Individual Factors Associated With the Implementation of A Health Management Information System At Kenyatta National Hospital

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Abstract- *A strategic harnessing of the power of data to healthcare systems strengthening makes a rapid and affordable progress towards achieving UHC Majority of the 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. The main objective of the study was to determine individual factors associated with the implementation of a Health Management Information System at Kenyatta National Hospital. The research was conducted at KNH and adopted a cross-sectional study design. The target population of the study were healthcare workers at KNH who were involved in implementing HMIS with a sample size of 263 the sample techniques used was mixed method sampling of snowball sampling, stratified sampling and convenience sampling. A sample total of 263 respondents was calculated for the quantitative study. The study utilized an in-depth interview schedule, 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 and tables use of chi square for analysis. 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. A better part of the respondents (59.3%) endorsed improvement on turnaround time as compared to (25.9%) who were against the idea. Same way, a major part (70.5%) seconded HMIS an impetus on faster service delivery contrary to a minority (18.2%). (p = 0.024). . A large part of the respondents (83.7%) was associated with higher Likert scale responseswhile, a minority (7.6%) disagreed with the concept.However, a few respondents were of the view that, HMIS had not improved efficiency to a larger extend 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 hospital uses HMIS in its day to day activities/roles in delivering health care services, (p value 0.006 and OR 6.844), with majority of the study population stating that there was an effective and fair distribution of computers in the hospital (OR 3.67). Duration worked at KNH strongly agreed and had an association with the fact that KNH had the current and up to date ICT infrastructure (OR 2.697). There was an association between resistance to change and the study 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*

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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

I. Introduction

A strategic harnessing of the power of data to healthcare systems strengthening makes a rapid and affordable progress towards achieving UHC [1]. In the 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 [2].Majority of the 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 [3].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.The International body for Health Information 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 [4]. The Kenya Health policy (2014-2030) [5]defines 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 [6]

1.1   Statement of the Problem.

Health care systems in many countries are characterized by complexity, fragmentation, and a lack of transparency.Health information systems can be the impetus and provide tools for managing emerging and re-emerging complex health care challenges in addition to addressing the growing information market needs [7].According to[8] accepting change and embracing modern innovations is one among very many ways of improving efficiency and reducing losses within healthcare organizations.The prerequisite for EMR/EHR is to understand the Organization needs and existing practices, then phase wise implementation will produce good results. EMR/EHR implementation success depends on the requirements of the individual organization and their readiness to the adoption [3]. While the integration of information and other health services expectations cannot be ignored, there are many bottlenecks which affect its adoption, majority of healthcare organizations have actually abandoned their newly acquired systems innovations and decided to go back to their antiquated systems. One of the key challenges in the Kenyan health sector identified in First Medium Term Plan of Vision 2030 document is weak health information systems. Health information system policy, Kenya 2012 – 2030 identifies various weaknesses that exist in current information systems that include inadequate capacities of HIS staff, unskilled personnel handling data and many parallel data collection systems amongst others. Overall, the current HIS provides limited information for monitoring health goals and empowering communities and individuals with timely and understandable information on health. Issues of access and intensity of use of health services have always been of significant concern in the health sector in Kenya [9].

1.2   Study purpose
The main objective of the study was to determine individual factors associated with the implementation of a Health Management Information System at Kenyatta National Hospital.

II.   Methods

The study was conducted in Kenyatta National Hospital in Nairobi County. KNH is at the apex of the health care sector in Kenya both as a facility and a training center. The facility has 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 study utilized an analytical research study and specifically the Cross-sectional research design. Cross-sectional research was used to obtain data/information concerning the current status of the phenomena to describe what exists, with respect to variables or conditions in a situation. Cross-sectional research aims to gather data without any manipulation of the research context and it is non-intrusive and deals with naturally occurring phenomena, where the researcher has got no control over the variables [10].   The target population were the 4,490 490 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 investigated and collected data from selected healthcare officers at Kenyatta National Hospital in Nairobi County who were directly or indirectly involved in HMIS. KNH is the biggest and top most level in the country and thus has got the most staff and being a national referral and teaching hospital most equipped. With rise in technology the scope was deemed appropriate due to the fact that, innovations and new technologies are more embraced in urban areas and cities as compared to other areas like the rural areas. The scope was deemed to be effective as it is a fast and effective way for new investigators with limited resources to begin to answer important research questions, gain valuable experience in a research area, and some-times have a publishable finding in a short time frame possible [11].

