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## ADDIS ABABA UNIVERSITY

SCHOOL OF INFORMATION SCIENCE AND SCHOOL OF PUBLIC HEALTH

**Exploration study and design of a technology platform for knowledge sharing among health professionals to improve maternal and child healthcare.**

Obsa Amente

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

**June, 2016**

**Addis Ababa, Ethiopia**

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Name and Signature of Members of the Examining Board

_____ Examiner	_____ Signature	_____ Date
_____ Examiner	_____ Signature	_____ Date
_____ Advisor	_____ Signature	_____ Date
_____ Advisor	_____ Signature	_____ Date

## **Dedication**

This project is dedicated to professionals who are giving their whole professional life, time, energy, knowledge and skill to improve maternal and child healthcare in Ethiopia and throughout the world.

## **Acknowledgement**

First of all, I would like to thank Almighty God for giving me the patience, wisdom, knowledge and strength I needed to complete this study and for always guiding me in every phase of my life.

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**Acronym**

ANC-Antenatal Care

BEmONC-Basic Emergency Obstetric and Newborn Care

CEmONC-Comprehensive Emergency Obstetric and Newborn Care

EPI-Expanded Program on Immunization

F/P-Family Planning

ICT-Information Communication Technology

IRB-Institutional Review Board

IT-Information Technology

KM-Knowledge Management

KSA-Knowledge, Skill and Attitude

MCH-Maternal and Child Health

MNCH-Maternal, Newborn and Child Health

PMTCT-Prevention of Mother to Child Transmission

TEMACC-Technology Enabled Mother and Child Care

WHO-World Health Organization

## **Abstract**

Knowledge is a valuable asset for individual as well as organizations to be successful in this demanding global economy. The change of information into knowledge is mainly due to the effort of human cognitive capacity. Knowledge Management (KM) is therefore a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance. KM includes processes like knowledge capture and/or creation, knowledge sharing and dissemination, and knowledge acquisition and application.

The major aim of this project is to explore the knowledge sharing status and design knowledge sharing technology platform for health professionals working on maternal and child healthcare unit. A qualitative cross sectional case study design was conducted to gain insight; explore the depth, richness, and complexity inherent in the topic of interest. The hospital technical staffs working in MCH unit were included as study participants. An in depth interview guide was used to collect qualitative data. The collected data was analyzed manually using the thematic inductive analysis method.

In this project/study the overall findings show that knowledge sharing brings common understanding among professionals, its application depends on resource of the health facility and professional's knowledge, skill and attitude (KSA), is facilitated by development of technology platform and automating the hospital system in general and it also need committed management body for its execution. Based on the study, appropriate sample content development and technology platform using word press software for knowledge sharing among professionals at MCH unit is designed. The findings highlight the ongoing educational, informational, infrastructural and other interventions to address the issue of knowledge sharing among professionals. In addition, appropriate recommendations are forwarded to the respected bodies.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Knowledge is an understanding that we get from a collection of data, contextual information, and experiences in order to better know our environment. Knowledge is a valuable asset for individual as well as organizations to be successful in this demanding global economy. The change of information into knowledge is mainly due to the effort of human cognitive capacity [1]. “There are two types of knowledge; tacit and explicit knowledge. Tacit knowledge is personal and stored in the heads of people. It is accumulated through study and experience. The degree and facility by which it can be shared depends to a great extent on the ability and willingness of the person possessing it to convey it to others. Whereas, explicit knowledge is a knowledge that can be codified and stored in documents, databases, websites, emails and the like. It can be readily made available to others and transmitted or shared in the form of systematic and formal languages [2].”

Knowledge management involves not only providing people with the right information when necessary, but also it is helping people share information and act in a way that improves the effectiveness of the organization [3]. As defined by Anders [4], “knowledge management is a set of principles, tools and practices that enable people to create knowledge and to share, translate and apply what they know to create value and improve effectiveness. It is about applying the collective knowledge of the entire workforce to achieve specific organizational goals.”

Needless to say, the intention of knowledge management is not necessarily to manage all knowledge, but just the knowledge that is most important to the organization. It is about ensuring that people have the knowledge they need, where they need it, when they need it- the right knowledge, in the right place, at the right time and for the right individual [5].

In addition to major components of KM (people, process, technology and content), institutional memory (the organizational knowledge and the mechanisms by which such knowledge is acquired, stored and shared among the employees of the organization) [10,11] and organizational

learning, a change in the organization's knowledge (both declarative knowledge or facts and procedural knowledge or skills and routines) that occurs as a function of experience are the basis for knowledge management [12].

What is more, Knowledge management process consists of knowledge capture and/or creation, knowledge sharing and dissemination, and knowledge acquisition and application [13]. Different sectors like business, public and more recently healthcare are among areas where knowledge management initiative has emerged in the world society [14].

According to the estimate made by the US institute of Medicine around 98,000 patients die each year as result of preventable errors. Similarly, a study conducted in two UK hospitals revealed that 11% of admitted patients experienced adverse events of which 48% of these events were most likely preventable if the right knowledge was applied [58]. The conclusion drawn by the above studies is that the under-utilization of healthcare knowledge contributes to incorrect clinical decisions and medical errors.

Knowledge management tools and platforms ranging from content management systems to group collaboration tools, synchronous and asynchronous communication can also help to capture and share knowledge. More advanced and new tools like wiki (collaborative authoring), blogging (personal journal, commentary and online diaries) and podcasting (syndication of digital media for playback on portable players and computers) could also be adapted to capture and disseminate knowledge. However, the application of these tools should be preceded by understanding of the context of local innovators and those who benefit from the knowledge (106).

The application of information and communication technologies for managing knowledge is not without problems. Not all aspects of living traditions of knowledge can be captured as 'artefacts' using digital technology. The collection of information from diverse sources is often a laborious, time-consuming and costly process. Those with knowledge may not be willing to share their actual knowledge. Efforts to capture knowledge by ICTs and setting up databases were not successful as hoped due to inadequate frameworks for capturing and making the knowledge

available in usable formats to the people who need them and who often do not have access to ICTs (106).

In hospitals of resource limited countries, knowledge and experience sharing are poorly practiced. The absence of this essential issue in hospitals is the main cause for the presence of various medical errors such as severe injury, miss diagnosis, wrong treatment, increased multidrug resistance and unexpected deaths [104]. Previous studies [95, 105] done in Ethiopia indicated that information and experience sharing practice of health professionals is poor due to several reasons such as, lack of opportunities for knowledge sharing, not integrating knowledge sharing in the hospital work process and lack of supportive management. In most of the healthcare institutions healthcare providers simply work by referring to their handouts and remembering their school trainings [104].

Knowledge sharing, the behavior of disseminating and transferring knowledge with other members within one's organization, is a key enabler of knowledge management. Effective knowledge sharing involves not only the dissemination and transfer of knowledge but also its retrieval and reuse [14].

Mechanisms such as community of practice, peer assists, synchronous and asynchronous communications are important to improve the exchange of knowledge. Tools such as intranets, search engines, content management systems (CMSs), electronic publishing systems, workflow systems, groupware, help desk applications, as well as more fundamental systems such as personal and group filing, project archiving have been refined to foster the sharing of knowledge (106).

The basic purpose of communicating knowledge with in a group is to utilize the available knowledge and improve group performance. According to Ming-Yu C. et al [18], the value of knowledge expanded when it is shared. Therefore, if managed properly, knowledge sharing can greatly improve work quality and decision-making skills, problem-solving efficiency as well as competency that benefit the organization at large.

## **1.2 Organization of the report**

In the process of identifying the important contents to be developed and in designing the knowledge platform, this project is organized in different chapters. The first chapter deals with background of the study, statement of the problem, objective, scope and significance of the study. The second chapter presents the review of the related literature in the area of knowledge sharing and discuss related works that asses the practice of knowledge sharing. The third chapter discusses the methodology followed for data collection, data analysis and interpretation. In the fourth chapter the result of the study is presented and discussed while the fifth chapter is the actual presentation of the developed platform prototype. The last chapter, chapter six presents conclusion and recommendation based on the study/project finding.

## **1.3 Statement of the problem**

As organizations, healthcare institutions face similar challenges that many other nonprofit and for-profit organizations face as they seek to create, capture, store and share information and knowledge among people within the organization [19]. Despite decades of effort by governments and nations of the world, there is still much to do in decreasing and eliminating health related problems especially in developing countries. Even though high progress is achieved, many countries, including Ethiopia, fail to meet the millennium development goal 5 (Improve maternal health) to the expected level (267/100,000) [20].

As indicated on Sustainable Development Goal 3 (Ensure healthy lives and promote well-being for all at all ages) under target 1 (reduce the global maternal mortality ratio to less than 70 per 100,000 live births) and target 2(end preventable deaths of newborns and under-five children), there is much work and effort needed to achieve these goals by 2030 G.C. However, mainly in developing countries, there are still various health related problems like high maternal mortality, under five mortalities, shortage of health professionals, low skill level of health professionals and many more [20]. These problems mainly stem from human and other resource policies, information politics, group dynamics, departmental silos, processes for information exchange, and the organizations incentive structure [19].

Being a practitioner involves using up-to-date medical knowledge and patient-related information to deliver the best possible care. Making the knowledge available to practitioners when they need it and improving the knowledge is very crucial [21]. In health care, knowledge is the main resources of the organizations, as it enables the organization to achieve best medical results [22]. The success of a medical care depends on how effectively and wisely knowledge is being used to improve the health care process [17]. As noted by Sheng and Raymond [23], –Organizations must consider how to transfer expertise and knowledge from experts who have it to novices who need to know.” That is, organization must give attention and need to effectively utilize knowledge based resource that already exists within the organization.

As observed on the background, Knowledge sharing among medical practitioners is considered to be vital for improving the quality of patient care. In particular, tacit knowledge sharing amongst physicians and practitioner, such as the sharing of clinical experiences, skills or know-how, have a significant impact on the quality of medical diagnosis and decisions making. From a healthcare Knowledge Management perspective, it is crucial to exploit and aid tacit knowledge sharing among clinical teams [24]. Knowledge sharing among health professionals has benefits such as sharing best practices in their profession, upgrading their skill and facilitating collaboration and communication among themselves, which in turn improve the healthcare service delivery.

In addition, even though more than 80% of the typical general hospital’s workforce consists of individuals with professional backgrounds, like many other professionals, health professionals working on MCH unit face different challenges in tackling maternal and child health problems. These problems include, absence of professional communities (virtual communities), lack of consultation mechanisms (if they work in different institutions), limited information in rural area, and very few or no skill upgrading mechanism except for formal trainings [25].

On the other hand, according to Abidi, S. S. R [26], even though there are knowledge creation and sharing mechanisms in place like morning meeting, informal communication, and formal patient

orders among health professionals, there are still a lot of knowledge sharing barriers. He describes the barriers as (i) Organizational Barriers which includes poor management support, lack of leadership, poor organizational structure, insufficient planning and lack of awareness of knowledge sharing. (ii) Human Barriers which includes cultural barriers, extra effort and time requirements, employee's opposition, staff retirement, staff defection and failure in ownership, and lack of trust in the accuracy and credibility of knowledge due to the source).

On top of this, Dalkir K. [13] adds other knowledge sharing barriers. These are (i) Technical Barriers such as insufficient infrastructure, poor IT design and planning, poor networking and lack of maintenance and training needs, unrealistic expectations of employees as to what technology can do and cannot do, reluctance to use IT systems); (ii) Political Barriers including the challenges involving the creation of meritocracy of ideas and knowledge markets, and (iii) Financial Barriers like financial needs for professional development, poor financial investment of the organization, security concerns, and insufficient IT investment.

Maternal and child health services miss their importance if the institution does not have a strategy to avert these knowledge sharing barriers and own a culture of creating and sharing knowledge and collaboration between the various actors across the organization. In order to solve this knowledge creation and sharing problem among health professionals, there should be access to information and available knowledge within and outside the organization [27, 28].

In order to access to adequate information and available knowledge and then further share among professionals working in maternal and child healthcare unit, knowledge management with appropriate design of technology platform might be an option. The design of this platform will solve some of the technology related barriers of knowledge sharing. The platform should contain appropriate content (what to be shared, source of information, who created the content, when it was created and other aspects) specific to maternal and child healthcare. Therefore, this project aims at designing a technology platform and developing a content that help health professionals working in maternal and child healthcare unit create and share knowledge among themselves.

## **1.3 Objective of the project**

### **1.3.1 General Objective**

The major aim/purpose of this project is to: -

- Explore the knowledge sharing practice and design a technology platform for knowledge sharing among health professionals to improve maternal and child healthcare.

### **1.3.2 Specific Objectives**

The specific objectives of this project are to: -

1. Explore the status of knowledge sharing among health professionals at Nekemte hospital MCH unit.
2. Develop sample content to be shared among professionals working in maternal and child healthcare unit at Nekemte hospital.
3. Design prototype platform to demonstrate possibilities of knowledge sharing among health professionals.
4. Test user interface prototype of the platform.

