

Health management information system data quality in the reproductive and child health programs; case study of mjini district, Zanzibar

Ahmed Suleiman Said, Bsc

Master in Project Management, Monitoring and Evaluation in Health Dissertation

Muhimbili University of Health and Allied Sciences (MUHAS)

October 2019

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCE



**HEALTH MANAGEMENT INFORMATION SYSTEM DATA QUALITY
IN THE REPRODUCTIVE AND CHILD HEALTH PROGRAMS; CASE
STUDY OF MJINI DISTRICT, ZANZIBAR**

By

Ahmed Suleiman Said, Bsc

**A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree
of Master of Science of Project Management Monitoring and Evaluation in Health of the**

**Muhimbili University of Health and Allied Sciences
October, 2019**

CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by Muhimbili University of health and Allied Sciences a dissertation entitled, “***Health Management Information System Data Quality in the Reproductive and Child Health programs; case study of Mjini district- Zanzibar,***” in partial fulfillment for requirements for award of the degree of Master of Science in Project Management, Monitoring and Evaluation in Health.

Dr Mughwira A. Mwangi

(Supervisor)

Date: _____

DECLARATION AND COPYRIGHT

I, *Ahmed Suleiman Said*, declare that this **dissertation** is my original piece of work that it has not been presented to any other University for a similar or any other degree award.

Signature:

Date:

This dissertation is copyright material protected under the Berne Convention, the Copyright Act of 1999 and other international and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means, in full or in part, except for short extracts in fair dealing; for research or private study, critical scholarly review or discourse with an acknowledgement, without written permission of the Directorate of Postgraduate Studies, on behalf of both the author and the Muhimbili University of Health and Allied Sciences

ACKNOWLEDGEMENT

Firstly, I would like to thank “GOD” the Almighty who enabled me to pursue this course successfully. This report is the valuable product of concerted endeavor and technical experts from various people within Muhimbili University of Health and Allied Science (MUHAS).

It is my heartfelt happiness to express my gratitude toward my supervisor, Dr. Mwangu Mughwira for his tireless professional support and guidance throughout the process of writing this dissertation.

Many thanks are also extended to the PMMEH Coordinator Dr Amani Anaeli (PhD) and his assistant Dr Sirili Nathaeli (M.D, MSc., PhD) and all teaching staff for the knowledge they imparted to me that enabled me to accomplish this dissertation work. .

I would also want to appreciate all my colleagues for the encouragement, comfort and counseling they offered me throughout my two years of study at MUHAS.

Lastly but not least, My great thanks should go to Zanzibar Ministry of Health Research Council, Second President’s Office of the Revolutionary Government of Zanzibar, Office of the Chief Government Statistician Zanzibar, District Authority, especially Urban Districts who accepted my study to be conducted in their respective areas

Thanks for your support, may God will pay you for everything!

DEDICATION

This dissertation is dedicated to my beloved wife Mwanaisha Mzee Ali, my twin Nahya & Nahir, Suleiman and the last daughter Nahla Ahmed for their patience and endurance of the loneliness they faced during the entire time I spent pursuing my Master programme.

ABSTRACT

Background: Health Management Information System data often exhibit problems of quality, and many users do not trust these data. The lack of use of health information or use of poor quality data in health care and systems results in inadequate assessments and evaluation of health care and result in weak and poorly functioning health systems.

General Objective: To assess implementation of Health Management Information System data quality in the Reproductive and Child health program in Urban district

Methodology: The study design was a descriptive evaluation study to assess the processes of ensuring quality of HMIS data in the RCH services. It used both quantitative and qualitative methods of data collection and analysis. The study population was health workers who are working in RCH unit both in government owned facilities (primary healthcare clinics) and private health facilities in Mjini district. For quantitative approach, simple random sampling technique was deployed and about 175 health workers were selected out of approximated 286 workers from RCH facilities. Qualitative data was obtained through interview with the key informants who were purposively selected to describe factors influencing data quality in HMIS.

Results: Study showed that 68% responded that reporting forms and registers use in their facilities were complicated. About 98.9% in health facilities had inadequate staff for HMIS related tasks. Also association between data quality and supportive supervision were statistical significance ($p= 0.016$). However, 65.1% of respondents had low skills of data quality checks and 76.6% of participants responded that responsibilities of data quality in health facilities were not clearly defined. Furthermore, 96.6% of respondents were not motivated to perform DHIS2

Conclusion and recommendations: The study findings concluded that: technical, organizational and behaviour determinants have great influence to maintain data quality in health care facilities. Hence, in the view of the findings this study recommends that; MoH collaboration with local Government to ensure that there is adequate staffing in each health

facility and who are trained in HMIS related task with clear structure and responsibilities and if not responsibilities for data quality tasks could be assigned to specific staffs within other health cadres such as health officers. District health managers should conduct periodic supportive supervision and data quality checks in all health facilities, The process of designing data collection tools for HMIS should be carefully considered with due considerations on simplicity of the data collection tools and clarity of data elements in terms of definitions and Staff should be motivated so as to maintain data quality in reproductive health facilities.

ABBREVIATIONS

HIS	Health Information System
HMIS	Health Management Information System
RHIS	Routine Health Information System
W.H.O	World Health Organization
MMH	Mnazi Mmoja Hospital
DHIS	District health Information Software
ICT	Information, Communication and Technology
DV	Dependent Variable
IV	Independent Variable
MoH	Ministry of Health
MUHAS	Muhimbili University of Health and Allied Sciences
IMCI	Integrated Management of Childhood Illnesses
LMIC	Low and Middle Income Countries

OPERATIONAL DEFINITIONS

Data: defines data as “factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation.”(1). Also data may be defined as a representation of facts or concepts or instructions in a formalized manner, suitable for communication, interpretation or processing by manual or electronic means(2).

Data quality: Data are of high quality if, "they are fit for their intended uses in operations, decision making and planning(3)

Health information: Health information is health care data that have been organized into a meaningful format(2).

Health Information System: Ongoing data collection of health status, health interventions, and health resources. Examples: facility-based service statistics, vital events registration, community-based information systems(4). Routine HIS often called Facility-based or called HMIS.

Technical factors: This refers to the data collection processes, systems and forms for the routine health information system(5)

Organizational factors: This refers the resources, structures, roles and responsibilities of the health system that influence performance of routine health information system(5)

Behavioral factors: This refers to the routine health information system user’s competency, attitudes and motivation to collect and use information generated by the system(5).

Accuracy: refers to the extent to which the data reflect the actual/correct information. It defines validity of the data and is achieved by minimizing errors from recording or interviewer bias and transcription.(6)

Completeness: means that an information system from which the results are derived is appropriately inclusive: it represents the complete list of records (eligible persons, facilities, units) and the fields in each record are provided appropriately(6)

Timeliness: Data are timely when they are up-to-date (current), and when the information is available on time. (6)

Table of Contents

CERTIFICATION	iii
DECLARATION AND COPYRIGHT	iv
ACKNOWLEDGEMENT	v
DEDICATION	vi
ABSTRACT	vii
ABBREVIATIONS	ix
OPERATIONAL DEFINITIONS	x
1.1 Background information	1
1.3 Conceptual framework.....	4
1.4 Research questions.....	5
1.4.1 General question.....	5
1.4.2 Specific questions.....	5
1.5 Research Objectives.....	5
1.5.1 General Objective.....	5
1.5.2 Specific Objectives.....	5
1.6 Rationale of the study	5
CHAPTER TWO.....	7
2.0 Literature review	7
2.1 Technical support.....	7
2.2 Organizational support.....	8
2.3 Behavior support.....	10
3.0 Methodology	13
3.2 Study design.....	13
3.3 Study population	13
3.4 Study area	13
3.5 Sample size	14

3.5.2 Sampling procedure	14
3.6 Study variables.....	15
3.6.1 Dependent Variable.....	15
3.6.2 Independent variables.....	16
3.7 Eligibility Criteria	16
3.7.1 Inclusion criteria:.....	16
3.7.2 Exclusion criteria.....	16
3.8 Data collection technique and Instrument	16
3.9 Data processing and analysis	17
3.10 Data Quality control.....	18
3.11 Plan for dissemination	18
3.12 Ethical consideration.....	18
CHAPTER FOUR	19
RESEARCH FINDINGS, PRESENTATION AND INTERPRETATION	19
CHAPTER FIVE	30
DISCUSSIONS OF THE STUDY FINDINGS	30
CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS	35
Reference	36
Appendix I: study questionnaire.....	40
Appendix II: Informed consent form.....	45
Appendix III: Interview guide for key informants – English version	47
Appendix IV: Interview guide for key informants – English version	48
Appendix V: Fomu ya Ridhaa ya Kiswahili.....	49
Appendix VI: Zanzibar map, including main islands of Pemba (north) and Unguja (south) ..	51
Appendix VII: Ethical clearance	52
Appendix VIII: Approval of ethical clearance	53

CHAPTER ONE

1.1 Background information

Health Information system has been identified as a part of system among six blocks that make up the health system. Its building blocks are service delivery; health workforce; health information; medical products, vaccines and technologies; financing, leadership and governance(7). The establishment of HMIS was aimed at ensuring the availability of accurate, relevant and timely data in all healthcare facilities. Several reasons have been advanced to explain the problem of poor quality data in developing countries and worldwide. Indeed, globally there has been a sustained call for improving the quality and availability of data from Routine Health Information Systems (RHIS). Despite this, RHIS data for maternal and child health are often lacking in most LMIC settings and if available are incorrect, incomplete or poor quality(8). Data quality is also used to improve patient satisfaction with health services by tracking certain dimensions of service quality(9). Other reasons failure of health workers to appreciate HMIS and shortage of trained medical recorders in such away data often exhibit problems of quality and many users do not trust these data. All data are subject to quality limitations such as missing values, bias, measurement error, and human errors in data entry and computation.(10). The generating quality data and using are important functions of the health sector, facilitating evidence-informed decision making by staff at all levels from providers of services at health facilities to those responsible for running health programs at the health ministry and at partner organizations(11). The effective monitoring of the program interventions are highly depending the availability of data quality in health facilities because lack of use of health information or use of poor quality data in health care and systems results in inadequate assessments and evaluation of health care and result in weak and poorly functioning health systems(12). In addition to that, poor quality routine data contributes to poor decision-making, inefficient resource allocation, loss of confidence in the health system, and may threaten the validity of impact evaluations(13). Also health systems require quality data from health information systems to plan for and ensure that the workforce is fully funded and equipped with the necessary commodities, infrastructure, resources, and policies to deliver

services(14). *Maternal, new born and child health care are among the priority interventions in the MoH Zanzibar, aiming at improving quality of life of women, new born children and adolescents as stipulated in the Zanzibar Vision 2020 and Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP II), the National health policy and SDG. This study considers factors influencing HMIS data quality focus to RCH due to; maternal health is one of the important SDG goal ‘‘Ensures healthy lives and promote well-being for all at all ages’’(15).* The raw data collected in RCH have to be transformed into meaningful information to support decision making. Health information system has great influence on improving the quality of health care services and health promotion in a countries including Zanzibar. Since the establishment of the integrated HIS in 2005 a number of donors has supported the programme at different times, with implications on the type of data collected and hence design on the data collection forms used(16). Zanzibar HMIS unit obtains its data from primary sources (routine data) and secondary sources. Routine data predominantly come from health facilities (Public and Private) using designed tally sheets and register books. The data are then summarized (manually) each month by health facilities operators, recorded on standardized paper tools and sent to the district offices. At district level all data are entered into electronic database (DHIS2) and an initial analysis is done before exporting data to Zonal Medical Offices, Health Programs and Central level (HMIS), with exception of the Tertiary hospital (MMH) which reports directly to HMIS central office. If data in the facility report are not accurate, then decisions made based on those data may not produce effects that are intended(17). Furthermore high quality data are important to inform, monitor, evaluate and managing health programs for achieving expected results. (18). This study was therefore carried out to assess factors associated with data quality with a view to proposing strategies for improving the quality of HMIS data.

