

# Publication

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## 1 Introduction

The necessity to improve nursing performance has intensified within the past years. Nurses, as the largest group of healthcare professionals and caregivers play the role of key contacts for patients in all healthcare settings and make major healthcare contributions to improved healthcare quality. The nurses' knowledge provides the basis for daily decision-making in pursuit of quality patient care outcomes (Ghosh and Scott, 2006). Therefore, the performance of nursing professionals is a crucial issue in the determination of the quality of care delivered in hospitals (Burhans and Alligood, 2010). Managing knowledge of the nursing workforce remains a crucial challenge in the healthcare sector. Consequently, improved efforts are needed to optimize and manage knowledge in nursing care for improved patient outcomes. It is imperative for healthcare organizations to create strategies to address nursing care deficits, and the growing demands for health services (Siu, 2015).

According to McGlynn et al. (2003) cited in Ajanaku (2018), the delivery of substandard care to patients is due to the inability of nurses to access and apply current and relevant knowledge needed in patient care. The state of the fragmentation of medical knowledge, ineffective collaboration across organizational boundaries coupled with unfavourable healthcare environment that forms a substantial barrier has resulted in difficulties for nurses to utilize pertinent knowledge required for the provision of high quality of care (Cruz and Ferreira, 2016). Prior research emphasized that knowledge management should be the foundation of an organization's effort in improving productivity and performance. There is a strong need to support and enable the internal activities of the nurses that makes knowledge flow better in hospital for improved quality care. Thus, using knowledge management (KM) can improve quality of care by helping nurses deal with the fragmented knowledge that exists in medical environment.

Siemuri (2014:59) highlighted that "the existing nursing care infrastructure in teaching hospitals in Nigeria has a number of limitations that makes it difficult for the registered nurses to effectively deliver effective and efficient patient care such as the challenge of mobilizing and utilizing knowledge to improve nursing care and ensure effective use of resources by nursing professionals. This leads to information overload, lack of access to the right information at the right time, to provide the best quality of care to the patient". This falls short of the objective of the hospital which is to remain sustainable, innovative and competitive while providing quality of care to the patient (Wickramasinghe, Gupta and Sharma, 2005). The

efficient knowledge management of the nursing workforce has become essential in delivering high-quality care in the rapidly changing healthcare environment. Healthcare institutions must strategize new and proactive approaches towards improving nursing care. This study therefore, sought to extend the frontiers of knowledge management in nursing care by examining the influence of the association between knowledge management infrastructure and process on nursing performance.

## 2 Background

Three main areas that are pertinent to providing the theoretical framework of this research were reviewed: (i) knowledge management infrastructure; (ii) knowledge management process and (iii) nursing care performance.

### 2.1 Knowledge Management Infrastructure

Knowledge management (KM) infrastructure are factors that stimulate knowledge management activities within the organization and harness the development of their knowledge assets (Zaied, Hussein and Hassan, 2012). According to Carrillo, Robinson, Anumba, and Al-Ghassani, (2003), KM infrastructure provides the technical and non-technical environment that facilitates the creation and sharing of knowledge. Other KM scholars agree that KM infrastructure are the general activities in the organization that support KM practices and contribute to the improvement of organizational performance (Lee and Choi 2003; Migdadi 2005).

Lee (2017) in a study examined “the influence of knowledge management infrastructure (structure, leadership, learning, information technology systems, trust, and collaboration) on the knowledge management process (creation, storage, sharing, and application) in four hospitals in Korea”. Quantitative data using a questionnaire was collected from a sample of 778 employees using random sampling from four hospitals. The results revealed in each of the hospitals, KM processes differently affect the organisational factors. Lee (2017) recommended that friendly organisational culture and systems must be espoused by the hospital managers and incessantly educate employees about KM based on trust and collaboration

Jaradat and Maani (2014) conducted a study exploring “the impact of knowledge management infrastructure on performance effectiveness of the Jordanian organisations. The results showed a statistically significant association between knowledge management infrastructure and effectiveness of performance. They suggested that organisations can improve their

innovativeness by having knowledge managers to discover and transfer knowledge for improving performance for organizations. A wide range of knowledge infrastructure capabilities has been acknowledged in the literature including organisational culture, organisational structure, and technological infrastructure. Yet, a review of the literature revealed a dearth of studies on the relationship of any of these components with nursing care performance in the field of healthcare and fewer studies considered these elements collectively. This study adopts the three constructs of knowledge infrastructure capability by Gold et al. (2001); these constructs are information technology, organisational structure, and organisational culture. The next subsections present a brief outline of each constructs.

