

# The Role of Knowledge Management in the Healthcare Services Quality in Haiti

ESLYNE JANE FLEURISSAINT<sup>1</sup>, SELMA ALTINDIS<sup>2\*</sup>, CIGDEM UGAN<sup>2</sup>

<sup>1,2,3</sup>Department of Healthcare Management, Graduate School of Business, Sakarya University, Turkey

Correspondence to Assoc Prof Selma ALTINDIS, E-mail: altindis@sakarya.edu.tr, Tel: +90 264 2953431

## ABSTRACT

**Background:** In the 21<sup>st</sup> century, one of the key elements for providing quality services in healthcare institutions is undoubtedly "knowledge management". Knowledge management is crucial for overall management in any organization given its advantages in terms of competitiveness and productivity.

**Aim:** To analyze the perception of healthcare professionals about the processes of knowledge management at hospitals and the advantages of using such processes as a tool to improve the quality of healthcare services in Haiti.

**Methods:** To achieve that goal, a questionnaire was administered to a total of 295 healthcare professionals in three renowned hospitals located in Port-au-Prince, the capital city of Haiti. Correlation, regression, t-test, and Anova analyses are used.

**Results:** It is observed that most of the participants think that the storage of knowledge is very useful in hospitals while they believe that the use of information collected through knowledge management is currently less beneficial in their daily activities. There is poor correlation between knowledge management processes and perception of health professionals on the benefits of the use of hospital information systems,

**Conclusions:** Health information systems are still dependent on tools such as written documents, some computer hardware tools, and office programs in Haiti. So it doesn't provide clinical, administrative and decision support to health professionals because of the lack of integrated systems in Haiti.

**Keywords:** Haiti, Knowledge management, quality, healthcare

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## INTRODUCTION

Quality is seen as an integral part of the management process necessary to achieve continuous improvement and performance in an organization. Nowadays modern management techniques especially "Knowledge Management" are increasingly implicated in the delivery of quality healthcare services. The data collected and analyzed at all stages of quality management is transformed into knowledge that carries an important value in health services.

Within the framework of quality management, knowledge management consists of processes including the creation, sharing, storage and utilization of knowledge. It therefore facilitates continuous improvement and learning so that organizations can better meet customers' changing needs and expectations<sup>1</sup>.

Hospitals are considered as organizations where medical information is intensively produced, used and stored. Knowledge management is very important particularly in the provision of quality healthcare services because every process based on information and knowledge can directly affect patients' life. For this reason, investigating the opinions of doctors and nurses who are the main healthcare professionals are important especially for developing countries such as Haiti where neither quality management nor information management are yet fully implemented.

At present study, knowledge management is discussed based on quality of healthcare services in Haiti. It is very important for the country to properly organize its infrastructure of knowledge management that has potential to make healthcare staff to be aware of quality issues in healthcare services.

The literature review relates previous works regarding quality and knowledge management in healthcare services.

**Quality in Health Organizations:** The American Medical Association defines quality of health services as "the level of health services offered to persons and communities that increase the likelihood of achieving desired health outcomes and is consistent with current professional knowledge"<sup>2</sup>. Donabedian<sup>3</sup> describes quality service as "the service expected to maximize a comprehensive measure of the well-being of the patient" after the anticipated gains and losses balance<sup>4</sup>. These definitions not only emphasize the need for good documentation and knowledge management to obtain the expected outcomes of health care system<sup>2,5</sup> but also indicates the importance of updating professionals' knowledge, which requires time-adapted intellectual and technological knowledge<sup>6</sup>.

**Knowledge Management in Health Services:** Knowledge management imply the creation, use, reuse and dissemination of information. Health care delivery is based on knowledge and evidence-based medicine<sup>7</sup>. For this reason, knowledge management infrastructure is a critical point in the healthcare sector. The healthcare system has a capacity to timely create or access to knowledge required for delivering services, successfully<sup>8</sup>. Knowledge management use information technologies for knowledge creation, information storage, sharing and use / reuse<sup>7</sup>.

