INTERNATIONAL JOURNAL OF SOCIAL Sciences and Information Technology
ISSN 2412-0294 www.ijssit.com

http://www.ijssit.com

SHARING KNOWLEDGE SPECTRUM OF BIRTH COMPANIONS WITHIN MATERNAL HEALTH IN KAKAMEGA COUNTY

[1*] **Alice Moyi Mwanza**
alicemoyi502@gmail.com

[2**] **George Mose**
gnmose@gmail.com

[3***] **Ashah Owano**
maryowino715@gmail.com

[1, 2] *Faculty of Information Science and Technology, Kisii University*
[3] *Technical University of Kenya*

Abstract*: Knowledge in its very nature exists in different types. There is increased recognition of the importance of knowledge in organizations, different knowledge types have also begun to be valued differently in institutions. The knowledge types have significant influence on the way knowledge is shared among individuals and within institutions. Making informed decisions based on the types of knowledge enables both expectant mothers to seek for referral services from birth companions. This paper discusses the types of knowledge that enable birth companions to share knowledge on quality health care. The objective of the study was to identify types of knowledge birth companions have and how it is shared within maternal health in Kakamega County. The study used mixed method approach based on a survey design. Study population was 5515, and data was collected using questionnaires and interviews. The study found that most BCs possess explicit and tacit which they shared when assisting mothers in preparing birth plans and in making quick decision for informing the health officers on any complications that were likely to arise on an expectant mother, and explicit and tacit knowledge was used by BCs in managing referrals and any complications that arose. The study recommends that there is need to fast-track indigenous knowledge on maternal healthcare trainings that encourage deployment of networks, ensure interoperability of various knowledge sharing platforms, promote rational utilization of knowledge within the health system, protect information security, and ensure scalable, sustainable approaches to health care. Trainings based on enhancing indigenous knowledge can help contribute to the driving force for vision 2030 that directly contributes to the Sustainable Development Goals.*

Keywords*: knowledge spectrum, birth companions, maternal health*

INTRODUCTION

Knowledge as a concept has become a key area in management of organizations today. Amayah (2013) defines knowledge as a subset of information that has been extracted, filtered, formatted so as to be processed in a very special way. Jafari Navimipour and Charband (2016) asserts that knowledge is the internalization of information, data and experience. Knowledge sharing (KS) is a technique that contributes to the knowledge society. According to Hu, Dinev, Hart and Cooke (2012) knowledge sharing is a process by which knowledge is conveyed from one person to another, from persons to groups or from one organization to other organizations. Hu et al., (2012) refer to knowledge sharing as a process of developing trans-specialist

understanding through creation of overlapping knowledge fields, while Hong, Mosca, and Luo (2012) considered it to be the main process of knowledge management as focused in this study.

When knowledge sharing is properly managed, it can greatly improve maternal health as it is the experience or information that can be communicated or shared (Hu, 2012). Munafu et al., (2016) points out that there are two ways of sharing knowledge among individuals and organizations: closed-network sharing which involves person-to-person sharing and open-network sharing which involves sharing through a central open system. In addition, Munafu et al., (2016) states that in closed sharing, an individual has the freedom to decide the mode of sharing and choice of partners to share his or her knowledge. Pushpamali (2010) averred that this type of interaction allows for more personal touch, with more direct sharing expected. Open-network sharing refers to the sharing of knowledge among members of a group through a knowledge management system, typically a central database system. It involves multiple individuals sharing multiple knowledge assets in a system. Zia-ur-Rehman (2011) and Smith (2008) clarified that tacit knowledge sharing leads to higher individual performance especially when knowledge sharing capabilities are combined with community resources.

Riege (2005) noted that the intensity and effectiveness of tacit knowledge sharing practices largely depend on the willingness of the person sharing knowledge, friendliness of the information technology system created, the incentive system as well as the organizational culture established over time. Aswath and Gupta (2009) observed that health institutions have challenges in disseminating tacit knowledge to individuals. BCs need to share information and knowledge with mothers of child bearing age in their sub counties, within and outside the health institution to create a competitive advantage among other counties (Mannava, Durrant, Fisher, Chersich and Luchters, 2015).

Statement of the problem

Knowledge sharing can result in exchange of news and peer review activities regarding services of BCs (Morara, 2016; Jafari Navimipour & Charband, 2016). Implicit information on types of knowledge a birth companion requires may be essential in ensuring that they are informed and used in detecting complications in expectant mothers when making referrals and to other individuals who might know and are willing to help. However, in the absence of know how for determining the appropriate type of knowledge by BCs, then their experiences and efforts may be questionable leading to high mortality rates. The know how is what triggered this study.

Objective of the study

The objective of this study was to identify the type of knowledge BCs have and how its shared within maternal health in Kakamega County.

LITERATURE REVIEW

The review of literature on the knowledge spectrum for birth companions confirmed that BCs possess tacit, explicit, embedded and indigenous knowledge as explained in the following paragraphs:

Tacit Knowledge

According to Joia and Lemos (2010) tacit knowledge is rooted in the minds of people. Cheng (2009) states that tacit knowledge is very important to individuals and organizations as a whole if knowledge is shared properly. Tacit knowledge become a competitive advantage in society when individual's ideas and expertise positively adds to economic and social values of their community. It is regarded as the most valuable source of knowledge, and the most likely to lead to breakthroughs in the organization (Wellman, 2009). This is possible

if tacit knowledge is exchanged from one individual to another on the basis of networking (Hong, Mosca, & Luo, 2012).

Knowledge sharing has been embraced by organizations/individuals that desire to have a cutting edge in their operations (Hislop, 2009). Berggren, Bergek, Bengtsson, Hobday and Söderlund (2011); Eom and Lee (2010) define tacit knowledge as information that can be exchanged. this knowledge can be shared on any given job training, mentoring, coaching, communities of practices, peer assistance, knowledge sharing forums which include seminars, conferences, workshops, after action reviews, knowledge network, and knowledge fairs (Aswath & Gupta, 2009). According to Liebowitz (2008) tacit knowledge is the know how that can be passed from one person to another or from one group to another. The group may consist of members engaged in a formal institution such as colleagues in a workplace or informal set ups for instance among friends/families. Paliszkiewicz and Koohang (2013) argue that the fundamental aspect of information locked in people's minds can enable groups or individual participation. BCs rely on utilization of available knowledge about expectant mothers to assist them when making referrals to health facilities. Mothers need to have been referred by a BC for them to be assisted in health/hospitals during delivery, failure to which they are required to pay maternity fees.