## **1.4 Scope**

The processes of knowledge management involve knowledge acquisition, creation, refinement, storage, transfer, sharing, and utilization. The knowledge management function in the organization operates these processes, develops methodologies and systems to support them, and motivates people to participate in them [13]. This project only covers the knowledge sharing component of the knowledge management process and only focus on designing the technological platform and content for knowledge sharing at hospital maternal and child health unit. Nekemte Hospital, one of the Oromia regional government owned hospitals, is the institution in which the project was undertaken. There is no any special interest to work on the institution where the project was undertaken except for the institution being the area where the principal investigator

has previously worked for and being familiar with the professionals working there. The knowledge of those contents to be shared in knowledge sharing among professionals working at maternal and child healthcare is very helpful in the design of the platform that can help in solving the existing problem. Therefore, this project tries to incorporate sample contents (what needs to be shared) and design prototype platform that help professionals share their knowledge among themselves.

### **1.5 Significance**

The success of this project will have a positive impact in establishing a uniform and fruitful scientific platform by which the hospitals create and share knowledge among health professionals. This will directly and indirectly benefit the technical staff (health professionals like doctors, nurses and others), administrative staff, patients, stakeholders and the country as a whole.

The direct beneficiaries of this project include both the health professionals and the hospital itself. The professionals, using the platform, will be able to share their knowledge and best practices, socialize, acquire knowledge and skill from others, create virtual communities, and get access to both tacit and explicit knowledge from repository. The hospitals on the other hand, benefit from the project by improving cost efficiency keeping the knowledge of retiring employees, increasing quality and efficiency of health service and research and also may increase the responsibility and accountability of professionals in relation to patient care.

Indirectly, the clients (who are receiving healthcare service from the professionals that share their knowledge using the platform) will benefit as they visit those professionals with updated knowledge and skill. In addition, policy makers might also be benefited from the result of the project implementation and scaling up the platform to other health institutions.

On top of this, the project is part of the requirement for the master's degree and its successful completion will lead to the earning of the degree.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Success of business organizations, in a local or global level, highly depends on the effective and efficient organization, use and management of the highly varied and distributed knowledge in the organization among employees. Knowledge organizations, in order to make their company in a superior business position, need to exploit and use knowledge sharing strategies and learning in the whole knowledge company. This knowledge sharing mechanism in a large global firms involves not only the cross-departmental process but also the knowledge sharing process that takes place within the organizations same department itself. In today's global firm environment, it is highly regarded that organizational knowledge is one of the most valuable and competitive resources of the business organization [31].

#### **2.1 Knowledge**

People usually agree that there is no common definition to knowledge. According to Davenport & Prusak [32], knowledge is defined as ~~a~~ "a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information". In addition, Brooking [33] defines knowledge as ~~in~~ "information in context with understanding to applying that knowledge".

Organizational knowledge, the collective skill and knowledge of employees within a given organization which is highly helpful for the attainment of organizational business goal, is classified in to two; explicit and tacit knowledge [37].

Polanyi [38] described tacit knowledge as ~~knowing~~ "knowing more than we can tell, or knowing how to do something without thinking about it, like ride a bicycle. This highly personal, subjective form of knowledge is usually informal and can be inferred from the statements of others. Tacit knowledge tends to be local. It is not found in manuals, books, databases or files [39]. In addition, NHS [37] states tacit knowledge as ~~the~~ "the knowledge that people gain through experience and store in their heads. It is much less concrete than explicit knowledge. Tacit knowledge is considered more valuable because it provides context for people, places, ideas and experiences."

–Explicit knowledge is knowledge that can be captured and written down in documents or databases. Explicit knowledge is technical and requires a level of academic knowledge or understanding that is gained through formal education, or structured study. Explicit knowledge is carefully codified, stored in a hierarchy of databases and is accessed with high quality, reliable, fast information retrieval systems. Once codified, explicit knowledge assets can be reused to solve many similar types of problems or connect people with valuable, reusable knowledge.” [40].

## **2.2 Knowledge Management**

Knowledge management (KM) is a mechanism used to meet the organizational business goals by the maximum effort of creating, capturing, storing and sharing knowledge asset of the company. It is simply performing all that is necessary in order to gain the most out of knowledge resources [42]. As defined by WHO [43], knowledge management is a set of principles, tools and practices that enable people to create knowledge and to share, translate and apply what they know to create value and improve effectiveness.

Knowledge management relies on the components of KM which includes people, process, technology and content. On the other hand, knowledge management consists of processes like knowledge creation, capture, storage and sharing [42].

### **2.2.1 Components of KM**

According to the leading global knowledge management studies, the major components of knowledge management are people, process and technology. While all three are critical to build a learning organization and get business results from KM, a majority of organizations worldwide implementing KM have found it relatively easier to put technology and processes in place, whereas the "people" component has posed greater challenges [6]. But according to Bolarinwa O.A et al [7], the discipline of knowledge management has four major components; people, process, technology and content.

- **People:** are those who create, share, and use knowledge, and who collectively encompass the organizational culture that nurtures and stimulates knowledge sharing [8]. The biggest challenge in KM is to ensure participation by the people or employees in the knowledge sharing, collaboration and re-use to achieve business results. In many organizations, this requires changing traditional mindsets and organizational culture from "knowledge-hoarding" (to keep hidden or private) to "knowledge-sharing" (share among team members) and creating an atmosphere of trust. This is achieved through a combination of motivation / recognition and rewards, re-alignment of performance appraisal systems, and other measurement systems [6].
  
- **Processes:** is the method to acquire, create, organize, share and transfer knowledge. In order to improve knowledge sharing, organizations often need to make changes to the way their internal processes are structured, and sometimes even the organizational structure itself [7]. It includes standard processes for knowledge-contribution, content management (accepting content, maintaining quality, keeping content current, deleting or archiving content that is obsolete), retrieval, membership on communities of practice, implementation-projects based on knowledge-reuse, methodology and standard formats to document best-practices and case studies, etc. [6].
  
- **Technology:** is the mechanism that store and provide access to data, information, and knowledge created by people in various locations [7]. Technology is often a crucial enabler of knowledge management – it can help connect people with information, and people with each other, but it is not the solution [5]. These tools typically provide a secure central space where employees, customers, partners and suppliers can exchange information, share knowledge and guide each other and the organization to better decisions. The most popular form of KM technology enablement is the Knowledge-Portal on the Corporate Intranet (and extranets where customers, partners and/or suppliers are involved) [6].

- **Content:** can be viewed as an evolution of data –any kind of item including unstructured and not necessarily discrete. Examples of content are image, free text, streamed video clips and also data items (i.e. discrete structured items that can reside in and fully managed by data base system.) [9].

### **2.2.2 Processes of KM**

KM processes increases the importance of knowledge assets through cooperation and sharing of the knowledge. This means, knowledge management processes altogether, has the ability to manage and develop any business organizations intellectual capital. These processes include:

#### ***A. Knowledge discovery and creation***

Knowledge creation and capture is the first component of knowledge management. People interaction creates generates knowledge so that any group of people, corporation or business organizations create knowledge in a continuous manner [45]. Explicit knowledge discovery highly relies on combination (where the existing explicit knowledge, data and information are reconfigured, re-categorized, and re-contextualized to produce new explicit knowledge) while tacit knowledge discovery is mainly based on socialization, which is synthesis of knowledge in the mind across individuals [46, 47].

#### ***B. Knowledge storage/capture and retrieval***

The process of knowledge structuring is about defining, storing, categorizing, indexing, and linking digital objects such as documents and images to knowledge units [48]. There are four main options for storing the information that are captured or shared [45]. These are: –(a) file system storage (local and network directories and folders); (b) databases; (c) e-mail; and (d) websites (intranet and external).” According to Nonaka [47], knowledge capture ad storage mainly benefits from both externalization (a condition when tacit knowledge is converted to explicit knowledge forms like words, concepts, visuals, and figurative language) and internalization (also known as learning, the process in which explicit knowledge is converted to tacit knowledge).

### ***C. Knowledge sharing and enrichment***

Knowledge sharing is the mechanism by which either explicit or tacit knowledge or both are transmitted to other individual or group of people [42]. The knowledge type, whether it is explicit or tacit knowledge which is being shared, uses socialization or exchange as a process of sharing the knowledge. Socialization is process of facilitating the sharing of tacit knowledge among individuals or groups while exchange involves sharing of explicit knowledge [50]. Knowledge sharing is done using different means, some of which are automatic and other on manual, such as training and education, company intranet, communities of practice, external or internal benchmarking, documentation and newsletter, and cross-functional teams [49].

### ***D. Knowledge application***

When knowledge is used to make decisions and perform tasks in business organizations, it is believed as if it has contributed directly to the organizations best performance. If the knowledge discovery, capture and sharing are performed in effective way, there is greater possibility that essential knowledge is available for the effective application in decision making and task performance. It is believed that knowledge application is benefited from two processes namely directions, which involves the transfer of instruction not the knowledge to make those decisions; and routines, which is using the knowledge embedded in the rules, guidelines and procedures for future tasks to be performed [51, 52].

## **2.3 Knowledge Management in Healthcare**

Every healthcare organization uses knowledge as a center of its day to day activities regardless of its use by practitioners or managers. In the management aspect, knowledge is important in human resource, finance, strategic planning, organizational dynamics and governance, information management, quality management, and risk management [53]. Likewise, practitioners use knowledge as a major source of evidence to practice correctly in their daily activity and in the systematic review of relationships between clinical experience and quality of care. Being a practitioner involves using up-to-date medical knowledge and patient-related information to deliver the best possible care [54]. In health care, knowledge is the main resources of the organizations, as it enables the organization to achieve best medical results [35]. The

success of a medical care depends on how effectively and wisely knowledge is being used to improve the health care process [55].

Tacit knowledge environment highly dominates the healthcare organizations. Healthcare professionals' tacit knowledge is the most valuable source of their "experiential know-how" acquired in critical situations of patient management. The importance of tacit knowledge in healthcare industry is well recognized as it is "certainly, about what really works and how to make it work" rather than explicit knowledge of "how things should work" [56].

Knowledge management (KM) initiatives have emerged in the business sector, public sector and more recently in healthcare. Healthcare is an information-rich industry; medical knowledge is expected to double during a professional lifetime [57]. And it is experiencing an exponential growth in the scientific understanding of diseases, treatments and care pathways. As a consequence, healthcare knowledge is in flux. New healthcare knowledge is being generated at a rapid pace and its utilization can profoundly impact patient care and health outcomes [7].

Just as we manage our organization's key tangible assets, such as finance, human resource and fixed assets, important medical knowledge need to be actively managed. Healthcare takes an active approach to Medical knowledge management by executing a series of strategies to improve how knowledge is managed – including a branding strategy focused on mobilizing awareness and support of the knowledge management initiatives [59].

In Ethiopia, knowledge management (KM) happens often person to person. Few past efforts such as the WoredaNet initiative by the Government of Ethiopia to facilitate knowledge sharing was not as successful because IT based KM is still in its infancy stage. Also, in Ethiopia, little or no attention is provided to knowledge generation and sharing mechanisms and approaches. This leads to the importance of having a system for knowledge sharing and learning among all stakeholders involved in the county's multi-sector (107).

Thus, managing knowledge in this industry is an enormous task. KM holds great promise for improving healthcare delivery and, more critically, for dealing with information overload suffered by physicians. It can facilitate the interaction, collaboration, and sharing of knowledge among physicians to improve patient care [57].

It is thus clear that, healthcare can profit from many advantages that KM provide, such as; improved patient care, safety and satisfaction, team-building across organizational boundaries and more informed decision making by learning from others and building on individual experiences etc. Therefore, the healthcare sector needs to embrace KM strategies, processes, tools and techniques. This can support healthcare organizations to create greater value by delivering higher healthcare quality with optimal cost effectively [55].

## **2.4 Knowledge Sharing**

The transfer of knowledge between individuals, individual and group, within/between groups, departments or sections in order to perform a given task is known as knowledge sharing (KS). It is all about sharing knowledge with others and not hoarding it [60]. Theodore [61] defines knowledge sharing as “a commitment of collaboration to inform, translate and educate the peers.” It involves active listening and learning. “The information shared involves visions, aims, supports, feelings, opinion and questions besides the work aspects that will increase the job performance and increase the quality of work in the department” [62].

It is either tacit knowledge, which is deeply resides in the brain of people and deeply rooted in emotions, ideas, procedure and actions; or explicit knowledge, a knowledge type which is found in a written form in documents, books and reports and can be easily codifies, stored and transferred across time that is shared among different people [63]. KS is the fundamental means through which employees can contribute to knowledge application, innovation, and ultimately to the competitive advantage of the organization [64].” It involves two or more parties and there has to be a source and a destination. Generally, in the transfer of something, someone will gain it and someone else will lose it. However, knowledge which is regarded as an intangible asset is different from tangible assets. Tangible assets tend to depreciate in value when they are used, but

knowledge grows when used and depreciates when not used. This means that knowledge will keep on growing whenever a person shares the knowledge that he/she has; when someone transfers their knowledge, they do not lose it [65].

Where knowledge sharing is concerned, the working culture of most of organizations in Ethiopia is in a way that the focus is on practical questions of day-to-day work rather than on lessons being learned at a strategic level. It's usually hard to find good examples of a coordinated and strategic approach either to knowledge dissemination or knowledge strategy in the non-profit industry. The information services in these organizations are mainly supply oriented, and user needs do not always coincide with the way information is made available. Most of the time, the problems associated in this regard are not what technological platform to use but how to manage the vast amount of knowledge generated in a way that satisfies stakeholders, peers and government counterparts as a strategic asset for development assistance (108).

