The Role Of Health Information System Towards The Achievement Of Uhcin Maternal Care: A Case Of Coast General Teaching & Referral Hospital

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ABSTRACT

The role of Health Information System is fundamental to achieving the goals of Universal Health Coverage. An integrated information system must be in place to generate good quality information to informed-decisions, and monitor progress towards these goals. This study sought to determine the role of the health information systems in the attainment of UHCin maternal healthcare within Mombasa. The study objectives were the determination of the role of quality assurance in free maternal care under UHC, to establish the role of data management in maternal care under UHC, determination of the role of system resources in achieving UHC maternal care, and the evaluation of the role of technical competency of healthcare workers in UHC. This study realized that quality assurance, data management, system resources and technical competency influenced the achievement of UHCin maternal healthcare at CGTRH, with system resources being the significant factor in the achievement of UHCin maternal healthcare at CGTRH.

Key Words: Health Information System, Universal Health Coverage, maternal healthcare

1. INTRODUCTION

The role of Health Information System is fundamental to achieve the goals of UHC(UHC). It aims at achieving equitable and sustainable health outcomes without financial hardship for citizens. Health Information System (HIS) in an umbrella framework that describes, analyze, and ensures all the health related issues are kept safely (Haux, 2017). The WHO, 2018 identifies HIS to be among the six key focuses on building a rigid all around health system. The Health management information system (HMIS) exists to address the need of timely and reliable information at national scales across Africa; however, they are failing to deliver adequate data for quick decision-making. Governments across the developing world have continued to embrace the program due to its ability to bring about equity in access to health care, affordability and quality of health care as well as the reduced financial risk. As a result, the developing countries in the Sub Saharan region have continued to engage the adoption of the UHC program aggressively (WHO, 2018). In order to achieve better health care service delivery, Gold *et al*., (2019) has called for enhanced Health information systems.

Ghana has made strides in adoption of the UHC program due to its investment in infrastructure and massive financing mechanisms (WHO, 2016). In East Africa, Tanzania implemented the program but faces challenges due to awareness and information management (Lagomarsino, et al., 2017).

Kenya has shown progress in adoption of UHCas evidenced through increased policy recommendations and reforms since independence in health informative documents such as Kenya Health Policy. Through devolution, the County's have improved geographical access to quality health care by coming up with various term papers in health (Okech & Lelegwe, 2016).

HIS in Kenya is an integral part of health system strengthening and helps decision-makers determine the state of the population, types of health services to be provided and the contribution made through health insurance. This calls for development of infrastructure, logistics of commodities, service delivery and human capacity to collect, process the data and use the information for policy formulation and evidence-based decision-making at all levels (KSPHIS, 2009). The Kenyan government has been mandated to ensure that UHCpolicy is implemented. The counties are supposed to initiate, expand and implement health insurance programs as indicated in the Kenyan Constitution. To achieve vision 2030, counties should focus on coming up with policies which aim to foster partnerships with both the private and non-governmental organizations to fast track achievement of the universal health program (Muiya & Kamau, 2018). The counties have however continued to face challenges in their implementation efforts.

The action of public health requires a reliable and timely information on health, which eventually assists in decision-making and assessment to improve accessibility, quality, and efficiency of the UHCnationally and internationally. Decision-making and better health work hand in hand, leading to better coverage and better health. HIS can act as a positive step in the right direction, in the implementation of UHC to provide better health for Kenyans through better information. That is why the study seeks to find out the role of health information system in UHCwith a focus on Mombasa County.

2. STATEMENT OF THE PROBLEM

Kenya continues to make slow progress despite its commitment to improving maternal health care. Kenya is among the countries with a big number of children dying at birth in Africa with a more than 5,000 estimated in maternal deaths per year (GoK, 2016). Kenya did not achieve the UN Millennium Development Goal 5 by 2015, where it had committed to reducing these deaths to 147/100,000 live births. The reasons given for the continued high mortality rate include financial barriers that prevent poor mothers from accessing maternal health services from skilled birth attendants mainly in modern health facilities (Kingori, Okero, & Muthoni, 2016).

