

Framework for Improving Quality Health Information to Reduce Maternal Morbidity and Mortality in Migori County, Kenya

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ABSTRACT

Quality health framework is a reference guide to evaluate and improve healthcare. It provides guidance to health services, on what good quality care entails and how it can be evaluated and demonstrated. Healthcare and quality are complex and highly vary between low and high income countries. Using quality health information reduces maternal morbidity and mortality among healthcare facilities; County referral, St Joseph mission, Rongo Sub County referral and Isebania county hospitals. Therefore, a framework was developed to improve data/information quality and in turn maternal healthcare. The study used cross-sectional design and the population sample size for the study was 155 healthcare workers. The sample size was determined by Cochran method and closed ended questionnaires were used to collect data. Data analysis used statistical package for social scientists (SPSS), and results were presented in percentages using tables and charts. These data were collected from healthcare workers and analyzed to determine quality of health information to reduce/ prevent maternal morbidity and mortality in Migori County. The study revealed that, the framework can improve quality of data, information and healthcare services. This resulted from data collected and analyzed using basic variables; Agree/ strongly agree achieving 95% for Migori county referral hospital, St Joseph 94%, Rongo subcounty referral hospital 96% and Isebania county hospital 95% and on average coverage was 95%. The frame is good for improving data/ information quality and its implementation is necessary due to its effectiveness.

Key words: quality data, quality information, quality improvement, use of framework

INTRODUCTION

Quality health framework is a reference guide to evaluate and improve healthcare services. It provides guidance to health services, on what good quality care entails and how this can be evaluated and demonstrated (Kang'a et al., 2016). Health care and quality services are complex and differ between low- and high-income countries (WHO, 2018).

Globally it is known that to provide health care services without concerns of quality, especially in health information, is unprofessional and possibly deadly (WHO, 2018). Quality in African health care systems has become a major concern due to seemingly obstinate poor health indices in most countries. Maternal morbidity and mortality rates are high; and quality of life is low, hence there is urgent need for a strategy to reduce morbidity and mortality to improve quality of healthcare services (WHO, 2018).

In Kenya and counties, including Migori, many information software systems have been put in place to improve quality, but not wholesome (partially) and specifically in areas of HIV; IQcare, Kenya EMR, Funsoft, OpenMRs and C-Pad are used (WHO, 2018) the rest of the hospital uses paper (manual).

MATERIALS AND METHODS

Study Area

The study was conducted in four facilities in Migori County; Migori county Referral Hospital, St Joseph mission hospital, Rongo Sub County referral hospital and Isebania County hospital.

Study Design

The study used cross-sectional design.

Study Population

The sample frame was 260 healthcare workers; Doctors 33, Clinical officers 51 and Nurses 176 (IHRIS, 2018). The sample size was 155 determined by Cochran method (1978).

Sample Size Determination Process

Cochran method (Cochran, 1978)

$$Z^2PQ \div d^2$$

Sample size:

$$n = [z^2pq] \div d^2,$$

Where z= standard normal deviate at 95% Confidence Interval =1.96; p= 50% or 0.5; q= 1-p or q=1-0.5=0.5; d= desired precision level or allowed standard error = $\pm 5\%$; $n = [1.96^2 \cdot 0.5 \cdot 0.5] \div 0.05^2 = 384.16$

Reduction Method: population < 10000

Since the population is <10, 000, and then reduction method is necessary. So, the final sample size (nf) will be calculated as follows:

$$nf = n \div [1 + (n/N)]$$

Where N = sample frame = 260 and n=sample size.

This gives: $nf = 384 \div [1 + (384/260)]$ Therefore, $nf = \underline{155}$.

Sampling Procedure

Sampling procedure for each facility

A total of 155 respondents will participate in this study out of 260 targeted, as calculated below:

$$\text{Migori referral Hospital} = 155/260 * 155 = \underline{92}$$

$$\text{St Joseph Mission Hospital} = 39/260 * 155 = \underline{23}$$

$$\text{Rongo sub county Hospital} = 46/260 * 155 = \underline{27}$$

$$\text{Isebania sub county Hospital} = 20/260 * 155 = \underline{12}$$

Sampling procedure for each cadre

$$\text{Doctors} = 33/260 * 155 = 20,$$

$$\text{Clinical officers} = 51/260 * 155 = 30$$

$$\text{Nurses} = 176/260 * 155 = 105,$$

$$(20+30+105) = 155.$$

Data Collection

Data were collected using structured questionnaires based on Likert scale.

Study Limitation

There was no existence of healthcare framework to guide data quality improvement. Sought literature and references from other areas related to this study.

Data Analysis

Data was manually entered into Microsoft excel (version, 2014) and analyzed using Statistical Package for Social Scientists (SPSS V 21) and presented in frequencies and percentage (%) tables.

Ethical Considerations

The study was approved by Barton university ethical body and NACOST before collection of data. Purpose of the study was explained to the study participants and once an agreement was reached, participants were interviewed. All participants gave informed consent before participating in the study.

