

ORGANIZATIONAL FACTORS ASSOCIATED WITH THE IMPLEMENTATION OF A HEALTH MANAGEMENT INFORMATION SYSTEM AT KENYATTA NATIONAL HOSPITAL

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ABSTRACT

Healthcare organizations are increasingly spending and allocating huge budgets in embracing modern technology innovations and ways of dealing with healthcare related issues. While modern technology benefits cannot be disputed they however come at an expense and require a rigorous process before adopting the innovation. Studies done indicated Health care organizations find the process a rigmarole and opt for easier ways to incorporate or adopt the innovations, these usually results to a collapse or bottlenecks in the outputs of the innovations, in fact, majority of organizations have abandoned their ultra-modern system only to go back to their old manual system. The main objective of the study was to determine Organizational factors associated with implementation of a Health Management information Systems among healthcare workers at Kenyatta National Hospital. The research was conducted at KNH and adopted a cross-sectional study design. The target population of the study were 4,900 healthcare workers at KNH who were involved in implementing HMIS. The sample techniques used were mixed method sampling of stratified sampling, snowball sampling and convenience sampling. A sample total of 263 respondents was calculated for the quantitative study. The study utilized a questionnaire and a key informant interview schedule. Before processing the quantitative data, the data collected from the field was cleaned, coded, entered into a computer software and analyzed using SPSS version 21 while qualitative data was manually analyzed based on themes that were developed from responses (thematic analysis). Data presentation from the quantitative data was in form of quantitative statistics such as frequency distribution, percentages, tables, use of chi square for analysis, p values and odds ratios. Qualitative findings were presented in verbatim form. This study was submitted to KNH/UON Ethical Review Committee for ethical approval. Consenting was sought from individuals. Results indicated that majority of those interviewed were of the opinion that HMIS had improved services delivery by effecting efficiency especially in accident and emergency department, the wards and reception areas, generally there was improved efficiency in information handling in that, it had helped to identify patients in and through the system and there was reduction in costs. However, a few respondents were of the view that, HMIS had not improved efficiency to a larger extent since a lot of things were still done manually, no proper training and the system not fully implemented. Main challenges included, lack of technical assistance which led to loss of data which had never been recovered to date and scarce resources. In relation to the cadre of the hospital, the systems were quite complex, inadequate healthcare staff experience, scarcity of infrastructure and shortage of ICT technicians to assist in trouble shooting. There were very many refunds to patients by finance, resistance by users due to the perception that, it was a business-oriented system rather than goal oriented. Results show that the ratio of males to females was 1:1, 133(50.6%) and females 129(49.4%) thus gender balanced. A greater number of the respondents were aged between 26-35, 91 (34.6%), followed closely by the age bracket 36-45, 74(28.1%), the minority were aged 55 and above, 12(4.6%). In Kenyatta more than half of the respondent's education level was college, 160(60.8%) with very few at secondary, 5(1.9%). population age, level of education and duration worked at KNH, (p value 0.008, 0.050 and 0.004). KNH might not be where they want or need to be as far as HMIS is concerned but they have made strides towards the right direction. Technologically, HIMS have already taken a vital role in the healthcare industry and are obliged to be organizational tools meant to create a better healthcare environment. It is essential for the KNH management to ensure that there is a systems thinking where each and every individual staff is not only motivated but also feels part and parcel of the HIMS process. KNH needs to devise a HIMS specifically for their clientele.

INTRODUCTION

In accordance with (GHO, 2016) the spread of a disease doesn't stop at a country's borders. With more people traveling to other countries and living in crowded cities, it's easier for germs to spread. Infectious diseases that start in one part of the world can quickly reach another. Resistance to medicines such as antibiotics is on the rise. This makes it harder to treat certain diseases. Natural and man-made disasters create refugee populations with immediate and long-term health problems. As attested by (Pratt and Hyder, 2016), International health, also called geographic medicine or global health, is a field of health care, usually with a public health emphasis, dealing with health across regional or national boundaries. Health systems research is increasingly being conducted in low and middle-income countries (LMICs). Such research should aim to reduce health disparities between and within countries as a matter of global justice.