Typically, the more the tacit knowledge, the more valuable it tends to be. The paradox lies in the fact that, the more difficult it is to articulate a concept such as a story, the more valuable that knowledge may be. This is often evident when people make reference to knowledge versus know-how, or to knowledge of something versus knowledge of how to do something (Gabbard, 2018). Valuable tacit knowledge often results in some observable action when individuals understand and subsequently make use of knowledge (Cavusgil & Calantone, 2013). It becomes practical when BCs use their accumulated tacit knowledge to assist mothers during pregnancy cycle by observing the growth of the foetus and making necessary recommendations for antenatal care to health facilities.

Explicit Knowledge

Explicit knowledge is either codified or formalized. It is also referred to as know-what (Moreno, Becerril & Alcalde, 2018). It is a type of knowledge that explains the basis of how mothers can prove to the health systems that they are attending the antenatal and postnatal clinics. BCs can also show proof of the fact that they keep records that indicate how they monitor the pregnancy progress of mothers before referring them to hospitals/health centres (Gabbard, 2018). According to Hislop, Bosua and Helms (2018) explicit knowledge can be compared to information that enables people to acquire necessary knowledge. This can happen immediately a mother delivers so that the BCs focus on the postpartum cycle rather than on the growth of the new born to ensure that immunization processes are adequately followed by the mother. Similarly, the mother goes through the process of recovery by adhering to the nutritional health values recommended after delivery. Eating healthy is key towards quick recovery of the mother and continuous breastfeeding of the baby can lead to a healthy environment (Gabbard & Park, 2018).

Explicit knowledge is knowledge that is expressed formally using a system of symbols. It can be easily communicated or diffused. It can be object-based or rule-based. Object-based knowledge can be found in artifacts such as products, patents, software code, computer databases, technical drawings, tools, prototypes, photographs, voice recordings and films. Knowledge is object-based when it is represented using strings of symbols such as words, numbers and formulas, or is embodied in physical entities like equipment, models and substances. Explicit knowledge is rule-based when the knowledge is codified into rules, routines, or operating procedures.

Embedded Knowledge

Embedded knowledge refers to the knowledge that is locked in processes, products, culture, routines, artefacts, or structures (Horvath, 2000; Gamble & Blackwell, 2001). Knowledge is embedded either formally, through a management initiative to formalize a certain beneficial routine, or informally as the organization uses and applies the other two knowledge types. This type of knowledge is found in rules, processes, manuals, organizational culture, and codes of conduct, ethics and products among others. Embedded knowledge can exist in explicit sources and can be written in a manual, particularly when the knowledge itself is not explicit. Barley, Treem and Kuhn (2018) asserts that there are barriers which ensure that embedded knowledge is well understood since generally, it relies on cultures, beliefs and may be very difficult to manage and initiate.

Indigenous Knowledge

This is the knowledge attributed to people that have lived in the same community for a period of time as well as generations in a similar environment. Thairu (2007) avers that indigenous knowledge is generated through observations and experiments, while Owiti, Nguyu and Mungai (2014) affirms that indigenous knowledge is that knowledge that is in a community rather than private property. This type of knowledge is generated within communities, and like other types of knowledge it is dynamic and constantly changing, and adapts to a changing environment. In health systems, indigenous knowledge can act as bodies of knowledge and beliefs handed down to generations with a specific locale, and are also referred to as local knowledge systems that can benefit BCs. Smith (2015) observed that they are characteristically linked to a specific geographical location, culture and shared history. They are orally based. This state may hinder transmission to those who do not share one language and cultural tradition and may form the basis for decision-making at education, health and security levels.

Theoretical Review

Boisot's Theory

Boisot's theory was developed in 1987 by Boisot, with the aim of understanding the difference between documented and undocumented knowledge. The theory attempts to postulates that knowledge is either codified or uncodified. In this study, BCs knowledge is uncodified and therefore, it is shared in the process of socialization and externalization to ensure that experiences/expertise is enhanced. The theory demonstrates that knowledge of the BCs can be useful and deliberately transmitted to a small group of people, on a need to know basis. This theory can be used to relate to how BCs understand the acquisition and effectiveness of knowledge sharing across groups of people, and communities of practice on a need to know basis. Communities of practice provide platforms for activities such as coaching, apprenticeship.

Empirical review

This study revealed that BCs are well-acquainted with knowledge on matters such as signs of different stages of pregnancy and their potential risks as well as their remedies, delivery process, nutritional requirements for expectant mothers, type of exercises to be done by expectant mothers and their importance, the best baby nursing practices as well as hygiene status for both the mother and the baby, sexually transmitted diseases and their remedies and also the traditional way of family planning. For instance, in this study some respondents stated that mothers encounter painful deliveries and that prompted intervention of a skilled medical practitioner. The use of gestures by mothers as signs indicated the pain they were undergoing. This finding resonates with Awad and Ghaziri (2010) line of argument that states that explicit knowledge is usually expressed formally using a system of symbols, and can therefore be easily communicated or diffused. The birth

companions were able to predict the due dates when the mothers were nearing delivery and ability to accompany them to the nearest hospitals or health centres. The findings of this study indicate that BCs have knowledge on safe deliveries and interpretation of the information on quality health care. It was evident that most BCs interviewed in this study recited the knowledge they have without making reference to any archive resource like books or any artifact, notwithstanding the noticeable inconsistencies registered in their responses.Similar findings by Connell, Kevin & Powell (2013); Gichuhi (2014) and Alipour, Idris &Karimi (2014) indicate that tacit knowledge is difficult and hard to acquire and transfer since it relies on knowing what one knows and requires face to face mechanism and its capability to explore mechanisms which can either result in a success story or one hard experience.

METHODS AND MATERIALS

Research design

The study adopted a mixed method approach based based on a survey design that involves the selection of a sample of respondents and administering questionnaires or conducting interviews to gather information on variables of interest (Sekeran, 2003). The two main research strategies are qualitative and quantitative.

Context of the study

The study was conducted in Kakamega County of Kenya which currently has a population of 1,660,651 million and an area of 3,034km. The County has 282 health facilities, and is one of the 47 counties in Kenya established under the 2010 Constitution of Kenya. It is the 15th largest county in Kenya in terms the size of the land, and the 5th among the 15 counties leading in maternal death. This county was chosen for this study because it reports high death rates on maternal health (KNBS 2016; UNPF 2014; WHO 2016).

