problem, they operate machines wrongly and that damages properties”.*

The key Informants were also asked about the work place settings with regard to knowledge sharing. Some of them said that there is a good work place setting for knowledge sharing but others said that their work place is not conducive for knowledge sharing because of its too narrow space, especially so in the laboratory department.

### **Support of senior managers for knowledge sharing in the hospitals**

The respondents were also asked the question “Do you view the sharing of knowledge as actively promoted and supported by senior management in the hospital? All except one informant gave the same answer and that is: “There is no support from the management side to encourage knowledge sharing”. But one of the pharmacy department heads said that:

*“First there is no interest and initiative for knowledge sharing among employees. If there were interest of knowledge sharing, the management and our superiors would support us”.*

### **Existing challenges within the hospitals to implement knowledge sharing**

The key informants were also asked to answer the question “What are the major existing challenges in implementing efficient knowledge sharing within the hospitals? Most of them gave the same answer that lack of individual interest is one of the key challenges in implementing knowledge sharing. Most of the respondents report that the lack of individual interest is due to the absence of support from their superiors and motivating factors.

They have also emphasized lack of knowledge sharing sessions like morning meeting among the nurses in contrast to the physicians and this has hampered the effective transfer of knowledge.

**Measures the hospital or department should take to improve the sharing of knowledge /experience among staffs**

Finally, all the key personnel were asked about what measures the hospital and each department of the hospital should take to improve knowledge sharing within the organization.

- ✓ All of them responded that there must be awareness creation among employees about the importance of knowledge sharing.
- ✓ They further said that there must be motivating factors for health workers like presence of motivational schema such as good working environment, acknowledgement of employee's contribution.
- ✓ Most of them said that the availability and accessibility of different facilities like computers, internet, specific and adequate locations/places for sharing knowledge and research findings is necessary. Journals and important books must be available in the hospital for efficient knowledge sharing to occur within the institution.
- ✓ Most of them also said that there must be a formal way of knowledge sharing like workshops and community of practice for efficient knowledge sharing to exist.

### 4.3 DISSCUSSION

This institution based study has attempted to assess the knowledge sharing practice of health care professionals and to identify factors affecting the knowledge sharing practices of health professionals in hospitals under Addis Ababa health bureau, Addis Ababa.

Knowledge sharing is a human act and is considered critical to organizations (27). In organizations, the biggest value of knowledge that can be achieved is when it is shared because it can help to increase job performance and facilitate new knowledge creation (28). Knowledge sharing can also increase intellectual capital, change individual competitiveness, change organizational competitiveness and reduce cost (29). This study show that (50.3%) of health professionals share their knowledge with their colleagues within the organization this is higher than in the study conducted in Bahirdar which is (82.3%) of the respondents are not frequently engaged in knowledge sharing activity this may be due to difference among communication openness among health professionals (11).

Since knowledge is one of the most important strategic resources in any organization. An organization should investigate ways to increase its use of knowledge that it already possesses. One step towards realizing this goal is to identify factors that encourage or discourage knowledge sharing in organizations. Once the factors are identified managers might be able to implement strategies to achieve organizational success through better knowledge sharing. As Riege (36) identified three dozens of factors affecting knowledge sharing and categorized them into three factors: individual, organizational and technological. From the individual factors trust, fear of loss of personal competitiveness, awareness and intrinsic and extrinsic motivational factors were considered in this study. Among this trust is one factor which is defined as the degree to which an employee believes that sharing knowledge will benefit them and they will not be exploited by any party in the organization (52).

For effective knowledge sharing to occur in both strong-tie and weak-tie relationships as long as competence- and benevolence-based trust exists between the two parties. In this study most of the respondents (66.7%) of the respondents agreed on the presence of trust among coworkers which is slightly higher than result of study conducted in Bahirdar hospital in which 59% of the respondents have mutual trust among themselves (11). This difference is may be due to difference in sample size.

Trust showed significant association to knowledge sharing practice of health care professionals in crude analysis but did not show association after adjusting for other variables. This is in contrast with the study conducted in Malaysian public agencies which showed strong correlation with knowledge sharing (52). This may be difference in the study area and population.