In a healthcare industry, knowledge sharing is critical among health professionals as they come from different background, perspective and observation based on their specific discipline [67]. Healthcare organizations should have the culture of knowledge sharing practices to make better use of the knowhow, experiences and skills of their healthcare professionals. As a result, the healthcare workers enable to implement their best practices and generate new ideas and better healthcare quality service can be delivered [68].

Cross sectional study conducted in Ethiopia shows supportive hospital management, open communication among healthcare professionals related to job issues, the presence of knowledge sharing opportunity in the hospital, salary increment, and motivation to transfer knowledge were the significant predictors that affect healthcare professional knowledge sharing practice in the hospital environment. The researchers also categorized factors affecting knowledge sharing into three factors: individual, organizational and technological factors (109).

Another study conducted at Felege Hiwot hospital showed that knowledge sharing opportunity, communication channel, motivation, resource allocation and high educational level were found to be independent predictor of knowledge sharing and the study concluded by pointing that the

management should give a great attention to knowledge sharing and that the hospital should make the necessary infrastructures and incentive mechanism to motivate staffs (94).

Finding of a study conducted to assess knowledge sharing practices of healthcare professionals in hospitals under Addis Ababa health bureau showed that job satisfaction, very high level of motivation, extrinsic motivation ,use of communication channel and presence of knowledge sharing opportunity were independent predictor of knowledge sharing and the study concluded by pointing that stake holders should device a way for strengthen knowledge sharing through improving all the hinderers of knowledge sharing (95).

#### **2.4.1 Factors affecting knowledge sharing**

Organizational knowledge is primarily embedded in the minds of the employees and in the activities, procedures, routines, processes and norms of the organization [69]. The sharing of these knowledge (both tacit and explicit), is very important for the competitiveness of any business organizations including healthcare institutions. However, there are barriers that hinder the easy knowledge sharing among employees of a given organization. This might be classified into three; Individual, Organizational and Technological barriers [70]. The individual related barriers are barriers like awareness, trust, perceived benefits and cost, channel of interaction, willingness, and individual's attitude [63, 71-83]. Organizational related barriers include organizational culture, management support, organizational Structure, and reward and incentives [35, 36, 84-88]. On the other hand, concerning the technology related barriers, Szulanski states –Despite the increasing use of technology to facilitate knowledge sharing within organizations, face-to-face interactions are still an indispensable mechanism for knowledge sharing especially when more –sticky” knowledge is involved” [89]. Technology tools like email, groupware, and computer based information are important in sharing knowledge by distributing information within and outside organizations and helping individuals access to quality information when necessary. It facilitates the flow of information by designing and implementing systems that support communication, collaboration and knowledge distribution [41].

After analyzing the relationship between IT support and knowledge sharing McDermott and O'Dell [84], came up with the concept of positive relationship between information technology support system and employee perception of the advantage of knowledge sharing with others colleagues. In addition, Bock & Kim [79] describe the existence of positive relationship between level of information technology usage and knowledge sharing behavior of business organization employees.

According to Devedzic [90], there are technologies considered as knowledge sharing enablers both at healthcare institutions as well as other business organizations which include groupware, intranets, document retrieval software, ontologies, knowledge based systems, data mining and intelligent systems among others; even though the ways in which these technologies are used is highly influenced by the values of organizational members [91].

### **2.5 Designing a knowledge sharing system**

Knowledge sharing systems are networking platforms which are helpful in enhancing different professionals networking and education, patient education, patient care, organizational promotion and public health programs. Its main importance is increasing a business organizations efficiency and competitiveness by improving the way the organization manages its explicit and tacit knowledge assets in and outside the organization [96].

According to Khun and Abecker [97], in addition to organization of digital medias such as web links and documents that represent explicit organizational knowledge, there are five crucial requirements in the success of knowledge sharing platforms in a given business organization. These includes: –(i) *Collection and systematic organization of information from various sources*. Most organizational business processes require information and data including e-mails, electronic documents such as specifications, and even paper documents. This requisite information may be dispersed through the organization. This first step requires the organization and collection of this information throughout the organization. (ii) *Minimization of up-front knowledge engineering*. Knowledge sharing systems must take advantage of explicit organizational information and data such that these systems can be built quickly, generate returns

on investment, and adapt to new requirements. This information and data is mostly found in databases and documents. (iii) *Exploiting user feedback for maintenance and evolution.* Knowledge sharing systems should concentrate on capturing the knowledge of the organization's members. This includes options for maintenance and user feedback so the knowledge can be kept fresh and relevant. Furthermore, knowledge sharing systems should be designed to support user's needs and their business process workflows. (iv) *Integration into existing environment.* Knowledge sharing systems must be integrated into an organization's information flow by integrating with the IT tools currently used to perform the business tasks. Humans, by nature, will tend to avoid efforts to formalize knowledge. (v) *Active presentation of relevant information.* Finally, the goal of an active knowledge sharing system is to present its users with the required information when and wherever it's needed. These systems are envisioned as intelligent assistants, automatically eliciting and providing knowledge that may be useful in solving the current task whenever and wherever it's needed."

Knowledge sharing platforms in healthcare institutions are useful in potentially improving health outcomes, increase employee's awareness of news and new discoveries, develop professional network, and provide quality healthcare service to clients. In addition, when employees are engaged in using such a platform, they can easily consult experts regarding any patient cases they face, read new articles or information uploaded by their colleagues, upload their own information or share their idea, discuss practice management challenges, and also engage in health advocacy [98-102]. In general, uses of knowledge sharing platforms among healthcare professionals include networking professionals from different discipline, professional education improving patient care providing up dated information to professionals, patient education once patients are engaged in the network, organizational promotion (the image of the institution is changed) and public health programs [103].

According to Irma& Rajiv, [42], based on their attributes, there are different types of knowledge sharing systems/platforms that are used to share tacit and explicit knowledge among employees of a given organization. Some of them are Incident report databases which are used to disseminate information related to malfunctions, Alert systems which share information on both

positive and negative experiences that has occurred or to occur, Best practices databases which share best practices or successful events in a company, Lessons learned systems which is used to capture and provide lessons that can benefit employees who encounter situations that closely resemble a previous experience in a similar situation.

The above presented studies and evidences show that there are different factors (individual, organizational and technological) affecting knowledge sharing among health professionals. The literatures also suggest different mechanism how to solve this problem and what the knowledge sharing system or platform should like when developed. Therefore, this project works on designing technology platform that help solve the knowledge sharing problem existing among healthcare professionals specifically focusing on the maternal and child healthcare unit and develop a prototype.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1. Study setting and area**

This project was conducted at Nekemte Hospital, which is one of the Oromia region government owned hospitals. According to the undocumented data gained from the hospital manager, the hospital is established in 1932 G.C by Swedish Missionaries and is found in Nekemte City 325km west of the capital Addis Ababa. There are three hundred (198 technical staffs including 23 GPs, and 7 Specialists; and 102 administrative staffs) working in the hospital under different departments including outpatient, inpatient, operation room, pharmacy, laboratory, radiology, and MCH (including comprehensive emergency obstetric and newborn care). The hospital has more than 125 beds for inpatient treatment. Currently the Hospital is serving more than one million people in Western Ethiopia.

#### **3.2. Study design**

Qualitative cross sectional case study design was applied. The design allowed the study of the detailed account and analysis of the practice and mechanisms of knowledge sharing among health professionals. Use of qualitative method provided detail insight that enabled exploration of the depth of contents to be developed. To this effect, the investigator collected appropriate data from the study participants in a single point in time.

#### **3.3. Source and Study population**

Since the number of healthcare professionals, their professional mix, and available technologies is considered better in hospitals compared to health centers, the study focused on a hospital. Accordingly, the source populations were all the employees working in the selected hospital. Eligible population and actual study unit are the same in this project which includes all the technical staff (doctors, nurses, midwives, emergency surgery officers and health officers) of the hospital working in the maternal and child healthcare unit who were included as study participants. Purposive sampling method was applied to include health professionals working in the maternal and child healthcare unit in the study.

### **3.4. Inclusion/Exclusion criteria**

The inclusion criterion for this project was being a technical staff/practitioner (doctor, nurse, midwife, emergency surgery officer, HO) currently working in MCH care unit.

### **3.5. Data collection instrument**

Semi structured in-depth interview guide was developed to conduct qualitative data collection. The data collection tool was knowledge management in-depth interview guide. It consist various parts addressing issues like the demographic profile of respondents, their engagement in maternal and newborn services, satisfaction in their current job, knowledge sharing practices, knowledge sharing mechanisms and other related concepts. Two data collectors were recruited and given appropriate training prior to the actual data collection.

### **3.6. Data Quality Management**

In order to ensure the quality of data during the data collection process, a number of actions like pre-testing the semi structured interview guide, and training data collectors for one day about the content of the questionnaire and how to interact with respondents were taken care of. In addition, problem encountered at the time of data collection was reported and appropriate action was taken. The questionnaires were also checked for missing value and inconsistency.

### **3.7. Operational definition**

**Knowledge sharing** is a process through which information, skill or expertise is shared or exchanged among friends or colleagues in a given situation.

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

**Knowledge sharing methods/mechanism** is a natural system or an established process like paper reports, email, informal communications or any other method through which knowledge sharing takes place.

**Supportive leadership** is a kind of leadership in which employees are enhanced to accomplish their mission, inspiring their commitment and the degree to which managers encourage knowledge sharing and consult team members to make good decision through provision of appropriate support to the employees of a given organization or institution.

**Technological factors** are factors that have an impact on how an organization operates that are related to the equipment and Information Communication Technology infrastructures used within the organizations environment and that affects knowledge sharing.

**Organizational factors** are those factors like leadership, organizational structure, technological infrastructure, culture and organizational intent that affects the degree and means of knowledge sharing among employees.

**Organizational culture** is value, procedure, thinking, status recognition, monetary and non-monetary rewards and how things are done in a given organization that affects knowledge sharing among employees of the institution.

**Individual factors** are the personality, trust, willingness, awareness, satisfaction and perception of awareness of individuals working in a given organization affecting knowledge sharing among employees of the institution.

**Health professionals in MCH unit** are trained and licensed healthcare providers who provide preventive, curative, promotional and rehabilitative services to mothers and children in a given health institution.

### **3.8. Variables**

In this qualitative study, as a variable, the practice, mechanisms and contents of maternal and child health unit knowledge sharing were the concepts that needed to be known for the development of the sample contents and design of knowledge sharing platform for professionals working at maternal and child healthcare unit.

### **3.9. Data Analysis/ Content Organization**

The qualitative data was organized and analyzed manually by the investigator using the qualitative thematic induction analysis method (even though the researcher risks human error) in which patterns of meaning across a data set are identified through rigorous process of data familiarization, data coding and theme development. In addition, despite the presence of different software like ATLAS.ti, NVivo, and MAXQDA, the data was coded and grid analysis was done by the use of word processor because some of this software change the quantitative data into qualitative and some simply sort the data than analyzing it. According to the result from data analysis, the appropriate samples of content to be shared were developed and prototype platform was designed. The final result was also communicated to Addis Ababa University and Nekemte hospital.

### **3.10. Method to design the platform**

The design science paradigm is fundamentally a problem solving paradigm. It seeks to create innovations that define the ideas, practices, technical capabilities, and products through which the analysis, design, implementation, management, and use of information systems can be effectively and efficiently accomplished. The Design Science process includes six steps: problem identification and motivation, definition of the objectives for a solution, design and development, demonstration, evaluation, and communication.

This project, therefore, follows the design science methodology, which is a paradigm that seeks to extend the boundaries of human and organizational capabilities by creating new and innovative artifacts.

Object-Oriented approach is used for analyzing and designing the system. This approach is selected because it has an advantage of modularity, extensibility, reusability as well as maintainability and also the investigator has a better knowledge on Object-Oriented approach.

### **3.11. Tool**

The project used Word-Press content management as a tool to develop the platform design. MySQL database management system is also used to develop the database of the platform.

### **3.12. Evaluation of the project**

After designing the system, prototype was developed and then its system performance is evaluated to see the functionalities of the system followed by user acceptance test so as to evaluate the usability of the system. For this process user acceptance test checklist was used.

### **3.13. Dissemination of the result**

Being an academic project, at the end of the project the principal investigator will deliver the already designed prototype and the documentation to AAU as partial fulfillment of MSc in health informatics. Furthermore the result of this project is communicated to Nekemte Hospital.

### **3.14. Ethical clearance**

The study/project tried to adhere to Belmont report (beneficence, autonomy and justice) during and after the initiation of the study/project. Ethical clearance was obtained from Institutional Review Board (IBB) of College of Health Sciences of Addis Ababa University.

Individuals have the right to choose and thus the right to know about the personal consequences of joining a project. Prior to interview, participants were informed about the right to decide voluntarily (their autonomy) whether to participate in a study or not and also informed that there will not be any risk or penalty. Both verbal and written informed consent was obtained from the study participants before the interview. Study participants have also informed that the study was aimed at producing a platform that can solve their knowledge sharing problem. The interview was scheduled and designed carefully to prevent any psychological discomfort.