While the maternal mortality rate is lower in Mombasa County at 197/100,000 as compared to the national rate, it is still above the targeted 147 per 100,000 (KNBS & ICF International, 2015). This has been attributed to poor quality services offered at the CTRH. Provision of poor quality services leads to patient dissatisfaction causing patients to shy off from accessing the services despite the introduction of the UHC through the policy of provision of free maternity services. This study aimed to establish the role of the introduction of health information systems in alleviating the challenges of poor quality services facing the hospital characterized by delayed access to medical information as well as overburdening of the limited infrastructure and existing staff.

3. OBJECTIVES OF THE STUDY

- To determine the role of quality assurance in achieving UHC in maternal care in CGTRH
- To establish the role of data management in achieving UHC in maternal care in CGTRH
- To determine the role of system resources in achieving UHC in maternal care in CGTRH
- To evaluate the role of technical competency in the attaining UHC in maternal care in CGTRH

4. MATERIALS AND METHODS

The study adopted the Cross-sectional descriptive research design, focusing on 114 hospital staffs at the CGTRH. Stratified sampling technique was employed to come up with a sample of 89 respondents. A structured closed-end questionnaire was administered to the respondents using the drop and pick later technique. Data preparation involved coding the raw data into meaningful outputs using SPSS software. Descriptive statistics were used which included frequencies, percentages, mean and standard deviation while inferential statistics presented model summary, ANOVA and coefficients of determination.

5. FINDINGS AND ANALYSIS

The study aims at determining the role of the health information systems towards the attainment of the UHCin maternal healthcare in CGTRH.

Quality assurance in achieving UHC in maternal care in CGTRH

	Mean	Std. Dev.
Monthly reports are submitted on or before 5th of every month to the health records department.	4.6000	0.58677
Data compiled is used to make informed decision to improving health care at the facility.	4.4125	0.60991
The data records in the DHIS2 are similar to the data on the primary source.	4.4000	0.58677
Key data series from the monthly reports are completely filed.	4.3500	0.57589
System can generate a complete record report without discrepancies	4.3125	0.56465

The study found that monthly reports were mostly submitted on or before fifth of every month to the health records department and that, data compiled was used to make informed decisions to improve health care at the facility. In addition, the study found that data records in the DHIS2 were similar to the data on the primary source(s), and that key data series from the monthly reports were completely filed and that the facility system generate complete record reports without discrepancies.

The study found that quality assurance had positive influence on the realization of UHC in maternal healthcare The results are in agreement with the findings of a study by Ogbuabor and Onwujekwe (2019) on the influence of quality assurance on the achievement of UHCin maternal care with what they had learned from a programmer

that offered a free maternal and child healthcare in Nigeria where the systems installed in the study generated complete record reports without discrepancies to satisfaction of the service seekers and the providers.

Data management in achieving UHC in maternal care in CGTRH

	Mean	Std. Dev.
Processing of registration for women seeking maternal services is done within 24 hours	4.6125	0.53943
Health facility data is used to monitor performance of service delivery.	4.5125	0.55103
Data processed is used to make decisions toward improved health outcomes.	4.4875	0.55103
Health records information officer in the facility coordinates submission of all health records to NHIF office for women seeking maternal care	4.3750	0.55972
Health data uploaded on DHIS comes from patients' medical records	4.3250	0.54599

The study found that processing of registration for women seeking maternal services was done within twenty hours and that the health facility data was used to monitor performance of service delivery. The study show that data processed was used to make decisions toward improved health outcomes. The study further found that health records information officer in the facility coordinates submission of all health records to NHIF office for women seeking maternal care and that Health data uploaded on DHIS comes from patients' medical records implying that data management is key component in guiding decisions aimed at realizing UHC.

The study found that the data management had positive influence on the realization of the UHC in maternal healthcare. The outcomes are in agreement with the findings of a study by Kanu (2019) where all the independepnt variables under data management had a positive significant influence on the realisation of universal health care in maternal health care. Further the findings agreed with the findings of a study by Amu, *et al*., (2018) that data management reduced delays in accessing the health records and consequently access to maternal health care.