1.2 Problem statement

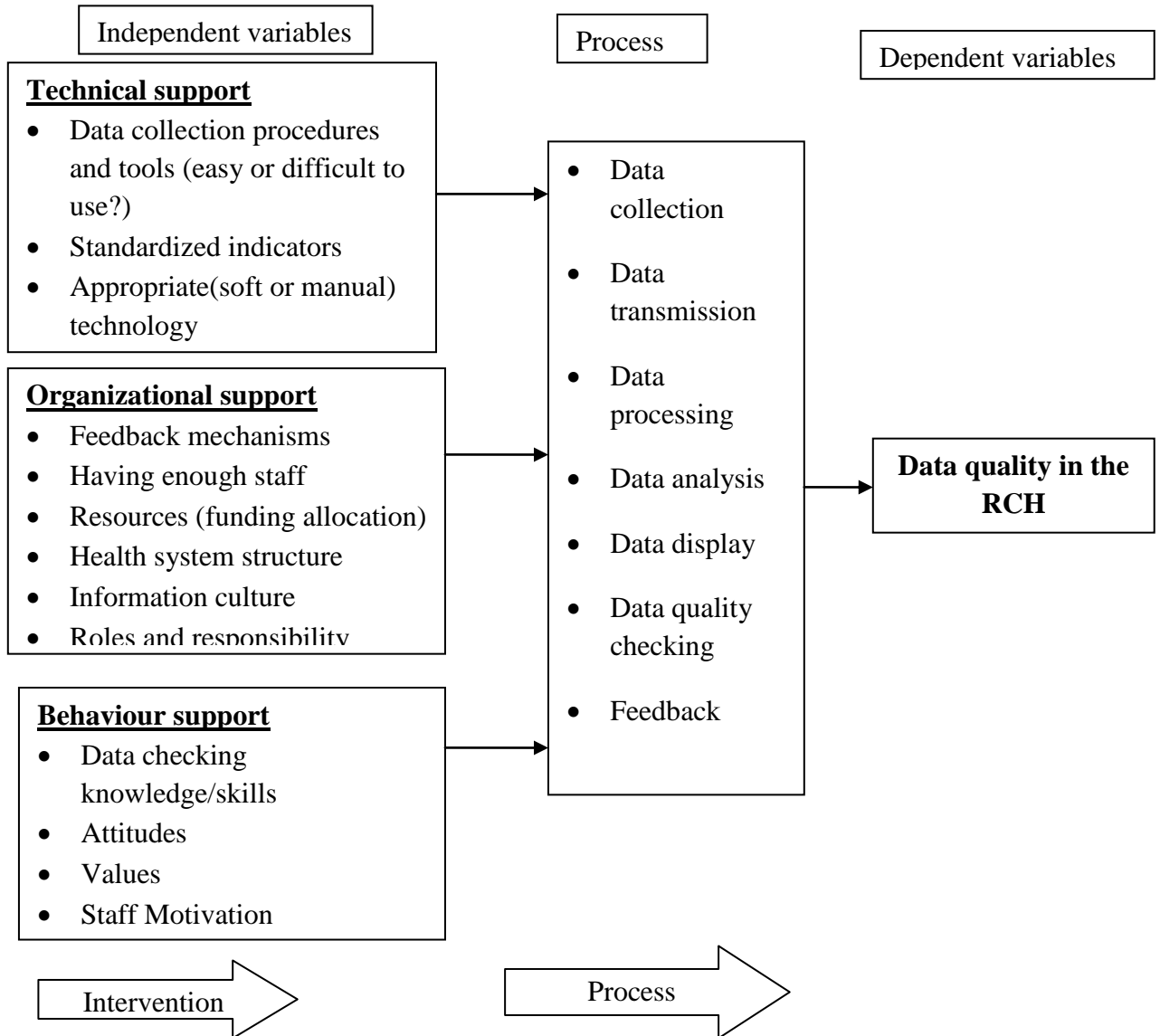
Health information Management system improvements and successes depends on interrelated areas of technical, organizational and behavioral determinants(11). In most of LMICs, data

qualities are ranged between 34% and 72%; and use of information between 30% and 53% (19)

Zanzibar has persisted with poor quality of data in health sector, too many (excessive) data are being collected which have no link to indicators and there are overlaps and inconsistencies in data reporting(20). According to the data quality assessment done, the findings revealed that an implementation of data quality services overall average score was 58%(21). Also, timely reporting rate is low in most of data collection tools. Reproductive and Child health coverage report submission rate were scored low 47.6% (2013), 58.3% in 2014, 70.8%(2015) and dropped again to 67.4% by 2016(22). Poor data quality in health facilities caused by recording and counting errors, inadequate staff responsible to manage data in health facilities, minimal conducting data quality assurance, inadequate budget allocation to train health workers and purchasing ICT facilities to HMIS as a result provides data which is untimely, incomplete, unreliable, and inaccurate.

Hence, poor data quality in RCH hampered the effective use of the information, strategy formulation and limits stakeholders' ability to use data for evidence-based in decision making. Therefore, this study will contribute in addressing the knowledge gap on routine health information system as well as determine technical, organizational and behaviour barriers to data quality.

1.3 Conceptual framework



Source: (PRISM) Tools (23)

The Conceptual framework has been adopted and modified from PRISM conceptual framework developed by Measure Evaluation used to monitor data quality and information use in Health Management and Information System (HMIS). Collectively, the framework provides a comprehensive picture of HMIS contributing factors associated with data quality including organizational, technical and behavior factors.

1.4 Research questions

1.4.1 General question

How effective was the implementation process of HMIS data quality in the Reproductive and Child health services in Urban district?

1.4.2 Specific questions

1. To what extent technical supports influence HMIS data quality in the Reproductive and Child health services?
2. To what extent organizational supports influence HMIS data quality in the Reproductive and Child health services?
3. To what extent behaviour support to health workers influence HMIS data quality in the reproductive and child health services?

1.5 Research Objectives

1.5.1 General Objective

To assess implementation of HMIS data quality in the Reproductive and Child health program in Urban district

1.5.2 Specific Objectives

1. To determine technical support that is influence data quality in the Reproductive and Child health services
2. To assess the organizational support that is influence data quality in the Reproductive and Child health services
3. To assess behaviors support to health workers that is influence data quality in the Reproductive and Child health services

1.6 Rationale of the study

Zanzibar aims to accelerate the reduction of maternal, newborn and child deaths by improving Reproductive and child health services(24). Health Management Information system requires availability of quality of data in order to support patient or client care. Accurate and reliable health care data in reproductive health services are needed for determining the continuing and

future care of a patient at all levels of health care. Data quality not only applied for patient care but also for monitoring the performance of the health services and evidence based decision making purpose. Therefore, it is contended that the findings of the study could be used by health managers and other stakeholders to reflect on data quality and identify factors affecting data quality to inform remedial actions. The study results will contribute in addressing the knowledge gap on data quality in RCH services in Mjini district.

CHAPTER TWO

2.0 Literature review

This study reviewed the necessary literature based on major variables research including technical support, organizational and behavioral support in health facilities for enhancing data quality.

2.1 Technical support

Data quality and data use in decision making affected with various issues including data collection procedures, analysis, presentation and setting standard indicators.

Data collection procedures

The collection of accurate and timely data has a significant impact on the efficiency and effectiveness of the decision-making process in health care(2). Studies show that data also can be lost or compromised, owing to inadequate network coverage, weak or spotty transmission, poor access to charging devices, memory shortages, and problems synchronizing with a central server(25). Also poor data collection occurs when data are not collected in a logical sequence, and when the instrument used to collect the data is deficient(2). Some causes and sources of poor data collection are:- poorly designed data collection forms with no logical sequence, inefficient clerical staff, lack of training in interviewing patients and recording details, and lack of understanding of the need for accurate data collection, lack of professional judgment by health care providers when recording data about a patient and his or her treatment, delay in recording data when data are not recorded at the point of contact with a patient and lack of understanding of requirements of data collection and data quality by medical officers, nurses and other health care professionals

Generally the health workers do not have tools to use for data analysis and they appeared not to be trained in data analysis. Poor analysis of data from one of the districts visited, where the annual report that was written by the secretary, someone who is not aware of the meaning of health data, was found to have many mistakes(26).

Poor quality data was cited as the primary technical constraint limiting staff's ability to make effective decisions. Data entry backlogs also affected data use because of delayed reporting. However data users and producers perceived insufficient HMIS skills as the key individual constraint to data use, with data users expressing a need for training to improve their data collection, analysis and use skill(27). In addition to that, lack of computers and frequent power failures reduced staff's ability to access data and delayed the reporting process.

