ASSESSMENT OF DEATH NOTIFICATION AND REGISTRATION PROCESS:

CASE STUDY OF RUNDU DISTRICT IN KAVANGO EAST REGION, NAMIBIA

A MINI-THESIS SUBMITTED IN PARTIAL FULFILMENT OF REQUIREMENTS

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ABSTRACT

Mortality information is most directly valuable in the health sector. They help to identify high mortality areas and high-risk groups in the population. They are necessary to determines health services and the mostly needed relevant interventions that are likely to have great impact. Vital registration systems provide an ongoing record of demographic events, such as births and deaths. It is requirement of the country's law to register all deaths with the Ministry of Home Affairs, Immigration, Safety and Security (MHAISS). The same ministry is the custodian of the National Population Register. The National Population Register contains records of births and deaths. Citizens are to report deaths, which took place outside health facilities to the police at local Forensic Pathology Units. The study used a Case Study methodology whereby Key-Informant Interview mapped out the business processes of death notification and registration in Rundu District. The study reviewed randomly selected notified death cases and assessed them for completeness and usefulness using the ICD-10 criteria. The quality of the data was determined using the Vital Statistic Performance Index (VSPI). The quality of the data determined four data quality attributes namely: completeness, accuracy, consistency and timeliness. The quantitative results shows that the number of registered deaths rose dramatically after the introduction of electronic death notification (e-death notification). Contrary, incompleteness in death reporting and registration systems resulted due to a variety of reasons. Among others includes poor access to serviceable facilities and lack of information on how and where to notify and register deaths.

Since the year 2018, district hospitals and the department of Civil Registration (CR) offices were responsible to capture timely records on the electronic National Population Register (e-NPR). The Ministry of Health and Social Services (MoHSS) aggregate information on deaths that occurred at public health facilities. Such records do not include deaths occurred at private hospitals, households, violent and accidental deaths. There is a need to improve the coordinated system in terms of data quality in order to enhance credibility and validity of conclusions drawn from them. An improved law is required to facilitate the creation of a complete and accurate electronic National Population Register (eNPR). The evaluation of the data quality is integral in providing end users with credible understanding from the analysis of notified death in order to improve the CR system.

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LIST OF ACRONYMS AND ABBREVIATIONS

CoD	Cause of Death
CR	Civil Registration
CRVS	Civil Registration and Vital Statistics
DC	Death Certificate
e-Death	Electronic Death Notification System
e-NPRS	Electronic National Population Registration System
HCW	Health Care Workers
HF	Health Facilities
ICD10/ICD11	International Classifications of Diseases 10th/11th Revision
ICoD	Immediate Causes of Death
ICT	Information and Communication Technology
MCCD	Medical Certification of Causes of Death
MHAISS	Ministry of Home Affairs, Immigration, Safety and Security
MoHSS	Ministry of Health and Social Services
MOU	Memorandum of Understanding
NamPol	Namibian Police
NPHC	Namibia Population and Housing Census
NPRS	National Population Registration System
NSA	Namibia Statistics Agency
OPM	Office of the Prime Minister
OSC	Other significant causes
UCoD,	Underlying Causes of Deaths
VS	Vital Statistics
VSPI	Vital Statistic Performance Index

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DEDICATION

I would like to dedicate this thesis and all the hard work incurred to my family, particularly to my late father (who passed on at a time of writing or working on this thesis). As well as to my sponsor the Germany Armed Forces Technical Advisory Group (GAFTAG Namibia), my employer the Ministry of Defence and Veteran Affairs. Additionally, to the fellow Health Workers who will make use of the research project for references. The support that you gave me, have given me strength to complete my project. Thank you very much and may God bless you all.

DECLARATION

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

The health and development challenges of the current decades cannot be tackled effectively without reliable data on births, deaths, and causes of death, which a comprehensive civil registration and vital statistics (CRVS) system can attain. Alternative methods such as surveys, censuses, or surveillance are not adequate substitutes from a statistical perspective. On contrary, they do not provide individuals with the legal documentations that they may require to benefit from services and participate fully in a modern society (Ministry of Home Affairs and Immigration & Namibia Statistics Agency, 2015). There is a need for research to generate and disseminate evidence about which CRVS strategies work best. In addition, there is a need to figure out which contexts ascertain the potential benefits of innovation in order to successfully scaled up and avoid the possible pitfalls, claimed by the Namibia Statistics Agency (2014). A need to compile research findings and disseminate to users for policymaking and best interventions. The modernization of CRVS systems necessitates new broad-based coalitions.

The global architecture for CRVS, so far dominated by UN agencies, should extend to include bilateral donors, foundations, non-governmental organizations, private sectors, academic institutions and civil society (Ministry of Home Affairs and Immigration, 2014). This change is essential to ensure that further development of CRVS systems is inclusive, participatory, multisectoral and has a strong evidence base. Civil Registration (CR) captures significant life events of people within the national borders. Governments have a task to generate vital statistics on the demographic dynamics and the health of the population and use the information gathered by recording such event (AbouZahr et el., 2015). CR produces reliable information on deaths that enable the calculation and production of timely and

accurate population estimates. It contributes to policy-making and planning of important national development programs.

Causes of deaths (CoD) and death statistics are basic outputs of Electronic Death Notification Systems (E-death). They are fundamental to the design of health strategies and policies. CR systems are the main source of Vital Statistics (VS), which includes deaths and their causes as they form part of the most useful information when their coverage and medical certification are analyzed (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020). The Department of Civil Registration in the Ministry of Home Affairs, Immigration, Safety and Security (MHAISS) is the central role player in the administration of the e-National Population Register (eNPR). The digitally linked e-Death Notification System is a multifaceted notification platform of the eNPR. The Namibia Statistics Agency (NSA) processes CR data obtained from NPRS to generate annual Vital Statistics Reports. Collaboration between MHAISS and NSA as well as other relevant key stakeholders is indispensable in improving the CRVS system in Namibia (Alipour & Payandeh, 2020).

1.2 Problem statement

Civil Registration and Vital Statistics (CRVS) is a multi-sectorial system facilitated by different players, who are responsible for different functions of the system in Namibia (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020). While Namibia has achieved comparatively high levels of death registration, the challenges remain to reach the remotest and the most vulnerable groups (Ministry of Home Affairs and Immigration (MHAI) & Namibia Statistics Agency, 2015). Furthermore, the differences amongst regions (e.g. Hardap with high registrations and Kavango with low registrations) calls for needs to investigate and address region-specific issues, such as culture and infrastructure. There are diverse incumbents' dealing with various methods of electronically

notifying death. Hence, information about the quality of mortality data is of interest for national descriptive analyses (Alipour & Payandeh, 2020).

A well-functioning CR system should provide timely, accurate data and reports to enhance the capacities of policy-makers to identify where services are needed (Ministry of Home Affairs and Immigration, 2014). Civil Registration and Vital Statistics (CRVS) system obtains e-death notifications from various stakeholders of different background. Hence, coordination of multiple agencies is key to the system's performance (Institute for Health Metrics and Evaluation, 2016). It is therefore, imperative to analyze the processes and registrations of vital events (deaths and causes of death) in the country. There is a need for a reliable, integrated and dynamic CRVS system with complete, timely and quality data that are meeting stakeholder expectations (Namibia Statistics Agency, 2014). Quality Cause of Death (CoD) statements are prerequisites for quality Death Certifications (DC) and CoD statistics. These data are a cornerstone for health policy-making and medical research worldwide.

The data provide statistical information useful for mortality surveillance, epidemiologic research, public health planning, and resource allocation for health research projects. CoD coding practices remain inadequate in most developing countries (Republic of Mauritius, 2015). Poor quality CoD statements may have financial, medico-legal, and policy implications. It requires a coordinated and efficient manner to register deaths and causes of deaths as part of generating vital statistics for good governance (Rogena et el., 2020). Hence, this assessment will involve three stakeholders within two government ministries. Ministry of Health and Social Services (MoHSS), Forensic Pathology Unit and CRVS under the Ministry of Home Affairs and Immigration, Safety and Security (MHAISS). This research is therefore set out to analyze and describe the business process mapping of death notification, registration and reporting system. The aim this thesis is to improve the registration of vital events of deaths and cause of death in order to enhance the quality and timely production of

vital statistics. It is set out to explore the opportunities to strengthen CRVS and identify gaps in the use of CRVS for developmental planning and policy formation.

