Barriers to Knowledge Management Practices, Interprofessional Collaboration and Information Technology Application in Federal Tertiary Hospitals in Nigeria

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Abstract

Effective dissemination of knowledge among health care professionals using information and telecommunication technology has been identified as an important tool to improve quality health service delivery. This study provides a succinct explanation of the constraints of using information technology in the management of knowledge among diverse health care professionals in federal tertiary hospitals in Nigeria. The study specifically focuses on factors militating against the effective use of information technology application to manage knowledge to promote interprofessional collaboration for improved quality service delivery. Cross-sectional data were collected from 479 healthcare workers across the federal tertiary hospitals in Nigeria. Using the Relative Importance Index (RII), the results show that inadequate ICT infrastructure (R = 0.79), inadequate technical support (R = 0.78), ICT illiteracy (R = 0.77), inadequate management support (R= 0.76), behavioural and personal characteristics (R = 0.72), among others are the major barriers militating against interprofessional collaboration and knowledge management in federal tertiary hospitals in Nigeria. Majority of the respondents also perceived lack of time and interaction among healthcare workers, poor verbal communication, level of experience, organisational structure and hierarchy, difference in education and gender as parts of the sociocultural factors inhibiting effective management of knowledge and interprofessional collaboration among health care workers. The study concludes that provision of basic information and communication technology facilities to healthcare workers is paramount to enhance knowledge sharing and interprofessional collaboration to improve quality health service delivery. Adequate funding, provision of medical infrastructure and basic amenities, health care workers education and orientation towards the benefits of interprofessional collaboration using the IT application are suggested as ways to improve quality health care services in tertiary hospitals.

Key words: Interprofessional collaboration; Information and communication technology; Knowledge management; Tertiary hospitals; Health care workers

INTRODUCTION

Rapid changes in services offered by the hospitals over the past two decades have necessitated increasing research interest in the relevance of various forms of knowledge, with the view to harnessing best practices to manage knowledge assets, to improve hospital performance. For organisations, continuous learning both internally and externally is key to organisational survival and serve as the basis of firms' knowledge architecture. Improving the flow of knowledge and communications across the organization through collaboration, sharing of knowledge, and generation of ideas has been observed to have a strong positive effect on organisational effectiveness and innovation(Onifade, Opele, & Adelowo, 2015); (Adewole & Opele, 2019); (Adegbite et al., 2020). In

public institutions, especially among the tertiary hospitals, several factors are responsible for the inability of the hospitals to render quality service, one of which is lack of competitiveness frameworks and a sense of accountability towards the future (Chawla & Joshi, 2011); (Awogbami, Opele, & Chibueze, 2020).Each federal tertiary hospital is expected to preserve the quality of life and to fully exploit the potential of its workforce to sustain the nation's health and its prosperity.

Interprofessional collaboration and the utilization of a teamwork strategy are both key parts of the health service delivery system globally. Moreover, health care is a multifaceted activity that involves health care workers from diverse backgrounds and training, who interact with each other as professionals,patients or service users to deliver the desired or expected outcome to the customers according to their health needs. Also, because of the interrelatedness of the health care system, it has been adduced that for efficient quality service delivery, a health professional may find it difficult to perform their duties independent of other health workers who are meant to provide complementary support effort to the health care users, hence the need to encourage interprofessional collaboration among health care professionals (World Health Organisation, 2010). According to Kaini (2017); (Central, Oluseyiadewara, Opele, Oyewumi, & Abdulraheem, 2019),collaboration among different health care professionals is most effective when roles are defined, team composition and task allocation are clearly established and knowledge is properly managed among the different tiers of professionals. However, (Bliss, Cowley, & While, 2000) cited in (Kaini, 2017) opines that lack of clarity and misunderstanding regarding the boundaries of professional roles may be a factor in restricting the utilization of relevant professionals within the interprofessional practice. Overlapping and blurring professional roles in the interprofessional care team can result in feelings of insecurity and anxiety, and can weaken professional confidence (Keeping, 2014).