### **2.1.1 Information Technology**

The technology component of KM infrastructure is an important dimension for knowledge creation and transfer (Gold, Malhotra and Segars., 2001). Gold et al. (2001) stressed that the flows of information and knowledge can be integrated through the linkage of information technology systems. Technology is an important element in knowledge management processes and serves as a repository in which knowledge can be reliably stored and efficiently retrieved (Chua, 2004).

Recent developments in information technology have changed the way of care delivery by nursing care professionals (Smedley, 2005; Lupiáñez-Villanueva, Hardey, Torrent, and Ficapal, 2011). In the current health care environment, information technologies are becoming an impetus for quality healthcare delivery by nurses and are required to integrate the use of ICT into their regular routine (Mutula, 2015). Technology allows nurses to organize and appraise information from different sources for better and informed decision-making and problem-solving within patient care (Lee, 2005; Mills and Staggers, 1994; Nahm and Posaton, 2000).

For better and informed decision-making and solving problems within patient care, technology allows nurses to organize and appraise information (Lee, 2005)

As stressed by Rouleau, Gagnon and Côté (2015), information technology improve the collaboration between the nurses and also the interaction between the nurses and patients which improve quality and safety of healthcare. It allows the knowledge sharing and expertise and improves timeliness, quality and access to variety of healthcare services.

### **2.1.2 Organizational structure**

**Organizational structure** is “the design of organizational work flow and processes, as well as the pattern of interrelationships among key components of the system” (Senge, 1994: 90). Organizational structure consists of rules, policies, procedures, and processes, hierarchical levels, departmentalization of employees and systems of motivational incentives, and coordination of work processes within the firm. organizational structure is aimed to provide functional units and work roles within an organization, but it has often had the unintentional consequence of constraining knowledge sharing and collaboration across internal organizational limits (Gold et al., 2001).

Different researchers in literature have recognized organizational structure as a key enabler of KM (Bose, 2003; Chourides, Longbottom, and Murphy, 2003; Holsapple and Joshi, 2000; Wong, 2005). In the context of healthcare organizations, flexible organizational structures encourage knowledge sharing within the organization and enable the creation of cross-functional teams in which experts from different departments can meet to facilitate the flow of ideas across departments, whilst formalized and centralized structures (rigid structures) are major stumbling blocks to knowledge sharing (Kim and Lee, 2006). The flexibility of an organizational structure is important in order to facilitate knowledge management processes across boundaries within and across the organization (Nguyet, 2010).

### **2.1.3 Organizational culture**

**5** **Organisational culture** refers to “a pattern of basic assumptions that the group learns as it solves its problems of external adaption and internal integration” (Schein, 1992: 9). The dimension of organizational culture in knowledge infrastructure refers to the vision and values of the firm and the cultural influences towards learning, interaction and collaboration (Pandey, Dutta and Nayak, 2018). The effectiveness of KM in the organization is constrained if an organization has a comprehensive KM system in place but does not have a supportive organizational culture (Alavi, and Leidner, 2001). A supportive culture is characterized by the recognition of the value and importance of KM to organizational performance by organizational members and their readiness to participate in KM activities and to use corresponding technologies (Gopal and Gagnon, 1995).

Organizational culture is an important aspect of the healthcare organization indicating that the organization must be driven by vision and associated with a shared culture of beliefs and practices. Being an enabler of knowledge in the organisation, culture is a major determinant of organizational outcomes. Jacobs and Roodt (2011) contributed that nurses would share

knowledge if they perceived desirable outcomes of their efforts and this improves the effectiveness and efficiency of care rendered to patients.