Population

The estimated target population was 5,515 comprising of 500 BCs; 15 Community health volunteers and 5000 mothers who had sought services of BCs in this County. The sample size of this study was 618 as shown in Table 3.1 below. Public health officer, health administrator and matrons were included in the category of community health workers to provide information on BCs services in the region. This helped to identify co-variate factors that significantly affected the outcome of this study.

Table 3.1: Sample size

Name of Sample	Population size (N)	Population sample size (s)
BC	500	217
Women who have sought services of BCs	5000	381
Community health volunteers	15	14
TOTAL	5,515	618

Sampling technique

The researcher used purposive sampling technique to select the BCs, mothers and community health volunteers since they were knowledgeable and very informed on the subject under investigation. Purposive sampling was used to select the key informants and snowball sampling method was used to select the mothers that had sought services of BCs. They rolled over till the required sample size was achieved.

Sample size

The sample size for this study was 618, a number arrived at by using Krejcie Morgan formula for determining sample size of finite population (Table 3.1 above). The sample of 618 represented a population size of 5,515.

Data collection

A self-administered questionnaire and an interview schedule was used to collect both quantitative and qualitative primary data respectively. The Questionnaire was used to collect quantitative data from BCs, community health volunteers and mothers and who had sought services of BCs on maternal health, while an interview guide was used to collect qualitative data from the District health officer, Public health officer, health administrators, matrons in charge of hospitals and Community health workers.

Data analysis

The study used descriptive statistics methods to analyse both quantitative and qualitative data using SPSS version 24. The data was obtained through questionnaires and interviews respectively.

Response Rate

Out of the sample size of 618, a response rate of 385 was yielded comprising of 56 BCs, 127 expectant mothers who sought services of BCs, 124 Community health volunteers, 36 Health administrators, 5 Public health officer, 2 District health officer, 31 Matrons and 1 Director of Health services within Kakamega County. The data analysed was based on responses from questionnaires administered and interviews conducted by the researcher as shown in the Table 4.1 below.

Table 4.1: Research response rate

Respondents	Sample size	Number of responses	Response rate (Percentage %)
BCs	201	56	27.86%
Expectant mothers	212	127	64.15%
Community health volunteers	130	124	95.38%
Health administrator	36	36	100%
Public H. Officer	8	8	100%
District H. Officer	2	2	100%
Matron	31	31	100%
Dir. of Health	1	1	100%
Total	618	385	62.30%

Table 4.1 shows that out the anticipated 618 respondents, 385 (62.30%) response rates was yielded by the study. According to Mugenda and Mugenda (2012) a response rate of over 50% is considered good adequate for analysis; 60% response rate is generally good while 70% response rate is excellent. The results are in agreement with Kothari (2014) who asserted that a response rate above 70% is deemed to be very good for data analysis. Babbie (2004) also averred that return rates of 50% are acceptable to analyze and publish, 60% is good and 70% is very good; while Bryman and Bell (2007) affirmed that a response rate of 50% is acceptable to analyze and publish, 60% is good and 70% is very good.

RESULTS AND INTERPRETATION

The study sought to identify the different types of knowledge possessed by BCs practices on maternal health during and after delivery as shown in Table 4.2 below.

Table 4.2: Type of knowledge on BCs practices on maternal health

Type of knowledge	Frequency	Percentage
Conducting deliveries	18	26.9
Tacit, implicit, explicit knowledge	15	22.4
Ante-natal care and post-natal care	8	11.9
Indigenous knowledge	6	9.0
Massaging mothers	4	6.0
Encouraging mothers to deliver in hospitals	3	4.5
Placenta retention	2	3.0
Family planning	2	3.0
Prevention of STDs	2	3.0
Support mothers during labor	2	3.0
Life of the baby	1	1.5
Hemorrhage	1	1.5
Previously BC's worked as midwives	1	1.5
Health education	1	1.5
None	1	1.5
Total	67	**100.0**

The analysed data in Table 4.2 above established that majority 18(26.9) of the respondents possess knowledge on conducting deliveries, while 15(22.4%) said they had tacit, implicit and explicit knowledge on birth companions practices on maternal health. Another 8(11.9%) said they had knowledge of BCs practicing ante-natal care and post-natal care. There were 6(9.0%) respondents who said they possessed indigenous knowledge on the practices they offer. The results demonstrate that majority of the respondents had knowledge on practices possessed by birth Companions on maternal health. This finding agrees with those of Paliszkiewicz and Koohang (2013) that fundamental information locked in people's minds can enable groups or individual's participation. BC rely on the utilization of available knowledge concerning expectant mothers sot that BCs can assist them effectively while making referrals. In their own words the BCs gave the following excerpts:

"Conducting deliveries"

"Tacit, implicit, explicit knowledge"

"Antenatal care and post-natal care"

"Indigenous knowledge"

"Massaging mothers"

"Encouraging mothers to deliver in hospitals"

"Placenta retention"

"Family planning"

"Prevention of STD"

"Support mothers during labour"

"Hemorrhage"

The following Figure 1 shows the extent of knowledge possessed by BCs.

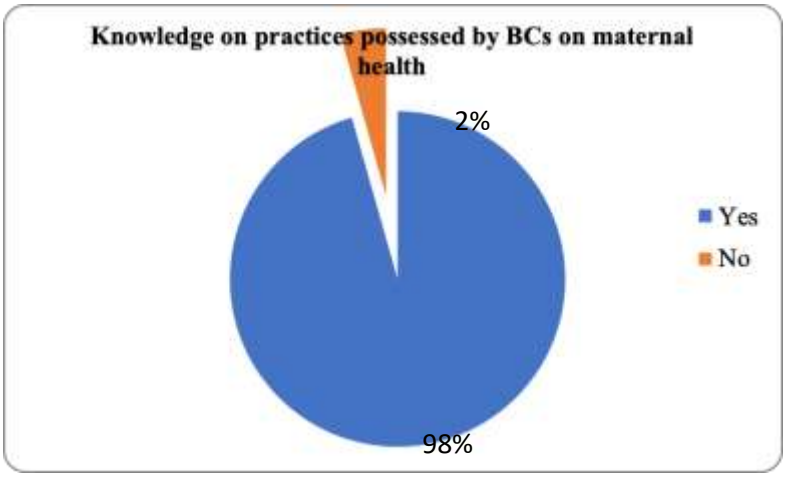

Figure 1: Knowledge on practices possessed by BCs on maternal health

Figure 1 above shows that 55 (98%) BCs acknowledged that they are well conversant with necessary knowledge on maternal health care. Only 1(2%) did not have comprehensive understanding of maternal healthcare practices.