In addition, confidentiality and anonymity of the participants and their information was secured by using codes and not the professional's names throughout the project period, so that the respondents could not be identifiable. The questionnaires were also kept in a secure place where only the researcher could access them. For the fair treatment of study participants, purposive

sampling technique was used to select all professionals working at MCH unit as respondents so that they are all included as study participants and the outcome of the project was also for the benefit of all the professionals. Participant's privacy was ensured throughout the study by conducting the interview in a private room.

## **CHAPTER FOUR**

### **PRESENTATION AND DISCUSSION OF STUDY RESULTS**

#### **4.1 Introduction**

This chapter discusses the results that emerged from the data analysis and interpretation of those results. Literatures that support these findings are also included in this chapter. The findings are presented according to the sequence in the questionnaire and are presented according to the following sub-headings: Socio-demographic characteristics, maternal, newborn and child health (MNCH) services provision, MNCH trainings received and practice and mechanism of knowledge sharing, level and reasons of job satisfaction, result of qualitative questions and discussion of basic themes.

In this project/study, data collected from all 31 respondents (those health professionals currently engaged in providing maternal and newborn healthcare services at the maternal and child healthcare unit) were analyzed and presented below.

#### **4.2 Socio-demographic characteristics**

A total of 32 in-depth interviews were conducted with staffs of the maternal and child healthcare unit of the hospital. Out of the total interviews notes, 31 (96.87%) had adequate information for analysis and one interview was incomplete and excluded from the analysis.

Out of the total respondents, 29 (93.6%) of them were between the age of 15 and 39 years old, while the rest were above 40 years of age. The gender distribution of the respondents shows that, 20 (64.6%) of them were female respondents, which might be indicative of those healthcare professionals involved in giving healthcare service for mothers and children are mostly female professionals.

Regarding their educational status, 23 (74.14%) of them had first level degree or above while 8 (25.86%) of them had diploma level certificate. The professional mix of the respondents shows

that, 18 (57.8%) of them were midwives, 7(22.5%) nurses, 3 (9.6%) health officers, 2 (6.4%) emergency obstetric officers, and 1 (3.2%) of them was obstetrics and gynecology specialist. According to the data obtained from the respondents, 54.8% (n=17) of them had more than five years of professional working service. This may indicate that, the individuals involved in this study are abler to give detail information on the subject matter (contents needed to be developed for knowledge sharing among professionals) since they are engaged in the service provision for relatively long period with considerable experience on the issue in general. The readers may get detail socio-demographic characteristics covered in this study from the table below.

**Table 4.1 Socio-demographic and work experience of respondents. Nekemte Hospital, 2016. (N=31)**

<b>Characteristics</b>	<b>Number (N)</b>	<b>Percentage (%)</b>
<b>Age</b>		
15-39 yrs	29	93.6
≥ 40 yrs	2	6.4
<b>Sex</b>		
Male	11	35.4
Female	20	64.6
<b>Qualification</b>		
Specialist Medical Doctors (gyn&obs)	1	3.2
Health Officers	3	9.6
Diploma Nurses	1	3.2
Degree Level Nurses	5	16.1
Masters Level Nurses	1	3.2
Diploma Midwives	7	22.5
Degree Level Midwives	11	35.4
Masters Level Midwives	0	0.0
*Other health workers	2	6.4
<b>Year of graduation</b>		
Before 2011	17	54.8
In/After 2011	14	45.2

<b>Start working in this facility</b>		
Before 2011	12	38.7
In/After 2011	19	61.3
<b>Start working on current position</b>		
Before 2011	6	19.3
In/After 2011	25	80.7

(\*Other health workers are Emergency obstetrics officers who are qualified on performing Caesarian and other emergency surgeries in addition to basic maternal healthcare services.)

### **4.3 Maternal, newborn and child health (MNCH) services provision**

This section assessed the services that the healthcare professionals have been providing in the health facility and the number of years they have been providing the service. Those professionals working on the maternal, newborn and child health care unit are considered to have better contribution to the development of the contents of the knowledge sharing platform.

As part of their work in the health facility the respondents were engaged in provision of maternal, newborn and child health services. Except for under-five outpatient department and under-five inpatient care, most of the respondents had experience in provision of other maternal, newborn and child healthcare. Based on their response, 25(80.6%) have provided family planning and PMTCT services, while 24 (77.4%) of them has been giving antenatal care service. About 21(67.7%) of them have been providing delivery care, postnatal care, newborn care and immunization for the baby. When asked for how long they have been providing maternal, newborn and child health services, 16 (51.7%) of the respondents reported that they have been providing the services for at least five or more years. Readers may find the detail report of MNCH service from the table below.

**Table 4.2 MNCH services Provision and Year of service of respondents Nekemte Hospital, 2016. (N=31).**

Characteristics	Number (N)	Percentage (%)
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<b>MNCH Services</b>		
Antenatal Care	24	77.4
Family Planning	25	80.6
PMTCT	25	80.6
Delivery Care	21	67.7
Newborn Care	21	67.7
Postnatal Care	21	67.7
Immunization for the mother	19	61.2
Immunization for the baby	21	67.7
Under five OPD	6	19.3
Under five inpatient/ pediatrics	4	12.9
Other MNCH Services	0	0.0
<b>MNCH Year of Service</b>		
< 5 yrs	15	48.3
≥5 yrs	16	51.7

#### **4.4 MNCH trainings received and practice and mechanism of knowledge sharing**

Knowing the trainings received by the health professionals (pre-service/basic and/ or in-service training during the past three years of service) and their practice and mechanism of knowledge sharing is important in the planning of what knowledge sharing platform should be developed and the contents to be included. Trainings may help as a means of motivation in helping professionals share their tacit knowledge with their colleagues.

During the time of interview, asked if the respondents have taken any pre-service/basic and/or in-service training in the past three years, 21 (33.3%) and 20 (31.7%) of the health care providers reported that they received training on family planning and prevention of mother to child

transmission of HIV/AIDS (PMTCT), respectively. About 12 (19%) of them said they attended training on Basic Emergency Obstetric and Newborn Care (BEmONC). BEmONC training include administration of antibiotics, uterotonic drugs (oxytocin), and anticonvulsants; manual removal of placenta; removal of retained products after miscarriage or abortion; assisted vaginal delivery; vacuum extraction; and basic neonatal resuscitation. Only 6 (9.5%) of them took the Comprehensive Emergency Obstetric and Newborn Care (CEmONC), that includes all the BEmONC training plus performing caesarian section, safe blood transfusion, and care of sick and low birth weight newborn. On the other side, while only 1 (1.5%) of them have taken training on antenatal care, about 3 (4.7%) of the health professionals has never taken any training during the past three years of their career.

Depending on the training they have attended, respondents were asked if they ever shared their knowledge from the training with their colleagues, 28 (90.3%) of them said they shared knowledge they have gained from training. Oral or face-to-face communication is the most used means of knowledge sharing among the professionals contributing to 25 (71.4%) of those individuals who claim to do so followed by document sharing and morning session/meeting each reported by 5 (14.2%) of the respondents. Asked if they have ever used technologies like email, and other social media to share the knowledge, none of the respondents reported to have used such platforms. The detail of their practice and knowledge sharing mechanism is presented in the below table.

**Table 4.3 MNCH trainings received, and knowledge sharing practice and mechanisms Nekemte hospital, 2016. (N=31).**

Characteristics	Number (N)	Percentage (%)
<b>MNCH Trainings</b>		
Antenatal Care	1	1.5
Family Planning	21	33.3
PMTCT	20	31.7
BEmONC	12	19.0

CEmONC	6	9.5
Did not take any training	3	4.7
<b>Knowledge Sharing Practice</b>		
Ever shared knowledge	28	90.3
Never shared knowledge	3	9.7
<b>Means of sharing knowledge</b>		
Orally	25	71.4
Document sharing	5	14.2
Technologies like email, social medias etc	0	0.0
Morning session/meeting	5	14.2

#### **4.5 Level and reasons of job satisfaction**

Evidences show that job satisfaction is one of the main factors motivating employees to share their knowledge with their colleagues. This holds true especially in healthcare area where the knowledge sharing among different expertise is essential in the outcome of every patient treated in the institution.

Respondents were asked if they could rate their job satisfaction with their current job at the hospital, and the majority of them, 22 (75.7%) reported that they are satisfied or very satisfied with their job while only 17.2% (n=5) of them answered as more or less satisfied. The rest 6.8% (n=2) of them are dissatisfied with their current work in the hospital.

From the total respondents who told they were dissatisfied with their job, 2 (66.7%) of them put unattractive salary as their major source of their dissatisfaction while 1 (33.3%) said lack/inadequate education or training was a source of job dissatisfaction. Further information is presented in the below table.

**Table 4.4 Job satisfaction level and reasons of job dissatisfaction at Nekemte Hospital, 2016. (N=31).**

<b>Characteristics</b>	<b>Number (N)</b>	<b>Percentage (%)</b>
<b>Job satisfaction</b>		
<b>Very satisfied</b>	12	41.3
<b>Satisfied</b>	10	34.4
<b>More or less satisfied</b>	5	17.2
<b>Dissatisfied</b>	2	6.8
<b>Very dissatisfied</b>	0	0.0
<b>Reason for dissatisfaction</b>		
<b>Lack/inadequate education/training</b>	1	33.3
<b>Salary is not attractive</b>	2	66.7
<b>Other reasons</b>	0	0.0

#### **4.6 Result of qualitative part**

In analyzing the qualitative data of this project, each of the steps like coding, theme identification, organizing the themes and global theme development were strictly followed. Coding began with application of series of codes to each transcript, later the codes have been grouped into concepts of similar one for easy comparability.

Short words or phrases that explained a descriptive sentence were used for the coding process. Further, from these concepts, major themes have been generated through an iterative process and used for description of the results. By coding the different expressions of the in-depth interview participants, the investigator organized and sorted the data to develop the framework by integrating the different themes that are patterned by way of sorting the data.

Exchange of information, oral communication, document sharing, resources, socialization, professional's knowledge, skill and attitude (KSA), automated system, and hospital management responsibility are some of the words/phrases frequently expressed by respondents during the time of interview and that the investigator used to code their response. It is the constellation of these codes and the already discussed issues that brought the development of themes.

The basic themes are those themes that have been derived from the interview text, and which are now assembled into groups. This is a simple re-naming of the original set of themes, but it is helpful to render a conceptual division between the identification of themes, and the creation of the thematic network. Organizing themes, on the other hand are simply clusters of the basic themes which are broader issues to name and identify those issues underlying them. In addition, global themes are those themes that summarize the main claim, proposition, argument, assertion or assumption that the organizing themes are about. This claim is the global theme of the network (shown in the below figure): the core, principal metaphor that encapsulates the main point in the text.

The analysis detail of the in-depth interview guide is attached as the annex of this document while the discussions of the identified themes are given below in a subsequent heading.

Using the induction analysis method, the codes given to each response of the study participants are summarized to basic identified themes which in turn is clustered to organizing and global themes accordingly. The following thematic network illustrates the global themes on which knowledge sharing among professionals working in the maternal and child healthcare unit of the hospital is anchored.



Fig.1 Thematic Network for Knowledge Sharing, Nekemte hospital, 2016.

#### **4.7 Discussion of basic themes**

The in depth interview result of respondents is summarized in the tables given under annexes (analysis table 4.5 and analysis table 4.6) to construct appropriate knowledge sharing themes starting from coding, organizing themes to global themes in induction method. The identified themes discussions are presented below under their respective topics discussed during the time of interview.

##### **Defining Knowledge Sharing (KS) and its benefits:**

From the qualitative study, the investigator found that there are a number of ways in which the health professionals define what knowledge sharing means. Most of the respondents (77.4%) of them have responded that knowledge sharing means the exchange of information and patient data with colleagues in the work place. Even though there is no universal definition of what KS means, this finding conforms with the definition by Sabherwal, Ranjit and Milne that says knowledge sharing is the mechanism by which either explicit or tacit knowledge or both are transferred between individuals, individual and group, within/between groups, departments or sections in order to perform a given task using different means, some of which are automatic and other on manual, such as training and education, company intranet, communities of practice, external or internal benchmarking, documentation and newsletter, and cross-functional teams [42, 49, 60]. The rest 22.6% of the respondents defined KS either as only sharing what you get on training or updating own information through any mechanism you can.

On the other hand, asked to describe how knowledge sharing benefits health professionals, most (61%) of the respondents answered that knowledge sharing decreases medical error, increase communication among professionals and bring them to common understanding on a given issue. This is in line with what Nor'ashikin A., Alexei T., and Dick W stated as saying knowledge sharing facilitates the interaction, collaboration, and sharing of knowledge among physicians and other health workers to improve patient care [57]. Around 39% of them have stated benefit of KS as a means of gaining knowledge and skill by itself.

During the interview, one of the respondents mentioned that:

–Knowledge sharing is information exchange or what we know with people around us. In this hospital we share patient information/data with nurses and other health professionals, which we can call it knowledge sharing. Its use is having common understanding patient issue, increasing communication and decreasing error.”