Knowledge is an important part of everyday activities for healthcare providers, both for employees and managers. Knowledge includes management in the context of management, human resources management, organizational dynamics and governance, strategic planning, risk management and quality management. For employees, knowledge is the most important resource to be applied correctly<sup>7</sup>. In general, health services face many

challenges, including increased costs and pressure to provide high quality, effective and efficient care. By establishing a knowledge management system and clearly articulating knowledge assets, healthcare organizations are more appropriately equipped to deal with these challenges. Because knowledge management is the key to develop better management techniques, data and knowledge on data management and evidence-based environment are crucial. The complexity of the service delivery process is guided by the complexity of the problems addressed by maintenance healthcare staff, and many disciplines need to create and share information to provide high quality care<sup>9,8</sup>.

**Hospital Information Systems and Usage:** Information and communication technology (ICT) in general are all technologies that enable collecting, processing, storing and transmitting information when necessary, or to access this information where and when necessary. The use of information technology in health services also aims to reduce costs while increasing the quality of care given to the patient<sup>10</sup>.

Hospital Information Systems (HIS) are comprehensive and integrated information systems designed to manage the administrative, financial and clinical departments of a hospital. The purpose of hospital information systems is to provide the best possible support for data processing and patient care, as a medical information area. It is accepted that information technology has a positive impact on the healthcare sector<sup>11</sup>. In today's medical institutions, computer technology is heavily utilized in the areas of data processing and information. In the beginning, computer technology has improved the reduction of paperwork, improvement of cash flow and administrative decisions, and it has developed in time to include data that are introduced in the clinic and auxiliary units<sup>12</sup>.

The function of the hospital information system is to ensure that the institution is in a timely and appropriate manner. Clinical, laboratory, radiology, operating theatre, pharmacy and dietary activities as processes regarding diagnosis and treatment; status and management of staff, facilities, equipment and supplies as processes regarding general management and accounting, customer accounts and taxation as processes regarding finance are amongst daily routines in hospitals. The HIS can be defined as performing hospital services with the aid of computer, exchanging information automatically in the electronic environment, recording detailed information arising the result of medical and financial activities and converting them to knowledge with the aid of an information system based on computer. The technology is heavily used at all stages of services offered at the hospital<sup>12</sup>.

HIS provides useful information at the right time, in the right way and in the right place, on many levels and in all levels of management, so that decisions can be made effectively and efficiently. HIS plays a very important role in planning, initiating, organizing and controlling the activities of the hospitals' subsystems, thus ensures synergy in the process. HIS improves patient care by evaluating data and recommendations for care and enable tracing a patient through retrospective quality and appropriateness of care<sup>11</sup>.

**The Role of Information Management in Quality Improvement:** Quality is seen as an integral part of the

management process needed to achieve continuous improvement and performance excellence. Without sharing information in the organization, quality management cannot be effective. Within the framework of quality management, knowledge management refer to, data collection, sharing and saving processes<sup>13</sup>. Thus, a range of strategies and practices can be developed in an organization by adopting, creating, representing, distributing and enabling insights and experiences to improve their quality systems.

## METHODOLOGY

A questionnaire was administrated in order to determine the perceptions of healthcare professional on the benefit of knowledge management. The questionnaire consists of four parts. In the first part, six questions, In the second part, 17 questions were formed by using the studies of Altindış<sup>14</sup> and Borousan et al<sup>15</sup> in order to determine the perceptions of participants about information creation, storage, sharing and use of information technology and knowledge management, in the second part. In the third section, there are 13 questions created by using the studies of Işık and Akbolat<sup>16</sup> and Akıncı<sup>17</sup> and in the last section there are 8 questions to determine the socio-demographic characteristics of the participants. A five-point Likert-scale questionnaire on the question related to knowledge management processes and The use of Hospital Information System was scaled as follows; 5 = Strongly Disagree, 4 = Disagree, 3 = Nor Agree, Nor Disagree 2 = Agree, 1 = Strongly Agree. The questionnaires were administered in 3 large hospitals in Port-au-Prince to 330 participants who were easily identified by sampling methods, but 295 relevant questionnaires were obtained after rejection of incompletely filled and conflicting expressions questionnaires.