Sources of acquisition of appropriate knowledge that BCs have

The study also sought to know how BCs acquired the knowledge they have as shown in the following Table 4.3.

Table 4.3: Source of most appropriate acquisition of knowledge that you have

Sources of acquisition of knowledge BCs have	Frequency	Percentage
Cultural competence (Apprenticeship passed on from parents, grandparents)	175	**37.5**
Empathy (Assisting, Imitation)	126	**27.0**
Consolation (by practicing)	103	**22.1**
Psychosocial(Observation)	63	**13.5**
Total	467	**100.0**

The analysed data in Table 4.3 shows that majority 175(37.5) of respondents acquired their practicing knowledge as a result of Cultural competence where the knowledge is learnt through apprenticeship and is passed on from parents, grandparents and other past generations. There were 126(27.0) of them who said they acquired the knowledge through empathy as they assisted and imitated what the parents or grandparents practiced, whereas 103(22.1%) practiced it as a form of consolation by practicing while 63(13.5%) of the respondents learnt through psychosocial by observation as was practiced by their parents. 37.5% of the respondents had cultural competence and empathy as the most appropriate acquisition of knowledge they had. The BCs said the following excerpts on how they got know-how on practices:

"Learn from their parents"

"Learnt from grandparents"

"Learnt from great grandparents"

"Learn from parents and grandparents"

"Learnt through apprenticeship"

"Learn by observation"

"Learn by imitating"

"Learn from AMREF"

"Learnt from seminars and workshops in hospitals"

"By practicing"

These findings concur with those of David (2007) who found that when people share knowledge with others they can be able to identify unique challenges that can arise and offer reasonable solutions. As BCs learn their practices from different sources including parents, great grandparents and seminars, they can share the knowledge to assist mothers in referrals.

Referral of expectant mothers to hospitals or maternity

The study established that BCs referred mothers for enhanced medical care as shown in Figure 2 below.

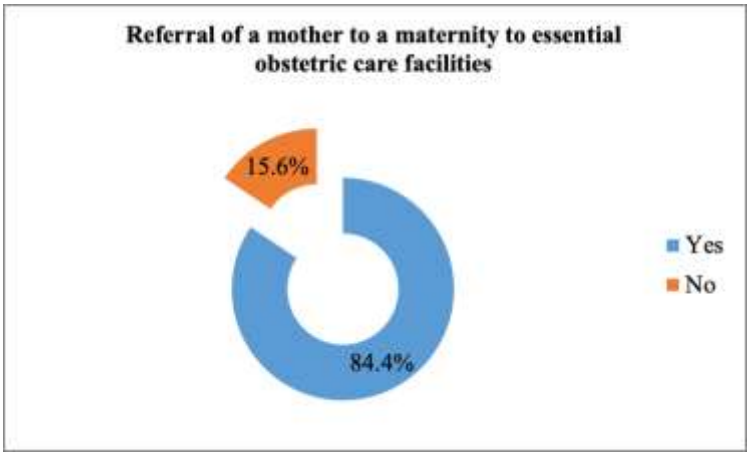

Figure 2: Referral of a mother to a maternity for essential obstetric care facilities

The data in Figure 2 indicates that majority of respondents (84.4%) were of the opinion that they had referred several mothers to a maternity or hospital for essential obstetric care facilities. The rest (15.6%) of the respondents had no idea whether they were referral services and were of the opinion that they had not referred a mother to a health facility for obstetric care. The findings agree with those of (Amayah, 2013).

Knowledge about referrals

The further established that know how knowledge on referrals was shared and exchanged among expectant mothers and services offered by BCs as shown in Table 4.4 below.

Table 4.4: Method of knowing about referrals

Mode of knowing about referrals	Frequency	Percentage
Workshops and seminars/ barazas	61	26.3
BC's, CHVs, Nurse/ Doctors	26	11.2

In case of complications	24	10.3
Current facility	20	8.6
Saw on TVs and radio/brochures/portals	15	6.5
ANC and PNC	12	5.2
Friends	12	5.2
Community health care services	11	4.7
Through Trainer of trainers	9	3.9
Train the BC's to refer mother to the hospitals	8	3.4
Own experience	5	2.2
Through other people who have ever been there	4	1.7
In class and job	4	1.7
Door to door visits	4	1.7
Through Linda Mama naAfya	3	1.3
Quick labour through training	2	.9
Through area services	1	.4
Child looking for bursary	1	.4
Introduction to ambulances	1	.4
Referrals	1	.4
Total	**232**	**100.0**

The analysed data in Table 4.4 indicates that majority 61(26.3%) of the respondents said that they had knowledge on discussions about referrals through workshops and seminars including barazas. The respondents presented an array of mediums that they know about referrals as they were well represented. Another 26(11.2%) of them said that the got to know from BC's, community health volunteers (CHVs), Nurses/ Doctors; while 24(10.3%) of the respondents knew in cases of complications. 20(8.6%) of them learnt out of curiosity to know and have a feel of a current facility and 15(6.5%) got the knowledge through TVs and radio/brochures/portals. Another 12(5.2) knew through ANC and PNC. The also shows that 11(4.7%) of the respondents got to know about referrals through Community health care services, while 9(3.9%) of them knew about referrals through trainer of trainers, whereas 8(3.4%) of the respondents got the knowledge by training the BC's to refer mother to the hospitals. Others 5(3.2%) said it was through their own experience, three sets of 4(1.7%) each said it was through other people who have ever been there, in class and job, and by door to door visits respectively. The other responses were 3(1.3%) who got to know through Linda Mama na Afya 2(.9%) through quick labour training, while four sets of 1(.4%) each knew through area services, child looking for bursary, introduction to ambulances and referrals respectively. The results indicate that workshops and seminars including barazas are the popular mode of knowledge about referrals followed by BC's, community health volunteers (CHVs), Nurses/ Doctors and cases of complications during emergencies. These findings are in tandem with those of Yu, Lu & Liu (2010) who found that knowledge platforms have a positive effect in increasing awareness on maternal health as well as informing mothers and BCs on quality health services. Kumar (2009: chai & Kim (2010) also found out that knowledge forums as radio and television are effective for information sharing including reengineering a member participation in exchange of ideas.

Table 4.5 also indicates the opinion of the respondents on the people expectant mothers discussed referrals matters with.