In the same vein, Baxter & Brumfitt (2008) opines that the way the interprofessional care team is managed and structured may have a great impact on the success or failure of the team. This, therefore, necessitates the call for proper interprofessional collaboration amongst healthcare professionals, and promoting an enabling environment with best practices in knowledge sharing framework amongst these professionals can guaranteed effective quality health services delivery (Jacob Kehinde Opele, 2020). Knowledge management and its practices emphasize the valuable resources of organisations (e.g human, time, finance, and even the application of technology, amongst others). To a large extent, it involves the nurturing of a learning environment that enables socialization and externalization of knowledge; and knowledge transfer - where individuals are motivated to

share, create and acquire knowledge (Liebowitz, Ayyavoo, Nguyen, Carran, & Simien, 2007) cited in (Gehman, Lounsbury, & Greenwood, 2016)as well as how such research has the potential to influence policies relevant to critical institutional changes unfolding in the world today. In Volume 48A, the focus is on the micro foundations of institutional impacts. In Volume 48B, the focus is on the macro consequences of institutional arrangements. Our introduction provides an overview to the two volumes, identifies points of contact between the papers, and briefly summarizes each contribution. We close by noting avenues for future research on how institutions matter. Overall, the volumes provide a cross-section of cutting edge institutional thought and empirical research, highlighting a variety of fruitful directions for knowledge accumulation and development.","author":[{"dropping-particle":"" ,"family":"Gehman","given":"Joel","non-dropping-particle":"","parse-names":false,"suffix":""},{"dropping-particle":"","family":"Lounsbury","given":"Michael","non-dropping-particle":"","parse-names":false,"suffix":""} ,{"dropping-particle":"","family":"Greenwood","given":"Royston","non-dropping-particle":"","parse-names":false ,"suffix":""}],"container-title":"Research in the Sociology of Organizations","id":"ITEM-1","issued":{"date-parts":[["2016"]]},"title":"How institutions matter: From the micro foundations of institutional impacts to the macro consequences of institutional arrangements","type":"article-journal"},"uris":["http://www.mendeley.com/documents/?uuid=c2a91a88-b2d8-49d3-b648-2f319896e3be"]}],"mendeley":{"formatted Citation":"(Gehman, Lounsbury, & Greenwood, 2016. The creation of such a social reality can become an important core competence that will promote professional and interprofessional collaborations amongst the health workforce hence, enabling the health organisations to acquire a sustainable competitive advantage, especially in the delivery of their services and possession of highly skilled and well-informed health personnel.

Health care is considered a knowledge-intensive sector and technology serves as a veritable tool towards managing this knowledge effectively. Therefore, the use of technology is critically important when quick information is needed to be disseminated or passed on to point of care professionals. Information technology has increased productivity in many sectors of the economy, and economic growth rests more and more on the contributions of IT. However, even though the investments in IT have been growing, its adoption and application have been relatively slow in the health care industry. Health care systems are under constant discussion and structuring (Ranta, 2010); (Awogbami et al., 2020). Hence, the existence of pressure to improve productivity, as the already struggling industry will face serious challenges due to the aging population. Thus, to be able to provide good quality health services to the citizens, the

productivity needs to increase and it is widely believed that IT, most importantly, its adoption and application will be playing a major role. Although a study has shown that technology helps to improve in dispensing health care services and to increase the accessibility of health care professionals to patients,it did not significantly reduce the outcomes of services to the patients in the long run due to lack of coordinated knowledge management and low interprofessional tendencies (Rajkumari, 2014).

Information technology (IT) is one of the most important innovations in the health care industry, due to its potential advantages of lowering cost, monitoring and surveillance, and reducing medical errors (Nalecz & Zmyslowski, 1998). The adoption rate in hospitals of developing countries, especially public (government-owned) hospitals, is much lower than their counterparts in developed countries. More researchers and policymakers are beginning to take great interest in this low-adoption-rate issue (Sun, 2016); (Opele, Iyanda, & Opele, 2015).