As stated by (WHO, 2016) in their latest version and current WHO framework for globally improving on Health systems, seven building blocks are clearly defined that together constitute a complete health system. This was underscored at the G20 meeting Osaka in the emphasis of a strategic harnessing of the power of data to healthcare systems strengthening that makes a rapid and affordable progress towards achieving UHC (G20, 2019). In relation to International health concerns majority of the National referral systems in developed countries among them Canada, United States of America and the United Kingdom have had to budget for huge amounts of money for an impetus towards Health Management Information System (HMIS) adoption whereas developing countries are still lagging behind and struggling to make do with the old traditional healthcare setups. Health systems are the core foundations of how countries respond to new disease threats and improving health of the people. The iterative nature of the process cannot be further overemphasized; any changes in mission, operations, functions, or information and data needs must be assessed to reveal their impact on analyses already completed, since these changes could have a profound effect on the system to be acquired (WHO, 2012).

According to (Health Systems Action Network, 2006) African policy makers are increasingly called on to use evidence-based research to inform development decisions. But this requires the rigorous collection of data as well as a coordinated system to disseminate it. This is why Kenya-based African Population Health Research Center is advocating for national policies to enable strong data systems. Precise and nuanced knowledge and understanding of what constitutes an effective health system is growing all the time and health systems—strengthening is rising on political agendas worldwide. Generally, health system strengthening (HSS) can simply be defined as any array of initiatives and strategies that improve one or more of the functions of the health system which in return leads to better health

through improvements in access, coverage, quality, or efficiency. For the Millennium Development Goals to be achieved and even reaching Universal Health Coverage, Health information Systems are critical. The International body for Health Information (IFHIMA) suggests that what governments should do to improve HIM systems and HIM professional status to get recognition like any healthcare provider in India should be implementation of standardized practices throughout the country, enhancing of education and training programs (IFHIMA, 2018).

As assessed by the Kenya Health policy (2014-2030) definition of the Country's long term intent in health through strengthening of health information, the target of the policy is to attain a level and distribution of health at a level commensurate with that of a middle income country, with specific impact targets of attaining a 16% improvement in life expectancy; a 50% reduction in annual mortality from all causes; and a 25% reduction in time spent in ill health. Towards strengthening national capacities for International Health Regulations (IHR), the country inaugurated the first Public Health Emergency Operations Centre (PHEOC) in 2016 to better coordinate activities of relevant stakeholders involved in prevention, detection and response to public health events (PHEs). It is expected that when PHEOC is fully operationalized, it will enhance public health emergency preparedness and response for PHEs in the country (GHO, 2016).

A study by Nussbaum, (2011) argues that disadvantage consists of having a low level of not only health achievement but also health (or capability) security. Countries with insecure health are those countries with a low prospect of sustaining their achieved level of population health. Health Achievement refers to the level of population health attained by a given country. Countries that are worst-off would comprise those that perform substantially worse on morbidity and mortality indicators relative to a decent or optimal level of health. The study proposes that this would, for instance, refer to countries that are particularly prone to the effects of climate change or are conflict affected. However, the study acknowledge other proxies for health insecurity exist beyond these.

According to Omambia *et al.*, (2016) embracing modern innovations in healthcare technology is one but among very many ways of improving efficiency and reducing losses within healthcare organizations. The integration of information and health services envisaged benefits cannot be disputed, still there are many challenges which affect and determine its effectual adoption. In fact, majority of organizations have abandoned their newly acquired systems only to go back to their old manual systems. Health management information systems can be the impetus for managing complex health care challenges and addressing growing information needs. A vital approach to the design and implementation of any HIT

and health program is to identify the various stakeholders who need to be involved and find mechanisms for including and incorporating their perspectives and concerns while simultaneously finding ways to mobilize their skills, expertise and resources.

In conformity with Odhiambo-Otieno (2005), evaluation of DHMIS is one of the most neglected areas in the MOH Kenya and without the comprehensive evaluation criteria there is little justification of maintaining or implementing a HMIS. HMIS is a critical part when it comes to any health facility transition. It is imperative for health facilities to know what works for whom and under what circumstances. The system must be understood in order to strengthen it and from that base they can design better interventions and evaluations for health systems strengthening. As reported by Bhattacharjee(2008), Healthcare organizations should overemphasize the iterative nature of the process since any changes in mission, operations, functions, or information and data needs must be assessed to reveal their impact on analyses already completed, since these changes could have a profound effect on the system to be acquired.