Table 4.1: Persons discussed referrals with

Persons discussed referrals with	Frequency	Percentage
Expectant mothers to make them attend clinic	66	**30.8**
BC, CHV, Nurses, Doctors	32	**15.0**
Friends	29	**13.6**
Friends who did not have the know-how to do it	12	**5.6**
Sisters/relative	9	**4.2**
Colleagues	9	**4.2**
Child who needs bursary	8	**3.7**
Client with a breech/ complications	6	**2.8**
NGO's	6	**2.8**
Community members	5	**2.3**
Patient who needed referral services	5	**2.3**
Patients and relatives of patients	5	**2.3**
Sexually assaulted children	4	**1.9**
Neighbours	4	**1.9**
Husband-family	3	**1.4**
Books' knowledge, exposure	3	**1.4**
Open forums	3	**1.4**
Own experience	3	**1.4**
Wife and children	1	**0.5**
Complications	1	**0.5**
Total	214	**100.0**

The analysed data in Table 4.5 indicate that majority 66(30.8%) of the respondents discussed the referral issues with fellow expectant mothers to make them attend clinic, closely followed by 32(15%) of them who said they discussed with BC, CHV, Nurses, Doctors, while 29(13.6%) of them said they consulted their friends who knew; and another 12(5.6%) of them respondents discussed with friends who did not have the know-how to do it. Another 9(4.2%) discussed with sisters/relative and colleagues; 8(3.7%) of the respondents discussed with a mother of a child who needed bursary. Two sets of 6(2.8%) said they discussed with Client with a breech/ complications and NGOs; while another three sets of 5(2.3%) said they discussed with Community members, Patient who needed referral services and Patients and relatives of patients respective. Another two sets of 4(1.9%) said they discussed with Sexually assaulted children and neighbours; while another four sets of 3(1.4) said they discussed with husband-family, Books' knowledge, exposure, open forums and own experience respectively. Although insignificant, two sets of 1(0.5%) of the respondents said they discussed with wife and children and also in case of complications. These findings are clear that most referrals are done by fellow expectant mothers persuading the others to attend clinic, birth companions, community health volunteers, Nurses, Doctors and friends consulted other friends who knew. The findings concur with those of Ribbons (2015) and Bazart and Gibson (2017) who also found that in Ethiopia mothers discussed referral matters with BCs, husbands and children included in the formal health system where they monitor their clinic attendance records on antenatal and postnatal care which contribute significantly in reducing maternal mortality ratios.

Opportunities for Knowledge sharing in health systems (Third objective)

The researcher sought to know if there are any knowledge sharing for BCs in the County particularly on the safe deliveries of children as shown in Figure 3 below.

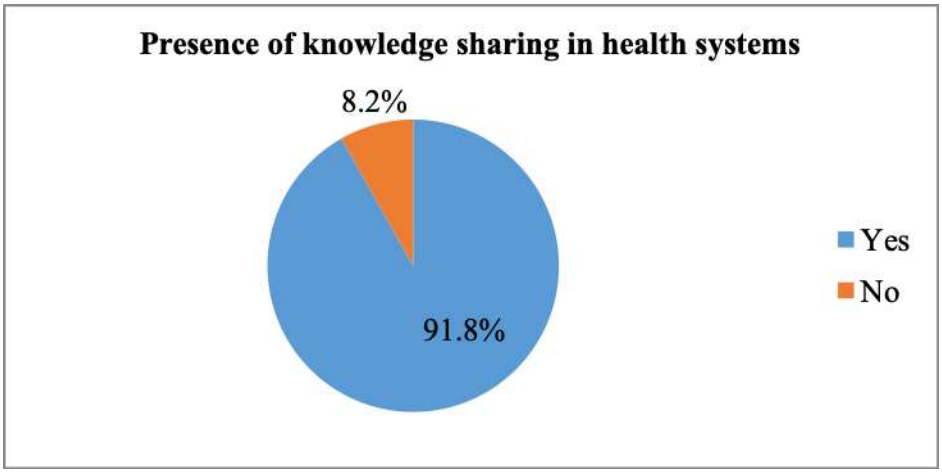

Figure 3: Presence of knowledge sharing in health systems

The analysed data in figure 3 above indicates that 353(91.8%) of the respondents confirmed and concurred that there was presence of knowledge sharing in health systems within Kakamega County. The most appropriate ways of sharing knowledge with the mothers and other BCs were during antenatal visits, through open forums and during postpartum visits respectively. Only 32 (8.2%) were not aware of the opportunities available in health systems where they can exchange of share knowledge on updates or new developments on maternal health in the County.

The researcher further asked the respondents the most appropriate ways of sharing knowledge between mothers and other BCs. Their responses are shown in Figure 4 below.

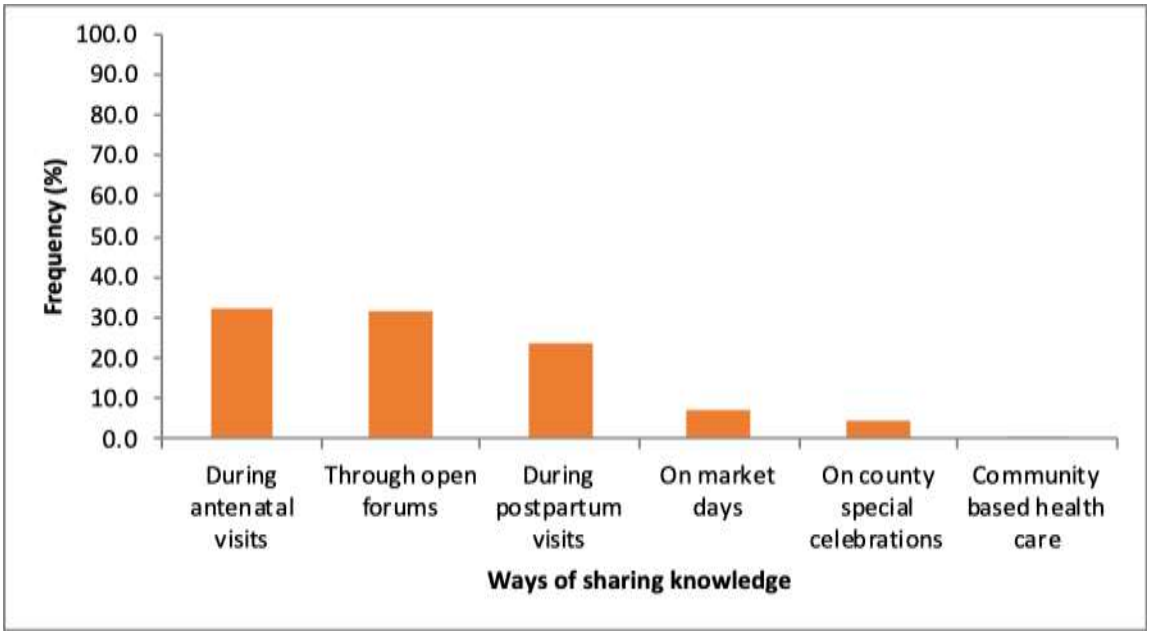

Figure 4: The most appropriate way of sharing knowledge between mothers and other BCs

The data in Figure 4 shows that 123(32%) of the respondents stated that sharing of knowledge between mothers and other BCs usually take place during ante-natal visits, while115 (30%) of them said that the knowledge is shared through open forums, while 77(20%) said they shared knowledge during postpartum visits. Surprisingly38 (10%) of the respondents stated that they shared knowledge on market days when BCs met expectant mother shopping.