To improve data quality, first tools should be available to collect the data, such as books but also data experts because we medical personnel learn very little about data when we are in the colleges..."(28). Moreover, the low level of education of most health providers challenged the training exercise as most of them could not grasp basic skills on data quality issues, indicator calculation and data use in general(29)

Poor quality of information also resulted from lack of timeliness in data collection. Data collected in the health facilities in the district usually was delayed in reaching the district health records office for almost two months, so decisions had to be made on the basis of the data collected the previous months. This gave false information on the current health situation in the district(30)

2.2 Organizational support

Feedback mechanisms

The key challenges facing the HIS include as following; most of the health facilities are situated in remote areas where there is limited or no access to technology and infrastructure advancement. At district level, the reports from various health facilities are aggregated into an overall district report and not kept in a systematic way on a health facility basis. The district reports are then submitted to the provincial level without local analysis for local decision-making. There is lack of feedback, training and support at all levels of data collection and lack of skills to analyze data.(26)

Study conducted in Uganda reported that; although medical superintendents sought feedback from staff on the main HMIS report findings during monthly meetings, staff had limited access to the actual data. Data producers did not receive feedback from the district health office nor staff unless there was data discrepancy at which time they informally addressed data quality issues. Lastly, there was a perception that superiors do not routinely share data with other facilities, or even across clinical departments, thereby limiting comparative analyses(27). However, lack of feedback and promotion of data use by decision makers decreased staff motivation to seek, use or share data.

Poor feedback can have a negative impact on health workers' motivation to take part in reporting processes, and as a result reduce availability and quality of health information(31). Feedback from the senior level to the districts was not commonplace especially on data related issues(29).

Also the study show the frequency of reports and feedback sent to the health facilities after the supervisory visit by the district supervisor. Among the health facilities that had a supervisory visit, only 39% had received any feedback of the supervisory visits. However 61% of the respondents have never received feedback or reports on the visits made.(32). Inadequate support from the immediate supervisor 52.5% compounded by unclear roles and responsibilities 45.4% were reported as hindrance to information use(33).

Availability of Resources

The major gaps in HMIS, resources including: policy and strategy plan were not developed; no written standardized guidelines and procedures; poor ICT infrastructure and maintenance; full dependence on fragmented, unsuitable external technical and financial resources; and under-skilled and under-paid personnel at all levels(31). The lack of computers required staff to complete reporting forms manually which increased the frequency of errors and contributes to poor data quality(27).

Presence of a focal person, responsible for day to day HMIS activities, had a positive influence on the quality of data where facilities with a focal person had a higher data completion rate 69.9% compared to those without 44.7%(34).

Planning

Poor data quality limits stakeholders to use data for evidence-based decision making and has a negative impact on facilities' strategic planning activities and their efforts to advocates for resources (27). However, data quality is a vital component of health information systems and the importance of the availability of usable routine health information is central to the use of the information for planning and decision making(35) . A major obstacle to accelerating health gains and optimizing the efficiency and effectiveness of health care delivery is that decision-makers at all levels of the health system are not using data at all times or in an optimal way to drive planning, performance management, and the delivery of services(36)

2.3 Behavior support

Poor staff training was cited as a challenge that resulted in staff with inadequate data collection, analysis and reporting skills and technology training(30). Sustaining a culture of data use requires that all people who interact with data have the appropriate skills and knowledge to analyze, interpret and use data in their day-to-day jobs. This culture of data use, however, requires time, money and other resources. Lack of funding is a frequently cited barrier to institutionalizing and sustaining a culture of data use at the county level.(37)

A study conducted by Edward Nicol argues that; lack of manpower and basic capacity/competence for recording and validating data were the most burning issues. Lack of numeracy skills also emerged as a reason for poor data quality. The majority of the staff involved with data collection, such as clinicians, nurses and data capturers, were reported to have inadequate numeracy skills(38)

Lack of organizational incentives to collect and use data, such as individual recognition, was thought to compromise the quality of data collection and the use of the information. In

addition, there was a general perception that staff don't realize the value of using data which negatively affects their motivation to record and produce high quality data(27).

Low motivation and morale among the staff was mentioned as a key problem in data collection and use. This was due to poor pay, poor working conditions, and lack of feedback on the collected information. Time constraints were reported by many decision makers as hindering data use among their staff(30).

Improvements to health information systems also require attention to be given to the training, deployment, remuneration and career development. Also they require attention to be given of human resources at all levels. At national level, skilled epidemiologists, to the training, deployment, statisticians and demographers are needed to oversee data quality and remuneration and career standards for collection, and to ensure the appropriate analysis and development of human utilization of information(39). Furthermore ,busy among health workers do not always complete data collection forms, leading to missing and/ or low quality data(28). In a study conducted about the experience of health care workers in usage of computers. 80% of the respondents have low experience in computer use. 18% have medium experience and only 2% have high experience of computer usage(32)

Staff's capacity to analyze, interpret and use data was limited. Data accuracy and timeliness affected data quality and thus use. The processes of checking data accuracy and providing feedback on the submitted monthly reports were not implemented, making it difficult for staff to understand importance of collected data not only for improving their own performance but also for the department or higher level or as a whole(27).

The findings with regards to extent of training the study participants had received showed that 30.0% had received little/minimal training in information areas that is, data collection, analysis, presentation, and information use in last three years preceding the study, indicating a need for more training for health workers(33).

Staff attitudes will influence poor quality data during the data collection, collation or analysis. They are not willing to follow guideline or instructions. Some of the reasons that may impede

data quality: staff attitude; human error; staff turnover; lack of numeracy skills; insufficient feedback and supervision; and, lack of ownership.(38)

However, staff attitude toward performing RHIS tasks, was emphasized as a factor hindering the collection of good- quality data(38). A majority of respondents indicated that high levels of provider absenteeism and mobility are contributing to the data collection burden(28)

Roles and responsibility on data quality

Stakeholders need to understand each other's roles and responsibilities in producing and using data and they need specific guidance in implementing their roles and responsibilities(27).

The study also demonstrated poor access to functional equipments like computer and internet which jeopardize routine health information utilization. Some staffs lack clear defined roles and responsibilities in their job a description, had not received adequate support supervision and feedback from their supervisors(33)

One of the major problems is that, in data collection process, the people who fill the monthly report at the health facilities are the nursing officers but in most cases and most facilities, the support staffs are called in to assist in filling in the data as the nurses' conduct the expected health care activities. This is due to the fact that there is a severe health care provider's shortage that is expected to intensify as the need for health care grows(32). The nursing staffs are responsible for collating the data when they have the time (35)

The doctor or clinician is supposed to produce good data, but he/she has other responsibilities and when you see paper work, meaning if there are few patients he/she will do it within time and if there are many patients he/she will do it after work, which sometime is not possible. So, what is done, for example, people who we selected sometimes can spend the night, extra time, even weekends to feed the data.(28)

CHAPTER THREE

3.0 Methodology

This chapter describes the study area, study design, study population, sampling frame, sample size calculation and the sampling procedure. The chapter also discusses data collection plan, validity and reliability of the research tool, pre-testing of the research tool, data analysis procedure and ethical considerations

3.2 Study design

The study design was descriptive evaluation design. Mixed methodology approaches (quantitative and qualitative) were applied in data collection and analysis. The study evaluated whether the implementation of HMIS data quality process was done as planned. The study highlighted the performance in terms of improved data quality. In addition, the technical, behavioral and organizational determinants of HMIS performance were assessed to generate insights and make recommendations for improving data quality.

3.3 Study population

The study population was health workers who were working in RCH unit both in Government owned facilities (primary healthcare clinics) and private health facilities in Urban district.

3.4 Study area

Urban district has an area of 165 sq km with a total population is 223,033 people as projected from the national 2012 census. The researcher decided to select this area because it was the district that was leading with a large number of health facilities than the rest of the districts and where Reproductive health and Child services are offered. The Urban district has a total of 44 health facilities both public and private, It is leading for having many hospitals compare to the rest of the districts and distributed with different status including 1- faith based 3- NGOs, 4- parastatal, 22- Private health facilities and 14- public health facilities. The district has one of the biggest Public referral hospital (Mnazi Mmoja) and two big (A-lrahma and Tasakhta) private hospitals. All hospitals are offering Reproductive and child health services. Moreover,

the district has specialized hospital based on Reproductive and Child Health Services known as Mwembeladu.

3.5 Sample size

The sample size calculation used Slovin's formula in Kothari (2004). We used this because the sample population (health workers) was less than 10,000. The total number of health workers approximated 286(286<10,000)

$$n = \frac{N}{1+N(e)^2}$$

Where n= desired sample size

$$N = \text{Population size} = 286$$

$$E = \text{Level of precision (error margin)} = 0.05$$

$$n = \frac{286}{1+286(0.05)^2} = 166$$

Adjusting response = $n \times 1/R$ where $n = 166$, $R = \text{response rate (95\%)}$

$$\text{Adjusted response} = 166 \times 1/0.95 = 174.7 \approx 175$$

The sample size was 175 health workers from the health facilities.

3.5.2 Sampling procedure

A simple random sampling technique was used to select the participants using the simplest lottery method. From a total of 44 facilities only 17 were found to have reproductive and child health services (14 publicly owned and 3 privately owned). A sample framework was developed by listing all 17 facilities. Their names, were written on a piece of paper, folded and put into a jar pot. Then was mixed thoroughly and drawn one by one without replacement. Each facility had an equal chance to be selected. The facility names were drawn from the jar pot one by one until 14 health facilities were picked. Out of the 14, twelve were publicly owned and two were privately owned. Again simple random selection applied to select participants who were working in Reproductive and Child Health unit and involved in the

study for each facility. A sample framework developed by listing all names from staff register. The piece of papers with names were put in jar pot and mixed and then names were drawn from the box without replacement. From each selected health facility between 12-13 participants were selected. Ultimately, about 175 health workers were selected to participate in the study out of approximated 286 health workers. Table 1 summary of selected respondents per facility type

Table 1: Facility ownership

Facility ownership	Number of health facilities were covered	Number of staff interviewed
Public	12	150
Private	2	25
Total	14	175

Sampling for qualitative data collection procedures

Key informants were selected and interviewed. Purposive sampling was applied in selecting key informants whereby in-charges of RCH sections in the facilities were picked for interviews. The ultimate number of people interviewed was governed by the principle of saturation point when new data were no longer coming out from the interviewees. The key informants from this level were probed on data quality with respect to the technical, organizational and behaviour issues. Only in-charge or his/her representative was interviewed from each selected health facility.

3.6 Study variables

3.6.1 Dependent Variable

In our study the dependent variable was data quality

3.6.2 Independent variables

In our research the independent variables were the various factors that influence the dependent variable i.e. data quality. The following were independent variables and how they were measured

Technical support: The variable was measured by assessing data collection procedures and tools (how easy it is or difficult to use), Standardized indicators and appropriate technology (soft or manual) applied in health facilities.