## 2.2 Knowledge Management Process

Knowledge process capabilities represent the fundamental processes for the knowledge assets input in the organization (Tanriverdi, 2005). Knowledge management process is necessary to leverage the knowledge management infrastructure (Khalifa and Liu, 2003). Nonaka and Takeuchi (1995) posited the KM process is capability of an organization to acquire new knowledge through the conversion of tacit knowledge and explicit knowledge and finally becomes organizational knowledge.. Gold et al. (2001) classification of the different perspectives of knowledge management process into four broad aspect of acquisition, conversion, application, and protection processes is adopted in this study and considers KM process as interrelated and integrated.

**Table 1:** Classification of KM process

Dimension	Definition
Knowledge acquisition	“Knowledge acquisition process are those oriented toward obtaining knowledge which can be described by many other terms such as acquire, seek, generate, create, capture, and collaborate, all with a common theme – the accumulation of knowledge” (Gold et al., 2001:190).
Knowledge conversion	“Knowledge conversion process is making existing knowledge useful. Organizations should convert an ineffective knowledge into information and store it in knowledge repositories or simply remove it from the system” (Gold et al., 2001:191).
Knowledge application	“Knowledge application process refers to the processes that are oriented toward the actual use of knowledge. The basic goals of knowledge management practice are not just generating new knowledge but also assuring that new and existing knowledge is actually applied in all processes where the knowledge can be used throughout an organization” (Gold et al., 2001:192).
Knowledge protection	“Security-oriented knowledge management processes are those designed to protect the knowledge within an organization from illegal or inappropriate use or theft. For a firm to generate and preserve a competitive advantage, it is vital that its knowledge be protected” (Gold et al., 2001: 192).

Source: (Gold, Malhotra and Segars, 2001)

### 2.3 Nursing care performance

Professional nurses comprise the largest group of healthcare workers and play a vital role in healthcare globally. The performance of nursing is associated with the “degree to which the health care services provided to the people and populations increase the likelihood of achieving the desired outcomes, based on the current knowledge” (Raftopoulos and Theodosopoulou 2001:21). Measuring KM and its contribution to nursing care performance is a crucial concern of health institutions. Nursing care performance is a complex, multi-dimensional concept, which has been defined along several different dimensions. In health quality improvement, several approaches have been developed to measure the performance of hospital nursing care (American Nurses Association (ANA), 2010b). In 2001, the Institute of Medicine (IOM) made specific contributions to enable improvement in healthcare quality in the report entitled “Crossing the Quality Chasm”. Health care quality was conceptualised as six dimensions: safety, timeliness, effectiveness, efficiency, equity and patient centeredness. This dimension has been universally accepted. IOM (2001) explains patient centeredness ensures care is based on the need and desire of individual patient and guide all clinical decisions. Efficiency is concerned with care that is not wasteful and involves avoiding underuse and misuse of services. Effectiveness deals with matching science to care. Timeliness is concerned with avoidance of delays within the healthcare system. Equity is concerned with closing the gap between justice and healthcare, in which care should not be influenced by the personal characteristics of the patient such as gender, ethnicity, geographic location and socioeconomic status.

### 3 Research Hypotheses

Based on the research question: what relationship exists between knowledge management infrastructure and knowledge process and how does the relationship affect nursing care performance? The study sought to test the following null hypotheses:

H<sub>01</sub>: The relationship between IT support in KM infrastructure and knowledge process does not positively influence nursing care performance.

H<sub>02</sub>: The relationship between organizational culture in KM infrastructure and knowledge process in KM capability does not positively influence nursing care performance.

H<sub>03</sub>: The relationship between organizational structure in KM infrastructure and knowledge process in KM capability does not positively influence nursing care performance.

H<sub>04</sub>: The relationship between KM infrastructure and KM process does not positively influence nursing care performance.