Respondents claimed sharing information with community health workers (18.1%) and assisting mothers to prepare birth plans (17.9%) as the most common ways of sharing knowledge on maternal health the results are shown in table 4.6 below.

Table 4.6: Ways of sharing knowledge on maternal health

Ways of sharing knowledge on maternal health	Frequency	Percentage
Sharing information with community health workers	184	18.1
By assisting mothers to prepare birth plans	182	17.9
Assisting mothers during referrals to health facilities/ hospitals	174	17.1
By informing the health officer on any complications	164	16.1
By training mothers and other BCs on quality care	135	13.3
Sharing knowledge with other county coordinators	120	11.8
Performing many deliveries	59	5.8
Total	1018	**100.0**

The respondents were probed on ways in which BCs services were known. The findings are shown in Table 4.7 below where 16.6% of the respondents indicated that TV and radio/social media were ways in which BCs services were known, 14.5% were known through relatives/husband/wife, 11.9% were known under community based healthcare, 11.1% was through seminars and workshops, 8.9 were through friends and neighbors. 7.2 was through hospitals while 5.1% indicated when performing deliveries, 3.8% were known from referral to hospitals and through training in any college as they refer mothers.

Table 4.2: Ways in which BC services were known

Ways in which BCs services were known	Frequency	Percentage
TV and radio/ Social media	39	16.6
Relatives/husband/wife	34	14.5
Under community based healthcare	28	11.9
Seminars and workshops	26	11.1
Friends/ Neighbours	21	8.9
Through the hospital	17	7.2
When performing deliveries	12	5.1
Through referral to hospital	9	3.8
Through training in any college as they refer mothers	9	3.8
Meetings and home visits	6	2.6
Fellow mother	6	2.6
Death of mothers and children	5	2.1
Used the TBA	5	2.1
ANC and PNC	5	2.1
Open forums and social groups	3	1.3

They help rescue mothers' lives	3	1.3
Looking for them in rural areas	2	0.9
Complications of the child in the womb	2	0.9
Own experience	2	0.9
Through the church	1	0.4
Total	235	**100.0**

The study sought to establish whether mothers/BCs were willing to share knowledge. The findings are shown in figure 5. The findings revealed that 90.5% of the respondents were willing to share knowledge on delivery. 9.5% were not willing to share knowledge.

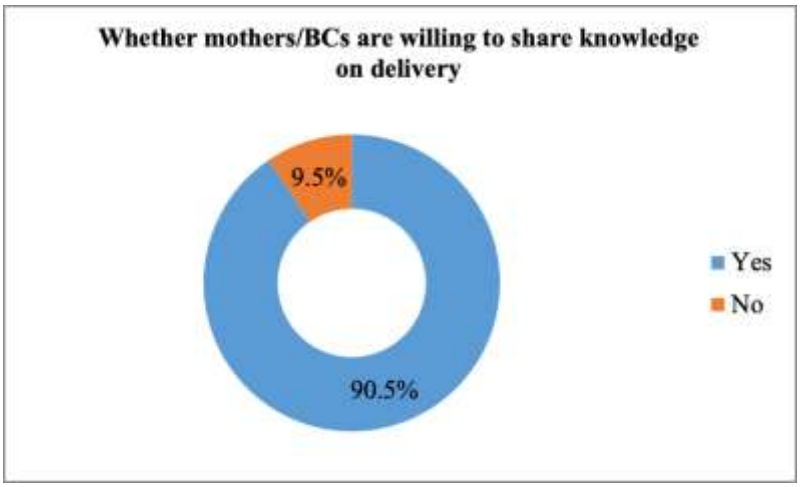

Figure 5: Whether mothers/BCs are willing to share knowledge on delivery

The study sought to establish number of BCs known statistics. The findings are indicated in Table 4.8. The respondents claimed that the number of BC services they are aware of were as high as 320, low of 1 and an average of 23.

Table 4.8: Number of BCs services known Statistics

Number of BCs services known Statistics	
N	192
Mean	23.67
Std. Error of Mean	3.513
Std. Deviation	48.671
Minimum	1
Maximum	320

The study investigated the services of birth companions sought. Majority of the respondents concurred that they seek (69.1%) BCs services. 31.9% do not seek birth companion's services as indicated in Figure 6.

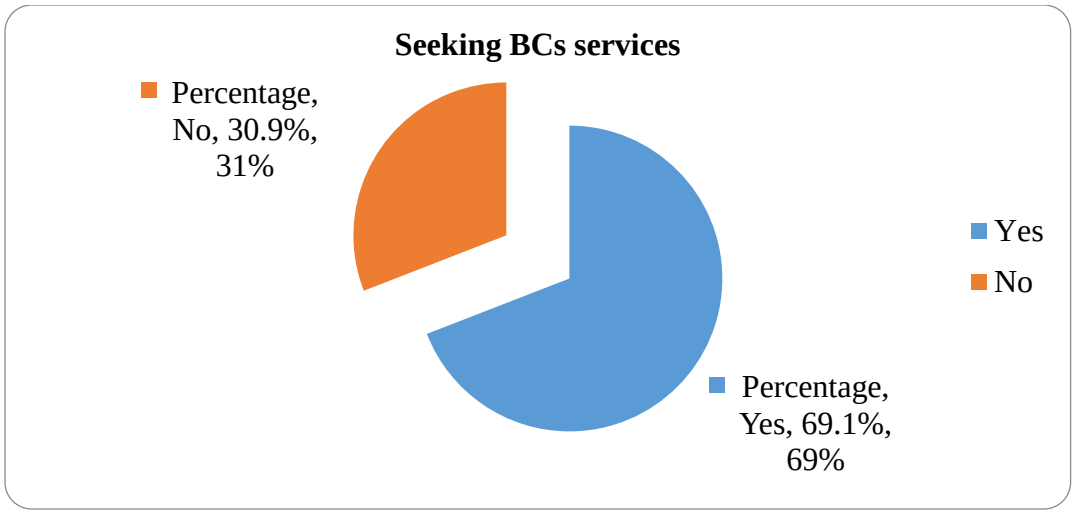

Figure 6: Seeking BCs services

The study went ahead to find out the frequency of using BCs services. The findings were as in Figure 7. The respondents were divided on the frequency of using BCs services with 41.10% claiming always, 41.10% claiming not often and 17.80% not at all.