There exists the paucity of literature focusing on knowledge management practices in government-owned health organisations. Moreso, adequate concern towards knowledge management practices amongst health professionals and the interprofessional collaboration amidst them is not, or do not appear, a priority. Furthermore, understanding the value of the health sector in the development of a nation and the need for interprofessional collaboration of which various related knowledge is shared amongst these professionals, in delivering quality health services with the application of information technology is also less attended by stakeholders., There is the need to examine the possible challenges confronting health professionals in adopting and applying information technology in delivering quality health services. Thus, this study seeks to contribute to the existing literature on knowledge management practices, interprofessional collaborations, and information technology application especially in the health industry. Specifically, the study seeks to identify possible factors that inhibit,or challenge the adoption, application, and progression of these IT towards its contribution to quality health care services delivery, using federal tertiary hospitals in Nigeria.

LITERATURE REVIEW

The health industry remains a space in continuous development, occupied by different professionals, predominantly those who are health inclined from diverse backgrounds, saddled with the responsibility of providing relevant health services to people who come seeking related health services. Studies have been conducted across the globe, observing the benefits of collaboration and knowledge management amongst different health professionals (e.g. doctors, nurses, technicians, radiographers, laboratory scientists, etc.) towards optimum delivery of quality health services, especially with the application or use of information technology in rendering services to seekers as such.

Kobayashi (2010),cited in Eriksen et al (2017), mentioned that interdisciplinary team members work in a collaborative and integrated way and utilize interdependent knowledge, skills, attitudes, values, and methods to deliver the goals of the organisation in the most efficient manner. In their study, Weller & Barrow (2011) using a qualitative approach to study interprofessional collaboration among junior doctors and nurses in a hospital setting, stated that for an interprofessional team to exist and perform maximally,team members must display sufficient cooperation and communication, sense of collaborative responsibility, good knowledge base, skills and competencies, and good team attitudes and behaviors. Clancy et al (2013) conducted an e-post questionnaire-based study using cross-sectional design among multiple health professionals in different sized Norwegian municipalities, to examine collaborative activities relating to public health nursing. Using the ANOVA and Chi-square test, the study found that collaboration can only thrive when interprofessional conflict is managed among different health care professionals.

Accordingly, all groups related and relational ties such as trust, respect, and collaborative competencies were observed to serve as the driving force of good collaboration. Inference from the above, interprofessional collaboration provides an enabling environment to promote teamwork amongst health professionals, increase the quality delivery of health services as well as encourage learning, since knowledge is being acquired and shared amongst the health professionals in the discharge of their relevant duties. However, challenges still exist that militate against interprofessional collaboration, which includes, the shortage of health care professionals as a result of brain drain especially in developing countries, issues of trust, and leadership, amongst others.

Zack et al (2006) cited in Mhhoya (2016),carried out an empirical study to explore the impact of knowledge management on organizational performance. The main focus was on the extent to which knowledge management practices are used in the firms and their impact on the performance of the firm. The study was carried out on 90 Australian, US, and Canadian firms from ten industry sectors of which the health industry was one. Organizational performance was studied in terms of product leadership, customer intimacy, and operational excellence while the knowledge management practices were analyzed based on the ability to create new knowledge; the ability to share existing knowledge; acknowledging the strategic value of knowledge and learning, and a culture of sharing. Results indicate that knowledge management practices have a positive

correlation with performance measures. Also, a study in telecommunications and the health sector empirically proved that strategy, srganizational culture, information technology, and leadership have a strong and positive impact on the knowledge transfer process (Al-Gharibeh, 2011).