-- (36-Year-old professional, Male) --

**Mechanisms of KS and Pt data documentation:**

Some of the respondents have acknowledged that it is common that either forget or ignore documenting patient data on their card during and/ or after providing healthcare service. About 89% of study participants have responded that knowledge sharing mechanism present in the health facility include oral communication, morning session meeting, sharing patient document, and/or consultation. And about 90.3% of the respondents reported that they engage in knowledge sharing with their colleagues in either one or more of the mentioned means of knowledge sharing mechanisms present in the health facility. The other 32% and 11% of study participants answered as registering patient information only on registration book and to discussing with colleagues only at the time of patient procedures respectively.

–Usually it is during consultation that I communicate with maternal and child healthcare unit workers/professionals; but workers in the MCH unit share knowledge orally and by sharing patient documentation when there is need to talk/communicate. Therefore, the existing means of knowledge sharing in this hospital, as far as I know, is orally and by sharing patient card in addition to consultation of senior professionals.”

-- (30-Year-old professional, Male) --

–The documentation of each work practice/patient care is simply by writing on patient/client card manually and archiving it in appropriate place for further use especially whenever the client visits this health institution.”

-- (24-Year-old professional, Female)—

### **Hospital Readiness and Staff Socialization:**

The majority of respondents (87%) judged the readiness of the health facility for knowledge sharing practice by the ICT infrastructure the institution has, trainings provided to the workers and the number of qualified human resources present in the facility. On the other hand, only 48% of them believe socialization and adequate time spent with other colleagues in the department are important in building team spirit among the working group and in turn for knowledge sharing with each other. This conforms to the study done on health professionals to know the organizational, clinical, patient and professional perspective of the use of social media and socialization in healthcare [98-102].

“In my view, the readiness of the hospital can be evaluated in different ways. Even though most of the health professionals working in this department are qualified (trained) professionals, there is still shortage of qualified manpower, trainings are not adequate and its distribution (who should be sent to trainings and who should not) among professionals is unfair. In addition, there is no ICT infrastructure in the hospital MCH unit except for the one that is found in the ward head office. The hospital has wireless internet service, but the staff is using the internet only using his/her phone since the hospital is not equipped with ICT technologies and not networked yet. This in turn decreases the time professionals spend to share their knowledge and socialize with each other using the technology which directly affects team spirit and knowledge sharing among professionals.”

-- (38-Year-old professional, Male) --

### **Challenges/barriers on KS:**

“The inability of the hospital management to strictly encourage and implement morning meetings among all professionals (because only small number of professionals mainly doctors are participating), lack of rule and regulations that govern workers to share their knowledge especially after attending a given training, absence of ICT infrastructures (failure to equip with computers, databases, networking), persistent use of paper based system/ manual system and the awareness problem that exists among professionals on KS

are some of the challenges that exist as a barrier for knowledge sharing among professionals in MCH unit.”

-- (35-Year-old professional, Female) --

The above expression describes how lack of infrastructure, lack of rule and regulations and awareness problem affects the knowledge sharing among professionals working in the MCH unit. In this study finding, about 48% of respondents complained that lack of infrastructure, and rule and regulation that orders any professional to share his/her knowledge and skill after attending trainings to the hospital staff is of the barriers/challenges that affect knowledge sharing among professionals working in the health facility. This finding is similar to the study done by Yu-Chung H., and Ya-Hsueh C; and Jones, M. C that documented knowledge sharing barriers. Both studies concluded that, organizational related barriers for KS include organizational culture (norms, rules, and procedures), management support (infrastructure), organizational Structure, and reward and incentives [36, 87]. On the other hand, studies done by different scholars reveal that individual related barriers like awareness, trust, perceived benefits and cost, channel of interaction, willingness, and individual’s attitude affects knowledge sharing [63, 71-83]. These studies support the finding of this paper in which majority of the professionals (64%) responded awareness on knowledge sharing and trust among healthcare professionals highly affects the knowledge sharing practice. The rest (36%) of them responded lack of training opportunity, work overload, budget problem and absence of regular meeting as a barrier/challenge in relation to knowledge sharing.

### **Easy and best way for KS:**

This study/project found that there are different assumptions and attitude towards the easiest and best mechanism for knowledge sharing among professionals. Majority of respondents (80%) were optimistic towards any easy platform for knowledge sharing and equipping all the departments with appropriate ICT infrastructures, even though they doubt of their skill to use the technology. This conforms to a study done by Husin et al and Alavi et al in business organizations in which respondents suggest ICT infrastructures, platforms and good organizational cultures make knowledge sharing easy among professionals [41, 91]. Around 20% of the respondents prefer paper based and oral/verbal communication (which is currently in

place) to technology platform for easy knowledge sharing among the healthcare professionals which is in line with the concept given by Szulanski that states “Despite the increasing use of technology to facilitate knowledge sharing within organizations, face-to-face interactions are still an indispensable mechanism for knowledge sharing especially when more “sticky” knowledge is involved” [89]. On the other hand, only 42% of the interviewed people believe automation of a system in the health facility increases the responsibility and accountability of health professionals in relation to patient care and other activities.

Here is one of the responses given to this question during the interview

“Since healthcare is one of the sensitive sectors needing due attention and resulting in higher responsibility and accountability, I suggest that it is best if any simple platform is developed, the hospital is equipped with ICT infrastructure, training is given to professionals and in the long run the current paper based system is changed to computerized (automated) system.”

-- (27-Year-old professional, Male) --

#### **Contents to develop on platform:**

Many of the interviewed professionals (94%) felt that it is important to include the entire maternal and child healthcare knowledge areas on the platform to be developed so that professionals will easily access and share knowledge using the technology. The main knowledge areas pointed out by the professionals include antenatal care, family planning, prevention of mother to child transmission of HIV/AIDS (PMTCT), delivery care, newborn care, postnatal care, immunization for the mother, immunization for the baby, treatment of sick child, human nutrition, and health education.

“As a gynecologist, I could simply suggest if all essential components/areas related to maternal and child healthcare including ANC, F/P, LDC, PNC, EPI, PMTCT, Nutritional advices (during pregnancy and breast feeding), treatment of sick child, and even maternal education (health education) in general are developed/uploaded on the platform so that

every health professional working in the maternal and child healthcare unit will easily access to the information and engage in knowledge sharing with other professionals. For example, antenatal care should include all features a mother should know like different test, and number of visits expected during pregnancy.”

-- (36-year-old professional, Male) --

### **Hospital responsibility:**

Result of this study shows that 68% and 61% of respondents included in the study believe raising staff awareness through training and provision of other incentives as well as equipping the hospital departments with information and communication technology infrastructures are responsibilities of the hospital management respectively. While other study participants have responded that, increasing budget allocation, taking/including knowledge sharing in routine work and using mass Medias for knowledge sharing should be among the responsibilities the health facility management should deal with.

One of the study participants gave the following response in relation to the interview question raised on what the responsibility of management should be on knowledge sharing.

–Major responsibilities of the hospital in improving knowledge sharing practice among professionals include creating awareness among professionals, recruiting adequate and qualified professionals including IT personnel, equipping the hospital with ICT infrastructure and giving training to all staff on how to use the technology.”

-- (38-Year-old professional, Male) --

In general, addressing important issues including defining knowledge sharing and its benefits by health professionals, mechanisms of knowledge sharing and documentation of patient data, hospital readiness for knowledge sharing and staff socialization, challenges/barriers on knowledge sharing in health institution, easy and best way suggested by professionals for knowledge sharing, maternal and child health contents to develop/include on technology

platform for knowledge sharing, and knowing what professionals think is the responsibility of the hospital for knowledge sharing will help to develop appropriate technology platform that should be user friendly and compatible to available technologies. This project was mainly concerned on the development of the sample contents and design prototype platform that help healthcare professionals share their knowledge with each other.

## **CHAPTER FIVE**

### **DESIGN OF PROTOTYPE PLATFORM**

#### **5.1 Introduction**

In healthcare, knowledge sharing platforms are networking systems that are helpful in enhancing different health professionals networking and education, patient education, patient care, health facility promotion and other public health programs. Its main importance is increasing health facility/organizations efficiency and competitiveness by improving the way the hospital manages its explicit and tacit knowledge assets in and outside the organization and simultaneously bringing responsibility and accountability to the employees on every activity they undertake in relation to patient care.

This project has tried to develop knowledge sharing platform for health professionals working in the maternal and child healthcare unit of Nekemte hospital after conducting qualitative study and analyzing the professionals input from the collected data using the in depth interview guide. The development of the prototype platform is done using word press, open source software which is helpful in designing such platform. The contents or knowledge areas of the maternal and child healthcare were extracted from the World Health Organization standard guidelines, professionals input and educational materials currently the health sector of our country (from grass root to higher level) are using. These contents/knowledge areas include the antenatal care, PMTCT, family planning, immunization for the child, immunization for the mother, counseling, and nutrition for pregnant mother and child. The detail of the knowledge areas are provided under the platform page called ‘\_services’. The platform can also be adapted to other health institutions in Ethiopia.

## **5.2 Components/contents of the platform**

The user requirements in this project is the result of analysis of the in depth interview guide, the contents suggested to be developed by the professionals, World Health Organization standard guidelines and knowledge area specific documents used by health institutions.

Therefore, the designed platform/page consists of components like:

- MCH KS home page
- Services Page
- Resources Page
- Staff Page
- Patient Archive Page
- Media Page
- Discussion Forum Page
- Contact us Page and
- TEMACC/Technology Enabled Maternal and Child Care link

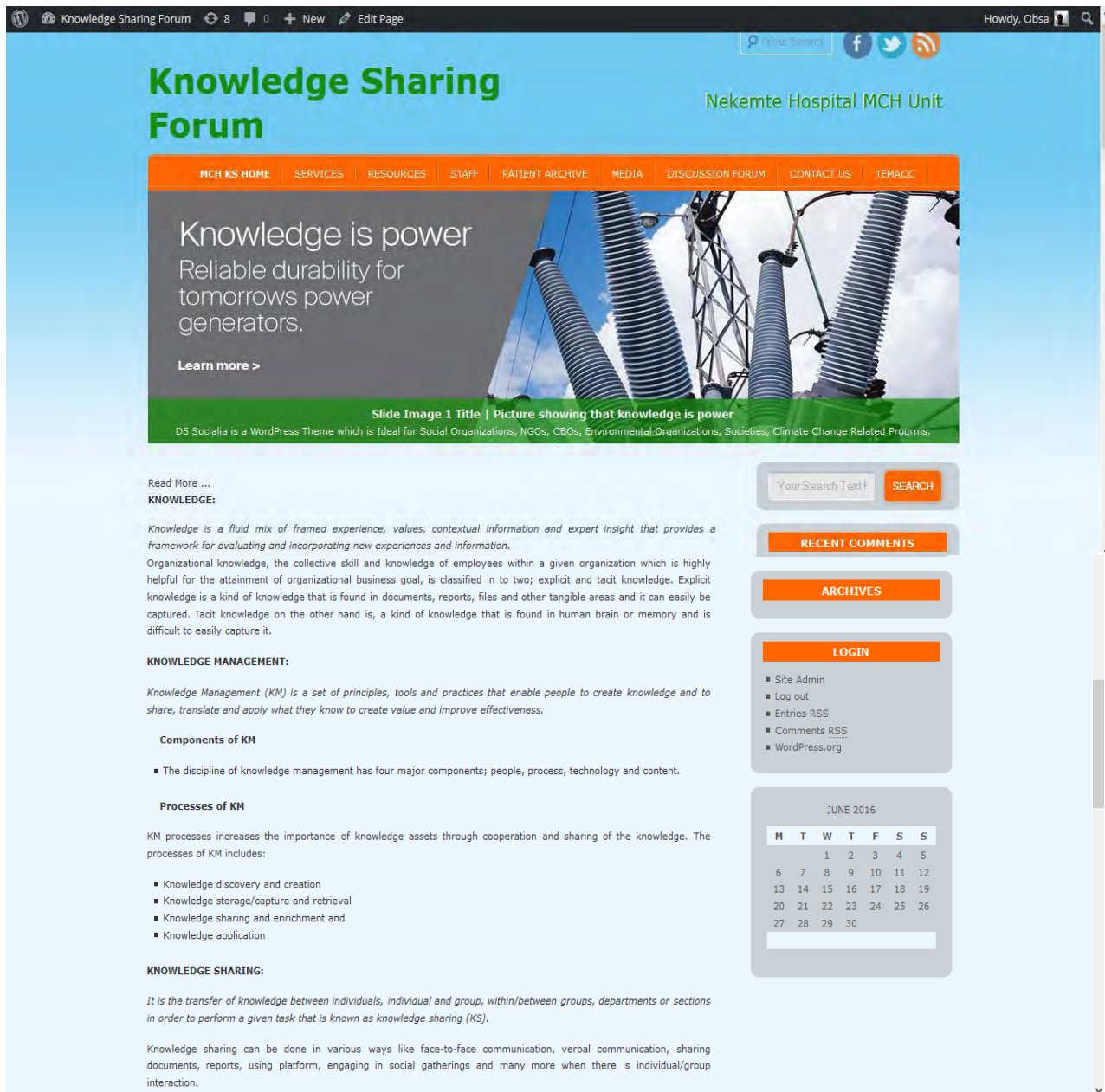
Each page and its components are discussed below for the easy understanding and usage of the platform by professionals being anywhere inside or outside the compound of the organization.