The other important factor which determines the knowledge sharing activity is awareness. Awareness at all levels of employees is the main component of successful implementation of knowledge management programme. Employees including the top management should be aware of the importance of knowledge sharing to create knowledge sharing culture (52). The result of this study showed that (82.9%) of the respondents are aware of the importance of knowledge sharing in their daily works which is consistent with the study conducted in Bahirdar in which 88.7% of the respondents were reported to be aware of the importance of knowledge sharing in their daily works (11).

The other individual factor is fear of loss of personal competitiveness. One of the reasons for reluctance to share knowledge is information hoarding 'knowledge is power, why share it' (34) but the result of the study showed that majority (63.2%) of the respondents have no fear of loss of personal competitiveness because most (82.9%) of health professionals are aware of the importance of knowledge sharing.

The other factor that affect the knowledge sharing practice of health care professionals was job satisfaction, in this study the result showed that majority of the respondents (57.2%) are not satisfied with their current job which is lower than with a study done in Bahirdar in which 73.7% of health professionals were not satisfied.

Multivariate analysis showed that job satisfaction is an independent predictor of knowledge sharing practices of health care professionals but the study conducted in Bahirdar showed that job satisfaction was not an independent predictor of knowledge sharing this may be due to sample size in this study area were greater than the comparative study area(11).

Motivation has been identified as a key determinant of general behavior; individuals need to be motivated to spend time and effort in participating in the knowledge sharing activity (15). This study showed that majority 41.5% of the respondents had medium motivation to share their

knowledge to their hospital staff and in Multivariate analysis high and very high level motivation is the independent predictor of knowledge sharing practice in health care professionals.

Accordingly majority of respondents 74.7% had intrinsic motivation to knowledge sharing. In the multivariate analysis extrinsic motivation was an independent predictor of knowledge sharing practice where as intrinsic motivation did not show statistical association with knowledge sharing. This is inconsistent with other studies done in Taiwan to examine the role of both extrinsic and intrinsic motivators in explaining employee knowledge sharing intention the result showed that intrinsic motivation were significantly associated in knowledge sharing intention where as extrinsic motivators were not significantly associated with knowledge sharing intention of employees (45). This could be due to study participant difference and analytical tool difference.

At the organizational factors supportive leadership, openness, resource allocation was used in this study. It is clear that employers must create an organizational culture that is conducive to the pre-requisites necessary to ensure a willingness to share knowledge.

This study showed that majority (63.2%) of respondents think that there is no supportive leadership in their organization for knowledge sharing which is supported by qualitative finding as most of the respondents said that knowledge sharing is not encouraged and supported by managers. The other factor is resource allocation, providing an appropriate infrastructure and sufficient resources to facilitate knowledge sharing practices is essential to successful knowledge management program. This study showed that more than half, 59.3% of the respondents disagree on the availability of resources like specific budget, periodic plan, enough hall, ICT infrastructures for knowledge sharing and this result is closely similar with the study conducted at bahirdar Feleghiwot referral hospital where 53% of the respondents consider that the hospital are not assigning enough resources to facilitate knowledge sharing (11).

The presence of 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. The study result showed that 56.8% of the respondents share their knowledge informally and there is lack of both formal and informal knowledge sharing opportunity in general. This is also supported by the qualitative study as most of the informants said that most of the time they share their knowledge informally. In multivariate analysis knowledge sharing opportunity was an independent predictor of knowledge sharing which is consistent with the study conducted in Bahirdar (11).

The other factor which influences knowledge sharing activity is information technology dimension. There are many ways to perform knowledge sharing. People can share knowledge in the form of documents, or through discussions which involve conversations and interactions (49).

IT can be used to facilitate each of these knowledge sharing activities, Different kinds of technologies exist to support knowledge sharing; it need not be a complicated and state-of-the art technology, but it should have the capabilities to allow collaboration and the exchanging of knowledge (49).

In this study health professionals use different communication channels; internet used was the least among the channels (10.8%). This is in contrast to studies done in Newzeland health care where the use of internet to access documents reaches 78% (49). The gross difference can be explained by the difference in the countries technology use and wealth as a whole.

