

## Quality Health Information for Health Annual Work Plans in Implementing Strategic Plans to Reduce Maternal Morbidity and Mortality, Migori County, Kenya

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### ABSTRACT

It is important to determine quality of health information for supporting health annual work plans in implementing strategic plans to reduce/prevent maternal morbidity and mortality in the four study health facilities in Migori county; County referral, St Joseph mission, Rongo Sub County referral and Isebania county hospitals. The study used cross-section design. The sample frame population was 260 and the sample size was 155 determined by Cochran method. Data were collected using closed ended questionnaires and were analyzed using statistical package for social scientists (SPSS). The methods of analysis of data were descriptive. Results were presented in charts and percentage tables. In the four facilities data were collected from healthcare workers and analyzed to determine quality of health information to support annual plans in implementing strategic health plans. The study results revealed that the most used system was electronic; 86% at St Joseph mission hospital while Migori county referral hospital was 40%. Routine health information software (RHIS) was most used ranging between 54% and 92%. Then analytic software knowledge among healthcare workers was 28% and electronic health records (EHR) 19%. Achievements in midwifery training were 93%, health information systems 61%, data analytics 28% and data quality improvement training covered 68%, and financial support 17%. The use of electronic health records was highly limited and yet it is key to quality data, information and healthcare services. Therefore, there is high need for investment as county in electronic healthcare systems including healthcare data framework to improve information quality.

**Key words:** quality information, annual work plans, strategic plan, morbidity, mortality

### INTRODUCTION

Quality health information is the degree to which data increase the likelihood of the desired health outcomes and are consistent with the current professional knowledge (Najafabadi, 2009). A strategy is a set of plans and courses of action, which together will result in the achievement of a goal such as prevention/reduction of morbidity and maternal mortality.

There are quality data systems globally for exchange of clinical information among health-care providers to improve quality of health-care services. Inadequate quality health information influences poor decisions which increase expenses of the services. This can be prevented by application of electronic health records (EHR) which has ability to generate and link relevant stakeholders to the system; patients, doctors, clinical staff, insurance companies, health care providers and policy makers.

In Africa there is limited information on the use of EHR software. Documentation using EHR is a challenge due to the high costs of procurement and maintenance, poor network infrastructure and lack of comfort among health workers with electronic medical record. There has been an increase in the use of EHRs in sub-Saharan Africa, largely driven

by utilization of HIV treatment programs although Penetration is still very low (Kim et al., 2019).

In Kenya, the Ministry of Health, provides support in digital health for the counties, having established an eHealth Unit, to guide overall policy for Master Facility List (MFL), District Health Information Software (DHIS2) and digital Health Atlas for ongoing monitoring annual, strategic plans, and Health Information System implementations (Manya et al., 2016).

Migori county mostly uses DHIS2 for secondary data collection, aggregation, analysis, and primary data collection for HIV uses Kenya Electronic Medical Records (KEMR) and IQcare in facilities (Manya et al., 2016).

## 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 Designs

The study used cross-sectional and prospective designs.

### Study Population

The sample frame was 260 healthcare workers for the study; Doctors 33, Clinical officers 51 and Nurses 176 (IHRIS, 2018). Sample size was 155 determined by Cochran method; Migori County Referral 92 hospital, St Joseph Mission hospital 23, Rongo Sub County referral hospital 27 and Isebania County hospital 13. This was based on calculation using Cochran method.

Number of doctors =  $33/260 \times 155 = 20$ , number of clinical officers =  $51/260 \times 155 = 30$  and number of nurses =  $176/260 \times 155 = 102$ ,  $(20+30+102) = 155$ .

### Sample Size Determination

*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 =  $\pm 5\%$ .

$$\text{This gives: } n = [1.96^2 \times 0.5 \times 0.5] \div 0.05^2 = 384.16$$

### *Reduction Method*

Since the population is below 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.

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

A total of 155 respondents will participate in this study as calculated below:

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

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

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

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

**Sampling Procedure**

Purposive sampling was used to identify the study participants and proportionate sampling was used to recruit study participants from the health facilities among healthcare workers.

**Data Collection**

Data were collected using closed end questionnaires.

**Data Analysis**

Data was manually entered into Microsoft Access (version 2013) and analyzed using Statistical Package for Social Scientists (SPSS V 21) and presented in frequencies and percentages 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 questionnaires 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.