### **MCH KS Home Page**

This page is the first page of the knowledge sharing platform of the hospital and MCH unit that anyone interested to know about the knowledge sharing can easily access whenever he/she opens the hospital web page. On this page, visitors may find the overall concepts what knowledge management mean, components/elements of knowledge management, knowledge sharing, means of knowledge sharing, importance of knowledge sharing, how everyone can be involved in knowledge sharing, components/knowledge areas to be shared in MCH unit, importance of knowledge sharing in MCH unit, the number and mix of professionals engaged in knowledge sharing in the department, role of professionals in knowledge sharing, hospital organogram, and other important information concerning knowledge sharing. Widgets on this page also have the search box, login site and calendar of the year. The login widget allows each user to get into the

page (once they are given privilege), while the search box helps them find anything difficult to get into easily from the whole components of the page.

The following figure illustrates the main home page of the platform and maternal and child healthcare unit of Nekemte hospital.



## Services Page

The services page of this platform is all about the maternal and child healthcare services provided at the MCH unit of the hospital in detail. It shows the currently available services and those that need appointment. Knowledge sharing in the department mainly focuses on the services provided by the professionals working in the department. Clients in need of these MCH services at the hospital can also easily view whether the service they are looking for is available at the department at the time of their need.

HOME ABOUT US SERVICES RESOURCES PATIENT ARCHIVE MEDIA DISCUSSION FORUM CONTACT US TEMACC

**Slide Image 4 title | Children holding banner showing importance of vaccination**  
D5 Socialia is a WordPress Theme which is Ideal for Social Organizations, NGOs, CBOs, Environmental Organizations, Societies, Climate Change Related Programs.

### MCH Contents/Services

Read More ...

The contents of maternal and child healthcare are those components and/or services given in the MCH ward. These services includes:

- Antenatal care
- Family Planning
- Counseling service on HIV/AIDS
- Prevention of mother to child transmission of HIV/AIDS
- Sick child treatment
- Immunization
  - For the mother
  - For the baby

**Currently the services we are providing at the maternal and child healthcare unit are:**

- Antenatal care:
  - Screening for HIV/AIDS
  - Laboratory tests including Rh factor
- Family Planning:
  - Long term FP services
    - Vasectomy (with appointment)
    - Tubal ligation (with appointment)
    - IUCD
    - Implant/Norplant
  - Short acting FP services
    - Injectables
    - Pills (COC, POP)
    - Condom (Male)
- PMTCT service for all pregnant mothers
- Provider Initiated Testing and Counseling (PITC) for everyone
- Immunization (EPI) service
  - For mothers
    - TT vaccine
    - Vit A supplement
  - For children
    - BCG
    - Polio
    - Pentavalent
    - Rotarix
    - Measles

Your Search Text SEARCH

RECENT COMMENTS

ARCHIVES

LOGIN

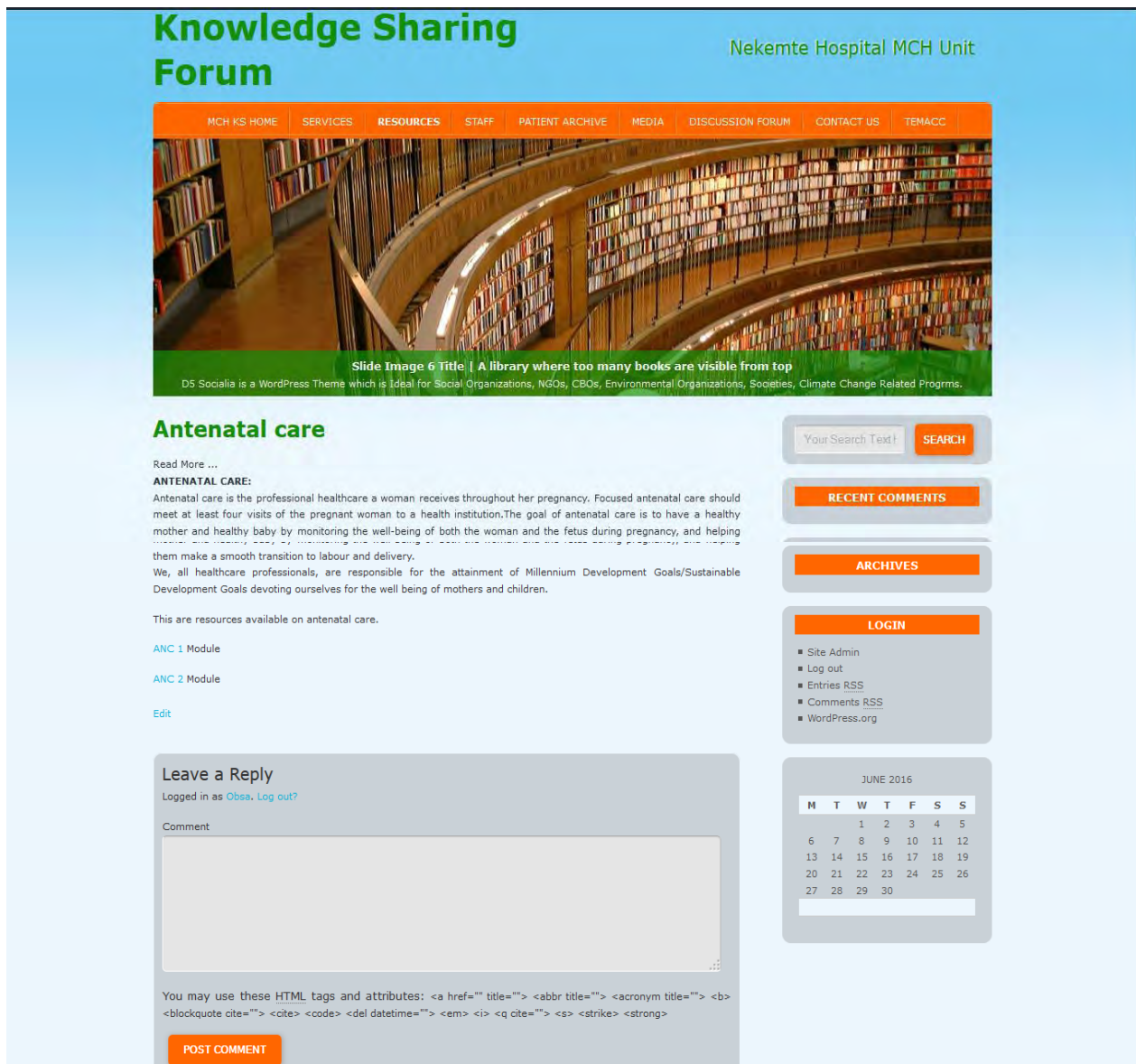
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## Resources Page

Documents uploaded on this site/page by the site administrator and/or user (those people who has privilege of accessing the page) in soft copy can be easily accessed by professionals working in the hospital, regardless of the department they are working in. The resources page is designed in a way that it can help users access topic specific resources including antenatal care, family planning, PMTCT, EPI and others. Resources are materials like different modules, guidelines, manuals and others.



# Knowledge Sharing Forum

Nekemte Hospital MCH Unit

- MCH KS HOME
- SERVICES
- RESOURCES
- STAFF
- PATIENT ARCHIVE
- MEDIA
- DISCUSSION FORUM
- CONTACT US
- TEMACC

Slide Image 6 Title | A library where too many books are visible from top  
D5 Socialia is a WordPress Theme which is Ideal for Social Organizations, NGOs, CBOs, Environmental Organizations, Societies, Climate Change Related Programs.

## Antenatal care

Read More ...

**ANTENATAL CARE:**  
Antenatal care is the professional healthcare a woman receives throughout her pregnancy. Focused antenatal care should meet at least four visits of the pregnant woman to a health institution. The goal of antenatal care is to have a healthy mother and healthy baby by monitoring the well-being of both the woman and the fetus during pregnancy, and helping them make a smooth transition to labour and delivery.  
We, all healthcare professionals, are responsible for the attainment of Millennium Development Goals/Sustainable Development Goals devoting ourselves for the well being of mothers and children.

This are resources available on antenatal care.

- [ANC 1 Module](#)
- [ANC 2 Module](#)
- [Edit](#)

Leave a Reply

Logged in as [Obses](#). [Log out?](#)

Comment

You may use these HTML tags and attributes: `<a href="" title="">` `<abbr title="">` `<acronym title="">` `<b>` `<blockquote cite="">` `<code>` `<del datetime="">` `<em>` `<i>` `<q cite="">` `<small>` `<strong>`

**POST COMMENT**

**SEARCH**

**RECENT COMMENTS**

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**LOGIN**

- Site Admin
- Log out
- Entries RSS
- Comments RSS
- WordPress.org

JUNE 2016

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## Staff Page

The staff page is where the list of healthcare professionals working in the maternal and child care unit is found. Employees working in the department are categorized according to their specific working unit like antenatal care, family planning, PMTCT, counselling service, immunization and others. The list of employees are given including their profession, service year, specific working unit, and some biographic data.

**Knowledge Sharing Forum** Nekemte Hospital MCH Unit

MCH KS HOME SERVICES RESOURCES STAFF PATIENT ARCHIVE MEDIA DISCUSSION FORUM CONTACT US TEMACC

# KNOWLEDGE SHARING

Slide Image 12 Title | An image showing KS written in words  
DS Socialia is a WordPress Theme which is Ideal for Social Organizations, NGOs, CBOs, Environmental Organizations, Societies, Climate Change Related Programs.

## Antenatal care

Read More ...

**ANTENATAL CARE:**

Antenatal care is the professional healthcare a woman receives throughout her pregnancy. Focused antenatal care should meet at least four visits of the pregnant woman to a health institution. The goal of antenatal care is to have a healthy mother and healthy baby by monitoring the well-being of both the woman and the fetus during pregnancy, and helping them make a smooth transition to labour and delivery.

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[ANC 1 Module](#)

[ANC 2 Module](#)

[Edit](#)

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**Leave a Reply**

Logged in as [Obsa](#). [Log out?](#)

Comment

You may use these HTML tags and attributes: `<a href="" title="">` `<abbr title="">` `<acronym title="">` `<b>` `<blockquote cite="">` `<cite>` `<code>` `<del datetime="">` `<em>` `<i>` `<q cite="">` `<s>` `<strike>` `<strong>`


## Patient Archive Page

One of the important components and features of the page is allowing professionals access patient archive/record that may help them not only engage in the discussion and knowledge sharing with their colleagues on each patient history/record, but also in the follow up of the clients visiting the department. This patient record can only be accessed by the admin and professionals who has a legitimate right to access patient data.

# Knowledge Sharing Forum

Nekemte Hospital MCH Unit

[MCH KS HOME](#) | [SERVICES](#) | [RESOURCES](#) | [STAFF](#) | [PATIENT ARCHIVE](#) | [MEDIA](#) | [DISCUSSION FORUM](#) | [CONTACT US](#) | [TEMACC](#)



**Slide Image 2 Title | Nurse looking after mother and child at ward**  
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### Patient Archive

Show  entries Search:

Mother's Name	Age	ID No.	General Conditions	Obstetric History	General Medical History	Pregnancy Follow up First Visit	Pregnancy Follow up Second Visit	Pregnancy Follow up Third Visit	Pregnancy Follow up Fourth Visit	Birth Preparedness	Ren
Ayantu	18	4915/08	1. Gravida 2. Para 3. LMP 4. EDD 5. HIV Test Result 6. Rh			Date GA BP Weight Anemia Folic Acid	Date GA BP Weight FHB Anemia Folic Acid	Date GA BP Weight FHB Anemia Mebendazole	Date GA BP Weight FHB Anemia Mebendazole		
Askale	20	1844/05	1. Gravida 2. Para 3. LMP 4. EDD 5. HIV Test Result 6. Rh			Date GA BP Weight Anemia Folic Acid	Date GA BP Weight FHB Anemia Folic Acid	Date GA BP Weight FHB Anemia Mebendazole	Date GA BP Weight FHB Anemia Mebendazole		
Hana	39	3995/07	1. Gravida 2. Para 3. LMP 4. EDD 5. HIV Test Result 6. Rh			Date GA BP Weight Anemia Folic Acid	Date GA BP Weight FHB Anemia Folic Acid	Date GA BP Weight FHB Anemia Mebendazole	Date GA BP Weight FHB Anemia Mebendazole		

[Edit](#)  
 Showing 1 to 5 of 5 entries [Previous](#) [Next](#)  
[Edit](#)

## Media Page

This page is created in a way that the users of the page should access different pictures, audios and/or videos uploaded on the page in relation to maternal and child healthcare. Users with account can upload, download, delete or comment on the materials uploaded on this specific site page. Here under is the page having some photos of the staff and clients.

The screenshot displays a WordPress website's media page. At the top, a navigation menu includes links for MCH KS HOME, SERVICES, RESOURCES, STAFF, PATIENT ARCHIVE, MEDIA (highlighted), DISCUSSION FORUM, CONTACT US, and TEMACC. Below the menu is a featured image with a lightbulb icon and the quote: "Power is gained by sharing knowledge, not hoarding it." The image is titled "Slide Image 11 Title | A quote on knowledge sharing".

The main content area is titled "Photo Gallery" and features a grid of four photographs: a woman holding a baby, a woman with a child, a woman with a child, and a woman with a child. A "Read More ..." link is positioned above the gallery. To the right of the gallery is a sidebar with several widgets: a search bar with the text "Your Search Text" and a "SEARCH" button; a "RECENT COMMENTS" widget; an "ARCHIVES" widget; a "LOGIN" widget with links for "Entries RSS", "Comments RSS", and "WordPress.org"; and a calendar for "JUNE 2016".