Use of communication channel is an independent predictor of knowledge sharing practice which is similar with the study done in Bahardar in which communication channel was an independent predictor of knowledge sharing (11).

## **4.4 Strengths and Limitations of the study**

### **Strengths**

- Both qualitative and quantitative data were collected so that an issue missed by one method could be picked by the other
- This study is probably among a few studies of its kind in Ethiopia as to the knowledge of the principal investigator, which is believed to pave the way to other related researches.
- This study had 96% response rate for the quantitative study which is high response rate.

### **Limitations**

- The fact that the questionnaires are self administered may affect the quality of the data
- Lack of similar published studies especially in Ethiopia made the discussion less comprehensive.
- For time and logistic reasons the study was conducted only in public hospitals under Addis Ababa health bureau

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATION**

### **5.1 CONCLUSIONS**

- Health professionals were aware of the importance of knowledge sharing and willing to share their knowledge but only half of health professionals were engaged on active knowledge sharing practice.
- A significant number of health professionals were not satisfied with their current job and the causes of dissatisfaction were lack of attractive salary, lack of recognition and reward system for the work they did and inadequate opportunity for further education.
- Majority of participants reported on the absence of motivational schema in their health Institution. They prefer acknowledgement of their contribution followed by good working environment as motivational scheme.
- Face to Face was found to be the most frequently used means of communication channel for knowledge sharing and the least one was Internet.
- The factors that were an independent predictors of knowledge sharing includes job satisfaction, high level of motivation, extrinsic motivation, use of communication channel, and the presence of knowledge sharing opportunity. These indicate that the presence of these factors motivates health professionals to share their knowledge, whereas their absence hinders health professional's knowledge sharing practice.
- There was little supportive leadership for knowledge sharing activity within the hospitals.
- There was a great lack of resource allocation like specific budget, periodic plan, and ICT infrastructure for knowledge sharing activity.
- Health professionals do not seem to have fear of loss of personal competitiveness as a result of knowledge sharing.
- In all of the hospitals most of the time their knowledge sharing was informal and there was a great lack of formal knowledge sharing opportunities like periodic meeting, training and workshops.

## **5.2 RECOMMENDATIONS**

Based on the findings and the objective of the study the following specific recommendations are made:

### **General**

- There should be mechanism for knowledge sharing like preparing knowledge sharing opportunity as periodic meeting, training, and workshops at department, health bureau and hospital level
- There should be motivational scheme to motivate employees to improve their knowledge sharing practice such as good working environment, acknowledgement of their contributions, and reward within the hospital, department and at health bureau.

### **To health care providers**

- Health professionals should use other communication channels like internet, phone in addition to face to face and patient medical records to improve their knowledge sharing practice.

### **For health bureau**

- There should be supportive leadership to encourage knowledge sharing activity in both health bureau level and within the hospitals.
- The health bureau should provide resources to hospitals such as specific budget, periodic plan and ICT infrastructure like providing internet access to facilitate knowledge sharing.
- The health bureau should prepare knowledge sharing opportunity like formal training and workshops to employees.

### **Research**

Further research on other governmental and private hospitals and comparative study between governmental hospital and private hospital are strongly recommended.

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## Annex I-A: INFORMATION SHEET

### Good morning/good afternoon.

My name is \_\_\_\_\_. I came from Addis Ababa University; I am working for an investigator doing my thesis for the partial fulfillment of master's degree in health informatics. The purpose of this study is to have insight about the knowledge sharing practices of health professionals and to identify the factors that encourage and discourage knowledge sharing among health professionals.



I would like to ask you some questions related to the topic I mentioned above. I would like to assure you that all of your responses to our questions will be kept strictly confidential and will not be shown to other individuals throughout the study process. Participation in this survey is voluntary, and you can choose not to answer any individual question or all of the questions and withdraw during the survey. We look forward for your full participation as the answers you give on this form will help in better understanding of the situation of knowledge sharing practices and will help to design appropriate intervention programs to alleviate the knowledge sharing problems.