Study purpose

To determine organizational factors associated with the implementation of a Health Management Information System at Kenyatta National Hospital.

Methods

The study was conducted in Kenyatta National Hospital in Nairobi County, Kenya. KNH is National referral facility at the apex of the health care sector in Kenya both as a facility and a training center. As per the time of study the facility had 50 wards, 22outpatient clinics, 24 theatres (16 specialized) and Accident and Emergency department it has a bed capacity of 1800 beds out of which 209 beds are for the private wing. The Hospital was built to fulfill the role of being a National Referral and Teaching Hospital, as well as to provide medical research environment. The study utilized a Cross-sectional research design. Cross-sectional studies portray an accurate profile of persons, events, or situations at that particular time. It allows the collection of large amount of data from a sizable population in a highly economical way. As per the healthcare tiers in Kenya, KNH is at the apex of which is the National Teaching and Referral Hospital and thus was purposefully selected. These allowed the study to collect data which was analyzed quantitatively and qualitatively using descriptive and inferential statistics (Kothari, 2004). These details corroborated the Cross-sectional survey as deemed the best strategy to fulfill the objectives of the study. The research design explored a case study of KNH. There were 4,490 accredited healthcare service delivery officers at Kenyatta National Hospital who would have in one way or another been involved in implementing the HMIS. The study included all the 4,490 accredited healthcare service delivery officers in the three levels of

management; top/managerial, middle/ and operational levels at Kenyatta National Hospital who would have in one way or another been involved in implementing the HMIS. All other persons not involved in the HMIS implementation were excluded. KNH has got 46 departments in total. From the organogram respondents were sampled based on their relevance and phases of HMIS implementation, thus there were three cadres of respondents. Since a sample was selected from the KNH located in Nairobi, it was expected that selecting one healthcare worker/respondent was the same as selecting the other. In the determination of the target population to be surveyed, a qualitative and quantitative sample size was determined. Therefore, according to the Krejcie and Morgan formula, three factors served as the basis for appropriate determination of the sample size (Kosomo, 2007). These factors were the projected frequency of the preferred respondent characteristic (p) from which an approximated 87.5% of the health professional officers surveyed were expected to persuade that the research was viable. The other factors used were the preferred level of confidence (t) which was set at 95% (gives a standard value of 1.96) and the acceptable margin of error (m) set at 4% (which gives a standard value of 0.04). Given the three factors, the sample size was thus calculated using the formula:

Total number of health workers = 4,490

19 departments are directly involved with HMIS

$$N = \{t^2 \times p(1-p) \times 1\} / m^2$$

$$= 1.96^2 \times 0.875(1-0.875) / 0.04^2$$

= 0.420175 / 0.0016 = 262.609375 and thus, 263 respondents in the operational level and thus 14 respondents in each stratum/department. In qualitative sampling snowball sampling was utilized where there was a very small population size characteristically at the top level management. As indicated by Salim (2020), in this type of sampling, the investigator asked the initial subject to identify another or next potential subject who meets the criteria of the research study. A questionnaire and key informant interview schedule were used as data collection tools. Data collection method was through the use of questioning and interviewing. Data collection technique involved structured and unstructured questions combined with a key informant interview. Before processing the quantitative data which in reference to Salim (2020) is data that can easily be measured or quantified, the data collected from the field was cleaned, edited, coded then entered into a computer software and analyzed using SPSS version 21. Qualitative data which cannot be represented by a numerical statistic, was done through qualitative content analysis. The study proposal was submitted to the Kenyatta National Hospital/University of Nairobi ethical review committee for ethical approval. Subsequent approval was vindicated upon meeting the warranted KNH/UoN ERC threshold.

RESULTS

A total of 263 respondents participated in the study. The ratio of males to females was 1:1, 133(50.6%) and females 129(49.4%) thus gender balanced. A greater

number of the respondents were aged between 26-35, 91(34.6%), followed closely by the age bracket 36-45, 74(28.1%), the minority were aged 55 and above, 12(4.6%). In Kenyatta more than half of the respondent's education level was college, 160(60.8%) with very few at secondary, 5(1.9%). There seemed a symmetry in years worked at KNH with respondents who had worked for more than 13 years, 74(27.8%) being the highest followed closely by respondents who had worked 1-3 years, 66(24.8%) and the least being less than 1, 34(12.8%) and 8-12 years, 33(12.4%) respectively. A larger number of the respondents were at the Middle/technical level of management, 139(53.1%) followed by the operational level, 110(42%) and a

minimum number were at the top level management, 13(5%).