1.3 Objectives of the study

1.3.1 Main objective

The aim of this study is to assess and map-out the coherence in approaches and harmonization of the death notification and registration systems, including linkages between the health sector, forensic pathological unit and civil registration on death reporting, medical certification of cause of death in Rundu District as a case study.

1.3.2 Specific objectives

- To determine the accurateness and consistency of notified death and documented cause of death registered through different death reporting systems (Civil Registration and Health Facility Information System) taking Rundu as a case district.

- To map out the business processes involved in the notification of death by different agencies (Health Facility Information System, Forensic Pathology and Civil Registration system) and the exchange of information between different entities within Rundu district.

- Identify country needs for support, country mentorship on improvement of death registration and ICD compliant medical certification of causes of death.

1.4 Significance of the study:

The study helped to identify gaps in the current systems, lack of capacity, effectiveness, bottlenecks and possible areas for improvement of the civil registration system in Namibia. The results of the study could be useful to help with validating and explaining the trends and discrepancies of mortality statistics. The study provided suggestions on establish an agreement on a course of action and the common approaches for implementation and rollout

of tools and processes, including harmonization of systems for certification and reporting of deaths; use of data; the role of partnerships and responsibilities of partners.

The findings of this study will serve as a baseline study to inform policy and legal framework for civil registration, Standard Operational Procedures and protocols involved in the process of death registration and assigning of causes of deaths. Use the outcomes of the study to evaluate the quality and validity of data on causes of deaths and aids in determination of the status of civil registration systems, in terms of its effectiveness, accuracy of civil registration and delivery of data for vital statistics generation.

1.5 Summary

Although many countries invested considerable resources in the establishment and maintenance of systems to monitor the levels, patterns and causes of mortality, they hardly assess the quality of the sources of such information (Alipour & Payandeh, 2020). Previously, Namibian health workers used paper-based tools (written form) with no chronological order for Causes of Death (CoD) and causes long waiting time for families. Upon the designed and developed electronic Notification Systems by the Office of the Prime Minister (OPM). E-death introduced in the year 2018 to all public and private health facilities (Namibia Statistics Agency, 2014). The aim of the new system was to improve timely registration of death and vital statistical data. The Electronic-Notification System uses latest health coding information (International Classification of Diseases (ICD)) and it made it easier to analyze data (as it requires data to be up-to-date and accurate) (Namibia Mortality and Causes of Death, 2020).

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

A civil registration system is defined as "the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events, provided through decree or regulation in accordance with the legal requirements of each country" (Namibia Mortality and Causes of Death, 2020). It means that civil registration system provides for the issuing a legal document that serves as proof of belonging (nationality) and other social characteristics of an individual. The Civil Registration (CR) system is a platform, which documents key life events such as births and deaths (Namibia Statistics Agency, 2014). The aggregate from the vital events are statistics that are important to any given government for planning purposes, but then these statistics need to be accurate, complete and timely." On the other hand, Civil Registration (CR) refers to continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population, as provided through decree or regulation in accordance with the legal requirements in each country (Alipour & Payandeh, 2020).

Civil Registration and Vital Statistics (CRVS) is the system whereby the government records the vital events (births, deaths and causes of deaths) of its citizens. The primary purpose of civil registration is to create a legal document that establish and protect the right of individuals. A secondary purpose is to create a data source for the compilation of vital statistics (Namibia Statistics Agency, 2014). Vital statistical records are documents or records containing those items of information concerning an individual vital event that meet the needs of vital statistics compilation. Vital Statistics (VS) are collections of statistics on vital events

in the lifetime of a person as well as relevant characteristics of the events themselves and of the person and persons concerned (AbouZahr et al., 2015).

Death is the permanent disappearance of all evidence of life at any time after live birth has taken place (postnatal cessation of vital functions without capability of resuscitation). Death event captured refers to the capturing or entering information about the death event or record on the National Population Register System (NPRS) (Namibia health data, 2016). Death event registered refers to the registration of an event through an issuance of a certificate. An instance to that regard can be a death certificate or a Medical Certification of Causes Death. Registration means a notified event made to the MHAISS office and issued a certificate thereof.

Causes of death is defined as all those diseases, morbidity conditions or injuries that either resulted in or contributed to death and the circumstances of the accident or violence that produced any such injuries (Namibia Statistics Agency, 2014). The Underlying Causes of Death (UCoD) is the disease or injury that initiated the train of morbid events leading directly to death or the circumstances of the accident or violence, which produced the fatal injury (World Bank, 2018). The aim for proper identification of the UCoD is to support prevention of future occurrences of similar deaths (Namibia health data, 2016).

Business process mapping is the judgmental task of defining what exactly a business does, who is responsible, and what is the standard by which the success of a business process (Namibia Statistics Agency, 2014). It is an ideal technique and tool for communicating processes to others. At times, it is necessary to be able to show a process to others.

2.2 Accurateness and consistency of death registration

According to Africa Programme on Accelerated Improvement of Civil Registration and Vital Statistics (APAI-CRVS) (2017) status of death registration, including the causes of death data, in Africa are relatively low. More than 80% of African countries have no concrete vital registration systems of death information in place to record deaths and their causes (Namibia Inter-Censal Demographic Survey, 2016).

According to WHO (2018) it was reported that in Africa only Algeria, Mauritius, Seychelles and South Africa have high coverage rates of death information (75% and higher). In most parts of Africa, death registration lags far behind birth registration coverage. Most deaths in Africa occur outside health facilities and a doctor rarely certifies the Causes of Death (Namibia Inter-Censal Demographic Survey, 2016). The existing international guidelines and standards on improving civil registration do not capture this unique context in Africa (Institute for Health Metrics and Evaluation, 2016). Thus, the need to design and adopt innovative approaches that are specific to the situation on the continent. Out of the 47 member States in the World Health Organization (WHO) African region, only Mauritius can provide high-quality Cause of Death data. Seychelles, South Africa and Zimbabwe are able to provide low or medium-quality data while Egypt and Morocco can provide low to medium-quality Cause of Death data (Namibia Statistics Agency, 2014). The World Bank recently noted that lack of information on deaths and causes of death means that problems arise from using estimates. The only way to accurately, track progress will be through complete Civil Registration and Vital Statistics systems.

There is a need for reliable and timely statistics from Civil Registration to monitor morbidity and mortality, national goals, targets and Millennium Developmental Goals (MDGs). That is for preparing population estimates and projections on a continuous basis. Mortality statistics systems provide basic information on causes of mortality in populations (Alipour &

Payandeh, 2020). On contrary, only a third of the world's countries have complete civil registration systems that yield adequate cause-specific mortality data for health policymaking and monitoring (Namibia Mortality and Causes of Death, 2020). The study will help to build a common understanding on the tools, strategies and processes for strengthening death registration systems in Namibia.

The objectives of this study will aid the development of a practical and properly contextualized and sustainable roadmap for national implementation and rollout of approaches for certification and reporting of deaths. Also to initiate the development of a practical roadmap for the country-level implementation. It will help to rollout the standardized ICD-compliant death reporting, Medical Certification and valid Autopsy. Initiate mentorship, cross-country learning and knowledge sharing on death registration system by strengthening and identified experiences.