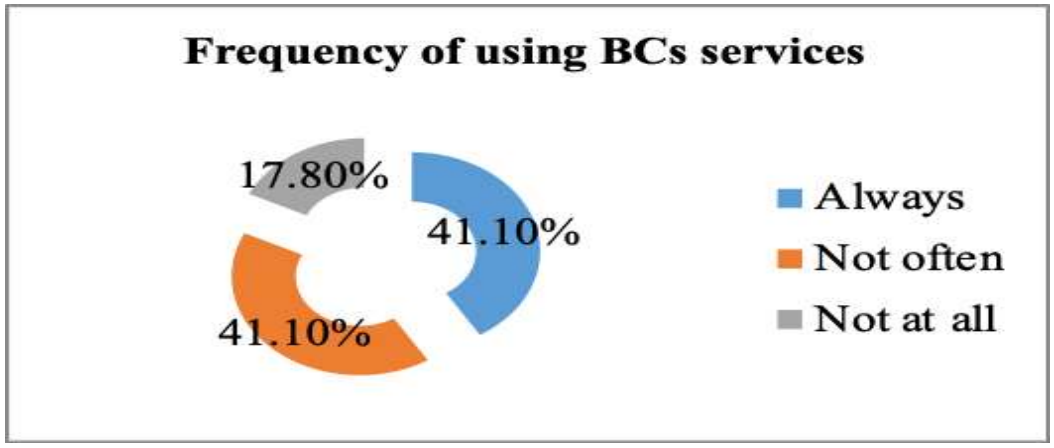

Figure 7: Frequency of using BCs services

The study sought to establish reasons why some mothers preferred BCs services through a set of questions. A summary of the findings is shown in Table 4.9.

The respondents provided an array of reasons some mothers prefer BC services with BCs offering good service, friendly nature and being well skilled (42.1%) being most represented. The key informants gave varied reasons from the excerpts that:

"BCs act as a link between mother's home and health facilities"

"They are also important when the facilities are far from the villages"

"They inform hospital personnel on any complications and care given to mothers"

"We do not prefer them"

"Respited labour gives you time to deliver at home"

"Now it is free you must have Mtiba and NHIF insurance"

"These BCs live near mothers it is easy to find them"

"They can refer mothers to hospital"

"They have ground work experience"

Association between types of knowledge and how it's shared within the health system in Kakamega County

The study established how various types of knowledge shared within the health systems as shown in Table 4.9.

Table 4.9: Reasons for preference of some mothers on BCs services

Reasons some mothers prefer BC services	Frequency	Percentage
They offer good service, are friendly and well skilled	107	42.1
Proximity convenience and readily available	55	21.7
They are cheap	35	13.8
Trusted and secretive	15	5.9
We are within the communities	10	3.9
Ease of access	8	3.1
Own experience	5	2.0
We are educated and so help them on information on seeking hospital care	3	1.2
Good referral hospitals	3	1.2
Relevant	3	1.2
Exposure and common language	2	0.8
Poor reception from other hospitals	2	0.8
Encouragement and moral support	1	0.4
Personal relationship with them	1	0.4
Creating awareness	2	0.8
They train community resources	1	0.4
Phobia for health facilities	1	0.4
Total	254	100.0

The findings indicated in table 4.9 show that respondents had explicit knowledge and that they majorly share it by assisting mothers to prepare birth plans 81.2% (n=121), those with Implicit and indigenous knowledge share it by assisting mothers during referrals to health facilities/ hospitals. Persons with tacit knowledge share it by informing the health officer on any complications and those who are not sure which type of knowledge they possess or have none share information with community health volunteers **Error! Reference source not found.**. The association between types of knowledge known and how it's shared was statistically significant as shown in **Error! Reference source not found.** below.

Table 4.10: Association between types of knowledge and how it is shared within the health system in Kakamega County

Types of knowledge you are aware of	How do you share the wealth of knowledge that you have							N
	By assisting mothers to prepare birth plans	Assisting mothers during referrals to health facilities/ hospitals	By informing the health officer on any complication	Performing many deliveries	Sharing information with community health workers	Sharing knowledge with other county coordinators	By training mothers and other BCs on quality care	
Explicit (Knowledge that is easy to articulate, write down and share	121(81.2%)	13(8.7%)	7(4.7%)	0(0%)	7(4.7%)	0(0%)	1(0.7%)	**149**
Implicit (The application of explicit knowledge)	7(14%)	30(60%)	5(10%)	1(2%)	7(14%)	0(0%)	0(0%)	**50**
Indigenous (Knowledge attained when one resides in a place for a long time)	25(27.8%)	33(36.7%)	17(18.9%)	3(3.3%)	9(10%)	1(1.1%)	2(2.2%)	**90**
Tacit (Knowledge gained from personal experience that is more difficult to express)	18(28.1%)	9(14.1%)	22(34.4%)	8(12.5%)	2(3.1%)	1(1.6%)	4(6.3%)	**64**
Not sure	6(27.3%)	4(18.2%)	0(0%)	1(4.5%)	7(31.8%)	1(4.5%)	3(13.6%)	**22**
None of the above	0(0%)	1(16.7%)	0(0%)	1(16.7%)	3(50%)	0(0%)	1(16.7%)	**6**

Table 4.3: Chi-Square Test for association between types of knowledge and how it's shared within the health system in Kakamega County

Chi-Square Tests			
	Value	Df	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	224.477[a]	140	**.000**
Likelihood Ratio	183.596	140	**.008**
Linear-by-Linear Association	.606	1	**.436**
N of Valid Cases	247		

a. 162 cells (93.1%) have expected count less than 5. The minimum expected count is .02.