A larger part of the respondents, (81.1%) agreed that KNH utilizes HMIS in their daily activities towards service delivery as indicated in table 4.1. A fair number (18.8%) were uncertain on the full implementation of HMIS, (40.6%) felt HMIS was not fully implemented while, an equal percentage (40.6%) felt there was full HMIS implementation. Majority of the subjects (58.7%) felt the institution had adopted changes into a more integrated process of management, whereas, a small number (14.6%) were contrary to the idea.

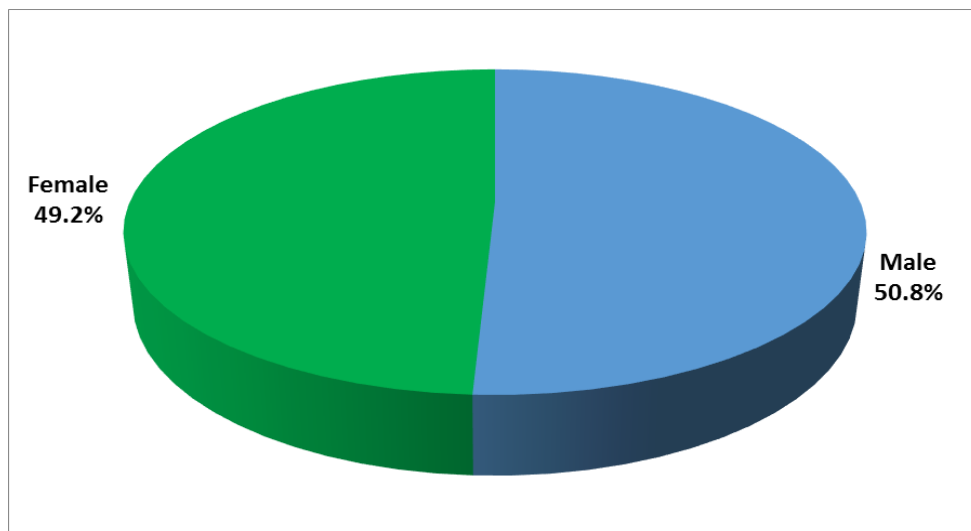


Figure 1: Sex distribution among the study population.

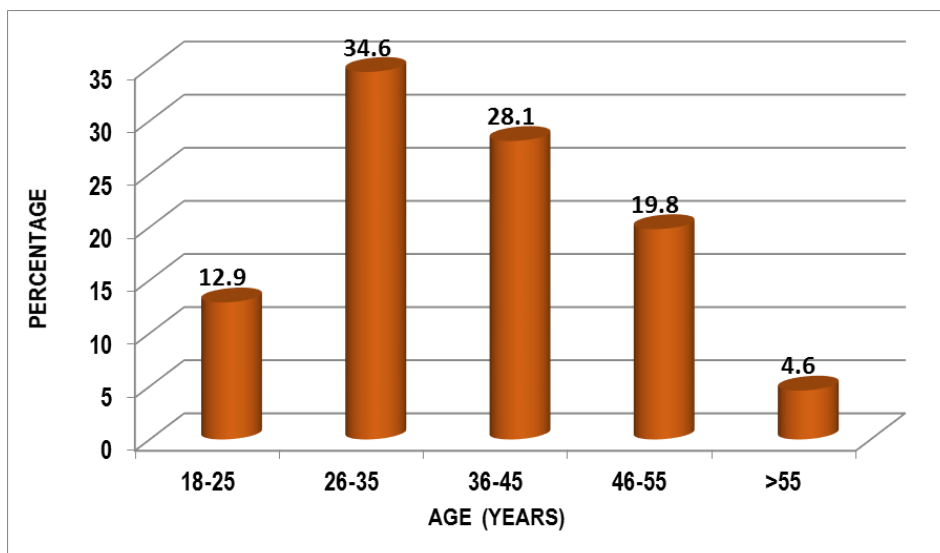


Figure 2: Age distribution among the study population.