2.3 Business processes of capturing medical certification of causes of death

The processing of Causes of Death (CoD) and death capturing as a component of vital registration covers a range of structural, statistical and technical aspects of the national mortality data (Namibia Inter-Censal Demographic Survey, 2016). Information on the number of deaths and their cause is vital in evaluating and tracking progress to-wards national, regional and international heath related goals. The information on the mortality trends and differentials is important for the identification of emerging diseases and conditions. Also for formulation of evidence-based health policies and tracking of the population health status (Namibia Statistics Agency, 2014). Consequently, cause-of-death statistics assist in the formulation of evidence-based health policies and guide priorities for intervention programs. If deaths are underreported, the health of a society will appear to be better than what it is in reality or on the ground (Republic of Mauritius, 2015). Numerous studies have shown variabilities in completion of Death Certificates (DC). A study conducted

in U.S. found errors in Atlanta, whereby about 47% of the in DCs ranging from omissions, incompleteness and incorrect information (Institute for Health Metrics and Evaluation, 2016). Maharjan, in an intensive care unit study, found that 78.4% of DCs had errors. This included errors in the terminology, serialization, or completeness of the CoD statement (World Bank, 2016).

The visual structure of a business process map makes it easier to understand the process without having to read (and try to comprehend) a long, narrative description (Ministry of Home Affairs and Immigration, 2014). Business process mapping helps with improving and re-engineering of the system. It is easy to understand a documented process and analyzing it improve its efficiency (Namibia Statistics Agency, 2014). Recommended analyses are necessary for the evaluation of national mortality data in developing countries to determine their utility and to guide efforts to improve their value for guiding policy (Alipour & Payandeh, 2020).

Health Information System (HIS) ideally collects data from all government health facilities, and generate information for planning, implementing and evaluating policies, strategies and programs (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020). Health workers are the primary generators of data from which health information is processed (Namibia Mortality and Causes of Death, 2020). Therefore, they need to understand the methods, techniques, and standards that govern the collection, compilation, analysis and interpretation of health information. By so doing, they are better able to appreciate the quality of data that is collected and thus, its usefulness and value in planning, managing and evaluating health programs and services (Namibia Inter-Censal Demographic Survey, 2016). Such achievement can be by means of identifying the strengths and

weaknesses in the current systems and draw important lessons from the analysis (Namibia Statistics Agency, 2014).

2.4 Namibian context of country needs and improvement of death registration

CR is under the MHAISS however; other ministries are involved in the process of death notification for registration. The MoHSS records and notify deaths that occurred in public health facilities, whereas the Forensic Pathology Unit of NamPol notify death and ascertain causes of death for unnatural deaths (Rogena et al., 2020).

Captured death records are across different agencies where transmission of records from one domain to the other may pose challenges between ministries and their various departments involved in the documentation process (Namibia Inter-Censal Demographic Survey, 2016). Namibia once undertaken a four months' comprehensive assessment of the CRVS systems within the country in the year 2014. The conducted assessment was under the joint leadership of the MHAISS and NSA. Key participating institutions in support of the initiative were the Ministry of Health and Social Services (MoHSS) and the Ministry of Safety and Security (MSS). The comprehensive assessment among others looked at the interface of the civil registration systems with the generation of vital statistics and the interrelationship with MoHSS, MHAISS and other agencies of the government such as NSA. Relevant stakeholders came up with a multi-sectoral strategic plan for the Civil Registration and Vital Statistics (CRVS) System in Namibia.

Improvement of the National Population Registration System (NPRS) by reviewing of the bottlenecks in the registration process of the vital events in order to identify gaps. A key element in the DC is the cause of death (CoD) statement that consists of words indicating the underlying CoD and other significant conditions or diseases present that may have contributed to death. The WHO International Classification of Diseases and related health

problems, Version 10 (ICD-10) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics, hence it is a useful tool in writing CoD statements (World Bank, 2019). The ICD-10 also provides a format for reporting CoD on the DC. Translated reported conditions are into medical codes through use of a classification structure according to the selection and modification rules contained in the ICD. The ICD coding rules improve the usefulness of mortality statistics by giving preference to certain categories of causes, by consolidating conditions, and by systematically selecting a single CoD from a reported sequence of conditions.

The Underlying Cause of Death (UCoD) is a single selected cause of death (World Bank, 2016). An Immediate CoD (ICoD) usually precedes the UCoD. Other Significant Causes (OSC) are the non-underlying CoDs, but may contribute to mortality. The combination of underlying and non-underlying causes forms the multiple CoDs.

In determining the ICoD and UCoD, physicians use the principle of Occam's razor, to select the simplest explanation that could give rise to the observations. Although physicians do often utilize these guidelines for CoD statements, they are widely available, in the filling of Death Certificates (DCs). In Kenya, as in most low- and medium-income countries, medical doctors at various levels of training and experience do death notification. Whilst in Namibia certification of death is either by junior doctors, mainly interns, clinical officers and few medical officers. Only conducted postmortems lead to pathologists to certify fewer deaths. The entered information on e-Death Notification System and completing of form (D1). The informant takes the given copy along to the deaths registrar (the MHAISS's offices).

2.5 Summary

The MHAISS officials who subsequently abstract the information from these notification forms are non-medical personnel, and therefore require that CoD statements be clear to

support proper abstraction. The abstracted CoD statements are use into generating DCs that and for the purposes of generating vital statistics. Poor quality CoD statements therefore may have financial, medico-legal, and policy implications. The quality of CoD statements may vary by age group. The elderly, for example, may have the most errors because of multiple natural diseases or co-morbidities such as cerebrovascular, cardiovascular or neurologic disease and/or dementia. In ascertaining CoD, some of these causes might be overlooked hence the dictum that "the elderly die with their disease and not of their disease".

In addition, death certificates for the elderly often list other conditions such as pathological fractures that may be mistaken as an UCoD (13). Increasing demand for better quality data and more investment to strengthen civil registration and vital statistics (CRVS) systems will require increased emphasis on objective, comparable, cost-effective monitoring and assessment methods to measure progress (World Bank, 2019).

CHAPTER 3: RESEARCH METHODS

3.1 Introduction

The researcher conducted secondary data review of death and causes of death on E-death Notification System (electronic database). Verified electronic platform information against the mortuary death register, Diseased Patient Files and post-mortem of individual level records. Assessed and conducted document inspection of both paper based records and electronic version to verify the E-Notification System data sets. In order to ascertain the state of agreements in the documentation process and the integrations of the death reporting system. The researcher conducted review of selected registered deaths from the period of June 2018 to July 2020 for verification purpose to augment the qualitative data obtained from the Key-Informant Interviews.

3.2 Research design

The study project employed a Case Study methodology involving an exploratory mixed method whereby the qualitative part provided descriptive account of the death notification and registration processes between two government agencies. The unit of measurement is the multifaceted capturing systems of death event, by the MoHSS and Forensic Pathology Unit of the MHAISS. The quantitative part of the study reviewed and cross-sectional analyzed the variable data element of the randomly selected notified and registered death event.

3.2 Study Population

The obvious and convenient targeted study population formed part of the Key-informant Interview. The present consented and experienced Health Workers (Nurses, Doctors and Mortuary Assistant); Police Officers from the Forensic Pathology Unit Official within Rundu District who works with processing of death events were all recruited in the study.

Hence, the study involved various players within multiple responsible Departments (entities) of MoHSS, Forensic Pathology Unit and Civil Registration. The assessment of the processes of the system by interviewing involved staff as Key-Informants. The study frame of the study was individual level records of notified death events retrieved from existing E-death Notification system shared by institutions involved in death notification and registration processes.

3.3 Sampling

The researcher employed simple random selection method to select individual records of notified and registered death between the periods of June 2018 to July 2020. The sample size determination considered in the study was a thirty percentage (30 %) of all the fully notified and registered death events for the period under review. However, the researcher also used a purposive non-probability sampling method to recruit Key-informants who met the preset requirement for the Key-Informant interviews purpose.

3.4 Research instruments

The study used a semi structured interview guide as form of an aid-memoir (checklist) for administering Key-Informant Interviews to consented officials. The research instrument consisted of probing questions for Health Care Workers (HCWs), Forensic Pathology Unit officials and Civil Registration officials. Interview guide consisted of specific questions to unfold the processes and determine the agreements or integration of the two-pronged system

of capturing, documenting, notification and registering of death and causes of death. The review of secondary data retrieved upon reviewing and verifying individual entries (from end to end) by means of extracting captured data from the e-Notification System platform.