Below the gallery is an "Edit" link and a "Leave a Reply" section. The "Leave a Reply" section shows the user is logged in as "Obesa" and includes a "Comment" text area. At the bottom, there is a note about HTML tags and attributes: "You may use these HTML tags and attributes: <a href="" title=""> <abbr title=""> <acronym title=""> <b>".

## Discussion Forum Page

Knowledge sharing among health professionals is key in quality health care. One means of sharing tacit knowledge among employees of a given organization is engaging in discussion forum face to face or using different platforms like this page. Therefore, this specific discussion forum page plays its role in the knowledge sharing activity among health professionals working in the maternal and child healthcare unit. Users/professionals with account on this platform will easily chat with other colleagues either on the topic they created or titles created by other individuals, comment on other people's post, edit and delete their own post.

**Hospitaala Naqamtee**  
ሰዎች ሀገራዊ  
Nekemte Hospital

MCH Unit

HOME ABOUT US SERVICES RESOURCES PATIENT ARCHIVE MEDIA DISCUSSION FORUM CONTACT US TEMACC

Slide Image 10 Title | Health professional counselling a mother on childcare  
D5 Socialia is a WordPress Theme which is Ideal for Social Organizations, NGOs, CBOs, Environmental Organizations, Societies, Climate Change Related Progrms.

### Discussion Forum

Read More ...  
Hello ladies and gentlemen! Welcome to the discussion forum. Share what you have and multiply your knowledge!

### Pregnancy

Read More ...  
HOME > Forums > Pregnancy > Pregnancy

This topic contains 2 replies, has 2 voices, and was last updated by [Obsa](#) 1 day ago.

Viewing 3 posts - 1 through 3 (of 3 total)

Author	Posts	Favorite   Subscribe
 Obsa Keymaster (:1)	<p>Pregnancy also known as gravidity or gestation, is the time during which one or more offspring develops inside a woman. The major factors that put pregnancy at risk are divided in to four. These are"</p> <ul style="list-style-type: none"><li>Existing Health conditions</li><li>Age</li><li>Lifestyle factors and</li><li>Conditions of pregnancy</li></ul> <p>Could you please someone engage in describing those major existing health conditions putting pregnancy at risk. Appreciate your contribution!</p>	
 Jalal Participant (:1)	<p>Yes Obsa! I do have a few to say on this. High blood pressure (usually uncontrolled), diabetes, kidney diseases, autoimmune disease, thyroid disease, obesity, and HIV/AIDS are some of the maternal health problems that poses great risk to pregnancy.</p>	

May 13, 2016 at 12:04 pm EDIT | CLOSE | STICK (TO FRONT) | MERGE | TRASH | SPAM | REPLY #171

May 13, 2016 at 12:17 pm EDIT | MOVE | SPLIT | TRASH | SPAM | REPLY #174

RECENT COMMENTS

RECENT COMMENTS

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## Contact us Page

As its name indicates, the main reason this page is created is to give an alternative address for those people who are interested in knowing the real address of the hospital and the department in particular. The address, in addition to for those who visit the hospital in person, the telephone, e-mail, postal and fax address is provided on the page.

**Hospitaala Naqamtee**  
**ሰዎቹ ሀኪማ**  
**Nekemte Hospital**

MCH Unit

HOME ABOUT US SERVICES RESOURCES PATIENT ARCHIVE MEDIA DISCUSSION FORUM **CONTACT US** TEMACC

Slide Image 8 Title | Health professional checking for the heartbeat of the fetus  
D5 Socialia is a WordPress Theme which is Ideal for Social Organizations, NGOs, CBOs, Environmental Organizations, Societies, Climate Change Related Programs.

### Contact Us

Read More ...

**Contact address:**

Nekemte Hospital is located in Nekemte City on the road to EECMY Western Synod in front of Nekemte Health Science College.

**Hospital CEO**

- Phone: +215-57-661-1597; +251-57-661-1598
- Fax: 251576611599
- E-mail: nhosp@yahoo.com
- P.O.Box: 96

**Medical Director**

- Phone: +251-57-661-1288
- E-mail: nhospmd@yahoo.com

**MCH Department**

- Phone: +251-57-661-1296
- E-mail: nhospmch@yahoo.com

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Your Search Text | **SEARCH**

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MAY 2016

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And the last page of this platform is the Technology Enabled Mother and Child Care (TEMACC) link that will provide users with information and resources distributed by the TEMACC website.

### 5.3. User Acceptance Test

User testing is a technique for ensuring that the intended users of a prototype platform can carry out the intended tasks efficiently, effectively and satisfactorily. For this particular project user test was done for the developed prototype which is used to address any significant issues identified. Four users are participated in the testing process (MCH, ANC, FP, PMTCT heads) and are presented with eight different questions that the investigator believes will address the user requirement using Likert scale evaluation methods.

Table 4.5: User test result for the prototype of technology platform for knowledge sharing among health professionals at MCH unit, Nekemte hospital, 2016.

S.no	Test Questions	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	The interfaces are attractive			1	2	1
2	I like the font and the color of the interfaces				3	1
3	There is consistency in the platform interface		1	1		2
4	I thought the platform is easy to use			1	3	
5	I found the interfaces are not cumbersome to use			1		3
6	All-important contents are addressed well				2	2
7	I need less time to learn the user interface			1		3
8	There is no unnecessary content available in the interface		2		1	1
	Average result in percentage		9%	16%	36%	39%

Based on the finding of the result of the user test questions presented to the respondents, 75% of the participants in the evaluation and testing has shown positive attitude and response (either agreed or strongly agreed to) for the prototype attractiveness of the interface, color of the interfaces, consistency of the platform interface, easy usability, low cumbersome, addressed essential contents, length of time to learn the system, and presence of unnecessary content in the system in general.

### **5.3. Limitation of the study/project**

This study/ project is not without limitations. The possible limitations of the study include:

- Being the method and design used qualitative and purposive sampling, and a single selected institution makes the result not representative and generalizable.
- The in depth interview result may have been different if self-administered questionnaire was used.
- The personal biases of the investigator may affect the result of the study.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATION

#### 6.1 Conclusion

The project was executed with three objectives: exploring the status of knowledge sharing among MCH unit health professionals, developing sample contents of the KS platform, and designing the prototype platform for knowledge sharing among professionals working at maternal and child healthcare unit.

The main findings of the study/project includes:

- Professionals, knowingly or unknowingly, share knowledge with their colleagues in one or another method.
- Information and patient data exchange among health professionals decreases medical error and miscommunication.
- Different knowledge sharing mechanisms (orally, document sharing, using platform, morning session discussion, etc) and appropriate documentation of patient data are important in the quality patient care.
- Infrastructure (including ICT infrastructures), qualified human resource and time for socialization determine the status of knowledge sharing.
- Absence of adequate infrastructure, lack of rule and regulation on knowledge sharing (especially after attending trainings and seminars) and lack of awareness negatively affects knowledge sharing.
- Presence of platform and generally automated healthcare system increases responsibility and accountability among professionals.
- Detail MCH content addressing each sub-units of the department (ANC, FP, PMTCT, EPI and others) on platform is important and necessary.

- Involvement of managers and other executive bodies of the hospital on equipping the health institution with infrastructure and in the creation of awareness among professionals through trainings is of ample importance.

## **6.2 Recommendation**

Based on the finding of the study/project, the following recommendations are forwarded to each concerning bodies.

### **i. Professionals**

Health professionals working in the hospital/ MCH department may:

- Engage in knowledge sharing with all available means (orally, document sharing, morning session meeting or platform)
- Document patient data accordingly and responsibly
- Use the developed knowledge sharing platform

### **ii. Hospital management/Management board**

As an immediate governing body of the hospital, the management board is advised if it may engage in actions like:

- Availing and use of knowledge sharing platforms and other soft wares
- Equipping the health facility with ICT infrastructures
- Providing training to professionals so that they will be motivated in KS
- Creating awareness on knowledge sharing among all staff
- Developing and applying rule and regulation on knowledge sharing
- Recruiting adequate ICT professionals/Health Informaticians
- Creating means to allocate time for knowledge sharing among professionals

### **iii. Ministry of Health**

Ministry of Health, the supreme body governing the health sector of a country, is advised if it might:

- Provide technical support for general system automation in hospitals
- Evaluate the impact of automating the system of hospitals

iv. **Researchers/Directions for future work**

The result of this project shows that opportunities for further study are abundant. Therefore, the investigator encourage other researchers to carry out further projects/research on future research/project directions like:

- Developing detail MCH and other department contents and integrate with available system
- Furthe study on any affordable means of knowledge sharing
- Testing the result of this project in various hospitals/health institutions.
- Replicating this study/ project in other areas (institutions) using other methods so as to ensure the representativeness would allow the generalizability of the finding

## 7. References

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## Annexes

### Annex-1

**Analysis Table 4.6. From Codes to Themes of KS at Nekemte hospital MCH unit, 2016.**

Codes	Issues discussed	Themes identified
<ul style="list-style-type: none"> <li>• <b>Exchange of information</b></li> <li>• <b>Shared patient data</b></li> <li>• <b>Common understanding</b></li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge sharing</li> <li>• Benefits of KS</li> <li>• Medical error</li> <li>• Communication</li> </ul>	<ul style="list-style-type: none"> <li>• Information and patient data exchange with colleagues is knowledge sharing.</li> <li>• Decreased medical error, increased communication and common understanding are benefits of knowledge sharing.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Consultation</b></li> <li>• <b>Oral communication</b></li> <li>• <b>Manual/paper based</b></li> <li>• <b>Morning sessions</b></li> <li>• <b>Document sharing</b></li> </ul>	<ul style="list-style-type: none"> <li>• KS mechanisms</li> <li>• Interaction with colleagues</li> <li>• Documentation</li> <li>• Patient card</li> <li>• Existing practice</li> <li>• MNCH department specific activity</li> </ul>	<ul style="list-style-type: none"> <li>• Oral communication, morning session meeting, patient document sharing and consultation are available KS mechanism.</li> <li>• Patient information is documented manually on patient card.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Resources</b></li> <li>• <b>Socialization</b></li> <li>• <b>Readiness of the hospital</b></li> </ul>	<ul style="list-style-type: none"> <li>• Infrastructure</li> <li>• Staffing</li> <li>• Team spirit</li> <li>• Time</li> <li>• Qualified professionals</li> </ul>	<ul style="list-style-type: none"> <li>• ICT infrastructure and qualifies human resource staffing can be indicators of hospital readiness for KS.</li> <li>• Socialization and adequate time spent with colleagues are keys to build team spirit for KS.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Management weakness</b></li> <li>• <b>Professionals Knowledge, Skill</b></li> </ul>	<ul style="list-style-type: none"> <li>• Organizational culture</li> <li>• Norm</li> <li>• Work procedure</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of infrastructure and absence of rule and regulation for KS are current barriers/challenges of KS.</li> <li>• Awareness on KS and trust highly</li> </ul>

<p><b>and Attitude</b></p>	<ul style="list-style-type: none"> <li>• Infrastructure</li> <li>• Awareness</li> <li>• Willingness</li> <li>• Attitude</li> <li>• Trust</li> <li>• Platform</li> </ul>	<p>affects KS among professionals.</p>
<ul style="list-style-type: none"> <li>• <b>Automated system</b></li> </ul>	<ul style="list-style-type: none"> <li>• Platform development</li> <li>• Easiest way of KS</li> <li>• Paper work</li> <li>• Oral communication</li> <li>• ICT infrastructure</li> <li>• Training professionals</li> <li>• Responsibility</li> <li>• Accountability</li> </ul>	<ul style="list-style-type: none"> <li>• Developing platform and equipping the department with ICT is the best and easiest way for KS.</li> <li>• With automated system, responsibility and accountability among professionals increases.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Contents of platform</b></li> </ul>	<ul style="list-style-type: none"> <li>• ANC</li> <li>• PMTCT</li> <li>• FP</li> <li>• Immunization for the mother</li> <li>• Immunization for the baby</li> <li>• Rx of sick child</li> </ul>	<ul style="list-style-type: none"> <li>• Each MCH care detail contents including nutrition and health education need to be included in the platform.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Hospital management responsibility</b></li> </ul>	<ul style="list-style-type: none"> <li>• Awareness</li> <li>• Infrastructure</li> <li>• Staffing</li> <li>• Training</li> </ul>	<ul style="list-style-type: none"> <li>• Equipping the hospital with ICT infrastructure is mgt responsibility.</li> <li>• Raising staff awareness via training and other incentives is necessary.</li> </ul>