**Hypothesis:** The hypothesis developed is as follow:

H: There is a relationship between the level of perceptions of healthcare personnel with regards to knowledge management and the level of perception of the benefits of using hospital information systems.

**Analysis Method:** In order to determine the internal consistency reliability Cronbach's alpha coefficients was used. Construct validity was assessed using exploratory factor analysis (EFA). Cronbach's alpha coefficient is 0.912, which suggests that reliability of this questionnaire is high. According to the results of KMO and Bartlett test in order to determine the suitability of the questionnaire for factor analysis, KMO value was greater than 0.500 and Bartlett's Test of Sphericity test was significant. Accordingly, the questionnaire is suitable for factor analysis.

According to the results of the exploratory factor analysis of the questionnaire related to knowledge management processes (creation, sharing, storage and use of knowledge), the reliability of the factors is high due to the high load values (between 0.861 and 0.610). According to the results of the analysis, the Knowledge Management processes questionnaire is valid and reliable.

The analysis methods include descriptive analysis, t-test on independent samples, one way analysis of variance and Tukey tests. We analyzed the data collected by using the SPSS 22 statistical software at 95% confidence interval ( $p = 0.05$ ).

**RESULTS**

A total of 295 people participated in the study, of whom 54.2% were nurses and 45.8% were doctors. As seen in the table, the majority of our participants were women (65.4%) and single (53.8%) individuals. The majority of the participants were individuals aged 29 years or less (32.5%) followed by individuals aged 40 years or older (30.2%). The majority of the employees have been working for 3 years or less (33.9%) and the group with the highest weekly working hours is 31-40 hours (26.4%). Most of the employees work in clinics (49,2%) and work during daytime (55.3%).

Table 1: Socio-demographic characteristics of participants.

		n	%
Gender	Female	193	65,4
	Male	102	34,6
Matrimonial Status	Single	173	53,8
	Married	114	43,2
	Divorced	8	3,0
Age	Under 29 years- 29 years	96	32,5
	30-34 years	63	21,4
	35-39 years	47	15,9
	40 years and more	89	30,2
Years of Work	Under 3 years -3 years	100	33,9
	4-6 years	74	25,1
	7-10 years	56	19,0
	11 years and More	65	22,0
Weekly hours of work	Less than 20 hours – 20 hrs	54	18,3
	21-30 hours	47	15,9
	31-40 hours	78	26,4
	41-50 hours	57	19,3
	51 hours – More than 51 hrs	59	20,0
Unit of function	Administrative	36	12,2
	Polyclinic	81	27,5
	Clinique	145	49,2
	Diagnostic Units	22	7,5
	Others	11	3,7
Work Shift	Constantly day time	163	55,3
	Constantly night time	32	10,8
	Day and night time	100	33,9
Profession	Nurse	160	54,2
	Doctor	135	45,8

Table 2 contains the Frequency Analysis of Communication and Information Technology Tools. Communication and information technology tools used while working in hospital. As displayed in the table, the most frequently communication and information technology tools used by the participants are distributed as follows: written documents (27.1%), computer hardware (18,3%) and office programs (14.1%). The healthcare personnel's perceptions about the benefits of the use of knowledge management tools in hospital is presented in table 3.

The table 3 shows that the perception of health care professionals about knowledge management processes is generally positive. Knowledge creation averages 3.90±0.72; knowledge storage averages 4.03±0.76; knowledge sharing averages 3,93 ± 0,70; knowledge usage averages is 3,72 ± 0,81. In general, it is observed that most of the participants think that the storage of knowledge is very useful in hospitals while they believe that the use of information collected through knowledge management is currently less beneficial in their daily activities. Table 4

provides the descriptive statistics on perception levels of utility of hospital information systems use.