The study included all the 4,490 accredited healthcare service delivery officers in the top, 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.The investigator usedstratified sampling for individual factors associated with the HMIS implementation.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 assumed 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 sample size was determined for the organizational and technical specific objectives while the individual specific objective utilized quantitative sampling specifically stratified sampling. Therefore, in the individual specific objective, according to the Krecie and Morgan formula, three factors served as the basis for appropriate determination of the sample size [12].These factors were the projected frequency of the preferred respondent characteristic (p) from which an approximated 87.5% of the health professional managers 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), and thus, 263 respondents in the operational phase and thus 14 respondents in each stratum/department.
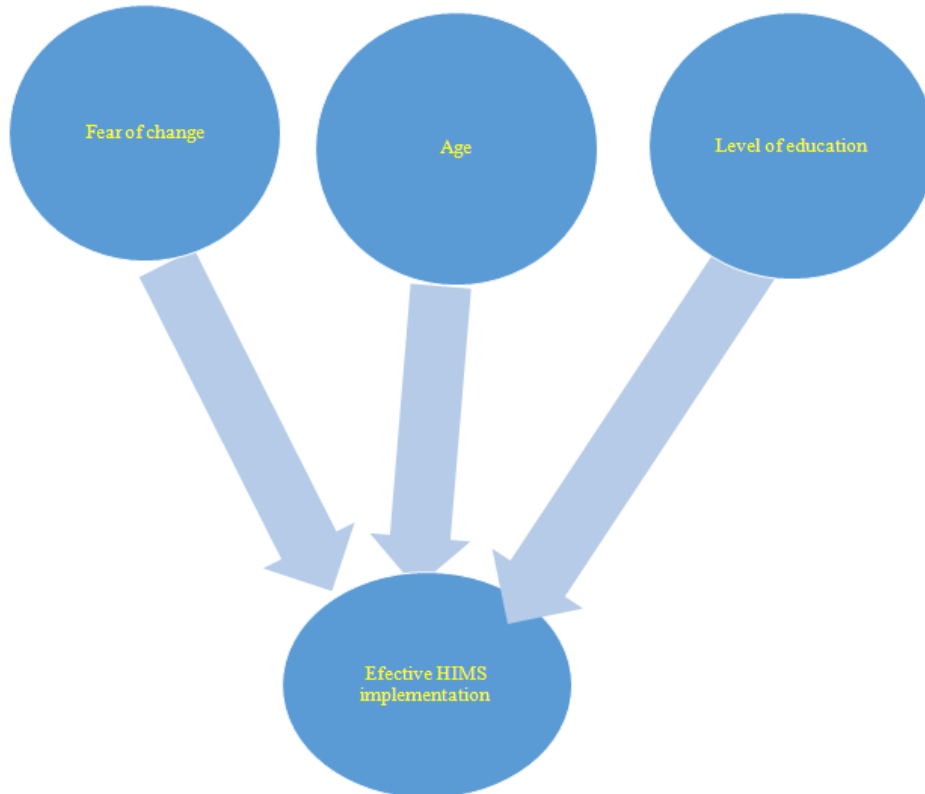
From the study the independent variables were the fear of change, age and educational level, since an independent variable refers to the status of the presumed cause whereas the dependent variable is the presumed effect. Implementation of HIMS thus depends on the individual aspects fear of change, age and education.

Data collection technique involved self-administered questionnaires containing structured and unstructured questionnaires combined with in-depth interviews and a key informant interview.Before processing the quantitative data, the data collected from the field was cleaned, edited, coded then entered into a computer software and analyzed using SPSS version 21 while qualitative data was manually analyzed based on themes that were developed. Data presentation was in form of quantitative statistics such as frequency distribution, percentages and tables use of chi square and regressions for analysis.

The proposal for this study was submitted to the Kenyatta National Hospital/University of Nairobi ethical review committee for ethical approval. On availing of the research permits, permission to conduct the research was granted where. The managers, supervisors and operational staff of the departments selected were informed prior to the visits and collection of data in their respective departments and offices. Participants were approached to give their consent before agreeing to sign an informed consent form before agreeing to participate in the study .The researcher ensured that individual participants gave their consent and were assured that their response was to be kept in privacy and high levels of confidentiality observed for purposes of the study.