Organizational support- The variable was measured by assessing feedback mechanisms, having enough staff, resources (funding allocation), health system structure, information culture and roles and responsibility toward data quality

Behaviour support- also was assessed on data checking knowledge/skills, attitudes, values and Staff Motivation

3.7 Eligibility Criteria

3.7.1 Inclusion criteria:

- All health workers permanently working in the RCH unit at least six months and who were willing to participate in the study (six months could help them to be aware of data management in the health facilities).

3.7.2 Exclusion criteria

- All health workers who were eligible could not be involved in the study due to various reasons such as having emergency duties.

3.8 Data collection technique and Instrument

Quantitative data; Self- administered questionnaires adopted from organizational behaviour assessment tool (OBAT) of PRISM toolset were used to provide the baseline of behaviour and organizational factors affecting routine HMIS performance. Also HMIS performance diagnostic tool was adopted from PRISM tool set in order to capture technical determinants of routine HMIS performance that is the level of complexity of data collection forms, their user

friendliness to provide a baseline of routine HMIS performance of data quality. The information was collected on participants socio-demographic and based on research objectives by using quantitative questionnaire with closed ended questions. Before conducting interview the researcher introduced himself to the head of facility to explain the purpose of the study. The written consent form had been provided to selected health workers

Qualitative data Qualitative data were obtained through use of interview guide that was administered to key informants who were purposively selected. The in-charge of the unit in RCH was interviewed. The interview was conducted face-face by researcher with the aid of audio recording. Respondents were interviewed to obtain their experiences and opinion on data quality (appendix III).

3.9 Data processing and analysis

Quantitative data analysis; Data was analyzed using SPSS software by generating frequency tables, cross tabulations and visual representations of appropriate variables. A categorical data, the cross tabulation were done to test the association of the variables through chi-square. The results were considered statistically significant with p-values less than 0.05 at 95% confidence interval.

Qualitative data analysis; The researcher looked out for the themes after interviewing the key informants. We had planned to interview eight (8) in-charges in each health facility. The researcher satisfied that saturation of the data was reached within six (6) interviews. During the interviews each selected health worker was interviewed individually after obtaining signed informed consent forms. All interviews were recorded with a voice recorder. The researcher looked out for the themes and patterns and some of these were probed further so as to harvest rich descriptions about data quality practices. The responses were analyzed by categorizing common pattern and themes on the factors that affect data quality.

Each voice were recorded then transcribed verbatim into transcripts for thematic analysis. The responses were analyzed by categorizing common patterns and themes on the factors affecting the quality of data in the HMIS in reproductive and Child health program.

3.10 Data Quality control

The questionnaire adopted from PRISM framework, Measure Evaluation and WHO guidelines. The pre-test study were conducted to test the study tools to questions were understandable. The data collection team were recruited and trained on data collection methods and ethics of data collection

3.11 Plan for dissemination

The study findings were disseminated to the Ministry of Health by holding a meeting where some health workers from the RCH facilities, Program management team of RCH were invited to share the findings.

3.12 Ethical consideration

Ethical approval was obtained from Institutional Review Board (IRB) of Muhimbili University of Health and Allied Science. Also approval was sought from Zanzibar Research Committee and finally I got permission from Mjini district Health Management Team. The consent was obtained from health workers and all information was kept confidential. Health workers were informed the purpose of the study and allowed either to participate or not without incurring any penalty. The consent form was attached to each questionnaire and participants signed voluntarily before being interviewed.

CHAPTER FOUR

RESEARCH FINDINGS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This section presents the findings and analysis of the study. These findings include; socio-demographic characteristics of respondents, technical, organizational and behaviour supports issues. Respondents were health workers, District HMIS focal persons, Nurses and other carders.

4.2 Socio-demographic information

Table 1 shows out of 175 respondents only 3(1.7%) health officers, 142 (81.1%) were nurses contributing to highest number, 23 (13.1%) were District HMIS focal persons and 7 (4.1%) other carders. Therefore, majority of the respondents were nurses who are currently in position that use routine health information system for data collection and reporting.

Most of the respondents were females 171 (97.7%) and with 4 (2.3 %) males. In terms of age the majority 139 (79.4%) of respondents were aged between 25-34 years. Regarding education level 161 (92%) of the respondents had diploma followed by certificate and degree each contributing 4%. In terms of professionalism, high proportion 166(94.9%) of study respondents were nurses. Regarding working experience, 105(60.0%) of participants had worked in health facilities between 5-8 years. This shows that the respondents had worked for considerable number of years and therefore suited to provide information on factors influence data quality in reproductive health facilities. Moreover, high proportion 117(66.9%) of respondents were from Primary Health Care Unit (PHCU).

Table 2: Distribution of respondent's Socio-demographic characteristics of the study participants (N =175),

Characteristics	Frequency (n)	Percentage (%)
Title respondents		
Health officer	3	1.7
District HMIS focal persons	23	13.1
Nurse	142	81.1
Others	7	4.1
Age group (years)		
15-24	1	0.6
25-34	139	79.4
35- 44	31	17.7
44+	4	2.3
Median age in years (range)	(25-34)	
Sex		
Female	171	97.7
Male	4	2.3
Education level		
Certificate	7	4
Diploma	161	92
Degree	7	4
Professional		
Clinician	6	3.4
Nurse	166	94.9
Health records officer	2	1.1
Environmental health officer	1	0.6
Working experience		
< 4 years	46	26.3
5-8 years	105	60.0
9-12 years	24	13.7
Type of facility		
PHCU+	43	24.6
PHCU	117	66.9
Specialized hospital	15	8.6
Facility ownership		
Public	150	85.7
Private	25	14.3

4.3 Technical support

Technical support, both for the health worker and the system may determine RCH data quality. These include data collection procedures, analysis, presentation and setting standard indicators.

Standardized tools

The study findings showed that 82.9% of the study participants agreed that tools were Standardized and aligned with the national indicators. However, 81.7% responded that indicators collected were relevant and understandable. Further analysis was done to establish whether the standardized data collection tools had any statistical significant association with data quality by use of chi-square test of independence and results were displayed in table 3. There was no statistically significant association ($p = 0.487$).

Table 3: Data collection tools are Standardized and aligned with the national indicators

		The score level of data quality				Total	X^2, p
		Very good	Good	Fair	Poor		
Data collection tools are Standardized and aligned with the national indicators?	Yes (n %)	9 75.0	101 82.8	31 88.6	4 66.7	145 82.9	$X^2 = 9.457,$ $p = 0.217,$
	Not sure (n %)	3 25.0	21 17.2	4 11.4	2 33.3	30 17.1	

Complexity of reporting forms and registers

The study findings showed that 68% of participants strongly agreed reporting system's forms and registers they use in health facilities were complicated.. Further analysis was done to establish if there is association between reporting forms and data quality using chi-square of independence and results were displayed in table 4. The results indicates no statistically significant association ($p = 0.811$).

Table 4: Reporting forms and registers used in health facility are complicated

		The score level of data quality				Total	X ² , p
		Very good	Good	Fair	Poor		
Reporting forms and registers used in your health facility are complicated?	Yes (n %)	9 75.0	84 68.9	22 62.9	4 66.7	119 68.0	X ² 0.845, p = 0.811
	No (n %)	3 25.0	38 31.1	13 37.1	2 33.3	56 32.0	

Adequate reporting forms and registers

Moreover, 93.7% of respondents disagreed that the health facilities had adequate reporting forms and registers. Further analysis was done to establish if there is association between reporting forms and data quality using chi-square of independence and results indicates that there was no statistically significant association ($p > 0.05$).

HMIS policy, plans and M&E guideline on data quality

In regard to the presence of National HMIS Policy, 78.3% responded that they had no HMIS policy. Conversely 95.4% of respondents they didn't know if the HMIS strategic plans were available. However, 65.7% of participants didn't know if M & E guidelines available. High proportion 148(84.6%) of respondents had not received training on data collection and reporting while all 175(100.0%) did not receive training on data analysis and presentation.

Availability of National HMIS Policy	Frequency (n)	Percentage (%)
Yes	137	78.3
No	5	2.8
I don't know	33	18.9
Availability of Strategic plan		
Yes	2	1.2
No	6	3.4
I don't know	167	95.4

Availability of M&E plan or guidelines for data quality		
Yes	17	9.7
No	43	24.6
I don't know	115	65.7
Duration you received training in computer software-DHIS2		
2-4 Weeks	1	0.6
Not any	174	99.4
Received training in HMIS data collection and reporting		
1-2 weeks	26	14.8
2-4 weeks	1	0.6
Not any	148	84.6
Received training in data analysis		
Not any	175	100.0
Received training in data presentation		
Not any	175	100.0

4.4 ORGANIZATIONAL SUPPORT

It is well known that each organization has its own culture and managerial way that determines data quality. In our study we assessed organizational support in terms of staff adequacy, structure, funds, supportive supervision, meetings, and challenges facing the facility to ensure data quality.

The association between Staff adequacy and data quality

The study findings revealed that 98.9% of respondents in health facilities had inadequate staff for HMIS related tasks. Further analysis was done and results displayed in table 6 which shows there is a statistical significance between staff adequacy and data quality ($p=0.02$).

Table 6: staff adequacy in health facility

		The score level of data quality				Total	X ² , p
		Very good	Good	Fair	Poor		
Your health facility has adequate staff responsible for HMIS related tasks?	No (n %)	12 100.	122 100.	34 97.1	5 83.3	173 98.9	X ² = 15.258, p= 0.02
	I don't know (n %)	0 0.0	0 0.0	1 2.9	1 16.7	2 1.1	

The association between facility structure and data quality

However, 99.4% of study participants responded that there was no clear structure in health facilities for HMIS related tasks. Further analysis was done and results displayed that there was no statistical significance between department structure and data quality.

Table 7: Facility structure on HMIS related task

Facility has clear structure on who is responsible for HMIS tasks?	No(n %)	12 100.	121 99.2	35 100.	6 100.	174 99.4	X ² = 0.437, p=0.933
	Yes (n %)	0 0.	1 0.8	0 0.0	0 0.0	1 0.6	

Association of funds adequacy and supportive supervision on data quality

The study findings showed that majority 159 (90.9%) of the respondents disagreed that funds were adequate. For the case of if the facility received supportive supervision focusing on data quality, 172 (98.3%) agreed, while 2 (1.1%) disagreed and 1 (0.6%) somewhat agreed. Further analysis was done to determine the significant association between funds adequacy, supportive supervision versus data quality. The results showed that there is no statistical significance between funds adequacy and data quality while for the case of supportive supervision there was a statistical significance (p= 0.016).