**RESULTS**

**Table 1: Health indicators for four health facilities**

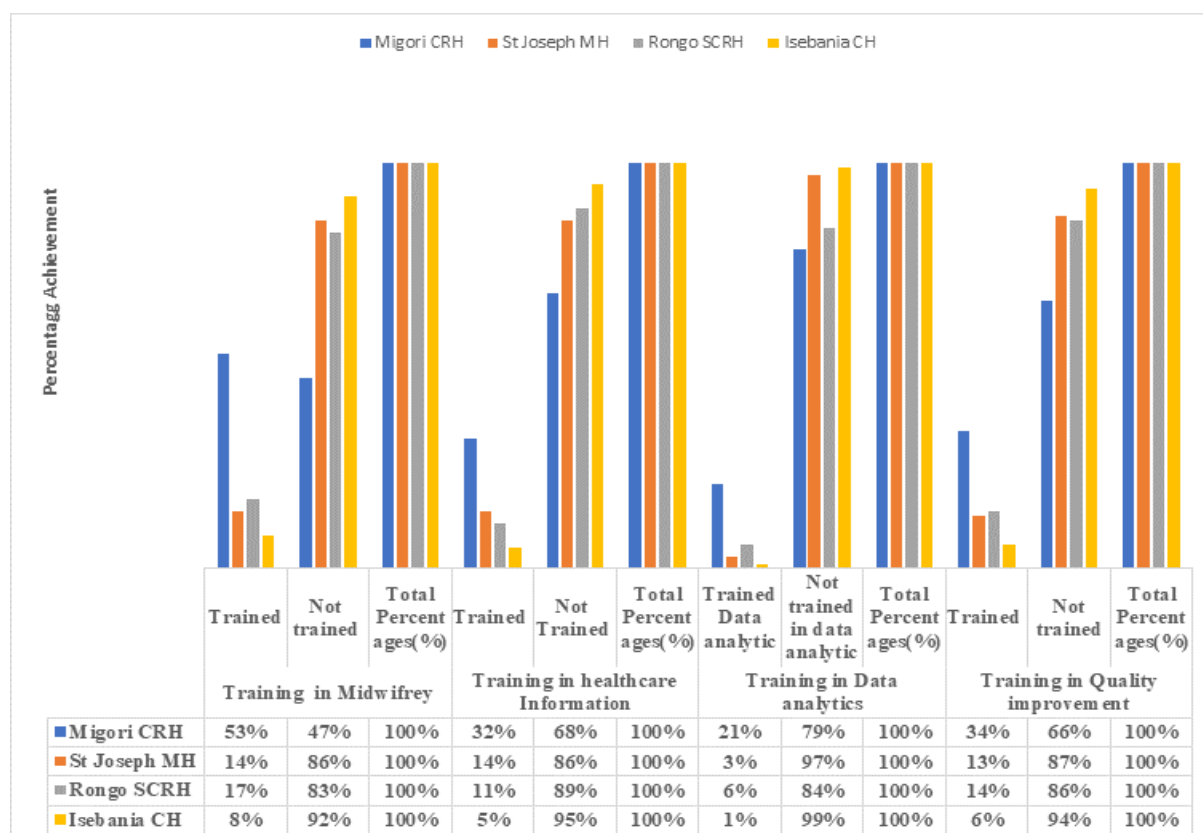
Training, use and availability		Health Facilities			
Indicators	Application	Migori CRH	St Joseph MH	Rongo SCRH	Isebania CH
<b>Training in health information system</b>	Trained	49(32%)	20(13%)	17(11%)	7(5%)
	Not Trained	106(68%)	135(87%)	138(89%)	148(95%)
	Total	155(100%)	155(100%)	155(100%)	155(100%)
<b>Use of Electronics Systems</b>	Used	8(5%)	133(86%)	1(1%)	3(2%)
	Not Used	147(95%)	22(14%)	154(99%)	152(98%)
	Total	155(100%)	155(100%)	155(100%)	155(100%)
<b>Availability of Computer knowledge</b>	Available	63(41%)	20(13%)	20(13%)	8(5%)
	Not Available	92(59%)	135(87%)	135(87%)	147(95%)
	Total	155(100%)	155(100%)	155(100%)	155(100%)

Table 1 has facilities and indicators to determine gaps in the use of health information in Migori County. The study revealed that the highest achievement among health indicators was availability in computer knowledge (41%.) and use of information (32%) at Migori County referral hospital (MCRH) and Lowest 1% in use of electronics at Rongo sub county referral hospital. Generally, achievements were below 50% in all indicators. On the other hand, the gaps existing in electronic health records range between 85% and 99%. However, gaps in all indicator range between 59% and 99%. These gaps have negative impacts in quality of data and information in supporting annual and strategic plans.

**Table 2: Training in data quality to improve annual plans in implementing strategic plans**

Use and availability		Health Facilities			
Indicators		Migori CRH	St Joseph MH	Rongo SCRH	Isebania CH
System in use	Applications				
	Manual/paper	93[60%]	53[34%]	142[92%]	127[88%]
	E-health	62[40%]	102[66%]	13[8%]	28[12%]
	%	100%	100%	100%	100%
Routine Health Information Software	Used	83[54%]	136[88%]	142[92%]	131[84%]
	Not used	72[46%]	19[12%]	13[8%]	24[16%]
	%	100%	100%	100%	100%
Analytics Knowledge	Available	43[28%]	5[3%]	6[4%]	13[8%]
	Not Available	112[72%]	150[97%]	149[96%]	142[92%]
	%	100%	100%	100%	100%

Table 2 has four facilities and three systems for data and information manipulations to determine quality of health information, supporting annual plans in implementing strategic health plans. The study revealed that the most used system was manual in Migori County ranging from 60% to 92% among the four facilities. Routine health information use ranged between 54% and 92% and analytics ranged between 3% and 28%. Generally, the most used system for data management was manual (paper), followed by routine health information software and the least was data analytics. Electronic systems are not common in use in Migori County, hence quality data and information is a challenge.