#### 4 Theoretical Framework

The study is underpinned by organizational capability theory by Gold, Malhotra and Segars (2001). Organizational capability theory posits that "critical organizational capabilities for successful knowledge management consists of knowledge infrastructure encompassing technology, structure, and culture along with a knowledge process architecture of acquisition, conversion, application, and protection" (Gold et al., 2001:186). Therefore, Gold et al. (2001)'s organizational capability theory provides one of the very few frameworks that attempt to investigate the role of knowledge capabilities in an integrative framework. The research model is depicted in figure 1

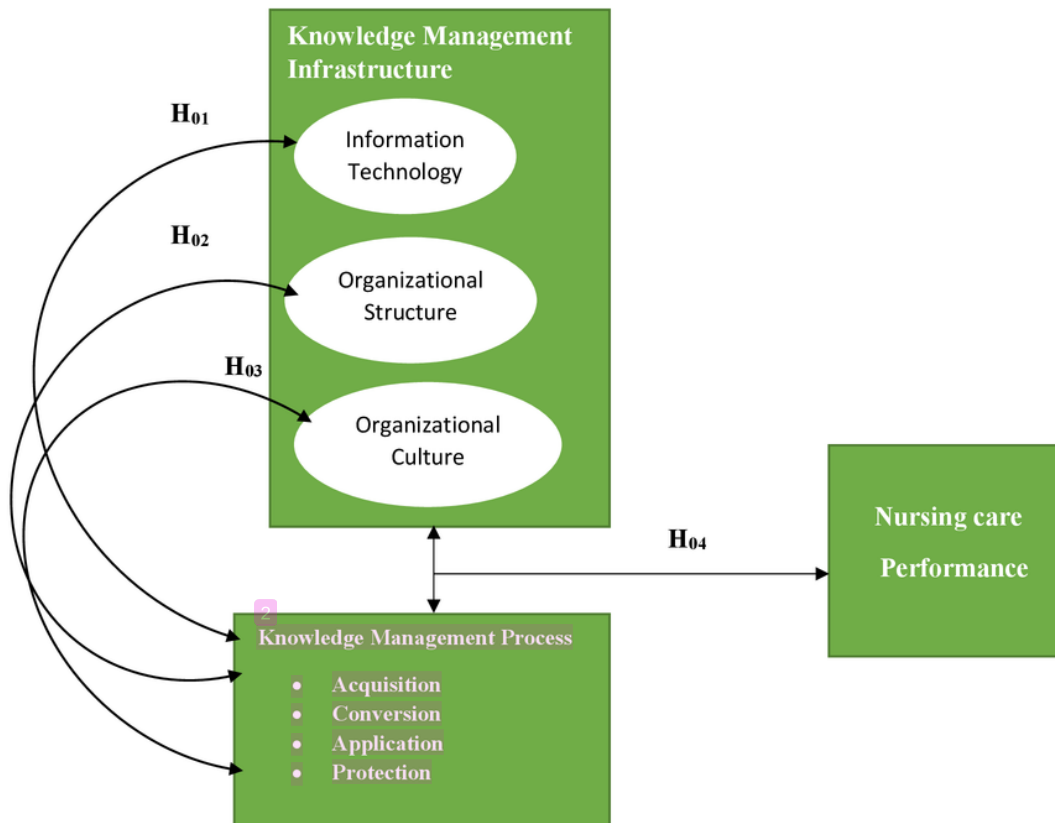


Figure1: Research model

#### 14 5 Methodology



This study adopted survey research design and was carried out at two purposively selected University teaching hospitals which are the University College Hospital (UCH) and Obafemi Awolowo University Teaching Hospitals (OAUTHC). Both teaching hospitals are located in the Southwest region of Nigeria.

The survey instrument was employed to measure the variables of KM infrastructure consisting of information technology, organizational structure and organizational culture; KM process consisting of acquisition, conversion application and protection and nursing care quality. The questionnaire (figure 2) for the survey was developed based on the constructs that were adopted from Gold et al. (2001) and Ghosh and Scott (2005) leading to a list of 59 measurement items. The constructs used multiple-item measures, and each item was based on a five-point Likert scale from 1=strongly disagree, 2=disagree, 3= neutral, 4=agree and 5=strongly agree.