Review meetings

The study findings showed that 80% of respondents agreed that they conduct data review meetings, normally discuss management of routine data quality, 2% discussed on reporting or timeliness and 8% discussed on routine data like disease trends while 12% discussed on service coverage in terms of quantity and quality

Table 8: Data review meeting

Data review meeting, normally discussed on	Frequency (n)	Percentage (%)
Management of routine data like quality, reporting or timeliness	20	80
Findings of routine data like disease trends	2	8
Service coverage in terms of quantity and quality	3	12

Data quality challenges

Majority (98.3%) of respondents agreed that they had data quality challenges in their facilities, 1.1% disagreed and 0.6% somewhat agreed. Further analysis was done using chi-square and results showed that there was no statistical significant between data quality challenges identification and data quality.

4.5 BEHAVIOUR SUPPORT

Behaviors of health workers determine data quality. There are several underlying determinants of these behaviors, such as quality checking skills, data analysis motivation, and roles and responsibilities

Data quality due to behavioral supports, response from the participants

The analysis showed that 65.1% of respondents had low skills of data quality checks. Similarly 94.8% of the respondents had low skills to perform DHIS2. Furthermore, 94.3% of the respondents have low confidence to perform DHIS2. However, 96.6% of the respondents were not motivated to perform DHIS2. Moreover 76.6% of participants responded that

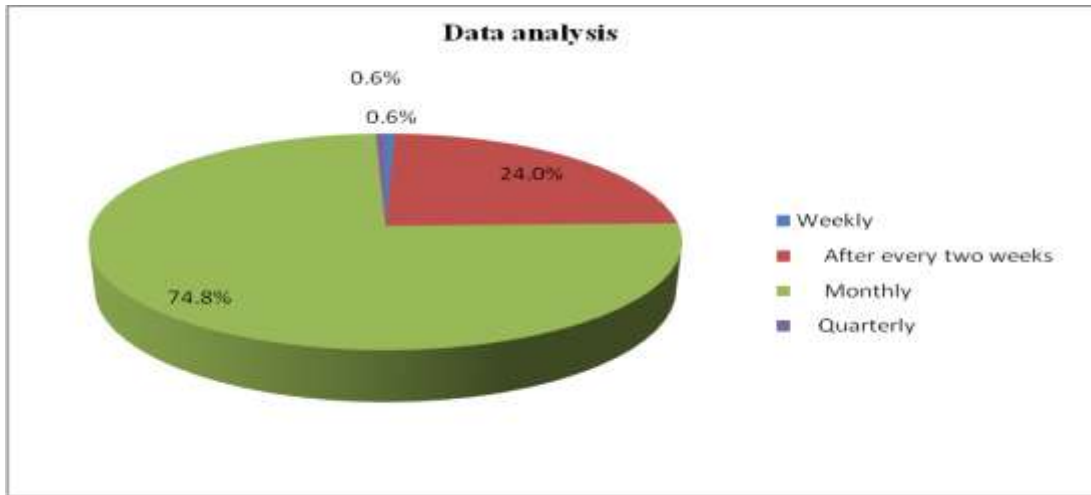
responsibilities of data quality in health facilities were not clearly defined. Also, high proportion 125 (71.4%) of participants agreed that collecting information were appreciated by co-workers.

Table 9: Data quality due to behavioral supports, response from the participants (N=175), urban district Zanzibar-2019

Characteristics	Frequency (n)	Percentage (%)
Staff have data quality check skills		
Agree	7	4.0
Disagree	114	65.1
Somewhat agree	53	30.3
Neither Disagree nor Agree	1	0.6
Staff have skills to perform DHIS related tasks		
Agree	1	0.6
Disagree	166	94.8
Somewhat agree	8	4.6
Staff have confidence to perform DHIS such as data analysis and interpretation		
Agree	1	0.6
Disagree	165	94.3
Somewhat agree	9	5.1
Staff motivated to perform DHIS related tasks		
Agree	1	0.6
Disagree	169	96.6

Somewhat agree	4	2.2
Neither Disagree nor Agree	1	0.6
Roles and responsibilities defined in Health facilities in terms of data quality in HMIS		
Not at all	134	76.6
Fairly well	37	21.1
Well	4	2.3
Collecting information needed for monitoring facility performance		
Agree	43	24.6
Disagree	33	18.9
Somewhat agree	99	56.6
Collecting information is appreciated by co-workers and superiors		
Agree	125	71.4
Disagree	10	5.7
Somewhat agree	36	20.6
Neither agree nor disagree	4	2.3

Similarly, 74.8% of the respondents said that facility data were analyzed monthly, with 24% responding that analysis was done after every two weeks, 0.6% each responding on weekly and quarterly basis.



4.6 Qualitative data analysis

A total of eight (8) face to face interviews were conducted. The thematic analysis based on health records responsibility, challenges of data quality practices and routine data collection process in RCH health facilities.

Health records responsibility

The qualitative analysis of the data highlighted the issues of assigning the responsible person for data recording officer in health facilities. The key informants responded as the following;

“Actually we do not have a person responsible only for data records (health record officer) in the health facility, me as in-charge I handle all data records in health facility at the same time providing services. Some data may miss or incomplete due to being busy and tiredness. I think we need someone specific for data entry and reporting” (Key informant 1)

Different registers are populated with details of clinic visits based on the type of services rendered such as immunization, antenatal care and family planning. At the end of the month a health staff who is usually dedicated to collect data, bring registers together and record summaries in a summery form. During the interview, one of the key informants pointed out that; *“I fill data in the registers books for the routine services with my assistant, we don’t have specific person for data records and reports. In fact at the end of each month we sit together*

and start to add up the data from registers and fill monthly summary reports” (key informant 2)

The facilities have discouraged many health care providers from using computers and have made data processing and analyzing to be very difficult. During the interview, one of the health workers explained that *“Because of the work load here, data reporting timely was an issue and we process manually. We need an officer for data processing and analyzing through computer and send to HMIS center”* (Key informant 3). There is significant gap in the availability of required health record officer to manage routine health information in health facilities.

Challenges of data quality in health facilities

The challenges of data quality in every health facility were observed due to the shortage of human resources, clinical workload, and use of complex and bulky forms and lack of training to health staff on data quality. *“The registers are too big and not aligned with data element like formal registers book has five visits while new procedure we are required to mark eight visits. So we get difficult to draw column with pen and ruler in order to fill data”* (key informant 4)

Many of the respondents had never had any formal training in the use of data reporting tools, analysis and presentation, this pose serious challenge in ensuring data quality *“As in-charges we were getting training concerned with the data collection but majority of health staff had never received training on data quality issues”* (key informant 5)

Also many of the respondents had de-motivated on data management

“We do a lot of paper work such as filling registers, forms, writing monthly summery reports, the is no computer here even network, we do everything manually. So data management here is ignored and the appreciation from authority is disappointed us (key informant 6)

Hence, qualitative analysis found a number of factors that affect data quality in health care facilities

CHAPTER FIVE

DISCUSSIONS OF THE STUDY FINDINGS

5.0 Introduction

This chapter presents a discussion of findings. The discussion based on study objectives (specific objectives) and also compares findings of this study with other researchers.

5.1 Influence of organizational support

On organizational supports, the study revealed that; majority of respondents in health facilities were having inadequate staff for HMIS related tasks. Additionally the study revealed that there was statistical significant association between staff adequacy and data quality ($p= 0.02$). These results were similar to those of Mwangi and Simba (2009) that showed, presence of a focal person, responsible for day to day HMIS activities, had a positive influence on the quality of data where facilities with a focal person had a higher data completion rate (69.9%) compared to those without (44.7%). Moreover, Karijo et al (2013) had reported that; one of the major problems in data collection process, the people who fill the monthly report at the health facilities are the nursing officers but in most cases and most facilities, the support staffs are called in to assist in filling in the data as the nurses' conduct the expected health care activities. Furthermore, study conducted by Adedapo Adejumo in Nigeria revealed that, the lack of capacity of qualified human resources at most of the health facilities has a major impact in data collection process(35)

Further analysis of data to determine the significant association between funds adequacy, supportive versus data quality was done. The results showed that there was no statistical significance between funds adequacy and data quality while for the case of supportive supervision there was a statistical significance ($p=0.016$). Additionally the findings consistent with findings of a study by Nutley et al (2010) that revealed, lack of computers required staff to complete reporting forms manually which increased the frequency of errors and contributes to poor data quality. Furthermore, the study conducted by Mboro (2017) also demonstrated poor access to functional equipments like computer and internet which jeopardize routine

health information utilization. Further study, some staffs had not received adequate supportive supervision and feedback from their supervisors (33) However, study conducted by Arent et al. (2017) that showed, sustaining a culture of data use requires that all people who interact with data have the appropriate skills and knowledge to analyze, interpret and use data in their day-to-day jobs. This culture of data use, however, requires time, money and other resources. Lack of funding is a frequently cited barrier to institutionalizing and sustaining a culture of data quality and use at the county level.

5.2 Influence of technical support

The study objectives was to determine how technical support influence HMIS data quality in reproductive health. The study analysis was done to establish whether the standardized data collection tools had any statistical significant association with data quality by use of chi-square test of independence and showed that there was no statistically significant association ($p = 0.487$). Similar study has been shown that poor data collection occurs when data are not collected in a logical sequence, and when the instrument used to collect the data is deficient(2). Good data collection tools encourage and support national health management information system to be improved and reliable data. Additionally findings are similar to Kjersti et al. (2018) that showed that the differences between indicators from the clinical records data and routine health information systems reports can be attributed to human error, inconsistent denominators, and complexities of data processes(5). Further study conducted in Garisa revealed similar findings, 80.6% of the respondents felt the indicators they report on monthly basis are standardized(5). Similar study conducted by Nyella in Zanzibar showed that, the low level of education of most health providers challenged the training exercise as most of them could not grasp basic skills on data quality issues, indicator calculation and data use in general(29)

This study showed that, in regard to the presence of National HMIS Policy 78.3% responded that they had no HMIS policy. These findings are similar to those of Askar et al (2017) that showed major gaps in HMIS, resources including: policy and strategy plan were not

developed; no written standardized guidelines and procedures; poor ICT infrastructure and maintenance; full dependence on fragmented, unsuitable external technical and financial resources; and under-skilled and under-paid personnel at all levels. Implementing IT solution for data collection saves time, limits the number of errors and increase the timeliness and reliability of data.