3.5 Data Collection Procedures

The researcher visited workstations of involved stakeholders' or departments such as: civil registration offices, Health Facilities, Forensic Pathology Units and mortuaries. The researcher observed the process, inspected documents and conducted Key-informant Interviews on the processes of death registration. Reviewed captured notified and analyzed electronic data on the E-death Notification System platform by logging in the system and assessed the completed deaths and causes of death.

3.6 Data analysis

The electronic database have features and capacity to run aggregated and summary data outputs reports for specific data sets. It formed part of the information flow assessment that established the quality of data sets captured at each stage from entry point (interface) in terms completeness, signed off, accurately captured, verified and notified (transmission of captured information). The researcher applied a composite index known as the vital statistics performance index (VSPI) to assess the performance of Civil Registration (CR) system at six (6) CR points or stations within Rundu district. The reviewed data was for the entries made between the periods of 01 June 2018 to 01 July 2020. The Vital Statistics Performance Index was used to determine various components such as Completeness of reported death; Quality of data of each reported death; Level of cause-specific details; Internal consistency; Quality of age and sex of the deceased, timeliness of data availability, the accuracy and utility of data and other monitoring and evaluation indicators of the CRVS. Factors that may influence the Vital Statistics Performance Index such as work force, procedures, equipment, environment

indicators, material, technology and electronics were qualitatively determined. Augmentation of the conducted individual entry-level analysis with the qualitative information from Key-Informant Interviews. Thematically analyzed Key-Informant Interviews, which was to complement the quantitative findings.

3.7 Research Ethics

The researcher obtained permission to conduct the study from the University of Namibia's Human Subject Research Ethical Committee (HREC). The researcher received the following ethical clearance reference number: OSHAC/578/2020, dated 6 August 2020. He sought another ethical clearance certificate was from the Ministry of Health and Social Services. To ensure confidentiality, names, addresses, ID numbers, or any other means by which a record could be easily identify an individual were not featured in this report. The study considered the follow all ethical principles:

3.7.1 Ensured the Principle of Autonomy by making use of verbal informed consent, which could be permit, the research to interview the Key-Informant as a requirement for all participants. The researcher explained purpose of the study to the study participants before they could agree or disagree to participate in the study. Respecting of the rights and dignity of the study subjects throughout the research period. Informed that participation in the study was voluntary and the participants were that they could withdraw from the study any time without any penalty.

3.7.2 Ensured principle of Non-Maleficence by making sure that no study participants could undergo any procedures, which may cause physical, emotional, psychological, social, economic and/or legal harm or discomfort to them. No use of names were on the data collection tools. Assured confidentiality of data collected by means of anonymity. Deceased's

particulars were detached at the end of the study period and no specific details was or will be published or recorded.

3.7.3 Ensured the principle of Beneficence was by means of informing and recommending effective turn around strategies and business process re-engineering. Provision of evidence based information to inform health care interventions, planners, program managers and critical decision makers on death data capturing, processing, documentation and reporting.

The study sought to improve the state of agreement between stakeholders dealing with death registration data to aid the enhancement of services delivery. The study helped to reduce discrepancies between the two-pronged system (Health Information System and Civil Registration system).

3.7.4 Ensured Principle of Justice was by enrolling substantive Health Care Workers from Health Facilities with Medical Officer, Civil Registration Officials and Forensic Pathology Unit in Rundu district were having an equal opportunity to in the study. Recruited all substantive officials' from MHAISS that are dealing with processing, documentation and reporting of deaths and causes of death were eligible to be as informants.

3.8 Summary

The achievement of research objectives upon reviewing randomly selected past records of secondary data from E-death Notification System databases (individual level entries between the month of June 2018 and July 2020). Individual level records consisted of notified and registered death as well as their causes. The researcher analyzed both streams of collected data sets by means of end-to-end business processes mapping. Therefore, the researcher reviewed individual level records of death from the point of notification to the point of a

successful death registration by Civil Registration official and issuing of the Death Certificate. The study-generated information obtained from interviews formed part of qualitative data, hence end-to-end business process analysis and mapping them. Analyzed quantitative data based on individual record level based on information entered then aggregated at a later stage.

The quality of vital statistics was determined according to quality assessment components namely: completeness, correctness or accuracy, and timeliness availability.

CHAPTER 4: RESULTS

4.1 Introduction

The researcher assessed and reviewed the death registration operation, management of the notification system, the institutional interface of the e-death notification with the civil registration system and the generation of vital statistics. The interrelationship of the health system with the other departments of the government Ministry. This chapter presented major findings of the study are in two parts or sections below (quantitative and qualitative segment).

4.2 Quantitative Findings

Table 4.2. 1 Summary of indicators of countrywide death registered, June 2018 - July 2020

Indicators	June 2018 – June 2019	July 2019 - July 2020	Total
Males	10 431 (54.18%)	10 091 (54.70%)	20 522
Females	8 815 (4579%)	8 352 (45.27%)	17 167
Death Completeness Rate (%)	74	76	150
Registered within 14 days (%)	91.8	95.9	187
Registered within 12 months (%)	99.1	99.9	200
Crude Death Rate (CDR) per 1,000 population	8.3	7.8	16
Adult mortality rate per 1,000 population	3	3	6
Under 5 (Child) Mortality Rate per 1,000 live births	58.8	57.7	116
Infant Mortality Rate per 1,000 live births	44.6	44.7	89
Neonatal mortality rate per 1,000 live births	28.5	27.5	56

Number of Stillbirths	737	685	1 422
Number of Maternal deaths	56	48	104
Number of Ill-defined causes of deaths	4 824	4 931	9 755
Ill-defined cause of deaths (%)	25.1	26.7	51
Total deaths occurred in the country	**19 254**	**18 448**	**37 702**

4.2.1 Death registration completeness: calculated death completeness rate is a percentage of registered deaths within the year of occurrence out of the estimated number of deaths in the same year of occurrence and is as follow:

$$(1) \quad Death\ completeness\ rate = \frac{Number\ of\ registered\ deaths\ within\ the\ year\ of\ occurence}{Projected\ deaths\ in\ a\ year} \times 100$$

Table 4.2. 2 Death completeness rates by year in Rundu District, June 2018 – July 2020

Time of the Year by months	Deaths registered	Completed Death events	Death completeness rate
June 2018 – June 2019	1 318	975	74.0 %
July 2019 – July 2020	1 359	1 032	76.0 %
Total	2 677	2008	75.0 %

As observed in the above Table 2, it shows that the completeness rate has improved with 2 % from 74 percent in June 2018 to 76 percent in July 2020.

4.2.2 Registration Timeliness: Reviewed death records shows that the deaths registered within 14 days increased from 91.8 percent in the cycle of June 2018 - June 2019 to 95 percent in the cycle of July 2019 – July 2020. This is also similar with the death registered within 12 months which increased from 99.1 percent in the cycle of June 2018 – June 2019 percent to 99.9 percent in the cycle of July 2019 – July 2020.

4.3.3 Consistency and Accuracy of Cause of death data: There was 2,523 (13.1%) of (19,254) errors in the cycle of June 2018 – June 2019 data set and 2,241 (12.1%) of (18,448)

errors in the cycle of June 2019 – June 2020 data set. Most errors were those on the "codes not to be used for underlying cause of death" (64.1% and 62.1%) and "cause of death implausible for age" (33.1% and 35.0%).