**Annex-2**

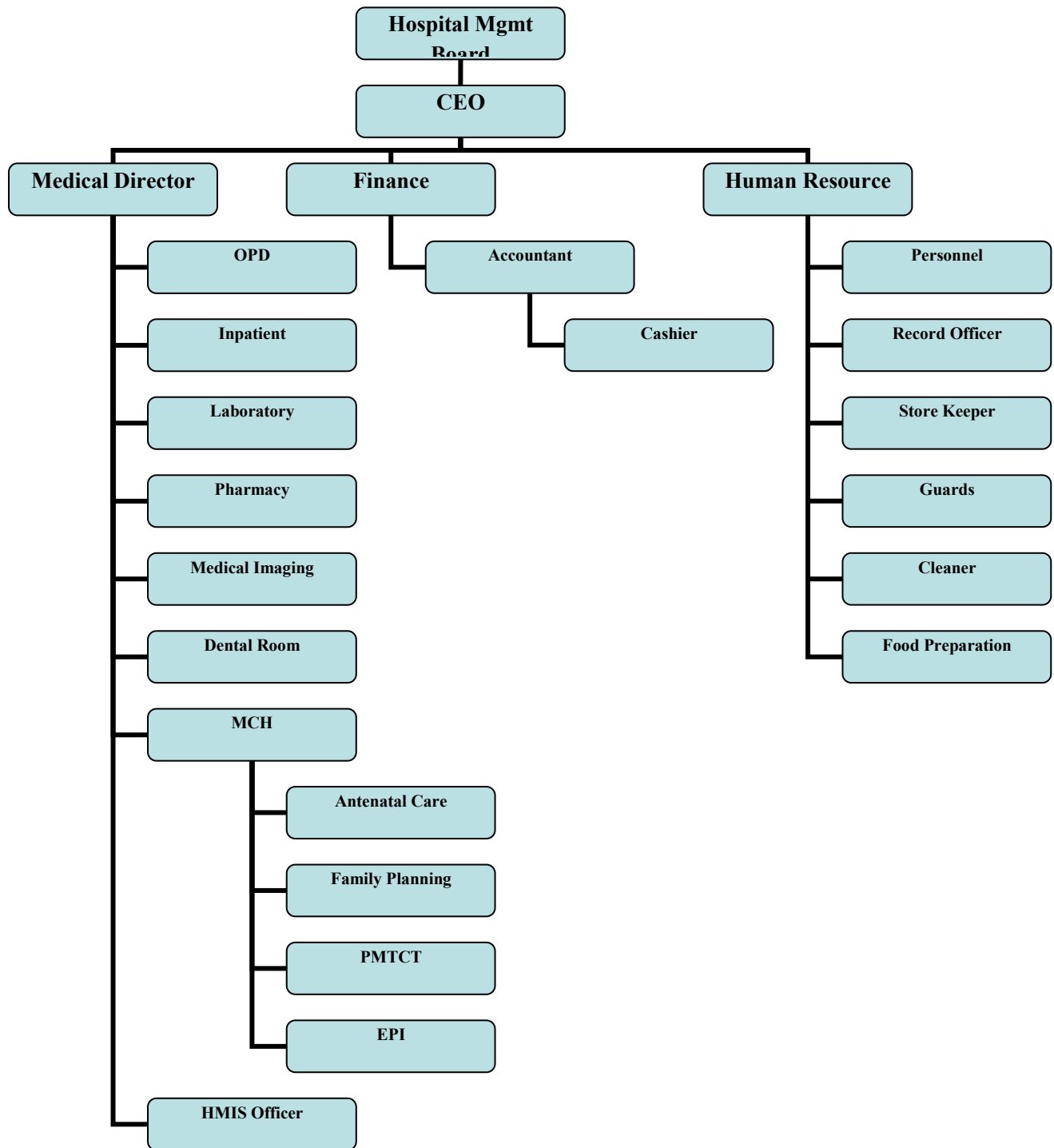
**Analysis Table 4.7. Basic to Organizing to Global themes of KS, Nekemte Hospital, 2016.**

Themes as basic theme	Organizing theme	Global theme
<ul style="list-style-type: none"> <li>Information and patient data exchange with colleagues is knowledge sharing.</li> <li>Decreased medical error, increased communication and common understanding are benefits of knowledge sharing.</li> </ul>	<ul style="list-style-type: none"> <li>Information and data exchange decreases medical error and miscommunication.</li> </ul>	<ul style="list-style-type: none"> <li>KS brings common understanding.</li> </ul>
<ul style="list-style-type: none"> <li>Oral communication, morning session meeting, patient document sharing and consultation are available KS mechanism.</li> <li>Patient information is documented manually on patient card. Information and patient data exchange with colleagues is knowledge sharing.</li> </ul>	<ul style="list-style-type: none"> <li>Different KS mechanisms and documentation of pt data are important</li> </ul>	
<ul style="list-style-type: none"> <li>ICT infrastructure and qualified human resource staffing can be indicators of hospital readiness for KS.</li> <li>Socialization and adequate time spent with colleagues are keys to build team spirit for KS.</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure, human resource and time for socialization determine KS.</li> </ul>	<ul style="list-style-type: none"> <li>KS depends on resource and professionals KSA.</li> </ul>
<ul style="list-style-type: none"> <li>Lack of infrastructure and absence of rule and regulation for KS are current barriers/challenges of KS.</li> <li>Awareness on KS and trust highly affects KS among professionals.</li> </ul>	<ul style="list-style-type: none"> <li>Absence of infrastructure, rule and regulation and level of awareness affects KS.</li> </ul>	

<ul style="list-style-type: none"> <li>• Developing platform and equipping the department with ICT is the best and easiest way for KS.</li> <li>• With automated system, responsibility and accountability among professionals increases.</li> </ul>	<ul style="list-style-type: none"> <li>• Presence of platform and automated system increases responsibility and accountability.</li> </ul>	<ul style="list-style-type: none"> <li>• KS is facilitated by platform and automated system.</li> </ul>
<ul style="list-style-type: none"> <li>• Each MCH care detail contents including nutrition and health education need to be included in the platform.</li> </ul>	<ul style="list-style-type: none"> <li>• Detail MCH content on platform is important and necessary.</li> </ul>	
<ul style="list-style-type: none"> <li>• Equipping the hospital with ICT infrastructure is mgt responsibility.</li> <li>• Raising staff awareness via training and other incentives is necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Managers need to focus on infrastructure and awareness creation through trainings.</li> </ul>	<ul style="list-style-type: none"> <li>• KS need management commitment.</li> </ul>

Annex-3

Fig. 2 Organogram of Nekemte Hospital



## **Annex-4 In-depth interview guide**

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

### **Information Sheet**

My name is \_\_\_\_\_. I am a student at Addis Ababa University and I am currently conducting a project for the partial fulfillment of master's degree in health informatics. The purpose of this project is to design a technology platform for knowledge sharing among health professionals working on maternal and child healthcare unit at Nekemte hospital.

I would like to ask you some questions related to the topic I mentioned above and all of your responses to questions will be kept strictly confidential throughout the project. Participation in this project is voluntary and you can choose not to answer any individual question or all of the questions. I look forward for your full participation as the answers you give on this form will help in better understanding of the situation of knowledge sharing practice in the hospital MCH unit and will help in designing appropriate technology platform to alleviate knowledge sharing problems. Your participation, non participation or refusal to answer the questions will have no effect now or in the near future on your professional activities and personal life.

May I get your permission to continue?

Yes  Go to the consent form

No  Stop

**Consent Form**

My name is Dr./Sr.\_\_\_\_\_. I am informed that this questionnaire is part of project that proposes design of technology platform for knowledge sharing among health professionals working at MCH unit at Nekemte Hospital. I have been told that the project will help in better understanding of the situation of knowledge sharing practice among healthcare professionals and understanding the situation will help in designing a technology platform to alleviate the knowledge sharing problems for future which will benefits all health professionals and health care organization. In addition I have been told about how the data collection will proceed. I clearly understand that my participation/non participation, or refusal to answer the questions will have no effect now or in the future on professional work as well as personal life. 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\_\_\_\_\_

Code\_\_\_\_\_

ADDIS ABABA UNIVERSITY

SCHOOL OF PUBLIC HEALTH AND SCHOOL OF INFORMATION SCIENCE

DEPARTMENT OF HEALTH INFORMATICS

**Questionnaire for the project on the “design of technology platform for knowledge sharing among health professionals working in maternal and child healthcare unit at Nekemte hospital.”**

**Part-I. Demographic profile of respondents**

**Now I am going to ask you some questions about the socio-demography**

Code	Questions	Response and code	SKIP																																				
Q01	Sex of the Health worker	Male.....1 Female.....2																																					
Q02	What is your age in complete year?	[ ][ ] Years																																					
Q03	What is your current professional/technical/medical qualification?	Gp [non-specialist] medical doctors.....1 Specialists medical doctors [gyn&obs].....2 Health officers.....3 Diploma nurses.....4 Degree level nurses.....5 Master level nurses.....6 Diploma midwives.....7 Degree level midwives.....8 Master level midwives.....9 Other health worker (specify).....10																																					
Q04	In what year did you graduate (or complete) with this qualification?	[ ][ ][ ][ ]																																					
Q05	In what year did you start working in this facility?	[ ][ ][ ][ ]																																					
Q06	In what year did you start working in your current position in this facility?	[ ][ ][ ][ ]																																					
Q07	In your current position, and as a part of your work for this facility, do you personally provide any the following MNCH services? (Probe: Any other MCNH services? Circle ‘Yes’ for all options listed)	<table border="1"> <thead> <tr> <th><b>MNCH Services</b></th> <th><b>Yes</b></th> <th><b>No</b></th> </tr> </thead> <tbody> <tr><td>Antenatal care</td><td>1</td><td>0</td></tr> <tr><td>Family planning</td><td>1</td><td>0</td></tr> <tr><td>PMTCT</td><td>1</td><td>0</td></tr> <tr><td>Delivery care</td><td>1</td><td>0</td></tr> <tr><td>Newborn care</td><td>1</td><td>0</td></tr> <tr><td>Postnatal care</td><td>1</td><td>0</td></tr> <tr><td>Immunization for the mother</td><td>1</td><td>0</td></tr> <tr><td>Immunization for the baby</td><td>1</td><td>0</td></tr> <tr><td>Under-five OPD</td><td>1</td><td>0</td></tr> <tr><td>Under-five in-patient/pediatric</td><td>1</td><td>0</td></tr> <tr><td>Other MNCH services (specify)</td><td>1</td><td>0</td></tr> </tbody> </table>	<b>MNCH Services</b>	<b>Yes</b>	<b>No</b>	Antenatal care	1	0	Family planning	1	0	PMTCT	1	0	Delivery care	1	0	Newborn care	1	0	Postnatal care	1	0	Immunization for the mother	1	0	Immunization for the baby	1	0	Under-five OPD	1	0	Under-five in-patient/pediatric	1	0	Other MNCH services (specify)	1	0	
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Q10	If you did receive training on any of the topics mentioned above please tell me if you shared the knowledge you got from the training to MNCH providers in this hospital?	Yes, I shared the knowledge.....1 No, I didn't share the knowledge.....2																																																																						
Q11	If you have shared the knowledge from the training to any of the MNCH providers here would please tell me how you did that?	Comment: _____ _____ _____ _____																																																																						
Q12	Now I would like to ask you about your satisfaction with you current job. Are you satisfied very satisfied,	Very satisfied.....1 Satisfied.....2 More or less satisfied.....3																																																																						

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Q13	If you are dissatisfied or strongly dissatisfied with you current job, could you please tell me why? (Do not read the options. Probe: Any other reasons? Circle all mentioned)	Lack of/inadequate education/training opportunity...1 Salary is not attractive.....2 Lack of reward and recognition.....3 Poor health facility infrastructure.....4 Unavailability of medical equipment & supplies.....5 Other reason (specify).....6	

**Part-II. Knowledge sharing questions**

**Now I am going to ask you some questions about the knowledge sharing practices, mechanisms and other related issues.**

2.1 Could you explain to me what knowledge sharing means? \_\_\_\_\_  
(Probe: Knowledge sharing benefits)

2.2 How do health workers in this hospital share knowledge on MNCH issues to their colleagues in the MNCH department? Can you describe if there is any existing knowledge sharing practice in your institution?

**Probe:**

- Knowledge sharing mechanisms present?
- How do you share knowledge with colleagues?
- How do you document working practices in your department?

2.3 How do you assess the readiness of the health facility for knowledge sharing practice?

**Probe:**

- Infrastructure,
- Staffing,
- Communication between health workers/Team spirit
- Availability of time to discuss and share knowledge

2.4 What do you think is/are the barriers/challenges of knowledge sharing in your health institution as well as MCH unit?

**Probe:**

- Organizational (cultural) factors like rules, norms, work procedures, etc
- Technological factors (availability of ICT, comm. mechanism like email, platforms
- Individual factors (awareness, willingness, attitude, and trust among professionals

2.5 How and what do you think is the best and easy way to share knowledge among health professionals?

**Probe:**

- Developing platform,
- Paper work,
- Oral/verbal communication

2.6 Based on your role/position/profession, what contents do you suggest need to be developed and shared among professionals working in maternal and child healthcare unit?

**Probe:**

- |                               |                             |
|-------------------------------|-----------------------------|
| • Antenatal care              | -Family planning            |
| • PMTCT                       | -Delivery care              |
| • Newborn care                | -Postnatal care             |
| • Immunization for the mother | - Immunization for the baby |
| • Treatment of sick child     |                             |

2.7 What measures do you think the hospital should take in order to improve its knowledge sharing practice?

I have finished my questions. Please tell me if there is any issue related with knowledge sharing that you want to discuss.

**Thank you for participating in the interview!**