Inadequate skills in the basics of M&E not only affect data quality but also ability to use the information in decision making. This study revealed that, in the case of availability of strategic plan majority 95.4% of respondents they didn't know if it's available. However 65.7% of them didn't know if M & E guidelines if it's available. Similar findings revealed by Nutley et al (2010) , poor data quality limits stakeholders' ability to use data for evidence-based decision making and have a negative impact on facilities' strategic planning activities and their efforts to advocate for resources.

In this study, one respondent received training in computer software- DHIS2 while 84.6% of respondents were not receiving training on data collection and reporting and 100.0% did not receive training on data analysis and presentation. This concurs with the study done in Kenya and Nigeria by Measure evaluation (2007); study shown that poor staff training was cited as a challenge that resulted in staff with inadequate data collection, analysis and reporting skills and technology training. The findings further supported by Bra and Sahay (2012) revealed that the workshops directly contributed to improvements in data coverage, data set quality and rationalization, and local use of target indicators(40). This consistent with the findings of the study by Mboro, (2017), 30.0% reporting to have received minimal training in computer software's(33). Furthermore, previous study conducted that 30.0% had received little/minimal training in information areas that is, data collection, analysis, presentation, and information use, indicating there is a need for more training for health workers(33). Similar previous study conducted that; there is lack of feedback, training and support at all levels of data collection and lack of skills to analyze data.(26). However, staff's capacity to analyze, interpret and use data was limited. Data accuracy and timeliness affected data quality and thus use. The processes of checking data accuracy and providing feedback on the submitted monthly reports

were not implemented, making it difficult for staff to understand importance of collected data not only for improving their own performance but also for the department or higher level or as a whole(27).

5.3 Influence of behaviour supports

Another finding highlighted in the study is that the health care providers had limited training in areas of data. Long training and short training to health workers is a big challenge around the world and specifically in low middle income countries. Medical schools found in Zanzibar do not teach data science and technology. The study findings revealed that majority 65.1% of respondents had low skills of data quality checks. So, health care workers need on-job training to enlighten them on data issues. It has been noted that staff's capacity to analyze, interpret and use of data was limited. Similar study were identified by Edward Nicol (2017) argues that; lack of manpower and basic capacity/competence for recording and validating data were the most burning issues. Lack of numeracy skills also emerged as a reason for poor data quality. However, findings of this study showed that high proportion 96.6% of respondents were not motivated to perform DHIS2., According to the assessment conducted by Nutley et al (2010) revealed that; lack of organizational incentives to collect and use data, such as individual recognition, was thought to compromise the quality of data collection and the use of the information. In addition, there was a general perception that staffs don't realize the value of using data which negatively affects their motivation to record and produce high quality data.

In this study,76.6% of participants responded that responsibilities of data quality in health facilities were not clearly defined. Similar study revealed that staff attitudes will influence poor quality data during the data collection, collation or analysis. They are not willing to follow guideline or instructions. Some of the reasons that may impede data quality: staff attitude; human error; staff turnover; lack of numeracy skills; insufficient feedback and supervision; and, lack of ownership (Edward Nicol, 2017). However, staff attitude toward performing Routine Health Information System tasks, was emphasized as a factor hindering

the collection of good- quality data(38). Moreover, majority of respondents indicated that high levels of provider absenteeism and mobility are contributing to the data collection burden(28)

Similar study revealed that; data producers did not receive feedback from the district health office nor staff unless there was data discrepancy at which time they informally addressed data quality issues. Lastly, there was a perception that superiors do not routinely share data with other facilities, or even across clinical departments, thereby limiting comparative analyses(27) . However, lack of feedback and promotion of data use by decision makers de- creased staff motivation to seek, use or share data.. In addition to that; poor feedback can have a negative impact on health workers' motivation to take part in reporting processes, and as a result reduce availability and quality of health information(31). Furthermore, poor feedback can have a negative impact on health workers' motivation to take part in reporting processes, and as a result reduce availability and quality of health information(31). Feedback from the senior level to the districts was not commonplace especially on data related issues(29)

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter consists of the conclusions and recommendations on the key finding of the study based on the three objectives.

6.1 Conclusion and recommendations: The study findings concluded that: technical, organizational and behaviour determinants have great influence to maintain data quality in health care facilities. Hence, in the view of the findings this study recommends that; MoH collaboration with local Government to ensure that there is adequate staffing and who are trained in HMIS related task in each health facilities with clear structure and responsibilities and if not responsibilities for data quality tasks could be assigned to specific staffs within other health cadres such as health officers. District health managers should conduct periodic supportive supervision and data quality checks in all health facilities, The process of designing data collection tools for HMIS should be carefully considered with due considerations on simplicity of the data collection tools and clarity of data elements in terms of definitions and Staff should be motivated so as to maintain data quality in reproductive health facilities.

Reference

1. Start SH. Introduction to Data Analysis Handbook. 2006. 1-112 p.
2. Organization WH. A GUIDE FOR DEVELOPING COUNTRIES IMPROVING DATA QUALITY : A GUIDE FOR DEVELOPING COUNTRIES WORLD HEALTH ORGANIZATION. 2003;1–81.
3. Baryamureeba M. FACTORS AFFECTING DATA QUALITY IN UGANDA HEALTH MARKETING. 2015;(April).
4. Edwards M. Routine Health Information Systems : Concepts and Methods. 2006;
5. Nicholas S. FACTORS INFLUENCING PERFORMANCE OF ROUTINE HEALTH INFORMATION SYSTEM : THE CASE OF GARISSA SUBCOUNTY , KENYA. 2017;
6. Development C. Ministry of Health , Community Development , Gender , Elderly and Children NATIONAL GUIDELINES FOR November 2016. 2016;(November).
7. 2007 WHO. E V E R Y B O D Y ' S B U S I N E S S S T R E N G T H E N I N G H E A L T H S Y S T E M S T O I M P R O V E H E A L T H O U T C O M E S W H O ' S F R A M E W O R K F O R A C T I O N. 2007;1–56.
8. Id MV, Kjersti M, Khader KA, Awwad T, Friberg IK, Ghanem B, et al. Comparing individual-level clinical data from antenatal records with routine health information systems indicators for antenatal care in the West Bank : A cross-sectional study. 2018;1–13.
9. Tadesse K, Gebeye E, Tadesse G. Assessment of health management information system implementation in Ayder referral hospital , Mekelle , Ethiopia. 2014;3(4):34–9.
10. 2007 WHO. Data quality review. 2007. 1-36 p.
11. United THE, Of R, Health MOF. THE UNITED REPUBLIC OF TANZANIA DHIS 2 Functions and Data Use for Health Information System Strengthening Participants ' Guide. 2017;(September).
12. Odhiambo- GW. Organizational factors affecting data quality of routine health management information system quality : Case of Uasin Gishu County Referral Hospital , Kenya. 2016;3(September):201–8.

13. Gimbel S, Mwanza M, Nisingizwe MP, Michel C, Hirschhorn L. Improving data quality across 3 sub-Saharan African countries using the Consolidated Framework for Implementation Research (CFIR): results from the African Health Initiative. 2017;17(Suppl 3).
14. Nutley T. Lot Quality Assurance Making Sampling Survey in Liberia An Intervention to Strengthen Health Systems. 2012.
15. UNDP. Sustainable Development Goals (SDG). 2015;1–24.
16. SHEIKH YH. The HEALTH INFORMATION SYSTEMS INTEGRATION AS INSTITUTIONALISATION The Case of Zanzibar. 2015;193.
17. Evaluation M. Health Management Information System (HMIS) Facilitator ' s Guide for Training of Trainers. 2010;1–94(February).
18. Health MOF. MINISTRY OF HEALTH - ZANZIBAR Annual Health Information Bulletin 2010. 2011;1–97.
19. Belay H. PRISM Tools Application. 2013;
20. Lungo JH, Igira F. Development of Health Information System in Zanzibar : Practical Implications. 2008;2(1):24–32.
21. Revolutionary THE, Of G. HIS STRATEGIC PLAN 2012-2020 (FINAL VERSION subject to costs rationalization). 2012;2020:1–29.
22. Zanzibar Annual Health Bulletin 2016. 2016;1–111.
23. Information R, Management S, Evaluation TM. Tools for Data Demand and Use in the Health Sector Performance of Routine Information Systems Management (PRISM) Tools.
24. Zanzibar M of, Health. Zanzibar health sector strategic plan iii 2013/14-2018/19. 2018;1–138.
25. Wambugu S, Wambugu S, Evaluation M. mHealth for Health Information Systems in Low- and Middle-Income Countries Challenges and Opportunities in Data Quality , Privacy , and Security Data Quality , Privacy , and Security Challenges and Opportunities in Data Quality , Privacy , and mHealth for Health Information Systems in Low- and Middle-Income Countries Challenges and Opportunities in Data Quality ,

Privacy , and.

26. Mukama F. Faraja Mukama Faraja Mukama. 2003.
27. Nutley T. A Review of Constraints to Using Data for Decision Making Recommendations to Inform the Design of Interventions A Review of Constraints to Using Data for Decision Making Recommendations to Inform the Design of Interventions. 2010;1–13.
28. Gateway D. Findings from Tanzania. 2016;
29. NYELLA E. Challenges and Opportunities in the Integration of HIS : Case Study from Zanzibar.
30. Assessment A, Use D, Measure C. Decision Maker Perceptions in Kenya and Nigeria An Assessment of Data Use Constraints. 2007;1–37.
31. Askar A, Ardakani M, Majdzade R. Bridging gaps in health information systems: a case study from Somaliland. 2017;1–20.
32. KARIJO EK. DETERMINANTS OF UTILIZATION OF ROUTINE DATA. 2013.
33. MBORO GN. USE OF ROUTINE HEALTH INFORMATION FOR DECISION MAKING AMONG HEALTH WORKERS AT COAST GENERAL HOSPITAL, MOMBASA COUNTY, KENYA. 2017.
34. Mwangu DOS and MA. East African Journal of Public Health Volume 3 Number 1 April 2006 28. 2006;3(1):28–31.
35. ADEJUMO A. An Assessment of Data Quality in Routine Health Information Systems in Oyo State, Nigeria. ADEDAPO. 2017.
36. Arenth B, Bennett A, Bernadotte C, Carnahan E, Dube M, Thompson J WJ. Defining and Building a Data Use Culture. 2017;1–36.
37. Counties K. Understanding Data Demand and Use in Kenya Successes and Challenges in Understanding Data Demand and Use in Kenya Successes and Challenges in. 2016;(October).
38. Nicol E, Bradshaw D, Uwimana-nicol J, Dudley L. Perceptions about data-informed decisions : an assessment of information-use in high HIV-prevalence settings in South Africa. 2017;17(Suppl 2).