Section A: elicited data about demographic characteristics of the respondents Section B: collected data on knowledge management infrastructure Section C: collected data on knowledge management process Section D: elicited data on nursing care performance
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**Figure 2:** Structure of the questionnaire

The total population of registered nurses (N=1948) in the selected teaching hospitals was stratified according to the clinical units (strata). Sample size (N=320) was calculated using Krejcie and Morgan (1970) sample size table. Proportionate allocation was used to select the size of the respondents from each stratum. The inclusion criteria were registered nurses on day shift and had been working for at least one year. Three hundred and twenty (320) questionnaires were administered face-to-face to the registered nurses across all the clinical units in the selected teaching hospitals. Out of which two hundred and ninety-eight (298) registered nurses (RNs) completed and returned the questionnaire.

Data was analysed by employing the statistical package for social science (SPSS) software version 22. The reliability of the questionnaires was tested by Cronbach's alpha and considered adequate if greater than 0.7. Principal component analysis (PCA) was used to measure the validity of the questionnaires with acceptable minimum level of 0.5 for the component loadings of the items. Two-step approach of structural equation modelling (SEM) was conducted to test the hypotheses using analysis of moment structures (AMOS) version 22. These two steps are: (i) assessing confirmatory measurement model and (ii) assessing the structural model (Byrne, 2001). Significance was set at 5% and 95% confidence interval.

## 6 Ethical approval

Ethical approval was obtained from the Ethics Committee of the University of KwaZulu-Natal and the selected teaching hospitals. Furthermore, an informed consent form was given to all the respondents to sign before they engaged in the study.

## 7 Results

### 7.1 Demographic Information of Respondents

Sixty-three (21.1%) of the respondents were males and two hundred and thirty-five (78.9%) were females. The results indicated that there were more female nurses in the health institutions than males. The highest number of respondents (63, 21.1%) were in the age range of 31-35 years, while the least 9(3%) belonged to the age range of over 55 years. The information of respondents' highest qualification status shows that most of the respondents were registered nurses, while the least (2, 0.6%) had a PhD.

Furthermore, results showed most of the respondents (81, 27.2%) were those with 1-5 years' work experience while the least of the respondents (42, 14.1%) had spent 16-20 years working in the health institutions. Most of the respondents (76, 25.5%) were in the cadre of Nursing officer 1(NO1), while the least of the respondents (23, 7.7%) were in the cadre of Assistant Chief Nursing Officer (ACNO).

### 7.2 Reliability and Validity of Instruments

Reliability of the multi-item constructs was measured by using Cronbach's alpha analysis in SPSS 22.0. For Cronbach's alpha, the acceptable level of 0.70 or above shows that the collected data is reliable (Pallant, 2005). Based on this criterion, the results of the study showed that all values of the measurement items were acceptable for Cronbach alpha coefficient. Table 2 displays the results.

**Table 2. Reliability testing**

Construct	Number of items	Cronbach alpha
Information technology	8	0.906
Organizational structure	7	0.725
Organizational culture	7	0.801
Nursing care performance	5	0.841

The construct validity of the measurement items was checked by applying principal component analysis (PCA). PCA uses a statistical technique to reduce a large number of variables into a small number for the ease of analysis (Wuttichaikitcharoen and Babel, 2014). The result of the PCA for all the variables is displaced in table 3. The measurement items showed component loadings greater than the acceptable level of 0.5.

**Table 3 Validity testing**

Variable	Variable code	PCA	
		Component loading	Variance extracted
Nursing care quality	NP1	0.586	61.66
	NP2	0.698	
	NP3	0.631	
	NP4	0.641	
	NP5	0.527	
Information technology	IT1	0.628	64.96
	IT2	0.617	
	IT3	0.673	
	IT4	0.667	
	IT5	0.711	
	IT6	0.705	
	IT7	0.782	
	IT8	0.654	
Organizational structure	OS1	0.660	64.05
	OS2	0.641	
	OS3	0.633	
	OS4	0.658	
	OS5	0.659	
	OS6	0.703	
	OS7	0.627	