2.1 Conceptual Framework
Independent variables

Dependent variable

The study conceptualized the dependent variable to be effective HIMS implementation while the independent variables to be fear of change, age and level of education.

III.   Figures And Tables

During the study 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%).

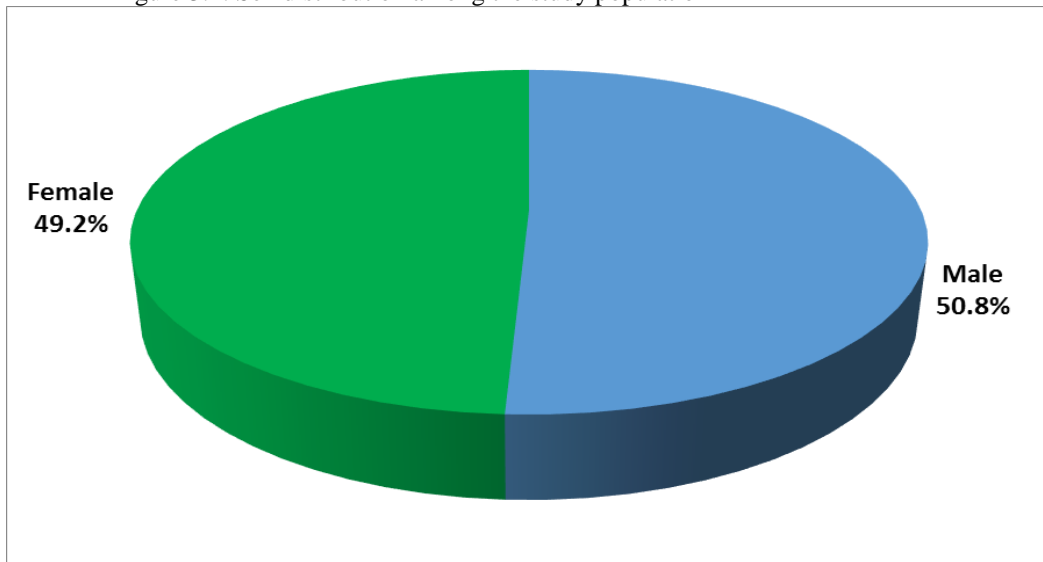Figure 3.1: Sex distribution among the study population

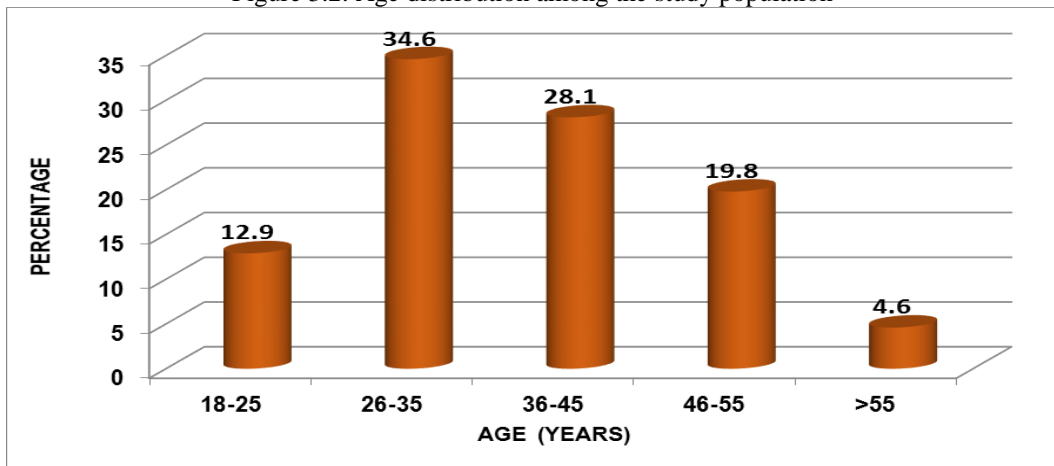Figure 3.2: Age distribution among the study population