To maintain confidentiality and ensure the identities of all participants questionnaire were kept under lock and key and the investigators were made aware of it. Identification codes were assigned to each questionnaire before entry of data into the SPSS software for analysis and report.

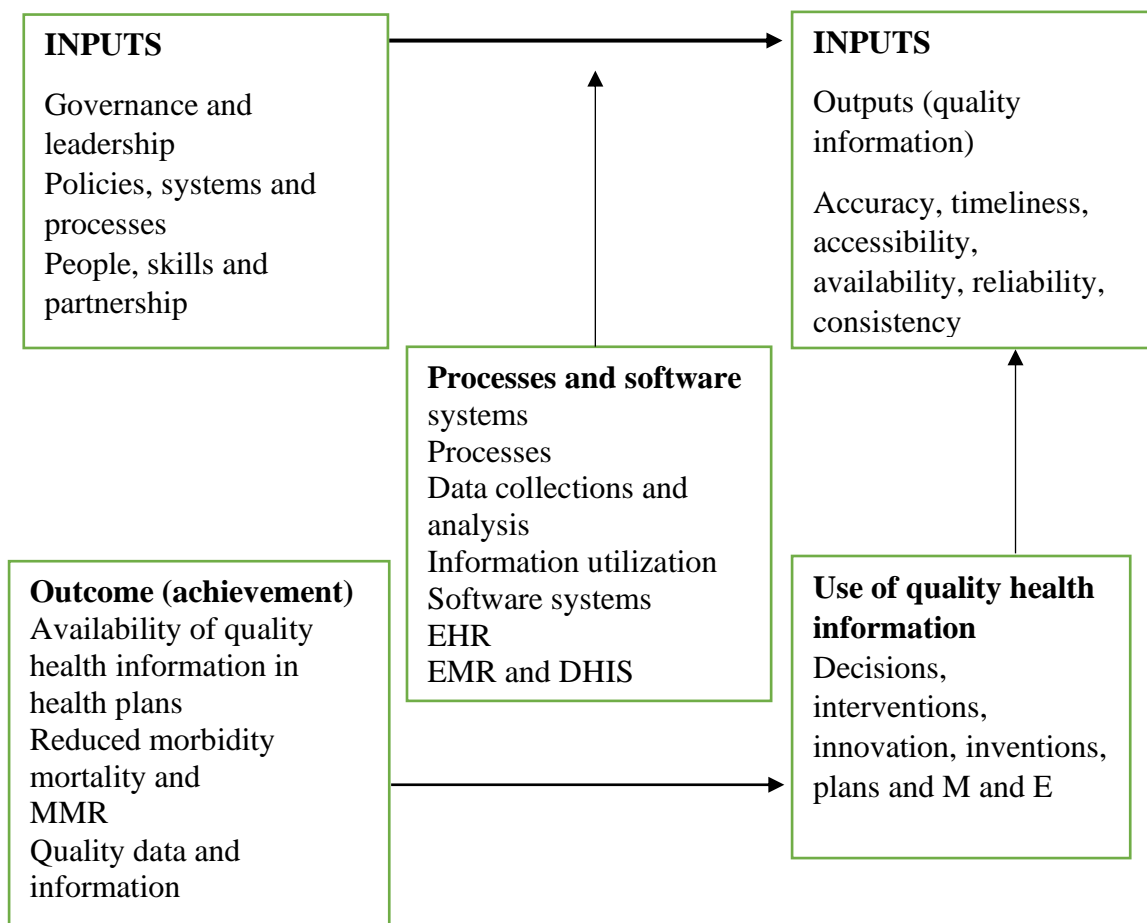


Figure 1: Framework for health data quality improvement

Framework

The framework illustrated in Figure 1 has 5 components in its structure; inputs, outputs, processes and software, outcome and utilization which assess the effectiveness of quality of health information in maternal morbidity, mortality and health plans. The framework uses processes and software on inputs to generate outputs and outcomes. The outcomes are used as information and knowledge to reduce maternal morbidity and mortality. Collection of data used the likert scale and results were as presented in Tables below.

RESULTS

Table 1: Assessment on Inputs/Resources per Health Facility in the Study – likert scale data

Inputs/Resources	Variables measured	MCRH	St Joseph	Rongo SCRH	Isebania
Governance/ leadership	Agree/ strongly agree	89(97)	23 (100)	26(96)	13(100)
	Disagree/ strong disagree	3(3)	0 (0%)	1(4)	0 (0)
Policy	Agree/ strongly agree	92(100)	23 (100)	27 (100)	13 (100)
	Disagree/ strong disagree	0(0)	0 (0)	0 (0)	0 (0)
People and skills	Agree/ strongly agree	87(95)	23(100)	26 (96)	13(100)
	Disagree/ strong disagree	5(5)	0 (0)	1(4)	0(0)
Partnership and support	Agree/ strongly agree	89(97)	23(100)	26(96)	13 (100)
	Disagree/ strong disagree	3(3)	0 (0)	1(4)	0 (0)
	Average	89(97)	23 (100)	25(93)	13(100)

In Table 1, it was revealed that Migori County Referral Hospital had (97.3%) respondents, St Joseph Mission Hospital (100%), Rongo Sub County referral Hospital (97%) and Isebania County Hospital (100%) on strongly agree/agree and strongly disagree/ disagree ranged between 0-5 percent. The indicators involved in this study were: Governance, leadership, policies, system processes, people and skills, partnerships support and data. The average achievement in these inputs/resources was 99% respondents. This was within the acceptable range of 95-100% and therefore good quality data and information to be used for quality decision making and interventions.