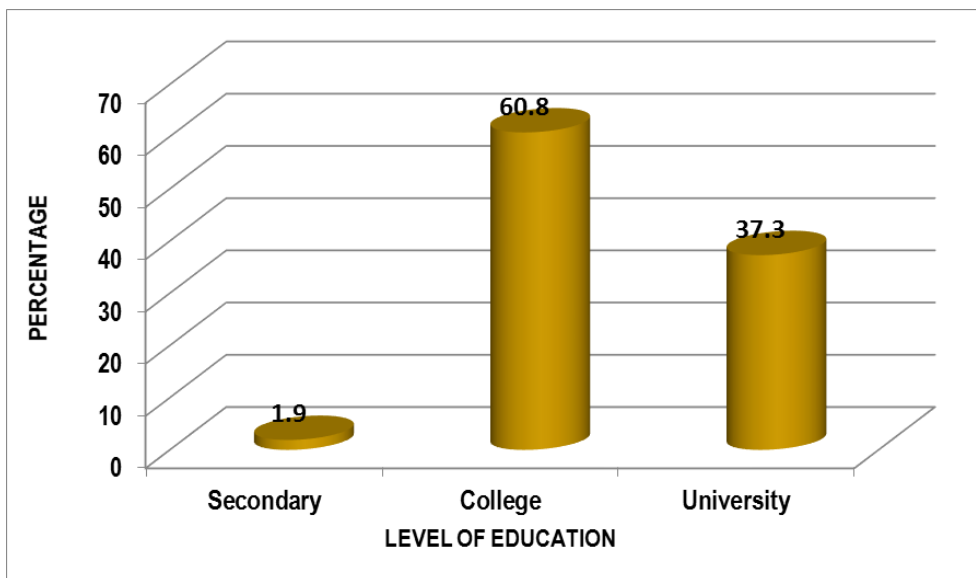


Figure 3: Education distribution among the study population.

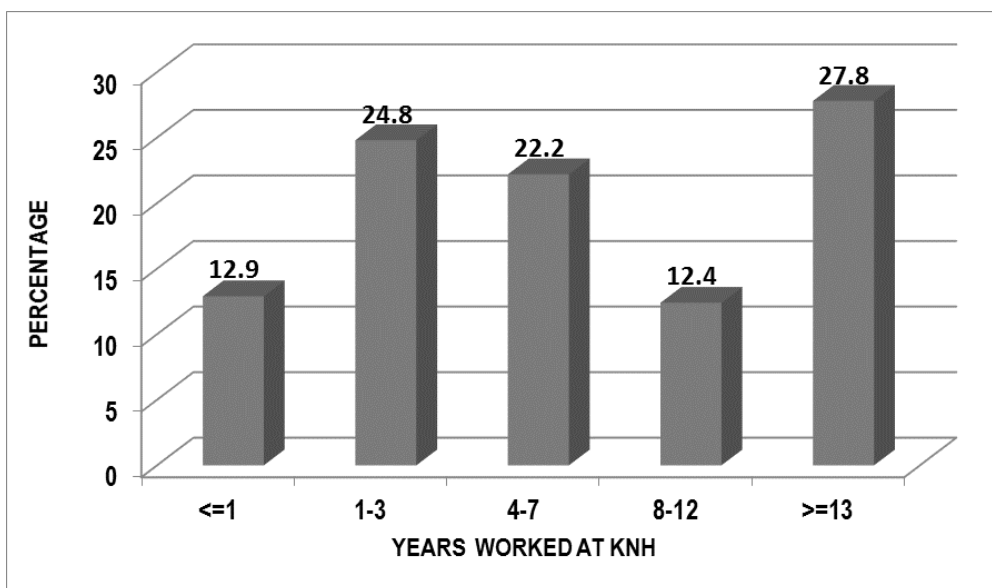


Figure 4: Duration of work among the participants.

Table 1: Organizational factors influencing the implementation of health management information system at the Kenyatta national hospital.