System resources in achieving UHC in maternal care in CGTRH

Statement	Mean	Std Dev.
Adequate technology infrastructure has been laid down for the HIS operation	4.5625	0.57023
Adequate financing has been done on operational maintenance of the Health Information System in the facility	4.5250	0.55060
Logistics of commodities have been well streamlined to ensure smooth implementation of the HIS	4.5000	0.50315
The Health Information System in the hospital has been integrated with other systems like health insurance for better decision making	4.3750	0.55972
There are enough personnel that have been employed to actualize the Health Information System in this facility	4.2875	0.55561

The study found that adequate technology infrastructure had been laid down for the HIS operation and adequate financing done on operational maintenance of the HIS in the facility. In addition, the study found that logistics of commodities was well streamlined to ensure smooth implementation of the HIS. Moreover, the study found

that that the HIS in the hospital had been integrated with other systems like health insurance for better decision making and that there were enough personnel that had been employed to actualize the HIS in the facility.

The study found that the system resources had positive influence on the realization of the UHC in maternal healthcare. The findings support the findings by Jat, (2017) that availability and distribution of infrastructure and technical human resources in the state hospitals which was key in the success towards the UHC in maternal care. In addition, the study findings agreed with Madaj, Bar-Zev and van den Broek (2019) who aruged that system resources had a positive significant influence on the achievement of UHC in maternal health care.

Technical competency in the attaining UHC in maternal care in CGTRH

Statement	Mean	Std Dev.
The DHIS is user friendly and efficient	4.5500	0.54888
Health data indicators are used as performance indicators by health managers	4.5125	0.54988
All required HIS reporting tools are available in the facility	4.4500	0.57147
Monthly data review meetings are being conducted to analyze the information generated	4.4125	0.54410
Healthcare workers are all skilled to utilize the HIS and interpret data	4.3250	0.52229

The study found that the DHIS was user friendly and efficient and that health managers used health data indicators as performance indicators. Additionally, the study found that all required HIS reporting tools were available in the facility and that monthly data review meetings were being conducted to analyze the information generated. The study found that healthcare workers were all skilled to utilize the HIS and interpret data. The study further found that the hospital's management gave the necessary training/skills that would allow the staff to utilize the HIS to realize UHC.

The study found that the technical competency had positive influence on the realization of the UHC in maternal healthcare. The findings agree with a study by Nguyen (2018) that technical competency of data managers had a siginifcant influence on achieving UHC in maternal health care. The findings supported Urquieta-Salomón and Villarreal (2016) that technical competency of data managers had a significant influence on achieving UHC in maternal health care.

Inferential Statistics

a) MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0. 863a	0.717	0.694	0.23137

Predictors: (Constant), Quality assurance, Data management, System resources and Technical competency

The four independent variables in the study influence 69.4% of the achievement of UHC in maternal care at the CGTRH, indicating that other factors not covered in this study influence 30.6% of achievement of UHC in

maternal care at CGTRH and further research should be done to determine the other factors that influence 30.6% of achievement of UHC in maternal care at CGTRH.

b) ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.793	4	0.948	17.716	0.000[b]
Residual	4.015	75	0.054		
Total	7.808	79			

a) Dependent Variable: UHCin Maternal Care

b) Predictors: (Constant), Quality assurance, Data management, System resources and Technical competency.

The significance value is 0.000, which is less than 0.05 confirming the model is statistically significant in predicting how quality assurance, data management, system resources and technical competency influenced the UHCin maternal care at coast general and referral hospital. The F critical at 5% level of significance was 17.716. Since F calculated is greater than the F critical, this shows that the overall model was significant.

c) COEFFICIENTS OF DETERMINATION

Multiple regression analysis was conducted to determine the extent to which each independent variable influences the UHCin maternal care at coast general and referral hospital.

Table 4.16: Coefficient of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.444	0.360		4.013	0.000
	Quality Assurance	0.631	0.110	0.103	1.923	0.003
	Data Management	0.735	0.110	0.114	2.841	0.002
	System Resources	0.713	0.134	0.266	4.009	0.000
	Technical Competency	0.782	0.117	0.474	5.078	0.001

a. Dependent Variable: UHCin Maternal Care

The table above shows that all the independent variables were significant predictors of UHCin maternal care at coast general and referral hospital, $p<0.05$.