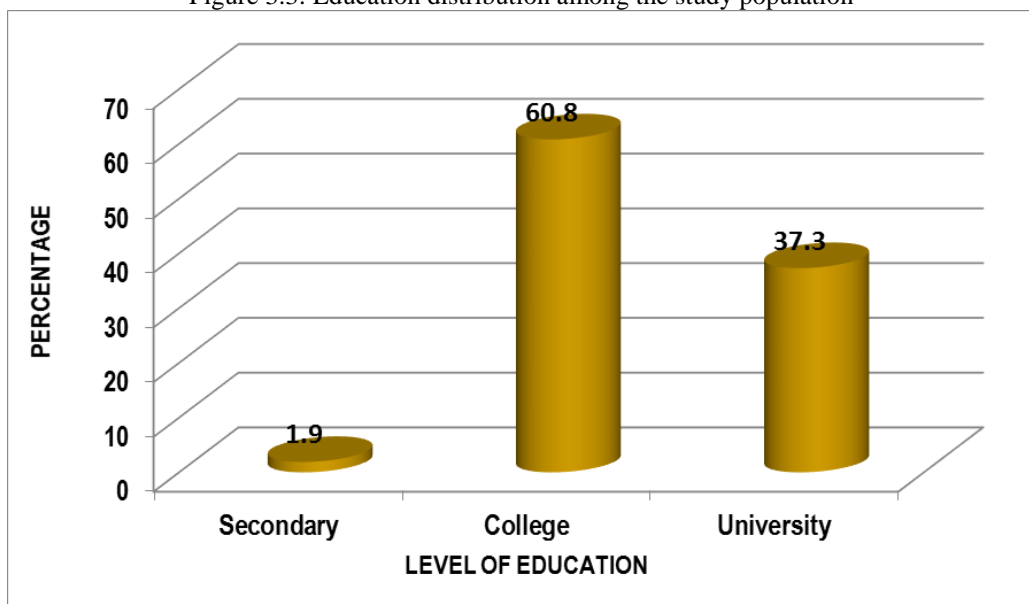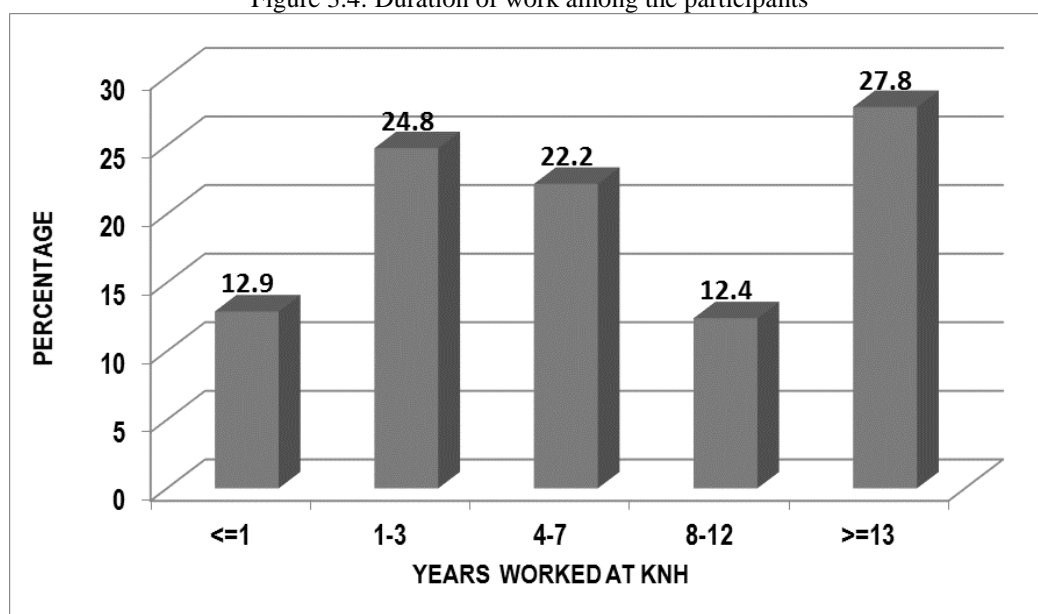Figure 3.3: Education distribution among the study population