Elsewhere, Lee & Goh (2010), studied the various knowledge management practices that were being used by 60 health care portals from North America and Asia. These health care portals represented hospitals, government institutions, and non-governmental institutions. A three-stage model was proposed which consisted of knowledge access, knowledge creation, and knowledge transfer as its three main stages which were used to manage the health care portals. It was also observed that, it is important to share knowledge between users and health care portal providers to improve performance. Thus, technology came to be established as a very important part of knowledge management systems. Examples of information technology used in the health space include electronic medical records (EMRs), nurse charts, and picture archiving and communication systems (PACS). A study by Pheko(2018)social development and the economic development of individuals, organizations and nations. However, the experience of working is not always pleasant as there are many instances where relationships between workers could deteriorate, leading to practices and behaviours that could be characterized as workplace bullying and/or mobbing. The current study is an exploratory study which used autoethnography to investigate experiences of academic bullying and mobbing, and relates the practices to power structures in academic institutions. Specifically, the author shares personal experiences and explores the physical and emotional pain of being bullied and mobbed. The author also outlines how both autoethnography and meaning in life strategies were used to cope with the physical and emotional distresses associated with the negative experiences. By outlining the success of the meaning in life strategies, the author hopes to inspire other "victims" to move from victims to being survivors of bullying and mobbing.","author":[{"dropping-particle":"","family":"Pheko","given":"Mpho M.","non-dropping-particle":"","parse-names":false,"suffix":""}],"container-title":"International Journal of Qualitative Studies on Health and Well-being","id":"ITEM-1","issued":{"date-parts":[["2018"]]},"title":"Autoethnography and cognitive adaptation: two powerful buffers against the negative consequences of workplace bullying and academic mobbing","type":"article-journal"},"uris":["http://www.mendeley.com/documents/?uuid=5ef9824f-cb32-4387-8a4f-4f8a6a1a44d9"]}],"mendeley":{"formattedCitation":"(Pheko, 2018 pointed out some of the challenges related to the adoption and application of information technology in the health care industry, which include low rates and

access to internet connectivity, low computer literacy, high infrastructure costs, low disposable incomes, and sparse population.

A case study approach was adopted by Stroetmann & Aisenbrey (2014) to investigate knowledge effectiveness in Siemens Healthcare, a leading medical supplier in the health care industry to manage and distribute knowledge effectively to save costs on duplication of efforts and repetition of errors. A clinical knowledge-based technology was created, which makes relevant knowledge available to various stakeholders – doctors, patients, technicians, etc., through database and documents, thereby saving time and reducing costs. Although technology is considered useful, studies show that organisational structure is the most significant predictor of knowledge management effectiveness, followed by organizational culture and information technology (Khalghani, Reshadatjoo, & Iran-nejad-parizi, 2013). They conducted this study in five medical research centres in Iran to investigate the impact of three enablers of knowledge management: organisational culture, information technology, and organisational structure on knowledge management effectiveness. Other authors claimed that medical professionals prefer technology-based knowledge management and social communities of practice to sharing knowledge amongst themselves (Ocak, Koseoglu, University, & Ross, 2014). They examined the various benefits of knowledge management that are used and adopted by the medical professionals of the hospitals in Aegean, Turkey and analyzed how health care professionals understand the concept of knowledge sharing and management. Interestingly, the results show that health care professionals were willing to make knowledge related contributions to facilitate greater sharing of knowledge.

Ajmal et al (2010), cited in Lee et al (2015), provided inputs on the barriers of knowledge management practices. Six major factors were proposed – familiarity with knowledge management; coordination among employees and departments; authority to perform knowledge activities; cultural support; incentive for knowledge efforts and system of handling knowledge. The results of this study indicate further that the most important barriers to knowledge management practices are the absence of the right information system and lack of incentives. Tseng & Lee (2014) discussed the effective methods of applying the knowledge management (KM) capability to create the ability for providing quick response to a changing and dynamic environment. The results showed that the ability to provide quick response acts as an important mediator in improving the performance of the organizations using knowledge management capability. It was concluded that knowledge management capability increased the ability for quick response to changes in the environment and helps to improve organisational performance. This

was found to be quite relevant to the healthcare sector as health organisations rely on being able to make quick decisions in emergencies. In addition to the requirement of quick response rate, health care professionals are challenged by the differences in the vocabulary used by different professionals that have caused barriers in inter-user reusability.