**Figure 1: Training on indicators to improve quality of data and information**

Figure 1 shows results for four facilities for this study; data on training included four health indicators; midwifery, healthcare information, data analytics and quality improvement. Knowledge from the training was to determine quality of information in health annual work plans to support implementation of healthcare strategic plans.

Migori county referral hospital achieved highest (53%, n=155) on training in midwifery and lowest (21%, n=155) in data analytics. While, St Joseph Mission hospital had highest (14%) in midwifery, n=155) and analytics (3%, n=155). Rongo sub county referral hospital, achieved highest (17%, n=155) in midwifery and lowest (6%, n=155) in data analytics. Isebania county hospital had highest (8%, n=155) achievement in midwifery and lowest (0.6%. n=155) in data analytics. This shows that the aspects of training were below average and service delivery was poor.

## DISCUSSION

This study was to determine quality of health information in health annual work plans in implementing strategic plans to reduce maternal morbidity. The study revealed that collection of primary routine health data for information, used manual health information systems among the 4 facilities in Migori county resulting in poor quality data/information.

Aggregation and analysis of secondary data used routine health information software (RHIS), concurring with this study findings and recommends that there should be a web-based software for data collection, validation, analysis, and presentation of information tailored towards integrated health information management activities (Kintu et al., 2005). In addition, computer systems produce high-quality and timely information for effective decision-making and it is necessary.

The current study found that most health facility for this study did not have quality data for generation of quality information due to inadequate primary routine data collection software, training of healthcare workers, professional knowledge, use of health information and electronic tools. Strongly agreed with this study finding, stating that though the health management information systems offer opportunities to inform health decision-making its usefulness is realized only when it allows for transformation of generated data into meaningful information and knowledge for action, clearly highlights that the quality of routine data have undermined utilization of information for decision-making in the health sector

The challenges/ problems of quality were realized and could be prevented/reduced/eliminated by investing in computer systems software. Interoperability was a problem but introduction of a software could be a solution – communication through linkages. In using these interventions there would be reduction in maternal morbidity and mortality and improvement of RHIS.

The study revealed that healthcare workers on average were untrained in health information systems, leading to poor quality information which could not be used to manage strategic plans effectively. This result concurred with Kintu et al. (2005), stating that data management at health facilities was poor.

The facility was managed by records assistants, majority of whom were non-professionals in health information systems due to shortages of professionals. They had deficiencies of knowledge and skills, hence their worker was incomplete and inaccurate. In addition, quality healthcare was hampered by chronic lack of resources (Yost et al., 2014), severe human resource and materials deficiencies essential for healthcare (Durand, 2010).

The current study found that there was no investment in electronic health records in Migori county and the highest investor of electronic health systems software was St Joseph Mission hospital (15%), followed by Migori county referral hospital (6%) and the rest of the facilities had 0%. This was due to hindrances and delays among healthcare workers

influencing use of electronic health systems in these facilities (Altuwaijri, Bahanshal, & Almeheid, 2011). These included negative beliefs, behaviors and attitudes of healthcare professionals towards such systems (Holden, 2011). Therefore there is no quality of information due lack of information systems.

### CONCLUSION

1. Software primary data collection tools were inadequate in the four health facilities, but there was one secondary software, Routine health information software (RHIS) which aggregates and analyses paper-based data. Data is collected manually and transferred into the software. These data include: secondary household, estimates, and census data and Primary Vital statistics and routine data manually collected.

2. There was no available quality information to use for development of policy and health plans, decisions and interventions because data was not collected using electronic systems.

3. There were quantity data but not quality due to manual/paper collections, storage, retrieval and entry into the software. They have transcription, human and omission errors.

4. The healthcare workers were in competent to handle information because some were non-professional in health information systems, staff turnover was very high in mission and private hospitals, and government hospitals have a small number of qualified staff who could not manage workload in these high-volume facilities.

### RECOMMENDATIONS

1. Efficient and effective EHR software should be initiated to collect, store, retrieve and analyze routine data electronically in all the facilities in the county.

2. The RHIS aggregating and analyzing data should be interoperable with EMR/EHR software collecting data for exchange without manual transfer of data and information. Communication of the two software should not interfere with but retain their different functions and the data will no longer be secondary but primary.

3. The duo should have dependable and reliable data stored for processing of information which can be retrieved for utilization.

4. There must be a training for healthcare professional's workers and orientation for non-professionals on software systems in use and data analysis.

5. Encourage routine software collection of data and information culture which quality of data/ information.

Provide 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.



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