39. Organization WH. Framework and Standards for Country Health Information Systems. 2008;1–72.
40. Braa J, Sahay S. Improving quality and use of data through data-use workshops : Zanzibar , United Republic of Tanzania. 2012;(January):379–84.

Appendix I: study questionnaire

Serial no:

Date:

Name of facility: _____

Introduction

The purpose of this questionnaire is to collect data on **Health Management Information system data Quality in Reproductive and Child health program**; case study urban district, Zanzibar, The findings will assist in informing strategies and opportunities for improvement.

Instructions: Kindly circle *the most appropriate/applicable answer in the section below*

Section I: Socio demographic information

AQ1	Title of the person filling the questionnaire	1 District HO 2 District HMIS focal person 3 Nurse 4 Other facility staff
AQ2	Age of the person	1 15 – 24 , 2 25- 34 3 35- 49 4 above 49
AQ3	Gender of the respondent	1 Male , 2 Female
AQ4	Education	1 Primary , 2 Secondary 3 Tertiary(certificate, diploma or degree) 4 Post tertiary(Master or PHD)
AQ5	Professional(specify)	1 Doctor 2 Nurse 3 Health records officer 4 Environmental health 5 Lab-technician 6 Others
AQ6	How long have you been employed in your current position?	1 Less than 4 years 2 5-8 years 3 9-12 years 4 Over 12 years
AQ7	What is the type of facility do you work	1 PHCU+ 2 Primary healthcare Unit 3 Specialized hospital 4 Referral Hospital 5 District health Management Team

Section II: Technical support

This section examine technical factors response from health workers

BQ7	Data collection tools are Standardized and aligned with the national indicators?	0 No 1 Yes			
BQ8	Do you think that the indicators collected are relevant and understandable?	0 No 1 Yes			
BQ9	Reporting forms and registers used in your health facility/department are complicated?	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree			
BQ10	The facility has adequate reporting forms and registers?	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree			
BQ11	Do you have any of these documents;				
	County/National HMIS Policy	1 Yes 0 No			
	Strategic plan	1 Yes 0 No			
	M&E plan or guidelines for data quality	1 Yes 0 No			
	To what extent have you received training in the following	1 1-2wks	2 2-4wks	3 4-6wks	4 More than 6 wks
BQ12	a. Computer software's DHIS2				

	areas?	b. HMIS (data collection and reporting)				
		c. Data analysis				
		d. Data presentation				
BQ13	Do you carry out any data analysis on the data you collect?	1 Yes 0 No				
BQ14	If yes in Q 13 above, how do you analyze your data?	1 Manually 2 Using DHIS 3 Using computer program excel				
BQ15	Does the HMIS data base working properly without network interruption?	1 Yes 0 No				
BQ16	If no, for how long problem sustained?	1 Less than two week 2 Three weeks 3 four weeks 3 More than four weeks				

Section III: Organizational supports

This section identifies organizational factors response from health workers

CQ17	Your health facility has adequate staff responsible for HMIS related tasks?	1 Yes 0 No 2 I don't know				
CQ18	Your facility/department has clear structure on who is responsible for HMIS tasks?	1 Yes 0 No 2 I don't know				
CQ19	Your facility/department has adequate funds to support HMIS activities?	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree				
CQ20	Your health facility/department receives regular supportive supervision visits focusing on data	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree				

	quality?	
CQ21	Do you conduct data review meeting?	1 Yes 0 No 2 I don't know
CQ22	If yes in Q above, what do you normally discuss? (Kindly circle what is discussed)	[1] Management of routine data like quality, reporting or timeliness [2] Findings of routine data like disease trends [3] Service coverage in terms of quantity and quality [4] Medicine stock out in terms of workload and quantification Always [5] utilization of services in relation to population assigned
CQ23	Are data quality challenges identified in your health facility?	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree

Section IV: Behaviour supports

This section identifies responses on Behaviour factors from health workers

DQ24	Staff have data quality check skills	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree
DQ25	Staff have skills to perform DHIS related tasks such as data analysis and interpretation	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree
DQ26	Staff have confidence to perform DHIS such as data analysis and interpretation	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree

DQ27	Staff are motivated to perform DHIS related tasks	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree
DQ28	How often do you analyze the data you collect?	1 weekly 2 After every two weeks 3 monthly 4 quarterly [4] No schedule
DQ29	Are your roles and responsibilities clearly defined in your job description in terms of data quality in HMIS	[1 Not at all 2 Fairly well 3 Well 4 Very well
DQ31	Collecting information gives me the feeling that data is needed for monitoring facility performance	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree
DQ32	Collecting information is appreciated by co-workers and superiors	1 Agree , 2 Disagree 3 Somewhat agree 4 Neither Disagree nor Agree

Appendix II: Informed consent form

Interview number:

Consent to participate in a study

Good morning / Good afternoon,

My name is **AHMED SULEIMAN SAID** working with Ministry of Health Zanzibar, but currently pursuing a Master of Science in Project Management, Monitoring and Evaluation in Health at Muhimbili University of Health and Allied Science (MUHAS) in Tanzania. I am here to study the **Health Management Information System (HMIS) Data Quality in the Reproductive and Child Health programs; case study of Urban district, Zanzibar.**

Purpose of the study

The study conducted as a partial fulfillment of the requirement for the academic award of Masters Degree in PMMEH. The study aiming is to assess **Health Management Information System (HMIS) Data quality in the Reproductive and Child Health programs.** You are being asked to participate in this study because your unit/section is an important premise with regards to reproductive and child health services within the country. Kindly collaborate to provide a clear picture on data quality. The findings of the study will be useful in assessing the strengths and areas for improvement.

Participation involvement: If you agree to take part in the study, you will be interviewed to answer and explain in details as per questionnaire used. This will take between 10 and 15 minutes to be completed.

Confidentiality: I assure you that, whatever information received will be kept strictly **CONFIDENTIAL** and will be used only for research purposes. Your name will not be written in this report. All information collected from the study will be entered in computers with identity codes known by the interviewer only.

Risks:

We do not expect any harm as a result of your participation in this study. There may be some questions that you are not willing to answer; do not hesitate to tell the interviewer your feeling on those questions. However, you may need to refer the researcher to somebody for more clarifications and supporting data.

Right to withdraw: It is voluntary to take part in this study. You can withdraw your participation at any time, even if you accepted at the beginning. Refusal to participate in this study has no penalty.

Benefits: The information you provide will lead the assessment of the HMIS data quality in RCH program. The information will also provide evidence base for the service improvement.

At this point do you have any questions about this study? May I interview you now?

By appending my signature on this form, I am attesting that I have read and understood the information above this study and I voluntarily and willingly assent to participate.

I Accept To Participate

Not Accept

(Do not write your name please, put your signature)

Who to contact: In case of any problem about this study, do not hesitate to contact the researcher; AHMED SULEIMAN SAID, Muhimbili University of Health and Allied Sciences,

P.O. Box 65001 Dar es Salaam. Mobile: +255 777199090 OR +255677534528

You may also contact the supervisor; Dr Mwangu A. Mughwira

Mobile: +255713253513

Appendix III: Interview guide for key informants – English version

Part I: Identification of the interviewee’s particulars

Name of Place..... District.....

Education level..... Position..... Age.....

Sex: Male Female

Duration in this position; Date of Interview.....

Part II: Questions

1. What is your specific role in these health facilities?
2. What is your understanding of data quality in health facilities?
3. Can you please describe the routine process of collating data in your health facility per day, per week and per month?
4. Are there any challenges you meet in data management in your health facility? Please describe.
5. Do you work with anyone to ensure data quality in the health facility? Please describe.
6. Do you attend trainings on data management and specifically data quality? How often in a year?
7. How do you ensure data quality in your health facility?
8. Identify Gaps in the Current routine data quality generated in health facilities
9. What are the challenges you encounter ensuring data quality in your facility?
10. What is the effect of poor data quality generated in health facilities?
11. What is your opinion on data quality generated in health facilities?

Appendix IV: Interview guide for key informants – English version

Sehemu ya I: Utambuzi wa msailiwa

Pahala..... Wilaya..... Wadhifa wa
msailiwa..... Umri..... Jinsia: M/me M/ke Muda wa kuwepo katika
wadhifa huu Tarehe ya usaili.....

Sehemu ya II: Maswali

1. Je nini kazi yako hasa katika hivi vituo?
2. Unafahamu nini kuhusiana na ubora wa taarifa za afya katika kituo cha Afya
3. Je unaweza kuelezea kazi ya kukusanya taarifa(data) katika kituo chako kwa siku, kwa wiki na mwezi?
4. Jee kuna usumbufu wowote unayokutana nayo kutokana na utunzaji wa data kwenye kituo chako? Tafadhali elezea
5. Je unafanya kazi na yoyote kuhakikisha taarifa zinazokusanywa ni bora katika kituo chako? Tafadhali elezea ni vipi.
6. Je umehudhuria mafunzo hasa ya taarifa za afya (data) na kuzitunza? Mara ngapi unapata mafunzo haya kwa mwaka?
7. Vipi utahakikisha ubora wa data katika kituo chako?
8. Bainisha udhaifu wa sasa uliopo kutokana na upatikanaji wa taarifa (data) bora katika vituo vya afya
9. Changamoto gani munakutana nazo na kukwamisha upatikanaji wa taarifa(data) bora katika kituo chako
10. Nini madhara ya upatikanaji wa data zisizobora katika vituo vya afya
11. Nini maoni yako kuhusiana na upatikanaji wa taarifa (data) bora katika vituo vya afya?

Appendix V: Fomu ya Ridhaa ya Kiswahili

Namba ya Msailiwa.....

Ridhaa ya kushiriki katika utafiti

Ninaitwa **AHMED SULEIMAN SAID**, nafanya kazi wizara ya Afya lakini kwa sasa nafanya **Shahada ya Uzamivu ya Usimamizi wa miradi, ufuatiliaji na tathmini kwenye Afya katika chuo** kikuu cha Sayansi ya Afya na Tiba Muhimbili.

Nipo hapa kwa ajili ya kufanya utafiti wa kutathmini ubora wa taarifa za wagonjwa katika programu ya Afya ya uzazi na mtoto.

Madhumuni ya utafiti: Utafiti huu unafanyika ili kukamilisha masomo ya shahada ya uzamili wa Afya ya Jamii katika chuo kikuu cha Sayansi ya Tiba Muhimbili. Utafiti una lengo la kutathmini ni kwa kiasi gani ubora wa taarifa za wagonjwa katika programu ya Afya ya uzazi na mtoto.