Figure 3.4: Duration of work among the participants

A better part of the respondents (59.3%) endorsed improvement on turnaround time as compared to (25.9%) who were against the idea. Same way, a major part (70.5%) seconded HMIS an impetus on faster service delivery contrary to a minority (18.2%). Majority of the respondents (66.8%) commended the past way of doing in comparison to (11.8%) who disputed the phenomenon. More than half of the respondents (54.1%) felt HMIS as a change could be resisted since it is unlikely to succeed following previous change attempts, in addition, (68.9%) individual respondents felt HMIS would make their expertise obsolete and they can't learn new ways of doing things. A balanced portion (47.5%) disagreed and (37%) agreed on having some expertise that is not being utilized. A large part of the respondents (83.7%) felt important in the progress and success of HMIS while, a minority (7.6%) disagreed with the concept as shown in Table 3.1 below.

Table 3.1: Individual factors influencing the implementation of health management information system at the Kenyatta national hospital

| | RATING | | | | | |
INDIVIDUAL FACTORS	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree	TOTAL
With HMIS, turnaround time(patient waiting time) has greatly improved	7.6%	16.3%	16.7%	49.4%	9.9%	100%
With HMIS healthcare service delivery is faster, better and easier to deliver	4.2%	14.0%	11.4%	54.2%	16.3%	100%
HMIS has brought about better up-dating and expertise in healthcare service delivery	2.7%	9.8%	14.4%	61.4%	11.7%	100%
Workers who have adopted HMIS have self-confidence in productivity	1.9%	4.9%	22.1%	57.0%	14.1%	100%
For you to effectively carry out your duties you need HMIS	1.5%	6.1%	7.2%	60.1%	25.1%	100%
The past way of doing things has been successful and there is no clear evidence of adopting HMIS	31.3%	35.5%	21.4%	10.3%	1.5%	100%
Proposed change (HMIS) could be resisted since it is unlikely to succeed and there have been failures of earlier change attempts	17.4%	36.7%	18.9%	24.2%	2.7%	100%
Some changes will make my expertise obsolete and I can't learn new ways of doing things	24.2%	44.7%	8.3%	17.4%	5.3%	100%
I have some HMIS skills I am not utilizing	9.8%	37.7%	15.5%	32.8%	4.2%	100%
I feel like am important to the progress and success of the HMIS	2.7%	4.9%	8.7%	57.2%	26.5%	100%

Table 3.2: Individual factors influencing the implementation of health management information system at the Kenyatta national hospital

INDIVIDUAL FACTORS	N %	P VALUE	ODDS RATIO
Has HMIS improved turnaround time (patient waiting time)		0.024	1.5
Yes	156 (59.3 %)		
No	107 (40.7 %)		

If Yes What is the average turnaround time			
< 10 min	8 (3.2%)		
10-20 min	71 (27.3%)		
20-30 min	160 (60.8%)		
> 30 min	23 (9%)		
In your view has HMIS brought faster, better and easier to deliver healthcare service delivery		0.005	4.78
Yes	186 (70.5 %)		
No	77 (29.5 %)		
If yes in which areas			
Casualty	8 (3.2%)		
Pharmacy	71 (27.3%)		
Administration	160 (60.8%)		
OTHERS SPECIFY	23 (9%)		
Yes	192 (73.1 %)		
No	71 (26.9 %)		
Do Workers who have adopted HMIS have self-confidence in productivity		0.084	1.7
Yes	187 (71.1 %)		
No	76 (28.9 %)		
For you to effectively carry out your duties you need HMIS		0.043	2.3
Yes	224 (85.2 %)		
No	38 (14.8 %)		
The past way of doing things has been successful and there is no clear evidence of adopting HMIS		0.112	2.56
Yes	31(11.8 %)		
No	231(88.2 %)		
Proposed change (HMIS) could be resisted since it is unlikely to succeed and there have been failures of earlier change attempts		0.216	0.8
Yes	71 (26.9 %)		
No	191 (73.1 %)		
Some changes will make my expertise obsolete and I can't learn new ways of doing things		0.919	0.4
Yes	60 (22.7 %)		
No	203 (77.3 %)		
Do you have some HMIS skills you are not utilizing		0.276	0.98
Yes	98 (37 %)		
No	165 (63 %)		