Table 4.2. 3 Ill-defined CoD by ICD-10 in Rundu District, June 2018 – July 2020

Ill-defined Causes of Death as per ICD-10 classification	June 2018 – June 2019		July 2019 – July 2020	
	Number	Percent	Number	Percent
Diseases of circulatory system	1,900	39.4	2,057	41.7
Symptoms, signs etc….	1,424	29.5	1,471	29.8
Diseases of genitourinary system	584	12.1	502	10.2
Infectious and parasitic diseases	315	6.5	343	7.0
Diseases of respiratory system	247	5.1	244	4.9
Diseases of digestive system	130	2.7	99	2.0
Endocrine, nutritional, metabolic etc…	107	2.2	94	1.9
Neoplasms	81	1.7	67	1.4
External causes of morbidity and mortality	33	0.7	50	1.0
Diseases of blood	3	0.1	4	0.1
Perinatal conditions	-	-	-	-
Total of ill-defined	**4 824**	**100.0**	**4 931**	**100.0**

The above table 3 shows that diseases of circulatory system recorded the highest percentage of ill-defined cause of death for both years, 39.4 percent between June 2018 and June 2019 then 41.7 percent between July 2019 and July 2020 cycle respectively.

4.2.4 Age and sex Mortality Patterns

Table 4 below shows that there were more deaths in the cycle of June 2018 – June 2019 compared to July 2019 – July 2020. Deaths by the elderly of 60 years and above account for 36 percent of the deaths. That is contrary to a high numbers of infant deaths, which usually indicates poor maternal health status of a country.

Table 4.2. 4 Distribution of deaths by age and sex, in Rundu district, June 2018 - July 2020

Age group	June 2018 – June 2019				July 2019 – July 2020			
	Total	Female	Male	Unknown	Total	Female	Male	Unknown
0 Day	1 182	533	641	8	1 063	482	577	4
1 – 6 Days	477	219	258		518	214	304	
7 – 27 Days	316	150	166		334	165	169	
28 – 365 Days	1 115	578	537		1 200	570	630	
0 year	3 090	1 480	1 602	8	3 115	1 431	1 680	4
1 – 4	988	471	517		906	443	463	
5 – 9	231	99	132		232	111	121	
10 – 14	196	93	103		167	76	91	
15 – 19	287	132	155		281	110	171	
20 – 24	586	239	347		519	207	312	
25 – 29	753	299	454		767	293	474	
30 – 34	1 031	436	595		841	355	486	
35 – 39	1 088	401	687		993	418	575	
40- 44	1 132	436	696		1 014	414	600	
45 – 49	1 018	406	612		978	379	599	
50 – 54	925	371	554		935	351	584	
55 – 59	968	411	557		871	374	497	
60 – 64	979	400	579		887	359	528	
65 – 69	989	447	542		1 023	422	601	
70 – 74	933	408	525		995	411	584	

75 – 79	990	458	532		938	440	498	
80 – 84	904	443	461		818	386	432	
85 – 89	775	470	305		786	449	337	
90 – 94	488	324	164		470	305	165	
95+	889	586	303		905	616	289	
Unknown Age	14	5	9		7	2	4	1
Total	**19 254**	**8 815**	**10 431**	**8**	**18 448**	**8 352**	**10 091**	**5**

4.2.5 Data Quality in Medical Certification of Causes of Death (MCCD)

Identified errors related to certification of death were as follows:

- MCCD forms are not in line with standard WHO form.

- Doctors' not recording cause of death according to International Classification of Diseases version 10.

- Spelling errors introduced during data entry in the electronic National Population Register System (eNPRS).

Table 4.2. 5 Distribution of errors by types in Rundu District, June 2018 – July 2020.

Time of the year	June 2018 - June 2019		July 2019 - July 2020	
Error type	**Number**	**Percent**	**Number**	**Percent**
CoD codes are not in the ICD10 listed codes	43	1.7	46	2.1
CoD implausible for sex	26	1.0	20	0.9
Cause of death implausible for age	836	33.1	784	35.0
CoD code not used for underlying cause of death	1 618	64.1	1 391	62.1
Total Errors	**2 523**	**100**	**2 241**	**100**

Detected cases of conditions that are unlikely to cause a death were present in all the data sets as illustrated in the above table 5. It shows that 2523 out of 4,824 (52 %) ill-defined causes
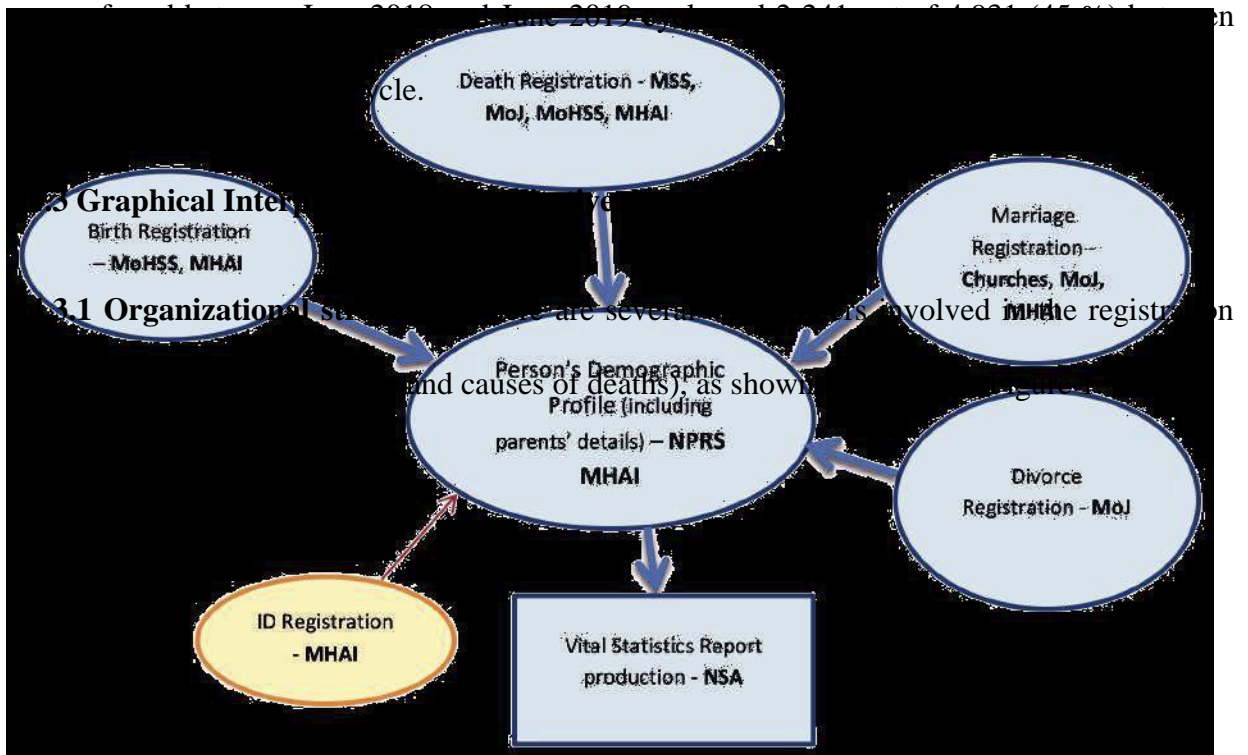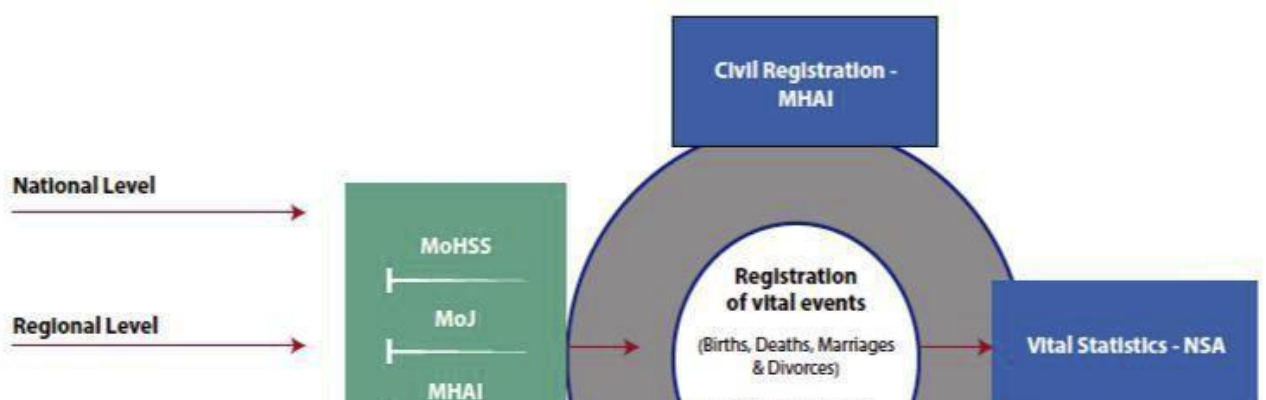

...for old...................June 2018 and June 2019 cycle, and 2,241 out of 4,931 (45.%) ....en

cle.