ORGANISATIONAL FACTORS	Strongly disagree	Disagree	Don't know	Agree	Strongly agree	TOTAL
KNH uses HMIS in their day to day activities/roles in delivering health care services	4.2%	3.8%	10.9%	63.4%	17.7%	100%
KNH management supports training in HMIS	2.3%	10.2%	22.6%	58.5%	6.4%	100%
Change has brought about better, effective and efficient healthcare services delivery in KNH	3.8%	6.4%	15%	65%	9.8%	100%
There is effective and fair distribution of computers in the hospital	7.9%	21.8%	23.7%	44.0%	2.6%	100%
HMIS has been fully implemented by the hospital	7.5%	33.1%	18.8%	33.1%	7.5%	100%
HMIS methods have been harmonized and standardized	6.4%	20.3%	25.2%	43.6%	4.5%	100%
KNH has developed changes in its structure into a more integrated process of management	2.7%	11.9%	26.8%	53.3%	5.4%	100%

There is proper HMIS advocacy by the management in KNH	4.5%	16.9%	27.1%	41.0%	10.5%	100%
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equal percentage (40.6%) felt there was full HMIS implementation. Majority of the subjects (58.7%) felt the institution had adopted changes into a more integrated process of management, whereas, a small number (14.6%) were contrary to the idea.

Table 2: Organizational factors influencing the implementation of health management information system at the Kenyatta national hospital.

Organization factors	N (%)	P value	Odds ratio
Does KNH use HMIS in its routine activities		0.0003	4.7
Yes	213 (81%)		
No	50 (19%)		
I DON'T KNOW	0 (0%)		
If yes state the activity it uses in your department	Patients' registry, data storage and analysis		
Dental	Patients' registry and data storage		
Theatre	Patients' registry and data storage		
Casualty	Patients' registry and data storage		
Pharmacy	Patients' registry, inventory, drug administration		
Administration	It's used to analyze data to help in decision making		
Laboratory	Patients' registry, storage of results and lab test requests from the doctors		
Do you have any training on the use of HMIS		0.001	2.1
Yes	169 (64.5%)		
No	94 (35.5%)		
If yes, where did you train			
KNH	8 (3.2%)		
UON	71 (27.3%)		
KMTC	160 (60.8%)		
OTHERS SPECIFY	23 (9%)		
Has the management offer some form of training on HMIS		0.005	6.8
Yes	170 (64.9%)		
No	93 (35.1%)		
Does the management sensitize on the use of HMIS		0.001	1.1
Yes	190 (72.4%)		
No	73 (27.6%)		
If yes, state the main support provided			
Financial	156 (59.3%)		
Time off	20 (7.7%)		
Both financial and time off	61 (23%)		
moral	26 (10%)		
Others specify	0 (0%)		
Has there been any change in service delivery		0.05	2.5
Yes	196 (74.8%)		
No	36 (13.5%)		
Can't tell	30 (11.7%)		
If yes, in which area has the change been realized	Service delivery, especially in the turnaround time		
Would you say change has improved service delivery		0.002	3.4

Yes	203 (77.1%)		
No	60 (22.9%)		
Are the computers adequate for use on the activity/service provided		0.1	0.01
Yes	122 (46.6%)		
No	138 (52.4%)		
I don't know	7 (3%)		
If yes, have they improved service delivery		0.001	3.67
Yes	208 (79.1%)		
No	16 (6.3%)		
I don't know	38 (14.6%)		

There were different organizational factors influencing the implementation of health management information system at the Kenyatta national hospital that the study set out to look at, and the following were among the factors that had any statistical significance. The study showed that there was a statistically significant association between level of education among the study population and Kenyatta national hospital. The hospital uses HMIS in its day to day activities/roles in delivering health care services, (p value 0.006 and OR 6.844). Sex of the study population showed significant association and also agreed strongly that there was an effective and fair distribution of computers in the hospital (OR 3.67). Looking at KNH management and the support to training of its employees in HMIS, there was an association with age of the study population and the duration worked at the hospital with a p value of 0.001 respectively. The study population agreed that Change had brought better, effective and efficient healthcare services delivery in KNH, with age and duration worked at the hospital strongly agreeing to that effect and showing a clear

association between them, (p value of 0.012 and 0.054 respectively). Age, duration worked at KNH and level of management among the study population strongly agreed that HMIS had been fully implemented by the hospital and that there was an association between age, sex, duration worked at KNH and level of management in the hospital and the fact that the hospital had fully implemented HMIS (p value 0.002, 0.01, 0.001 and 0.009 respectively). There was a clear association between age, sex, level of education and duration worked at the hospital among the study population and the fact that HMIS methods had been harmonized and standardized in the hospital with (p value of 0.005, 0.007, 0.000000* respectively supported by an OR, 3.852, 5.767 and 3.629 on sex), level of education and duration worked at KNH. Finally the study observed that the age of the study population strongly agreed and had a statistically significant association with the fact that there was a proper HMIS advocacy by the management in KNH, p value 0.05 as indicated by table 3 below.