Individual factors also played a role in the adoption of HMIS in KNH. From the study it was worth nothing that turnaround time (patient waiting time) greatly improve by the adoption of HMIS, also it is worth noting that age of the study population against the turnaround had an association with a p value of 0.024. The study showed that HMIS made health service delivery faster, better and easier and the study population strongly agreed and there was an association between the turnaround and the study population duration worked at KNH (p value 0.0000* and OR 4.780) and 2.028 OR with regards to sex. The study population age and duration worked at KNH strongly agreed that HMIS had brought about better up-dating and expertise in healthcare service delivery, and its association had a p value of 0.000* and 0.002* respectively and OR 5.706 on sex. When asked if the Proposed change (HMIS) could be resisted since it was unlikely to succeed and there had been failures of earlier change attempts, the study population age, level of education and duration worked at KNH, indicated that there was an association (p value 0.008, 0.050 and 0.004 respectively). Finally, on individual factors the study was able to show an association between level of management at KNH and the statement that some changes would render an individual expertise obsolete and they can never be able to learn new ways of doing things (OR 2.565)

Table 3.3: Socio-demographic characteristic verses individual factors influencing the implementation of health management information system at the Kenyatta national hospital

	SOCIO -DEMOGRAPHIC CHARACTERISTIC				
	Sex	**Age bracket (Years)**	**Level of education**	**Duration worked at KNH (years)**	**Level of management**
INDIVIDUAL FACTORS	**Male Female**	**18-35 >35**	**<=college University**	**<= 3 > 3**	**Top Middle/ Operational**
With HMIS, turnaround					

Statement / Statistic	Col 1	Col 2	Col 3	Col 4	Col 5
time(patient waiting time) has greatly improve					
Strongly disagree/Disagree	23.1% 34.6%	21.2% 35.4%	27.6% 30.5%	21.2% 33.6%	25.0% 29.1%
Strongly agree/Agree	76.9% 65.4%	78.8% 64.6%	72.4% 69.5%	78.8% 66.4%	75.0% 70.9%
P value	0.072	0.024	.646	0.06	1.000
Sig	0.098	.297	.567	.489	.911
Exp(B)	1.710	1.582	1.204	1.374	1.3083
95% CI (Lower-Upper)	.905-3.228	.668-3.750	.638-2.275	.559-3.379	.269-4.357
With HMIS healthcare service delivery is faster, better and easier to deliver					
Strongly disagree/Disagree	14.7% 25.4%	13.2% 26.5%	20.4% 20.2%	8.7% 28.2%	16.9% 20.6%
Strongly agree/Agree	85.3 74.6%	86.6% 73.5%	79.6% 79.8%	91.3% 71.8%	83.3% 79.4%
P value	0.048	0.013	1.000	0.000*	1.000
Sig	0.063	.819	.790	.005	.836
Exp(B)	**2.028**	.675	.790	**4.780**	.838
95% CI (Lower-Upper)	.962-4.275	.323-2.081	1.104 .534-2.282	1.599-14.289	.159-4.433
HMIS has brought about better up-dating and expertise in healthcare service delivery					
Strongly disagree/Disagree	12.9% 16.8%	4.6% 23.7%	12.1% 18.3%	5.6% 20.4%	9.1% 15.2%
Strongly agree/Agree	87.1% 83.2%	95.4% 76.3%	87.9% 81.7%	94.4% 79.6%	90.9% 84.8%
P value	0.454	0.000*	0.236	0.002	1.000
Sig	0.792	**.011**	.127	.774	.554
Exp(B)	1.117	**5.706**	1.888	1.218	1.918
95% CI (Lower-Upper)	.491-2.539	1.503-21.668	.835-4.270	.317-4.680	.221-16.607
The past way of doing things has been successful and there is no clear evidence of adopting HMIS					
Strongly disagree/Disagree	84.3% 86.1%	84.7% 84.9%	84.6% 86.4%	86.7% 84.0%	77.8% 85.0%
Strongly agree/Agree	15.7% 13.9%	15.3% 15.1%	15.4% 13.6%	13.3% 16.0%	22.2% 15.0%
P value	**0.844**	1.000	0.841	0.688	0.630
Sig	0.840	.786	.737	.646	.502
Exp(B)	1.087	1.164	1.150	.766	1.750
95% CI (Lower-Upper)	.484-2.441	.389-3.480	.509-2.597	.246-2.385	.342-8.949
Proposed change (HMIS) could be resisted since it is unlikely to succeed and there have been failures of earlier change attempts					
Strongly disagree/Disagree	63.1% 72.0%	57.8% 75.5%	72.0% 58.2%	54.4% 74.1%	50.0% 67.2%
Strongly agree/Agree	36.9% 28.0%	42.2% 24.5%	28.0% 41.8%	45.6% 25.9%	50.0% 32.8%
P value	0.188	0.008*	0.050*	0.004*	0.227
Sig	.167	.503	0.50	.043	.404
Exp(B)	1.559	1.316	.535	**2.324**	1.702
95% CI (Lower-Upper)	.831-2.925	.590-2.936	.286-1.001	1.028-5.256	.488-5.936
Some changes will make my expertise obsolete and I can't learn new ways of doing things					