Harris (2016) explored the concepts of knowledge management and organizational learning in context with Nursing Intellectual Capital (NIC) which has emerged in recent years and involves nursing knowledge resources, to improve performance in health care organizations. This study focused on how nursing knowledge resources could be used to improve health care performance. Another group of experts (Sibbald, et al., 2016) investigated knowledge management in healthcare organisations to create a model for effective knowledge management implementation in these organizations. A qualitative methods approach was used in ten healthcare organizations. It was reported that not many healthcare organisations had a formal implementation of knowledge management. leadership. Also, culture and financial resources were found to be significant predictors of knowledge management practices according to the study.

From the literature, the adoption and application of knowledge management practices, interprofessional collaboration, and information technology amongst staff across various sectors including the health sector is topical and one of the priority debates in recent times. Thus, for the health industry and professionals to improve the quality of service delivery and competiveness, it becomes eminent embrace knowledge creation and sharing through interprofessionalsim and collaboration among health workers.

METHODOLOGY

The study adopted the survey research design.A total of 479 respondents who are health care workers from randomly selected federal tertiary hospitals in Nigeria made up the study population. The instrument used for data collection is the questionnaire. Data gathered was analyzed using relatuive importance index (RII) with the aid of the IBM statistical package for social science (SPSS) and Microsoft excel version 21. Relative importance index helps to rank the criteria according to their relative importance. The following formula is used to determine the relative index:

$$\text{R.I.} = \sum \frac{W}{A*N}$$

or

$$\text{RII} = \text{Sum of weights} \; \frac{W1+W2+W3\ldots\ldots+Wn}{A*N}$$

R.I. = or RII
= Sum of weights
Where:

W is the weighting as assigned by each respondent on a scale of one to five, with one implying the least and five the highest. **A** is the highest weight, and **N** is the total number of the sample. Based on the Ranking (R) of Relative Importance Index (RII), the weighted average of the two groups will be determined. According to Akadiri (2011), five important levels are transformed from (RII) values: High (H) (0.74 ≤ RII ≤ 1), High-Medium (H-M) (0.69 ≤ RII ≤ 1) and Low (L) (0.59 ≤ RII ≤ 1).

RESULTS

Table 1
Barriers of knowledge management practices, interprofessional collaboration & information technology application in federal tertiary hospitals in Nigeria
N = 479

	$\overline{X}$	RII	Ranking
Poor ICT infrastructure	2.93	0.79	1st
limited technical support	2.93	0.78	2nd
Poor integration of ICT systems	2.89	0.78	2nd
ICT illiteracy	2.84	0.77	4th
Poor management support	2.79	0.76	5th
Poor IT support system	2.64	0.73	6th
Personality diffrences	2.60	0.72	7th
Personal outlook	2.57	0.71	8th
Poor communication between boss and subordinates	2.57	0.71	8th
Organizational culture and standards	2.56	0.71	8th
Unrealistic expectations	2.55	0.71	8th
Time factor	2.51	0.70	12th
Poor communications among staff	2.51	0.70	12th
Poor verbal and written communication among some staff	2.51	0.70	12th
Unequal experience	2.42	0.69	15th
Bureaucracy and hierarchy	2.43	0.68	16th
Expected reciprocity benefits	2.39	0.68	16th
Reluctance to IT use among some staff	2.37	0.67	18th
Poor intention to work	2.33	0.67	18th
Unequal education attainment	2.23	0.64	20th
Lack of trust among colleagues	2.12	0.62	21st
Gender differences	1.83	0.57	22nd
Weighted mean	2.52	0.70	

Table 1 with an average Relative Importance Index (RII) value of 0.70, reveals the challenges associated with knowledge management practices, interprofessional collaboration & information technology application in Federal Tertiary Hospitals in Nigeria. The top challenges identified include inadequate ICT infrastructure (R = 0.79) ranked in the first position, inadequate technical support, and lack of integration of IT systems with an

equal RII value of 0.78,jointly ranked 2nd. ICT illiteracy among the staff (RII = 0.77) ranked 4th, inadequate management support (RII = 0.76) ranked 5th, while inadequate IT support system (R = 0.73) and behavioural and personal characteristics (R = 0.72) ranked 6th and 7th in the table. This was closely followed by attitude, poor communication, organizational culture and norms, and unrealistic expectations of employers, with equal RII values of 0.71 and thus are jointly ranked of 8th in the table.