Table 3: Organizational factors influencing the implementation of health management information system at the Kenyatta national hospital.

ORGANISATIONAL FACTORS	Socio -Demographic Characteristic		Age bracket (Years)	Level of education	Duration worked at KNH (years)	Level of management				
	Sex						18-35 >35	<=college University	<= 3 > 3	Top Middle/ Operational
	Male	Female								
KNH uses HMIS in their day to day activities/roles in delivering health care services	6.0%	12.2%	8.1%	4.7%	6.8%	7.7%				
Strongly disagree/ Disagree			8.9%	15.7%	10.1%	8.2%				
Strongly agree	94.0%	87.8%	91.9%	84.3%	93.2%	92.3%				
/Agree		0.114	91.1%	0.006*	89.9%	91.8%				
P value		0.99	1.0	0.65	0.482	0.66				
Sig		-	0.99	0.557	0.99	0.502				
Exp(B)		--	--	.044-7.064	--	0.284				
95% CI (Lower-Upper)			--		--	.007-11.152				
KNH management supports training in HMIS	14.8%	18.1%	7.4%	13.7%	5.2%	30.8%				
Strongly disagree/Disagree	85.2	81.9%	24.1%	19.2%	22.7%	8.2%				
Strongly agree		0.5	92.6%	86.3%	94.8%	69.2%				
/Agree		0.69	75.9%	80.8%	77.3%	85.9%				
				0.326	0.001	0.66				

P value	1.924	0.001	0.23	0.99	0.99
Sig	.074-50.013	0.99	6.844	-	-
Exp(B)		-	.283-	--	--
95% CI (Lower-Upper)		--	165.521		
There is effective and fair distribution of computers in the hospital	35.3% 42.4%	31.9% 45.3%	41.9% 34.7%	32.1% 43.2%	20.0% 39.5%
Strongly disagree/ Disagree	64.7% 57.6%	68.1% 54.7%	58.1% 65.3%	67.9% 56.8%	80.0% 60.5%
Strongly agree /Agree	0.314	0.060	0.367	0.139	0.174
P value	0.314	0.060	0.36	0.50	0.463
Sig	3.67	1.782	0.517	1.691	3.287
Exp(B)	.693-19.428	.416-	.125-2.137	1.691	3.287
95% CI (Lower-Upper)		7.644		.364-7.868	.137-79.06
HMIS has been fully implemented by the hospital	49.0% 51.8%	38.4% 60.5%	. 49.2%	35.4% 59.0%	15.4% 58.3%
Strongly disagree/Disagree		61.6%	51.9%	64.6%	84.6%
Strongly agree /Agree	51.0% 48.2%	39.5% 0.002*	50.8%/ 48.1%	41.0% 0.001*	41.7% 0.009*
P value	0.7	0.69	0.778	0.001*	0.009*
Sig	0.01	1.36	0.77	0.057	0.723
Exp(B)	0.098	.289-	0.793	1.606	0.62
95% CI (Lower-Upper)	.015-.640	6.388	.162-3.875	.312-8.259	.044-8.716
HMIS methods have been harmonized and standardized	30.2% 41.0%	26.0% 45.5%	27.8% 46.9%	19.0% 46.7%	9.1% 37.6%
Strongly disagree/ Disagree		74.0%	72.2%	81.0%	90.9%
Strongly agree /Agree	69.8% 59.0%	54.5% 0.005*	53.1% 0.007*	53.3% 0.00*	62.4% 0.10
P value	0.13	0.94	0.10	0.33	0.10
Sig	0.21	0.94	0.10	0.33	0.10
Sig	3.852	1.079	5.767	3.629	0.99
Exp(B)	.449-33.038	.143-	.691-48.136	.269-48.917	-
95% CI (Lower-Upper)		8.147			--
There is proper HMIS advocacy by the management in KNH	27.8% 32.3%	22.4% 35.5%	25.0% 36.1%	25.4% 31.7%	23.1% 41.7%
Strongly disagree/Disagree	72.2% 67.7%	77.6% 64.5%	75.0% 63.9%	74.6% 68.3%	76.9% 58.3%
Strongly agree/Agree		0.05*	0.105	0.45	0.758
P value	0.5	0.80	0.07	0.414	0.99
Sig	0.91	0.753	0.061	0.399	-
Exp(B)	1.128	.078-	.003-1.385	.035-4.258	--
95% CI (Lower-Upper)	.120-10.643	7.234			