• Strongly disagree/ Disagree	70.5% 79.5%	71.4% 78.3%	78.1% 70.8%	71.4% 77.5%	53.8% 76.0%
• Strongly agree /Agree	29.5% 20.5%	28.6% 21.7%	21.9% 29.2%	28.6% 22.5%	46.2% 24.0%
P value	0.136	0.235	0.217	0.357	0.098
Sig	0.150	.626	.343	.736	.112
Exp(B)	1.571	1.233	.743	1.159	**2.565**
95% CI (Lower-Upper)	.850-2.903	.532-2.860	.403-1.372	.492-2.730	.804-8.186
I have some HMIS skills I am not utilizing					
• Strongly disagree/ Disagree	56.9% 55.4%	50.5% 61.7%	58.6% 52.8%	51.1% 59.6%	50.0% 56.0%
• Strongly agree /Agree	43.1% 44.6%	49.5% 38.3%	41.4% 47.2%	48.9% 40.4%	50.0% 44.0%
P value	0.892	0.105	0.410	0.219	0.769
Sig	.676	.216	.483	.906	.653
Exp(B)	.888	1.638	.819	.953	1.312
95% CI (Lower-Upper)	.509-1.550	.750-3.578	.468-1.431	.433-2.101	.401-4.292
• I feel like am important to the progress and success of the HMIS					
• Strongly disagree/ Disagree	5.7% 10.3%	7.0% 9.7%	10.2% 5.5%	6.7% 9.3%	15.4% 8.0%
• Strongly agree /Agree	94.3% 89.7%	93.0% 90.3%	89.8% 94.5%	93.3% 90.7%	84.6% 92.0%
Sig	.251	.919	.283	.541	.279
Exp(B)	1.789	.935	.557	1.532	.404
95% CI (Lower-Upper)	.663-4.823	.258-3.386	.191-1.622	.391-6.005	.079-2.065

Qualitative Findings

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 this determined how well the process will roll out, and self-assessment. The PDCA cycle was effective and it brought about emphasis on continuous feedback that identifies major errors on the ongoing process. 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 it involved various departments. The involvement of other stakeholders. However, some respondents were uncertain of what they thought was critical. The users, developer, the HODs were involved, health insurance such as NHIF. The stakeholders involved were very few, the process involved nurses, physiotherapists, occupational therapists, counsellors, however very few individuals at the hospital were involved and many were not aware of the process. The stakeholders mostly involved were drawn from ICT, Nursing, Health Records and Finance departments. Most people did not know how to use the computer, lack of internet connection, and lack of technical assistance led to loss of data which had never been recovered to date, scarce resources, and lack of computers. The size of the hospital, and the systems were quite complex, inadequate 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. There was lack of key support, the network could not support the system and the equipment were outdated and required replacement. It was hard to reverse mistakes in the system, the system was easy to manipulate and the server had a small capacity.