DISCUSSIONS

The results established that BCs in Kakamega County are sufficiently conversant with explicit and tacit/implicit knowledge of maternal health care. Further, explicit knowledge under the custody of BCs was easy to articulate, write down and share while the indigenous knowledge was acquired when one resided in a place for a long time. The Respondents alluded to a common fact that indigenous knowledge was that knowledge that remains as community's heritage rather than private property. These findings resonate with findings by Thairu, (2007); Owiti, Nguyu and Mungai, (2014), that indigenous knowledge is attributed to people who have lived in the same community for a period of time as well as generations in a similar environment. On the tacit type of knowledge, thit was established that tacit knowledge gained from personal experience was more difficult to express and also least used by BCs and yet it was the knowledge that resided in a human mind which relied on the expertise and experience of an individual.

The study established that in scenarios where the knowledge was amply utilized for the benefit of expectant or lactating mothers, a significant positive impact was registered. For instance, use of the previously mentioned communication platforms to share the fore-mentioned knowledge has had a positive effect in increasing awareness on maternal health in the county. A significant number of BCs alluded to the fact that in cases where their expertise isn't working they have swiftly referred their customers to seek further medicinal examination and management from hospital hence positively influencing access to health facilities. BCs who shared knowledge on quality health care with their clients positively contributed to reduction of maternal mortality rates in the county. As a result of sharing vast knowledge with some members of the community, they increased the size of their clientele, majority of whom expanded their operational niche through referrals (networking). The study also found that knowledge under the custody of BCs has been preserved and passed onto generations through apprenticeship of members within the same family.

SUMMARY OF THE FINDINGS

The study established that there are four types of knowledge under the custody of BCs, namely explicit, tacit, indigenous and implicit knowledge. Explicit and tacit were the most popular type of knowledge among BCs, while indigenous and implicit knowledge were the other knowledge under this category, which also contributed to the amount of knowledge an individual needed to exchange or share health information. This type of knowledge was shared through assisting mothers in preparing birth plans and in making quick decision by informing the health officers on any complications likely to arise. Indigenous knowledge which is generated within communities, was dynamic and constantly changing, due to its adaptation to a changing environment. It was shared while making referrals to hospitals as well as when seeking BCs services, while implicit

knowledge was shared when assisting mothers during referrals to health facility/hospitals. Tacit knowledge was shared among birth companions, and was used to inform health officers about any complications on expectant mothers at the time of referrals

CONCLUSION

Explicit and tacit knowledge were the most popular type of knowledge among BCs, and was shared when assisting mothers in preparing birth plans and in making quick decision by informing the health officers on any complications that were likely to arise. Tacit knowledge shared by birth companions was used to inform health officers on any complications.

Association between the types of knowledge and how it was shared was significant and people have access to sources of information which they use when they need medical care, therefore, sharing of knowledge improves maternal health especially when it is shared on placenta retention, family planning and preventive measures. Indigenous knowledge which is generated within communities was dynamic and constantly changing, due to its adaptation to a changing environment was least known although shared in making referrals as well as seeking BCs services.

RECOMMENDATIONS

There is need to fast-track indigenous knowledge on maternal healthcare trainings that encourage network deployment, ensure interoperability of various platforms, promote rational utilization within the health system, protect information security, and ensure scalable, sustainable approaches. Trainings based on enhancing indigenous knowledge can help contribute to the driving force for vision 2030, which directly contributes to the sustainable development Goals. The trainings policies to include response to prolonged labour, referral management, facilitation of systematic and mass dissemination of relevant health information, as well as linkages with national health communication plans and strategies.

The results of this study calls for an urgent common research agenda and an enabling environment for implementation to generate the most compelling evidence that advocates for enhanced knowledge sharing among BCs. This will contribute more effectively to achieving global goals to reduce preventable deaths of children under the age of 5 years and promote their healthy development.

REFERENCES

Amayah,.T. A. (2013). Determinants of knowledge sharing in a public sector organization. Journal of Knowledge Management, 17(3), 454–471. https://doi.org/10.1108/JKM-11-2012-0369

Awad, E. M. & Ghaziri, H. (2010). Knowledge management. Delhi: Pearson Education

Balogun, M., & Odeyemi, K. (2010). Knowledge and practice of prevention of mother-to-child transmission of HIV among traditional birth attendants in Lagos State, Nigeria. The Pan African medical journal, 5, 7-7.

Boisot, M. H. (1998). Knowledge assets: Securing competitive advantage in the information economy. Oxford: OUP

Gichuhi, W. Z. (2014). Determinants of effective knowledge mamagement practices in selected university libraries in Nairobi and Kiambu counties, Kenya. Nairobi: Kenyatta University

Hu, Q., Dinev, T., Hart, P., & Cooke, D. (2012). Managing employee compliance with information security policies: The critical role of top management and organizational culture. Decision Sciences, 43(4), 615-660.

Ismay, G. R., Morrow, H. M. & Ghebrehiwet, L. (2008). Knowledge and Practice of Traditional Journal of the Eritrean Medical Association, Birth Attendants (BCs) in Eritrea. 4,22–27.

Jafari Navimipour, N., & Charband, Y. (2016). Knowledge sharing mechanisms and techniques in project teams: Literature review, classification, and current trends. Computers in Human Behavior. https://doi.org/10.1016/j.chb.2016.05.003

Johnson, B., Lorenz, E., & Lundvall, B.-AAke a. (2002). Why all this Fuss about Codified and Tacit Knowledge? Industrial and Corporate Change, 11(2), 245–262.

Kaba, A., & Ramaiah, C. K. (2018). Investigating knowledge acquisition among faculty members. Interdisciplinary Journal of Information, Knowledge & Management, 13.

Munafu, S. M., In, S., Fulfillment, P., The, O. F., For, R., Of, D., … Engineering, F. O. F. (2016). the design and implementation of knowledge management systems in academic libraries to enable knowledge management processes: a case study of Makerere university library. Pretoria: University of Pretoria.

Owiti, J., Nguyu, W. Mungai, G. (2014). Knowledge management enhancement through ICT. Journal of digital libraries and knowledge management 491), 1-16.

Pushpamali, N. (2010). A study of the organizational culture for knowledge sharing in selected bank branches.

Razmerita, L., Kirchner, K., & Nielsen, P. (2016). What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication. Journal of Knowledge Management, 20(6), 1225–1246. https://doi.org/10.1108/JKM-03-2016-0112

Schwartz, D. G., & Te'eni, D. (2014). Encyclopedia of knowledge management. Encyclopedia of Knowledge Management 1 https://doi.org/10.1057/palgrave.kmrp.8500152

Thairu, R. & Oyondi-Nganyi (2012). Knowledge management and digital libraries: current issues with regard to indigenous knowledge in Kenya. Journal of professional practice, 3(1-2), 24-37