3 Graphical Inter...e

3.1 Organizational st................... are severa..............is involved in the registration

...................and causes of deaths), as shown.................................gure

Figure in ovals:
- Birth Registration – MoHSS, MHAI
- Death Registration - MSS, MoJ, MoHSS, MHAI
- Marriage Registration – Churches, MoJ, MHAI
- Divorce Registration - MoJ
- Person's Demographic Profile (including parents' details) – NPRS MHAI
- ID Registration - MHAI
- Vital Statistics Report production - NSA

Figure 4.3. 1 Structural and Functionality of Namibian NPRS

4.3.2 Civil Registration data flow: The diagram in Figure 2 illustrates the process flow for civil registration and vital statistics as well as key role players in the registration of vital events.
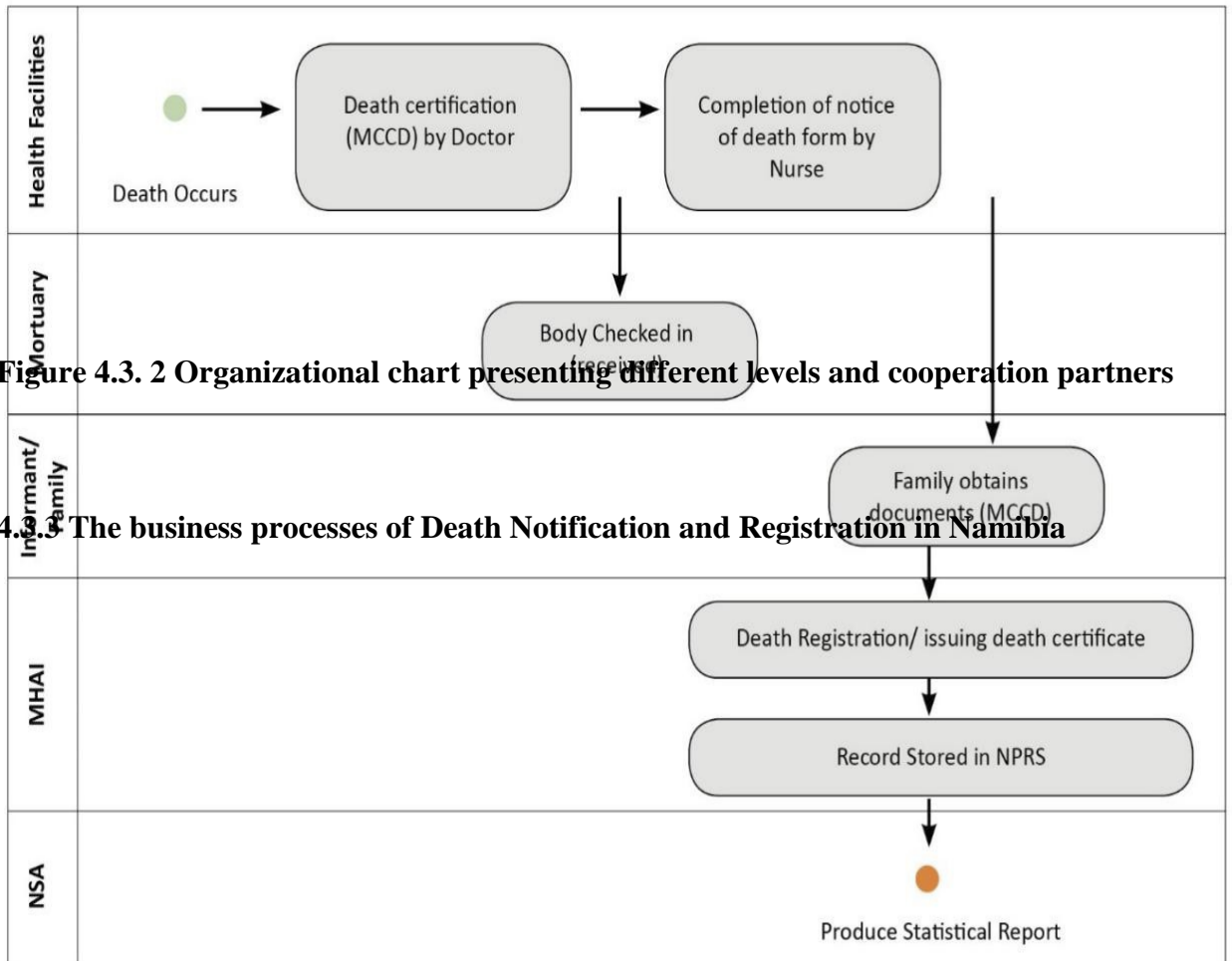

Labels in second figure:
- Civil Registration - MHAI
- National Level
- Regional Level
- MoHSS
- MoJ
- MHAI
- Registration of vital events (Births, Deaths, Marriages & Divorces)
- Vital Statistics - NSA

Figure 4.3. 2 Organizational chart presenting different levels and cooperation partners

4.3.3 The business processes of Death Notification and Registration in Namibia

Figure 4.3. 3 Certification and Registration for deaths occurring in Health Facility

The process in Figure 3 depicts a diagram flow for deaths that occur in a Health Facility (HF), as explained in the following steps:

Step 0: Death occurs in HF or Certified in HF (Dead on Arrivals/ Dead upon Arrivals) as part of night census.

Step 1: a Doctor certifies the death, adds the cause of death on the patient admission file, and completes an electronic Medical Certificate of Cause of Death (MCCD) on e-Death Notification System platform.

Step 2: Ward nurse completes the notice of death form and the in-patient department register book to indicate that a death occurred. Concurrently the Patient Core module of the e-Death is completed Step to initiate the death notification process.

Step 3: Body moved to mortuary together with a copy of the notice of death form and a body Identity Document (ID) tag. Completed the concurrently Body Movement section of the Navigate Part module on the e-Death platform to indicate the chain of custody.

Step 4: At mortuary, completed death registration book is by hospital mortuary assistant. Informant or Family members positively identify the body in position with national documents if death occurs in their absence.

Step 5: Family takes the completed notice of death paper with a unique death notification code to MHAISS to obtain a death certificate. The automated (system generated) unique death notification code guide the CR officials to retrieve the individual electronic file of the deceased on e-Death platform by linking to the details/data already entered by HCWs at the HF where the death occurred or certified. Step 6: MHAISS registers death by approving or accepting the death notification electronically notified by HCWs and issues death certificate. Record stored in NPRS Step 7: NPRS Data are manually transferred/transmitted by stored in external hard - drive and sent to or collected by NSA for production of statistics