Your participation/ non-participation, or refusal to answer questions will have no effect now or in the future on services that you or any member of your family may receive from health service providers or any organization. We would be very thankful if you spend 20-30 minutes with us. If you have any uncertainty or question about the request you can contact the principal investigator or research and ethical committee of school of Public health, Addis Ababa University:

Principal investigator: cell phone: 0912157516 email: [tiru1993@gmail.com](mailto:tiru1993@gmail.com)

HI, AAU:

May I get your permission to continue? *Check box* (✓)

Yes  Go to the Consent form   
No  Stop 

**Thank you!!!**

## **ANNEX II-A: Consent form**

I the undersigned have been informed that this questionnaire is part of the study that assess the knowledge sharing practices of health professionals in hospitals of Addis Ababa Health Bureau. I have been told that the study will help in better understanding of the situation of knowledge sharing practices and to design appropriate intervention programs to alleviate the knowledge sharing problems for future which benefits all health professionals and health care organizations. In addition, I have been told about how the data collection is proceed. And also have been told about the time it took to complete the data collection i.e. 20-30 minutes. I clearly understand that my participation/ non-participation, or refusal to answer questions will have no effect now or in the future on services that I or any member of my family may receive from health service providers or any organization. At last, I am assured that confidentiality of my response is maintained. Therefore, I am consented to participate in the study by signing this form.

The Study participant's Signature \_\_\_\_\_

Date\_\_\_\_\_

## **Annex III: Self administered Questionnaire**

### **Structured questionnaires for the assessment of knowledge sharing practices among health professionals: the case of hospitals under Addis Ababa health bureau**

#### **Part 1: Demographic profile of the respondent**

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

1. Your gender?

**1. Male**

**2. Female**

2. Your age group?

**1. Less than 20 years**

**2. 21-30**

**3. 31-40 years**

**4. 41-50 years**

**5. 51-60**

**6. More than 60**

3. Your highest educational level?

**1. Specialist**

**2. Medical Doctor**

**3. Advance Diploma**

**4. First degree**

**5. Masters Degree**

**6. Doctorate Degree**

**7. Diploma**

**8. certificate**

4. Your Profession?
- |                     |                          |                    |
|---------------------|--------------------------|--------------------|
| 1. Medical doctor   | 2. Laboratory technician | 3. Physiotherapist |
| 4. Nurse            | 5. Pharmacist            | 6. Sanitarian      |
| 7. X-ray technician | 8. Anesthetist           | 9. Ophthalmologist |
| 10. Dentist         | 11. Other specify.....   |                    |
5. What is your working experience in health organization?
- |              |               |                |
|--------------|---------------|----------------|
| 1. ≤ 5 years | 2. 6-10 years | 3. 11-15 years |
| 4. >15 years |               |                |
6. What is your working department -----
7. What is your Current Salary (per month)?
- |                  |              |               |
|------------------|--------------|---------------|
| 1. Up to BR. 999 | 2. 1000-1499 | 3. 1500-1999  |
| 4. 2000-2499     | 5. 2500-3000 | 6. Above 3000 |
8. Are you satisfied with the current job?
- |        |        |
|--------|--------|
| 1. Yes | 2. No. |
|--------|--------|
9. If your answer for question number 8 is “No” which of the following is/are the cause of dissatisfaction (possible to choose more than one answer)?
1. In adequate /no opportunity for further education and training/
  2. Lack of attractive salary
  3. Lack of reward and recognition system for the work you did
  4. Other specify\_\_\_\_\_
10. How much do you feel motivated to transfer knowledge in the hospital?
- |             |        |           |         |              |
|-------------|--------|-----------|---------|--------------|
| 1. Very low | 2. Low | 3. Medium | 4. High | 5. Very high |
|-------------|--------|-----------|---------|--------------|
11. Is there motivational scheme in the hospital to motivate knowledge sharing practice?
- |        |       |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
12. Do you document working practice and procedure?
- |        |        |
|--------|--------|
| 1. Yes | 2. No. |
|--------|--------|