Table 2: Frequency Analysis of Communication and Information Technology Tools

	n	%age
Office programs (Word, Excel vb.)	137	14,1
Computer operating systems	89	9,2
Computer hardware	178	18,3
Photocopier and printing machine	132	13,5
Computer software	80	8,2
Network	52	5,3
Database (Java, Access)	40	4,1
Written documents	264	27,1

Table 3: Descriptive Statistics of Perception Levels Related to Information Management Processes

	n	Min	Max.	Mean	Sd
Knowledge Creation	295	1,80	5,00	3,90	0,72
Knowledge Storage	295	1,40	5,00	4,03	0,76
Knowledge Sharing	295	1,25	5,00	3,93	0,70
Knowledge Usage	295	1,33	5,00	3,72	0,81

Table 4: Descriptive Statistics of the Perception Levels of the Benefits of Using Hospital Information Systems

	n	Min.	Max.	Mean	Sd
Benefits of Using Hospital Information Systems	295	2,62	5,00	4,29	0,43

The perception level of the utility of hospital information systems seems to be generally positive. The average score for the use of hospital information systems is 4.29±0.43. According to this average, participants' perceptions about the use of hospital information systems are high.

This section investigates the existence of the relationships between knowledge management processes and the benefits of the use of hospital information systems. The correlation analysis suggests a positive perfect relation between the variables (with a high correlation coefficient).

Table 5 shows the relationship between information management processes and the benefits of using hospital information systems.

Table 5: The Relationship between Knowledge Management Processes and the Benefits of Using Hospital Information Systems

		Benefits of using hospital information systems
Knowledge Creation	R	,179 <sup>*</sup>
	P	,002
	N	295
Knowledge Storage	R	,276 <sup>**</sup>
	P	,000
	N	295
Knowledge Sharing	R	,325 <sup>**</sup>
	P	,000
	N	295
Knowledge Usage	R	,273 <sup>**</sup>
	P	,000
	N	295

P\* < 0,05; p\*\* < 0,01

The findings reveal a positive correlation between the benefits of using hospital information systems and the use of knowledge creation (r = 0,179); the use of knowledge storage (r = 0,276); the use of knowledge sharing tools (r = 0,325); there is a positive correlation (r = 0,273) Knowledge usage tools respectively.

## DISCUSSION

Health services have a great influence on people because they can directly affect human life, and the provision of these services with high quality is crucial. The use of knowledge in health care services to improve quality depends on the proper management of knowledge. Therefore, it is very important to establish an appropriate and adequate knowledge management system in healthcare institutions. In this study, the perception of selected health professionals in Haiti (nurses and doctors), who represent the main workforce in hospitals, on knowledge management processes based on quality is investigated.

Almost 98.6% of the respondents use communication and information technology tools to ease their daily tasks at hospital. Written documents, computer hardware and office programs among others the most common tools that are used. Besides, approximately 60% of health professionals easily employ these tools.

Regarding the relationship between the processes of knowledge management and the perception of health professionals about the benefits of the use of hospital information systems, a positive moderate relationship was found between the benefits of the use of hospital information systems and the sharing of knowledge, knowledge creation, knowledge storage and knowledge usage. This result is corroborated by the study performed by Kilinc<sup>18</sup> showing a strong positive relationship between the level of communication technology and the level of service quality among the workers.

The lack of an advanced knowledge management system and infrastructure in Haiti may justify the findings. For this reason, it is considered that the adoption of a knowledge management policy at the national level and the support of top management in hospitals is very important for the future of information management and quality health care delivery.

## CONCLUSION

In general, poor correlation between knowledge management processes and perception of health professionals on the benefits of the use of hospital information systems, can be explained by the under development of hardware and software systems related to the technological infrastructure in Haiti. Furthermore, health information systems are still heavily dependent on tools such as written documents, some computer hardware tools, and office programs. The lack of integrated systems in this respect is inadequate in terms of clinical, administrative and decision support. It is believed that such a work in Haiti will be a basis in terms of building a sophisticated knowledge management infrastructure in future.

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