Organizational culture	OC1	0.772	70.59
	OC2	0.833	
	OC3	0.714	
	OC4	0.664	
	OC5	0.735	
	OC6	0.578	
	OC7	0.631	

### 7.3 Normality Assessment

To select a suitable estimate in structural equation modelling (SEM), the normality distribution of the interval variables was determined by employing statistical technique of skewness and kurtosis test (Idris, Richard and Waziri, 2016). A non-normality is presumed for a set of data when the values of skewedness or Kurtosis are greater than the accepted values of 2 and 7 (Kline, 2005). The values of skewedness and kurtosis for the eight latent variables in the study satisfied the assumption of normality. All variables lie between -0.370 and -1.194 for skewness and -0.52 and 2.4 for kurtosis which is within the accepted range.

### 7.4 Confirmatory Analysis using Structural Equation Modelling

Two-step approach of Structural Equation Modelling (SEM) was used: (i) assessing confirmatory measurement model and (ii) assessing the structural model (Byrne, 2001).

#### 7.4.1 Overall fit indices

Various researchers proposed a few criteria for examining the model fit while carrying out a CFA. However, six criteria were adopted in this study which includes: the chi-square, the chi-square dividing by the degree of freedom (CMIN/DF), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Root Mean Square Residual (RMR), and Root Mean Square Error of Approximation (RMSEA). Table 4 displays the summary of the fit indices.

**Table 4: Summary of the fit indices.**

Model	P value	( $\chi^2$ )	DF	CMIN/DF	GFI	CFI	RMR	RMSEA
IT	0.057	10.720	5	2.144	0.986	0.993	0.024	0.062
OS	0.213	7.109	5	1.422	0.991	0.996	0.032	0.038

OC	0.150	3.798	2	2.323	0.992	0.977	0.019	0.067
AP	0.259	11.244	9	1.249	0.988	0.977	0.015	0.029
CP	0.055	10.810	5	2.162	0.986	0.994	0.013	0.063
APP	0.855	1.954	5	0.391	0.997	1.000	0.006	0.000
PP	0.443	4.781	5	0.956	0.993	1.000	0.019	0.000
NP	0.799	0.450	2	0.225	0.999	1.000	0.004	0.000

Note IT=Information Technology; OS=Organizational Structure; OS= Organizational Culture AP=Acquisition Process; CP=Conversion Process; APP=Application Process; PP=Protection Process; NP =Nursing care Performance

#### 7.4.2 Measurement model

A confirmatory factor analysis (CFA) was conducted to evaluate the measurement model which showed that the model had a good-fit. The CFA results for overall measurement model were:  $\chi^2 = 1246.041$ ;  $df=692$ ;  $CMIN/DF=1.801$ ;  $CFI = 0.913$ ;  $GFI = 0.831$ ;  $RMSEA = 0.052$ ;  $RMR= 0.055$ ;  $p = 0.000$ .

#### 7.4.3 Structural equation model

After the assessment of the validity of measurement model. The model was found to have an acceptable good-fit. Thus, the results were used to specify the structural model. Nguyen (2010:168) citing (Hair et al., 2006) indicated that the “fit statistics of the saturated model should be same as those obtained for the CFA model. The results of SEM showed that the structural model satisfied an acceptable level of model fit”. The overall CFA results for structural model were:  $\chi^2 = 490.952$ ;  $df= 271$ ;  $CMIN/DF= 0.946$ ;  $CFI=0.946$ ;  $GFI = 0.888$ ;  $RMSEA = 0.052$ ;  $RMR= 0.041$ ;  $p = 0.000$ .

#### 7.5 Hypothesis tests

Three hypotheses  $H_{01}$  to  $H_{04}$  was developed to deal with the research questions of this study. The hypotheses were examined by assessing the path coefficients and t-values. Knowledge infrastructure and process capabilities are the independent variables while nursing care performance is the dependent variable in the SEM model. The hypotheses were tested at 0.05 significance level (95% confidence level). Table 5 displays the results of the hypotheses test.