<b>SER. No</b>	<b><i>How important are the following incentives for you in order to improve your knowledge sharing attitude? Please encircle one answer only.</i></b>	
13	Good working environment	1. Very Low 2. Low 3. Medium 4. High 5. Very high
14	salary increment	1. Very Low 2. Low 3. Medium 4. High 5. Very high
15	Career development	1. Very Low 2. Low 3. Medium 4. High 5. Very high
16	Chance of promotion	1. Very Low 2. Low 3. Medium 4. High 5. Very high
17	Gaining status as expert	1. Very Low 2. Low 3. Medium 4. High 5. Very high
18	Acknowledgment of your contribution	1. Very Low 2. Low 3. Medium 4. High 5. Very high
19	I have full confidence in the skills of my co-workers	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
20	I trust knowledge of my co-workers.	1. Strongly disagree 2. Disagree 3. neutral

		4. Agree 5. Strongly Agree
21	If I got into difficulties at work, I know my co-workers would try and help me out	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
22	If I share knowledge with in my organization my colleagues will believe that I am very concerned about their welfare	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
23	I am aware of the importance of knowledge sharing in daily works	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
24	I believe that I would gain new ideas, technologies, skills or techniques as a result of sharing knowledge.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
25	Knowledge sharing would help me not to repeat the same mistake as happened to my colleague	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
26	My organization has a very up-to-date ICT infrastructure which helps knowledge sharing	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
27	In my organization, employees use knowledge networks such as ( email, intranet, internet) to communicate with colleagues	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
28	In my organization there is lack of technical support and immediate maintenance of integrated	1. Strongly disagree 2. Disagree

	IT systems which obstructs work routines and communication flows.	3. neutral 4. Agree 5. Strongly Agree
29	In my organization there is lack of training regarding employee familiarization of new IT systems and processes	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
30	When I share my knowledge with Colleagues, I believe that my future requests for Knowledge will be answered.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
31	I am confident in my ability to provide knowledge that others in my organization consider valuable.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
32	I enjoy helping colleagues by sharing my knowledge	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
33	There is a specific budget dedicated to acquire, and share knowledge in the hospital	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
34	There is periodic plan to acquire, organize and share knowledge in the hospital	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
35	There are information communication technology infrastructures (internet, intranet, etc) in the hospital that allow employee to share knowledge.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree

36	There are enough location (Hall) within the office where staff can socialize and exchange knowledge	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
37	Managers in our organization encourage knowledge sharing with colleagues	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
38	Managers in our organization encourage employees to suggest ideas for new opportunities	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
39	Managers in our organization consult team members to make decision and solve problem	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
40	Sharing knowledge would reduce my personal competitiveness.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
41	Sharing knowledge would waste my time or increase my work load	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
42	Exclusive ownership of knowledge would make me outstanding and important person in the organization	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
43	I am willing to explain my know-how, experience or skills to my colleagues.	1. Strongly disagree 2. Disagree 3. neutral

		4. Agree 5. Strongly Agree
44	If I need additional information and knowledge about how to perform the task, colleagues are likely to tell me about it.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
45	Communication among my colleagues is very open on job related issue.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
46	My superior openly explains the purpose of the company's policies, rules and expectations to team members.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
47	In your organization employees are co-operative and helpful when asked for some information or advice.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
48	In your organization Knowledge sharing seen as strength and knowledge hoarding as a weakness.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
49	There is good intra-team communication and sharing of knowledge in my organization.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree
50	In your organization Individuals are visibly rewarded for knowledge sharing and reuse.	1. Strongly disagree 2. Disagree 3. neutral 4. Agree 5. Strongly Agree