4.3.4 Certification and Registration for deaths occurring outside the Health Facility as shown in the following Figure 4.
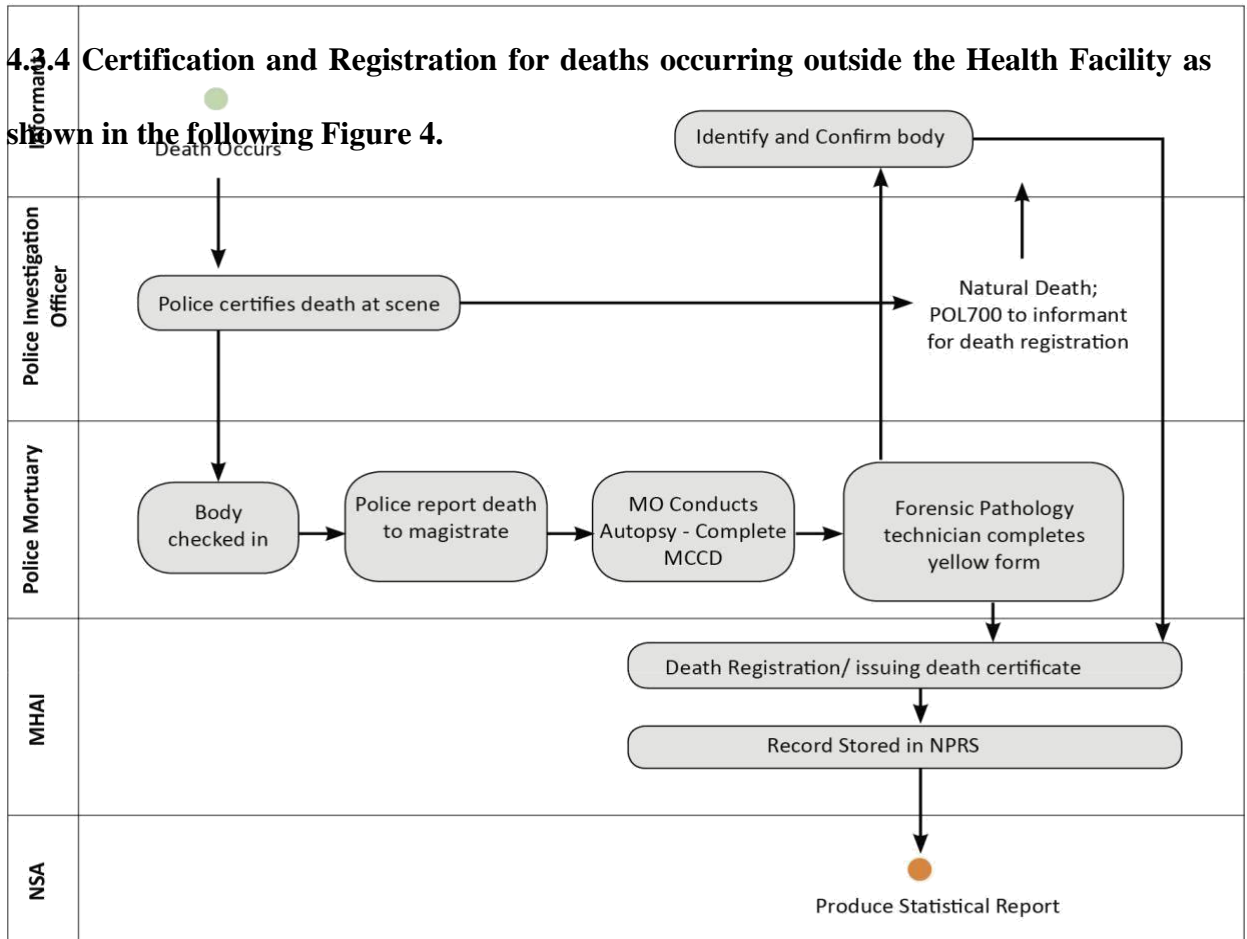

Figure 4.3. 4 Certification and Registration for deaths occurring outside Health Facility

The process in Figure 4 depicts a diagram flow for deaths that occurred outside a

Health Facility (HF), and exemplifies the following steps:

Step 0: Death occurs anywhere outside the HF.

Step 1: Informant calls nearest police station (for a scene of crime investigation).

Step 2: Police (Investigation officer) investigates circumstance surround the death and certifies loss of life on the bases of no signs of living or obvious death as a results of medico-legal hazards. In case of a natural death, the family may receive a Death Notification Letter with Pol700. Take Pol 700 to MHAISS to obtain a death certificate.

Forensic Pathology Unit Officials make a new entry in the e-Death Notification platform in order to obtain the Unique Death Notification Code. Also known as Death Reference or Death Notification Number on the Death Notification Letter.

Step 3: Forensic pathology technician receives the body both physically and electronically on the e-Death Notification System (to indicate the Body Movement), completes Pol28 (report accompanying body sent for post-mortem) and Pol67 (Government Mortuary Receipt of Body and Property), transports body to mortuary and completes death register (Pol26).

Step 4: Police reports death to Magistrate (Ministry of Justice) and requests for approval from magistrate to conduct the autopsy by completing Pol58.

Step 5: After approval from Magistrate (Ministry of Justice), the Medical officer conducts Autopsy to determine cause of death and complete Pol29 (certificate of examination on causes of death) then complete the electronic MCCD by entering the CoD on the e-Death platform.

Step 6: Forensic pathology technician completes the yellow form and attach to Pol29.

Step 7: Informant identifies and confirms the body and completes Pol51 and obtains Pol29 and yellow form to register the death at MHAISS.

Step 8: MHAISS Officials registers the death and issues a death certificate and burial order as well as monitor Death record stored in NPRS, ready to transfer to NSA for reporting purposes.

Step 9: NPRS Data collected or sent to NSA for statistics production

4.3.5 Link between Civil Registration, Civil Identification and Vital Statistics
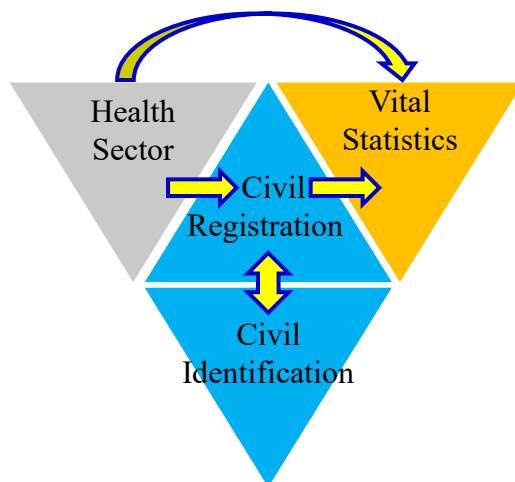
Figure 4.3. 5 Interrelationships between various sectors of the government