As per the SPSS generated table above, the regression equation is: ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$) becomes:

$Y = 1.444 + .631X_1 + .735X_2 + .713\ X_3 + .762\ X_4 + \varepsilon$

According to the regression equation, taking all factors (quality assurance, data management, system resources and technical competency) to be constant at zero, growth of tourism will be 1.444. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in quality assurance leads to a 0.631 increase in UHCin maternal care; a unit increase in data management leads to a 0.735 increase in UHCin

maternal care. In addition, a unit increase in System Resources leads to a 0.713 increase in UHCin maternal care; a unit increase in Technical Competency leads to a .782 increase in UHCin maternal care. The results infer that the four factors studied were significant in the realization UHCin maternal care where system resources (sig.000) was the most significant factor at 95% level of confidence followed by Technical Competency, Data Management and Quality Assurance with significance values of .001, .002 and .003 respectively.

6. CONCLUSION

The study concludes that hospital information system was utilized in all the key departments focused on realizing the universal maternal health care, namely the management department, finance department, clinical department, health records department, pharmaceutical division, maternity wing as well as the administration department.

The study concludes that monthly reports were mostly submitted on or before fifth of every month to the health records department and that, data compiled was used to make informed decisions to improve health care at the facility. In addition, the study concludes that data records in the DHIS2 were similar to the data on the primary source(s) and that key data series from the monthly reports were completely filed and that the facility system generates complete record reports without discrepancies.

The study concludes that processing of registration for women seeking maternal services was done within 24 hours and that the health facility data was used to monitor performance of service delivery. The study findings further show that data processed was used to make decisions toward improved health outcomes and that the health records information officer in the facility coordinates submission of all health records to NHIF office for women seeking maternal care and also uploaded the health data on DHIS from patients' medical records, implying that data management is key component in guiding decisions aimed at realizing universal health care.

The study concludes that adequate technology infrastructure had been laid down for the HIS operation and adequate financing had been done on operational maintenance of the Health Information System in the facility. The study in addition concludes that logistics of commodities was well streamlined to ensure smooth implementation of the HIS. Moreover, the study concludes that that the Health Information System in the hospital had been integrated with other systems like health insurance for better decision making and that there were enough personnel that had been employed to actualize the Health Information System in the facility.

The study concludes that the DHIS was user friendly and efficient and that health data indicators were used as performance indicators by health managers. Additionally, the paper concludes that all required HIS reporting tools were available in the facility and that monthly data review meetings were being conducted to analyze the information generated. Moreover, the study concludes that the healthcare workers were all skilled to utilize the

HIS and interpret data and the hospital's management gave the necessary training/skills that would allow the staff to utilize the HIS purposed to realize the universal health care.

In the inferential statistics the study concludes that that the four factors (system resources technical competency, data management and quality assurance) studied were significant in the realization of UHCin maternal care. Finally, the study concludes that system resources (sig.000) was the most significant factor at 95% level of confidence followed by technical competency, data management and quality assurance with significance values of .001, .002 and .003 respectively.

7. RECOMMENDATION

The study recommends the promotion of quality assurance towards UHCin maternal healthcare, through installation of a system in the hospital that would act as the database specifically for the mothers during ANC, PNC and at CWC. Establishing the focused database separates the generalization of the maternal information with the services offered at the facility.

The study further recommends the promotion of data management aimed at achieving universal maternal health care, the hospital management should ensure that data from all the respective departments handling maternal information is submitted every week as monthly submission makes it bulky and tedious to handle and would lead to mixing up of data.

In addition, the study recommends that in order to promote the exploitation of system resources towards the universal maternal health care, the facility should practice the division of labor and specialization and the employees are assigned tasks that they are good at. This would enhance the quality, productivity, clarity and accuracy of the information produced, processed, and submitted.

The study further recommends that in order to promote technical competency, the hospital management should empower their workers by giving them the autonomy where the employees can make minor decisions without consulting with the management or supervisors. The autonomy gives the workers the ownership and power in managing a task assigned to them aiming at promoting the realization of the universal maternal health care.

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