**Table 5: Results of Hypothesis test**

Hypothesis	Inter-Construct Correlation	Estimate	Standard error	t-value	p-value	Conclusion
H <sub>01</sub>	IT<----- >KMP----- >NP	0.132	0.040	3.312	P(0.000)<0.05	Rejected
H <sub>02</sub>	OS<----- >KMP----- >NP	0.576	0.105	5.484	P(0.000)<0.05	Rejected
H <sub>03</sub>	OC<----- >KMP----- >NP	0.464	0.074	6.271	P(0.000)<0.05	Rejected
H <sub>04</sub>	KMI<----- >KMP----- >NP	0.173	0.070	2.753	P(0.006)<0.05	Rejected
Dependent variable= Nursing care performance						
95% confidence interval *significant at = 0.05						
Source: SPSS AMOS version 22 Output						

## 8 Discussions

The results of the structural model assessment and an examination of the standardized regression weights were statistically significant and therefore, rejected the hypotheses: H<sub>01</sub> ( $\lambda=0.132$ ,  $t=3.312$ ,  $p<0.05$ ); H<sub>02</sub> ( $\lambda=0.576$ ,  $t=5.484$ ,  $p<0.05$ ); H<sub>03</sub> ( $\lambda=0.464$ ,  $t=6.271$ ,  $p<0.05$ ); and H<sub>04</sub> ( $\lambda=0.173$ ,  $t=2.753$ ,  $p<0.05$ ). This implies that the relationship between the dimensions of KM infrastructure (information technology, organizational structure and organizational culture) and KM process strongly and significantly influence nursing care performance in the teaching hospitals. The result further implies that improvement in the combined relationship of technological, cultural, and structural capabilities of the teaching hospitals with KM process of the nurses will produce significant and positive improvements in performance of the registered nurses.

The result of this study is consistent with other results that indicated that knowledge management is positively associated with organisational performance as reported in KM literature (Massey et al., 2002; Lee and Choi, 2003; Tanriverdi, 2005; Schulz and Jobe, 2001). A related study of Lee, Kim and Kim (2012) on the integrated view of KM for performance in hospitals analysed the relationships between KM infrastructure which includes cultural, structural, and technology aspects and the knowledge process capabilities by expounding on the contribution of knowledge infrastructure and process capabilities as determinants of organisational performance. The result of their study indicates that knowledge process is driven by knowledge infrastructural capabilities. Bagheri, Hamidizadeh and Sabbagh, (2015:439) indicated that, “knowledge process capabilities in turn mediate the relationship between KM infrastructure and organisational performance which demonstrate the relevance of KM infrastructure and KM process for organisational performance”.

Also supporting the current research finding, Zaied (2012) in Egypt reported a strong positive correlation between the relationship of KM (infrastructure and process) and knowledge management functions. The results revealed that the strong positive correlation between KM capabilities and KM process strongly influenced organisational performance. Ghosh and Scott (2007) in their contribution highlighted that the dimensions of technology, structure and culture in knowledge infrastructure need to be compatible with knowledge processes to accomplish significant effectiveness in patient care.

The result of the current study reveal that a strong and positive relationship exists between information technology, organisational culture, and organisational structure in knowledge management infrastructure and knowledge management process, which plays a considerable role in improving nursing care roles in the two teaching hospitals. Thus, this indicates that information technology, organizational structure and organizational culture in KM infrastructure are positively and significantly related to the KM processes of the registered nurses in the selected teaching hospitals. The result suggests that the connection between the dimensions of knowledge infrastructure and knowledge process strongly and significantly influence nursing care performance in the teaching hospitals.

Furthermore, findings of the current study result provide the evidence that information technology, organizational structure and organizational culture play a considerable role in knowledge management process in nursing care roles in the two teaching hospitals. It is clear that, of the three factors of knowledge infrastructure, organizational structure has the strongest

influence on the knowledge processes which drives nursing care performance. This can be explained by the importance of structure as an enabler of effective knowledge management, particularly as a facilitator for managing knowledge processes. As noted in the literature, network of relationships enables the processes of acquiring, converting, and applying knowledge and information, (Alavi and Leidner, 2001; Davenport and Prusak, 1998; Anderson, 2009). These results highlight the need to consider information technology, organizational structure and organizational culture as a dominant issue in KM practices in health organizations in Nigeria to enhance nursing care delivery and achieve greater quality in health care. This further implies that improvement in information technology support, cultural and structural capabilities of the hospitals will lead to substantial improvements in KM process capabilities of the registered nurses. Thus, the improvement in the mutual relationship of information technology support, cultural and structural capabilities of the teaching hospitals with knowledge process capabilities of the nurses will lead to strong and positive improvements in performance of the registered nurses.