Table 2: Assessment of Outputs on health Indicators per facility using likert scale data

Output Indicators	Variables measured	MCRH	St Joseph	Rongo SCRH	Isebania
Accuracy	Agree/ strongly agree	88(96)	23(100)	26 (96)	13(100)
	Disagree/ strong disagree	4(4)	0 (0)	1(4)	0 (0)
Completeness	Agree/ strongly agree	89(97)	23 (100)	26 (96)	13(100)
	Disagree/ strong disagree	3(3)	0 (0)	1 (4)	0(0)
Consistency	Agree/ strongly agree	89(97)	23 (100)	26 (96)	13(100)
	Disagree/ strong disagree	3(3)	0 (0)	1(4)	0(0)
Accessibility	Agree/ strongly agree	90(98)	23 (100)	26(96)	13(100)
	Disagree/ strong disagree	2(2)	0 (0)	1(4)	0 (0)
Availability	Agree/ strongly agree	90 (98)	23 (100)	27 (100)	13(100)
	Disagree/ strong disagree	2(2)	0 (0)	0 (0)	0(0)
Timeliness	Agree/ strongly agree	90(98)	23 (100)	27(100)	13 (100)
	Disagree/ strong disagree	2 (2)	0(0)	0 (0)	0(0)

In Table 2, it was revealed that output indicators for Migori County referral Hospital achieved 97% respondents, St Joseph Mission Hospital (100%), Rongo Sub County Referral Hospital (97.3%) and Isebania County Hospital (100%) on strongly agree/agree. On strongly disagree/ disagree ranged between 0-4 percent. Averagely the achievement per facility was 98.5% among the respondents. This was satisfactory range of 95-100% and this information can be used for interventions and innovations.

Table 3: Likert scale assessment on system processes per facility

Systems processes	Variables measured	MCRH	St Joseph	Rongo SCRH	Isebania
Collection, analysis and use	Agree/ strongly agree	89(97)	23 (100)	26(96)	13(100)
	Disagree/ strong disagree	3 (3)	0(0)	1(4)	0(0)
Dissemination of quality health information	Agree/ strongly agree	90(98)	23(100)	26(96)	13 (100)
	Disagree/ strong disagree	2(2)	0(0)	1(4)	0(0)

According to Table 3, the study on system processes and software revealed that Migori County Referral Hospital had 97%, St Joseph Mission Hospital 100%, and Rongo Sub County referral Hospital 96% and Isebania 96% respondents on strongly agree/ agree. On strongly disagree/ disagree respondents ranged between 0-4% percent. Averagely the achievement of systems used to develop the framework per facility was 98%. This was suitable range of 96%-98%. This is quality information for quality decisions, interventions and inventions.

DISCUSSION

The Framework for improving quality health information to reduce maternal morbidity and mortality, revealed that improving governance, leadership, policy, systems/processes, people skills, reporting, use of information and partnership quality of data/ information will be realized. The initial stage of meaningful use of healthcare component encourages providers to integrate technology into medical practice, making vast amounts of patient data available electronically and later stages of the program focus on empowering patients by providing them with online access to their health information (Marcotte et al., 2012). Implementation of a web-based data quality intervention will improve data completeness and accuracy. This implies that use of a web-based system can improve data quality and reporting of information. Personal Health Records and electronic health records systems have been developed to enable patients to manage their own health care and personal health records depend on the type of implementation: tethered, interconnected, or stand-alone (Manya et al., 2016). The framework can be used to achieve quality data, information, healthcare services and reduce maternal morbidity and mortality.

CONCLUSIONS

Framework inclusive of software for primary data collection was lacking in the four health facilities, although there was secondary software, Routine health information software (RHIS) which aggregates and analyses paper-based data. Collects Data manually and it is transferred into the software which includes: secondary household (CBHI), estimates (WHO), census (NBS & DHS), Primary Vital statistics (births & deaths) and routine data manually collected (RHIS). For this reason, there was no available quality information to use for developing of policies, health plans, strategies, decisions and interventions.

RECOMMENDATIONS

There should be provided a framework encompassing Governance, Leadership, Policies, Systems and process, People and skills, data use and reporting and Partnerships/support to manage health information in the county. The framework should run on E.HR software platform to collect, store, retrieve and analyze routine data electronically. The RHIS aggregating data should be interoperable with REMR/EHR software collecting data for exchange without manual transfer of data and information. There must be a training for healthcare professionals and orientation for non-professionals on software systems data analysis and use.

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