51	There is periodic meetings in which people working in different teams, department may participate.	<ol style="list-style-type: none"> <li>1. Strongly disagree</li> <li>2. Disagree</li> <li>3. neutral</li> <li>4. Agree</li> <li>5. Strongly Agree</li> </ol>
52	There are formal opportunities like training program and workshop within the hospital that allow employee to share knowledge.	<ol style="list-style-type: none"> <li>1. Strongly disagree</li> <li>2. Disagree</li> <li>3. neutral</li> <li>4. Agree</li> <li>5. Strongly Agree</li> </ol>
53	There is informal knowledge sharing practice within the hospital?	<ol style="list-style-type: none"> <li>1. Strongly disagree</li> <li>2. Disagree</li> <li>3. neutral</li> <li>4. Agree</li> <li>5. Strongly Agree</li> </ol>
54	How frequently do you share know-how with the hospital staff?	<ol style="list-style-type: none"> <li>1. Never</li> <li>2. Rarely</li> <li>3. sometimes</li> <li>4. Often</li> <li>5. Always</li> </ol>
55	How frequently do you share knowledge obtained from workshop and training to the hospital staff?	<ol style="list-style-type: none"> <li>1. Never</li> <li>2. Rarely</li> <li>3. sometimes</li> <li>4. Often</li> <li>5. Always</li> </ol>
56	How frequently do you share knowledge gained from guidelines, journals, and book to the hospital staffs?	<ol style="list-style-type: none"> <li>1. Never</li> <li>2. Rarely</li> <li>3. sometimes</li> <li>4. Often</li> <li>5. Always</li> </ol>
57	How frequently do you share education results, research findings with your colleagues in your hospital?	<ol style="list-style-type: none"> <li>1. Never</li> <li>2. Rarely</li> <li>3. sometimes</li> <li>4. Often</li> <li>5. Always</li> </ol>

58	How frequently do you use face to face communication to share knowledge with colleagues?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
59	How frequently do you use intranet and internet to share knowledge with colleagues?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
60	How frequently do you use phone to share knowledge with colleagues?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
61	How frequently do you use knowledge artifacts including education materials, bulletin boards, manuals, and patient medical record for knowledge sharing?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always

62	How frequently do employees communicate with each other teams or groups for sharing information and knowledge?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
63	How frequently can employees freely access to the majority of document, information and knowledge Within organization?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
64	How frequently do you receive appropriate financial value when you transfer your know-how to other colleagues?	1. Never 2. Rarely 3. sometimes

		4. Often 5. Always
65	How frequently do you share your knowledge, to get more chance of promotion?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
66	How frequently do People give admiration for your job when u teach or share your own skills?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always
67	How frequently do you share your knowledge, to get more chance to show your skills to the other colleagues?	1. Never 2. Rarely 3. sometimes 4. Often 5. Always

## **Annex IV. INTERVIEW GUIDE**

### **Interview guide for to assess knowledge sharing among health professionals:**

1. What is the term “knowledge sharing” to you?
2. How would you generally describe knowledge sharing culture at your hospital?
3. What are the main ways of sharing knowledge within the hospital/department?
4. Do you feel employees at the hospital value knowledge sharing? Do you find them  
Willing to share knowledge with fellow employees?
5. Do you view the sharing of knowledge as actively promoted and supported by senior  
Management in the hospital? Please explain how?
6. Does your hospital have a mechanism in place that allows the sharing of knowledge among  
the employees?
7. What are the existing challenges/problems in implementing efficient knowledge sharing (In  
terms of facilities, human resources communication channel, attitude, and skill of the staff,) and  
how influential is the challenges?
8. What measures the hospital or department should take to improve the sharing of knowledge  
/experience among staffs?

## Annex V: LIST OF HEALTH PROFESSIONALS

**Table List of health professionals in hospitals under Addis Ababa health bureau in 2011**

Profession	Qualification	Zewditu memorial hospital	Ras desta hospital	Gandi memorial hospital	Menilik hospital	Yekatit12 hospital	Total
General practitioner	Doctors	27	14	0	13	19	
Specialist	Doctors	12	5	2	19	21	
Health officer	Bsc	2	3	3	0	6	
Nurse	Bsc	42	45	15	51	58	
Nurse	Diploma	108	57	83	110	107	
Pharmacist	BSC	7	7	2	4	8	
Pharmacy technician	Diploma	5	3	6	7	5	
Lab technologist	Bsc	12	4	5	9	14	
Lab technician	Diploma	5	8	5	7	5	
Others	Certificate, Bsc,Diploma	70	17	28	48	54	
TOTAL	Below diploma	6	0	4	13	8	
Total		290	163	149	268	297	1167