Umeombwa kushiriki katika utafiti huu kwa sababu wewe/idara/sehemu/kitengo chako ni muhimu katika kuzingatia huduma zenye ubora za Afya ya uzazi na mtoto nchini.

Tafadhali naomba ushirikiano wako katika kutoa taarifa juu ya hali halisi ya ubora wa taarifa za afya vituoni. Matokeo ya utafiti huu yatatumika kuboresha huduma hizo.

Masuala yanayohusu ushiriki: Iwapo utakubali kushiriki katika utafiti huu, utasailiwa masuala yaliyo kwenye mwongozo wa usaili ili kutoa maelezo husika. Itachukua kiasi ya dakika 10 mpaka 15 kukamilisha usaili huu.

Usiri: Nakuhakikishia kwamba majibu, taarifa, maoni na ushauri wowote utakaotoa utakuwa ni siri na itatumika kwa ajili ya madhumuni ya utafiti. Jina na cheo chako hakitaandikwa katika taarifa hii. Aidha, taarifa zote zitaingizwa kwenye kompyuta kwa kutumia namba za utambulisho ambazo zinajulikana kwa msaili tu.

Madhara: Sitegemei kuwa ushiriki wako katika utafiti huu utakuwa na madhara yoyote. Iwapo kuna maswali ambayo hutayapenda, unaruhusiwa kutoyajibu au kumwelekeza msaili kwa mtu mwingine kwa maelezo zaidi. Aidha, una uhuru wa kutoendelea na usaili wakati wowote.

Haki ya Kujitoa/ kutoshiriki katika utafiti Ushiriki wako katika utafiti huu ni wa hiari. Una hiari ya kujitoa katika utafiti huu wakati wowote hata kama ulikubali mwanzoni. Kujitoa kwako hakutaathiri stahili zako kwa namna yoyote ile.

Manufaa: Taarifa utakazotoa zitasaidia kujua hali halisi iliyopo kutathmini ubora wa taarifa za Afya za MTUHA katika huduma za Afya ya mama na mtoto. Taarifa hizi zitasaidia katika kuboresha huduma. Katika haya unasuali lolote kuhusiana na utafiti huu? Je ninaweza kukuhoji.

Kwa kuweka sahihi yangu katika dodoso hili, naathibitisha kuwa nimesoma na nimefahamu taarifa ulizoelezea hapo juu na kwa hiari yanguna nipo tayari kushiriki

Nakubali kushiriki

Sikubali kushiriki

.....

.....

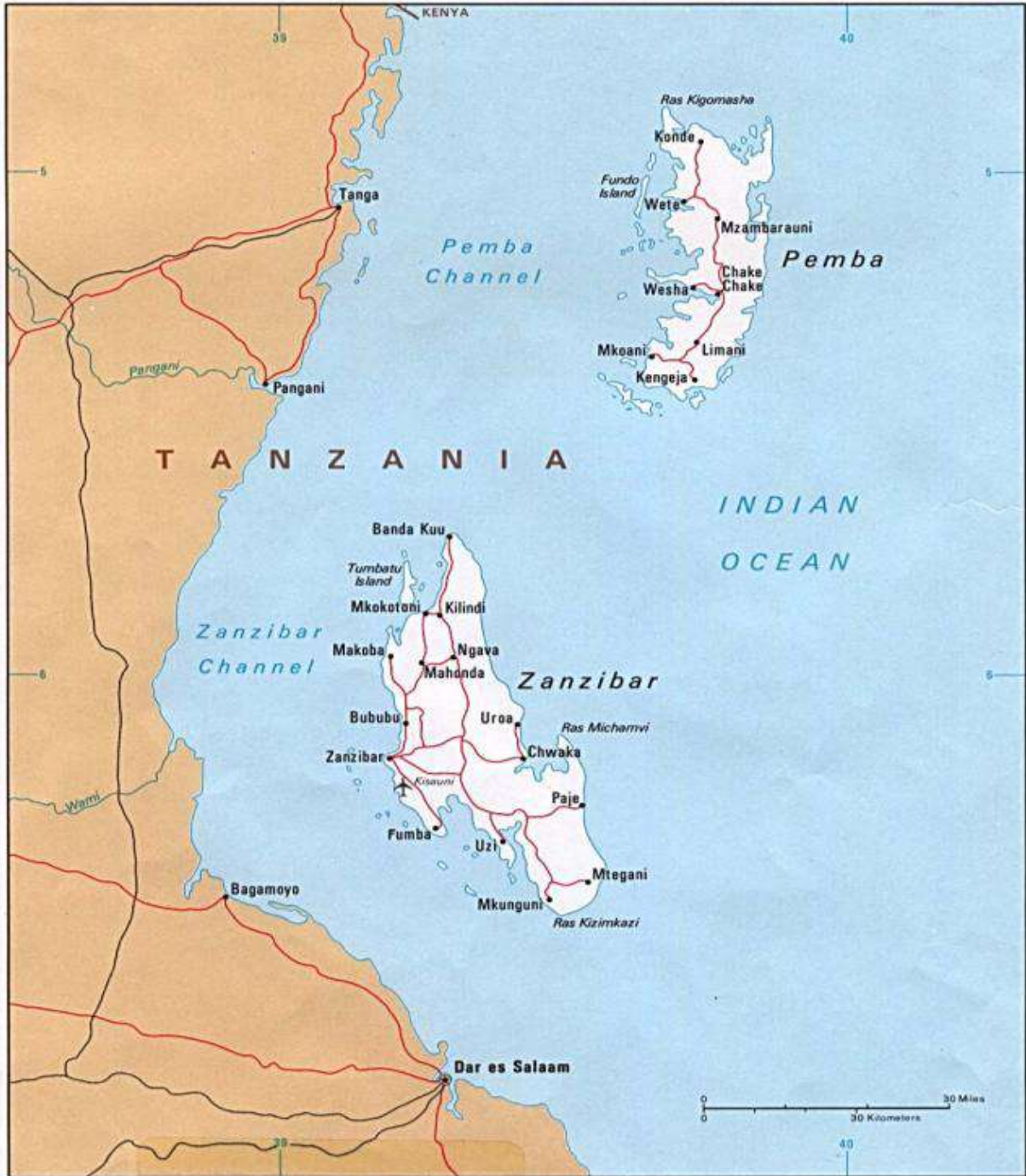
(Usiandike jina lako, weka saina yako tu)

Watu wa Kuwasiliana: Iwapo una swala au tatizo lolote kuhusu utafiti huu, unaweza kuwasiliana na mtafiti, **Ahmed Suleiman Said**, Chuo Kikuu cha Sayansi za Afya na Tiba, Muhimbili, S.L.P. 65001, Dar es salaam. Namba ya simu: 0677534528 au 0777199090.

Pia unaweza kuwasiliana na Msimamizi wa utafiti huu Dr **Mwangu Mughwira**, Chuo Kikuu cha Sayansi za Afya na Tiba, Muhimbili, S.L.P. 65001, Dar es salaam.

Namba ya simu: +255713253513

Appendix VI: Zanzibar map, including main islands of Pemba (north) and Unguja (south)



Appendix VII: Ethical clearance

ZANZIBAR HEALTH RESEARCH INSTITUTE



Ministry of Health Zanzibar, P.O. Box 236, Vuga Zanzibar
Tel: +255 772 605 560 Fax: +255-24-2231613
Email: info@zahri.org Website: http://www.zahri.org

Ref: NO. ZAHREC/02/June/2019/38

28th June, 2019

Mr. Ahmed Suleiman Said
Student Researcher
MUHAS.

PROTOCOL TITLE: "Health management information system data quality in Reproductive and child health in urban district, Zanzibar"

RE: ETHICAL CLEARANCE FOR CONDUCTING HEALTH RESEARCH IN ZANZIBAR:

This to certify that research protocol entitled "Health management information system data quality in Reproductive and child health in urban district, Zanzibar" was received and reviewed by the Zanzibar Health Research Ethical Committee (ZAHREC) on 28th June, 2019.

We would like to inform you that the decision of the committee to this protocol was "Approved".

The permission to undertake data collection is for one year beginning from the date of this letter.


The principal investigators have to provide progress report after six months and final report to the Zanzibar Health Research Institute.

Seek permission to publish your findings from ZAHRI.

Any change made to the protocol need to be submitted to the ZAHREC for approval prior to its implementation.

Thanks in advance,


Dkt. Mayassa S. Ally,
DIRECTOR GENERAL,
ZANZIBAR HEALTH RESEARCH INSTITUTE,
ZANZIBAR.


Dr. Juma S. Mbwana,
/DIRECTOR GENERAL,
MINISTRY OF HEALTH,
ZANZIBAR

Appendix VIII: Approval of ethical clearance

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES**

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz



Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/

22nd May, 2019

Mr. Ahmed Suleiman Said
MSc. Project Management Monitoring and Evaluation Health
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "HEALTH MANAGEMENT INFORMATION SYSTEM (MHIS) DATA QUALITY IN THE REPRODUCTIVE AND CHILD HEALTH PROGRAMS; CASE STUDY OF URBAN DISTRICT, ZANZIBAR"

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from 23rd May, 2019 to 22nd May, 2020. In case you do not complete data analysis and dissertation report writing by 22nd May, 2020, you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
ACTING: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Public Health and Social Sciences, MUHAS

Appendix IX: Research/filming permit

REVOLUTIONARY GOVERNMENT OF ZANZIBAR

<p>SECRETARY ZANZIBAR RESEARCH COMMITTEE P. O Box 239 Tel: 2230806 FAX: 2233788</p>		
---	---	---

RESEARCH/FILMING PERMIT
(This Permit is only Applicable in Zanzibar for a duration specified)

SECTION

Name:	Ahmed Suleiman Said
Sex:	Male
Date and Place of Birth:	05 th Feb, 1977
Nationality:	Tanzania
Passport Number:	AB 419135
Date and Place of Issue:	24 Aug 2010
Date of arrival in Zanzibar:	-
Expected date of departure:	-
Duration of study:	2 Month
Research Tittles:	Health Management Information System (HMIS) Data Quality In Reproductive and Child Health Program, Case Study of Urban District Zanzibar

Full address of Sponsor: P.O.Box 236

This is to endorse that I have received and duly considered applicant's request I am satisfied with the descriptions outlined above.

Name of the authorizing officer:	Abdalla M. Denge
Signature and seal:	
Institution:	Office of Chief Government Statistician
Address:	P. O Box 2321 Zanzibar

Date: 16/06/2019