The result of the current study is further corroborated by Ghosh and Scott (2006) in their study entitled “effective knowledge management systems for a clinical nursing setting”. The results indicated that organizational structure, information technology and culture play a considerable role on nursing processes. Also, supporting the research finding of the present study, Lee (2017) in their investigation of the effects of knowledge management enablers on the knowledge management process of four Korean Tertiary hospitals found that knowledge management enablers affect the knowledge management process in the hospitals. Smith, Mills and Dion (2010) also suggested that the efficient management of knowledge is substantially associated with how well infrastructure factors are translated into the knowledge process of the organization.

Our study showed that the teaching hospitals’ technological structural and cultural infrastructure has a well-established role to play in leveraging the knowledge processes of the registered nurses in the improvement of patient care and in reducing medical errors to the barest minimum.

## **9 Conclusions and Recommendations**

A survey study of 320 registered nurses in selected teaching hospitals provides robust support and consistent with prior studies that the relationship between the dimensions of technological support, organizational structure and organizational culture in KM infrastructure and the



dimensions of acquisition, conversion, application and protection in KM process is ideal for improved nursing care delivery. The results of the current study reveal KM infrastructure and process contribute significantly to the performance of nurses in the teaching hospitals in providing quality patient care in the Nigerian healthcare environment with organizational structure having a major influence.

To improve nursing care delivery, Nigerian teaching hospitals should consider incorporating a supportive organizational culture as shared knowledge, experiences and values as critical success factors for KM into the work practices and milieu. A knowledge sharing ethos, cultural influences (such as ethical values, excellence in healthcare delivery, professionalism, strategic thinking, continuous learning, team collaboration, and commitment to quality) have been found to contribute to quality of care (Carney, 2011; Ghosh and Scott, 2006). Furthermore, Ho, Hsieh and Hung (2014) maintained that highly centralized organizations restrict knowledge sharing and suppresses innovative solutions. Therefore, organizational structures should be designed for flexibility to encourage knowledge sharing, collaboration and learning. Gold et al. (2001) stressed the importance of information technology tools in knowledge management. As highlighted by Ojerinde and Iroju (2015), the Nigerian healthcare system is plagued by inadequate technological infrastructure, this consequently affects quality patient care by the professional nurses. It is recommended adequate technological infrastructure and tools are implemented by the Federal Government of Nigeria in enhancing efficient and effective healthcare delivery.

Knowledge management should be embraced as a viable means through which registered nurses in teaching hospitals can improve their services and become more responsive to the clinical needs of the patients. In addition, effective management of knowledge can help achieve strong nursing care performance within healthcare organizations. The study has by large demonstrated that KM infrastructure of information technology, organizational structure and organizational culture; and KM process of acquisition, conversion, application and protection are crucial drivers of nursing care performance in Nigerian teaching hospitals. The study results can contribute to the development of effective and efficient KM systems for improving nursing care delivery and productivity of healthcare organizations.

## **10 Limitations**

The findings of this study are limited to the respondents who participated in the study and employed in the selected teaching hospitals located in Southwest Nigeria. The results cannot

be generalized to other populations of nurses with different healthcare settings and different educational backgrounds and geographic locations.

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PAGE 1

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PAGE 2

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PAGE 3

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PAGE 4

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PAGE 5

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PAGE 6

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PAGE 7

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PAGE 8

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PAGE 9

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PAGE 10

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PAGE 11

---

PAGE 12

---

PAGE 13

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PAGE 14

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PAGE 15

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PAGE 16

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PAGE 17

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