Table 1 further reveals other challenges to include lack of time,poor communication among staff, and poor verbal and written communication (RII = 0.70),jointly ranked 12th. The difference in levels of experience (R = 0.69) ranked 15th. Strong organizational structure and hierarchy, and expected reciprocity benefits ranked a joint 16th with an RII value of 0.68. Jointly ranked 18th are reluctance to use IT systems and poor intention which share equal RII values of 0.67, while the difference in education levels (RII = 0.64) ranked 20th.Lack of trust (RII = 0.62) and gender difference (RII = 0.57) ranked 21st and 22nd respectively.

SUMMARY OF FINDINGS

The result of this study reveals the challenges that militate against the concepts of study: knowledge management practices, interprofessional collaboration, and information technology application in federal teaching hospitals in Nigeria. Concerning knowledge management and its practices, the study revealed inadequate management support and poor organizational structure and hierarchy to be the key challenges affecting the adequacy of knowledge management practices in federal teaching hospitals. This is in tandem with the studies of Jacob Kehinde Opele(2020) as well as Jumoke and Mutula (2018)Nigeria. Questionnaires were distributed to registered nurses across the clinical units in the selected teaching hospitals. Structural equation modelling using SPSS version 22 was used to test the hypothesised relationships. The findings revealed that information technology, organisational structure and organisational culture in knowledge management infrastructure are found to positively and significantly influence knowledge management processes (knowledge acquisition, conversion, application and protection which discovered that organisational challenges such as incorporation of knowledge management approach and sharing pursuits,lack of leadership, lack of official and casual places to share, lack of translucent incentives and recognition systems as well as existing corporate culture to be factors militating against knowledge management practices. Similarly,a study by Adegbite and Okafor (2018) also provides support to the findings of this study, stressing that organisations need to engender knowledge creation and transfer culture to institutionalize knowledge and to improve performance.

The challenging factors revealed as regards interprofessional collaboration among staffs in health care facilities include poor verbal communication, lack of time and trust, differences in gender, education levels, and the experience levels among the staffs, as well as behavioral and personal characteristics (e.g. the attitude of the staffs) were identified. This supports the study of (Opele, 2020; Adam, 2018; Clancy, 2013; Ajmal & Helo, 2010;) which revealed challenges such as gender differences, lack of time, fear, awareness, domination, usability, past mistakes, experience, time, communication, age, gender, social application, education, ownership, people, accuracy, and cultural differences to be barriers of interprofessional collaboration.

In this study,factors militating against information technology application were revealed to be ICT illiteracy among the staff, perceived usefulness, lack of IT system integration, and the reluctance of staff to use IT systems. According to Africa (2018), Pheko (2018), Escoba-Rodriguez and Romero-Alonso (2014), lack of IT system incorporation, lack of IT techniques and procedures,absence of technological assistance,impractical goals of employees,lack of compatibility, mismatch, reluctance to use IT systems,lack of training and lack of communication to be high walls against the adoption and application of information technology.

CONCLUSION

Based on the findings of this study, we found that knowledge management practices, interprofessional collaboration, and information technology application is becoming more and more popular in the health care sector because they are cential to patient care. These concepts are important tools in growing the knowledge and performance of health personnel as well as enhancing a healthy work environment, not only for the benefits of the patients in terms of improved health care outcomes and health experience, but also for the organisation in terms of achieving cost efficiency in service delivery, and provision of stress-free practice (Zheng, Sim, & Koh, 2016). It is therefore recommended that the federal government through the Federal Ministry Health, relevant agencies and NGOs focus on providing health institutions with adequate medical infrastructures and basic amenities needed to ensure the smooth running of the facilities towards enhancing the quality of health service delivered in Nigeria. In the same vein, adequate funding as well as the training of staff should be ensured. Also, staff orientation towards interprofessional collaboration should be strengthened through individual health care professional associations. Further research could be conducted to assess the impact of administrators on knowledge management practices, interprofessional collaboration, and information technology application in federal tertiary hospitals in Nigeria.

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