IV. Discussion

The study showed that HMIS had brought better, effective and efficient healthcare services delivery in KNH, with age of the study population and duration worked at the hospital among the study population, majority strongly agreeing to that effect and showing a clear association between them, (p value of 0.012 and 0.054 respectively) improved service delivery. The majority of those interviewed were of the opinion that HMIS had improved services by effecting efficiency in service delivery especially at the Accident and emergency department, in the wards and reception areas, generally efficiency in information handling, it helped identify patients in the system, and there was reduction in costs. "*The HMIS has 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 extend since a lot of things were still done manually, no proper training, the system was not fully implemented. [13]Pointed to the fact that adoption of HMIS helps improve service delivery, especially to institutions that have fully adopted the use of HMIS. From the study it was worth nothing that the turnaround time (patient waiting time) greatly improved by the adoption of HMIS, also it is worth noting that age of the study population against the turnaround had an association with a p value of 0.024. The study showed that HMIS made health service delivery faster, better and easier and the study participants strongly agreed and there was an association between the turnaround and the study population duration worked at KNH (p value 0.0000* and OR 4.780) and 2.028 OR with regards to sex. ICT can provide an impetus to a greater degree of overall adoption of IT in many healthcare organizations that leads to quality, effective and efficient healthcare delivery of services [14], it was also pointed out that very few government-run health services had properly functioning HITs within them, and there is no reliable infrastructure to enable inter-organizational transfers of information. Invariably, there is no national health information and IT infrastructure to underpin the delivery of health care. It is worth noting that ICT has been projected to be among the major pillars of the nation's economy by 2013 [15]. The findings were central to the study findings, the study observed that, the study population age, sex, duration worked at KNH strongly agreed and that there was a statistically significant association with the statement that the department collects, analyses, interprets and stores its data in computers, with (p value of 0.003, 0.035, and 0.050 respectively). With regards to the use of ICT infrastructure by KNH, employees to communicate with each other, the study population sex, age and duration worked at KNH strongly agreed that it was being used and that there was an association with (p value of 0.05, 0.031 and 0.028 respectively, however, with regards to whether KNH understood fully the application of HMIS and currently were using it to help improve service delivery. This findings were in line with [13], in that they showed that adoption and implementation of HMIS in any organization greatly impacts positively on service delivery. Based on the key informant, the study observed that the registration component of HMIS had greatly helped in the identification of patients. The deputy director administration, was of the opinion that data was well captured, processed, stored, and retrieved, though much should be done to make it effective. User training programs needed to be rolled out, owing to the fact that there was very little training done to the uses before the implementation of HIMS. HRIO in charge of renal and orthopedic were of the view that the HMIS users were well trained on the use of the software. The hardware and software were available to the users, and were used to produce and store data, the HMIS is a process that helped improve data management. The system provided a lot of data sharing, the network was properly installed and there was a software called FUN SOFT, the data processing component was well equipped. The HMIS component had changed the organization to some extent though some were not functional. On integration, at first there was resistance but this changed after training of the users. Data was stored in a database and would be retrieved and used any time. The hardware and software ran on an operating system, java. However, the Deputy Director Audit, and deputy nursing among others reckons that users were not fully trained and others were new, hence the customer service was slow, and the network was not very reliable, software was unreliable and it left out major revenue items. The chief director nursing stated that; the hardware were few, the software was very unstable. The system was not so well up to date, most of the computers were hanging and even losing data, and it was costly. The users should be trained in order to comfortably adopt the system. This revelation agreed with [1], that training of health workers on the necessary skills with regards to HMIS, and ensuring that, there is enough resource allocation helps with implementation and ultimately delivery of good services to the patients. In addition to these findings, was the aspect of systems perspective where what you do affects everyone and other people's decisions affect you and thus a systematic thinking.

V.   Conclusions

From the study findings, it appears that while comparing the aspects of different individuals in the HIMS is a tall order, a good number enthused in health information and felt left behind with their health information gathering techniques. The basic idea here is that individuals create and influence institutions which consequentially create and influence culture, therefore, it is very 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, subsequently, essential signals regarding the individual needs and wants catered for which can in return increase work performance leading them towards success.Lastly, while there was no portent of health human resource amber attestation, there is need for KNH to protect and strategize against labor hemorrhage and individual sclerosis that could plunge the facility into a health crisis.

VI.   Recommendations On Research Findings

As KNH strives to achieve and meet international standards the facility needs to devise a HIMS specifically for their clientele; the doctors, health administrators, patients, pharmacies and insurance companies

that is appeasing to them. Moreover, there is a need for more emphasis on the importance of health data and advocacy on the principles of health data in the vicinity of interoperability and improved quality health systems by the Ministry of Health.

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