DISCUSSIONS

It was agreed that organizations need to target resource mobilization, research and development, and access to essential medicines and vaccines, health workforce, international health regulations and statistical capacity-building, further WHO stated that a qualified health workforce that is available, equitably distributed and accessible by the population is essential for a well-functioning health system. (WHO, 2019) These findings agreed with the study findings that the integration of HIMS had a positive influence on the day to day affairs of KNH. The respondents reflected that adequate staff training and sufficient time spent by different experts in the field helped to ensure the appropriate design of the new system. It was safe to say that the study highlighted that KNH's leadership and governance had developed changes in its structure into a more integrated process of

management, especially when it comes to how products and services are adopted and implemented in the hospital. Making sure there is an all-inclusive consultative process across all cadre. The Information system development and implementation activities that were conducted in anticipation from manual to electronic at KNH include; Planning, designing, training of system users, revision of indicators, preparation of guidelines, staff training, benchmarking, self-assessment of the organization, evaluation of manual systems, conducting group discussions, integration of data collection process, disease surveillance, patient identification, deployment of trained staff, procurement of computers, installation and commissioning. The key informant's interview also pointed out that training of users to have skills and knowledge on how to use the system and to avoid resistance and good software, preparation of guidelines since they literally explain everything related to the

system. The implementation phase was important as it determined how well the process rolled out, and self-assessment (Omambia *et al.*, 2016). The PDCA cycle was effective and it brought about emphasis on continuous feedback that identifies major errors on the ongoing process.

The majority of those interviewed were of the opinion that HMIS had improved services by effecting efficiency in services delivery especially in accident and emergency department, in the wards and reception areas, generally efficiency in information handling, it had helped to identify patients in the system, and there was reduction in costs. One respondent observed;

“For sure the HMIS had reduced the patient waiting time during registration, increased effectiveness in communication, charging of services, ordering of drugs online, discharging of patient, ease of records retrieval, reduced errors.....”

However, a few respondents were of the view that, HMIS had not improved efficiency to a larger extent since a lot of things were still done manually, no proper training, the system is not fully implemented.

The components considered to be key elements were; Hardware, software, users, data collection, storage and its management, integration, then use of funsoft software, patient bio-data, the networks and internet, the processes and basically everyone working in the system. Some of the respondents were uncertain since their interaction with HMIS was limited. The needs analysis helped KNH management to identify the needs for implementing HMIS. Development of data capturing system using computers during patient's registration. The pilot studies were important as they involved various departments and the involvement of other stakeholders. However, some respondents were uncertain of what they thought was critical during the adoption and implementation of HISM at KNHS. According to G 20 Osaka (2019), a people centered approach means that, data should empower people or help their effort to actively participate in the development of a health management information system, from the design phase all the way to the implementation of the system. The WHO (2017) indicates that governance and leadership of countries is vital on how the health systems perform. This is in tandem with the study results that indicated there is a need to strengthen the health system through enhancing and in syncing systems and human systems.

CONCLUSIONS

HIMS serve a critical function in healthcare, including the areas of patient care, administration, research and education. There are significant limitations to all administrative and healthcare data. Often this relates to the breadth of data collected, which is frequently determined by the expected HIMS. Grounded in the contemporary issues while planning for the future, HIMS

have the effect and ability of reshaping the effective canon, the form and contents of healthcare globally. Africa is Africa (a dark continent) because we don't value data or observe the basic data principles. KNH might not be where they want or need to be as far as HMIS is concerned but they have made strides towards the right direction.

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