4.3.6 Vital Statistics Report Production and Dissemination Process

The processing, analysis and publishing of the Vital Statistics (VS) report by the Namibia Statistics Agency. Figure 6 below is illustrate the process flow for the production of vital statistics report.
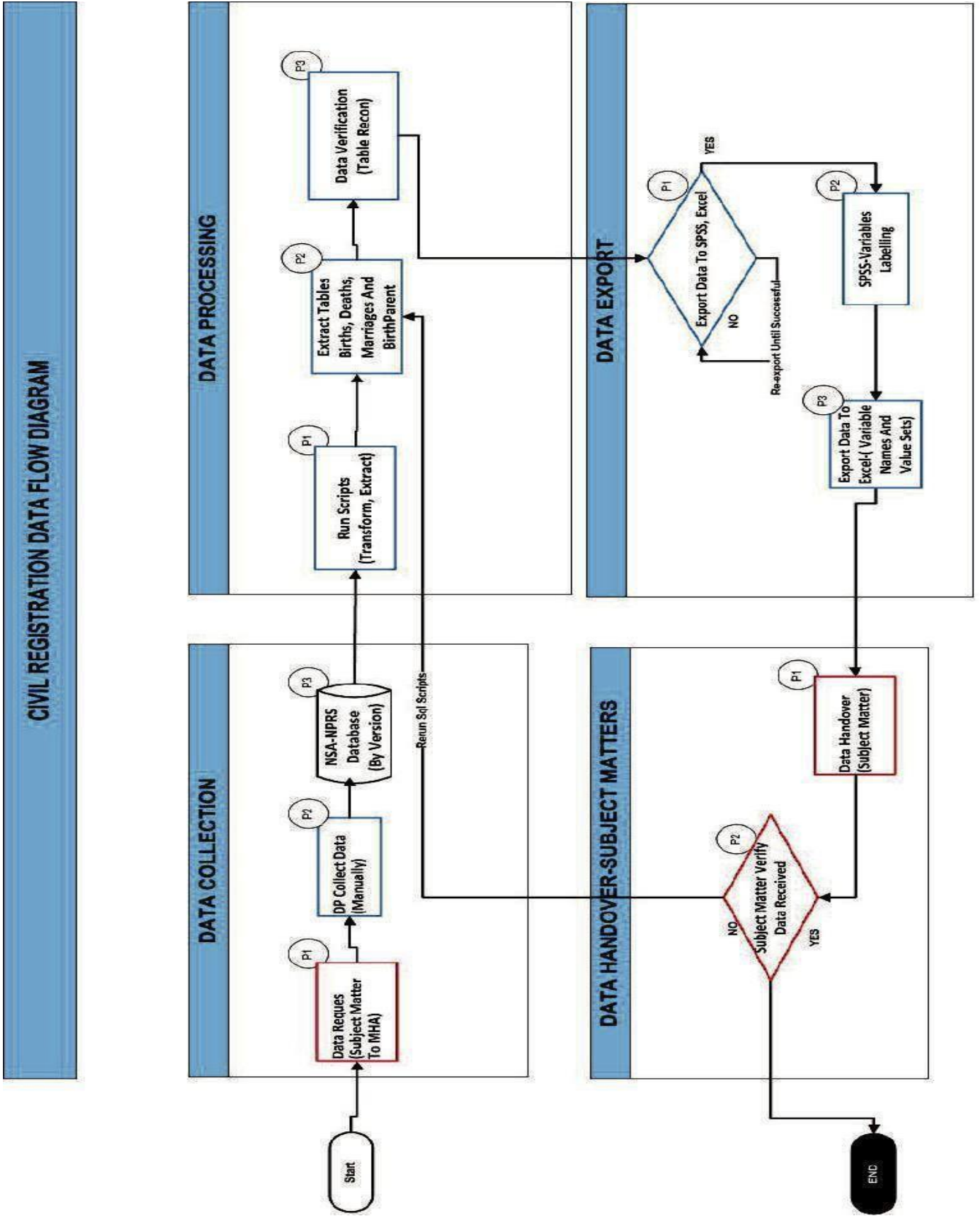
Figure 4.3. 6 Flow for processing of civil registration data to produce VS report

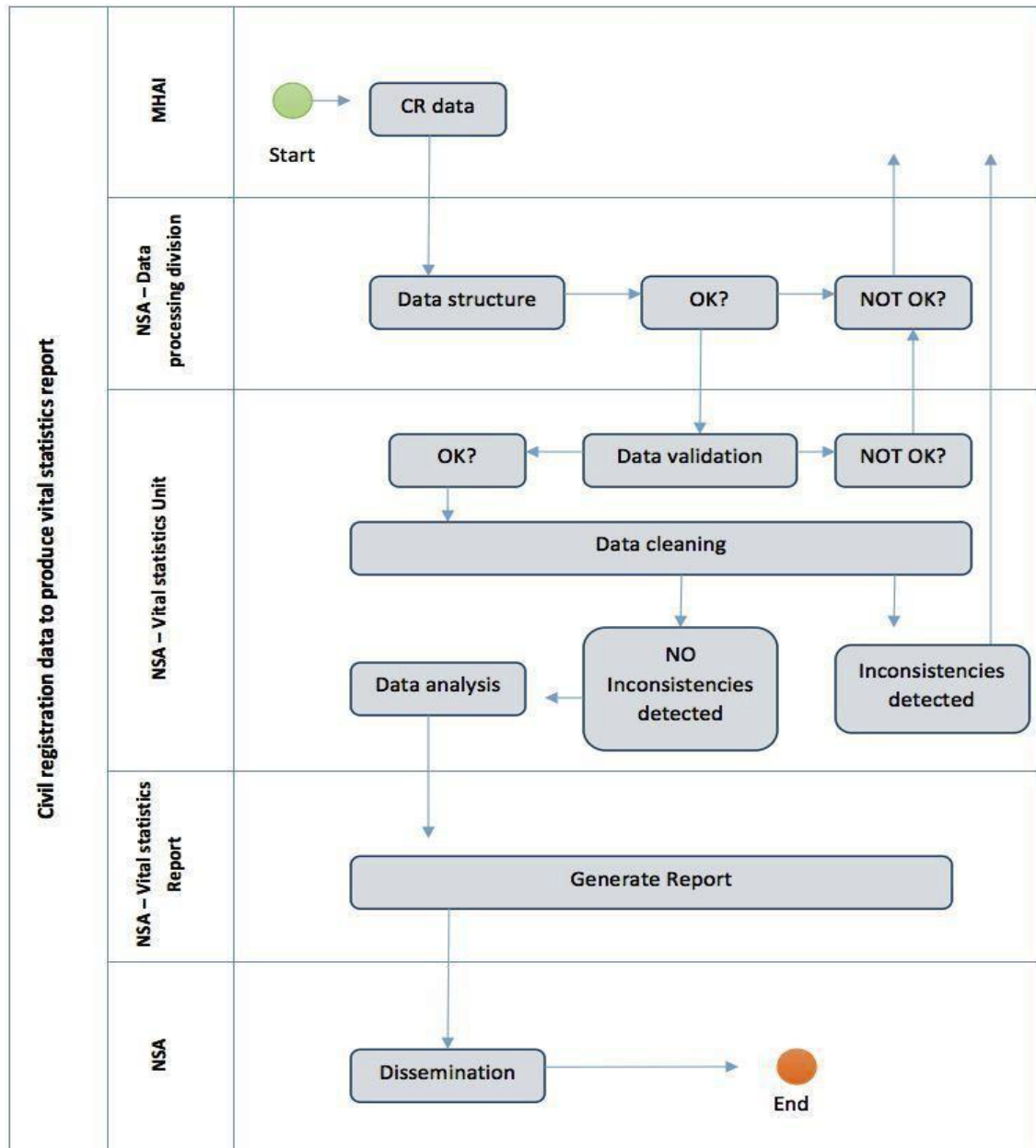**4.3.7 The Civil Registration (CR) data processing is as depicted by the Flow diagram in Figure 7.**

Figure 4.3. 7 Flow diagram for Civil Registration data processing

4.4 Outlined thematic qualitative findings of the study are as follow:

4.4.1 Outdated legislation frameworks:

There are specific Acts of Parliament that governs the registration of births and deaths in Namibia As amended the Birth, Marriage and Death Registration Act 81 of 1963sets out the legal framework for civil registration of births and deaths in Namibia. The production and dissemination of statistics in accordance with the Statistics Act No.9 of 2011. Civil Registration and identification legislation are in various laws, including Article 15 of the Constitution of the Republic of Namibia, on the right to a name from birth as well as the right to acquire nationality and Identification Act 21 of 1996. Mandatory death registration is also under the terms of the Births, Marriages and Deaths Registration Act 81 of 1963. Registrars or assistant registrars issue a death certificate.

4.4.2 Need for coordinated CRVS structures with strong leadership and Stakeholders:

The two leading CRVS stakeholders are the Ministry of Home Affairs, Immigration, Safety and Security (MHAISS) and the Namibia Statistics Agency (NSA). MHAISS Department of Vital Statistics (VS) has a role to ensure that data captured for VS meet international standards; share aggregate data with researchers; release CR data timely and regular basis; ensure that private health facilities periodically transmit their data. The coordination mechanism currently consists of the CRVS Steering Committee (SC) and Technical Working Group Committee (TWGC). A need to establish clear coordination structures to execute the strategy with clear roles and responsibilities and an M&E system. These structures need strong leadership and sponsorship.

4.4.3 Need for wider application of technology and Advocacy on the use of ICT:

The Office of the Prime Minister has designed electronic Birth and Death Notification and registration system and the new technology has been introduced by MHAISS and its offices, all CR points has been connected in Rundu District. Participants and quantitative data cited increased timely registration as opposed to the previously Namibia Population and Housing Census (NHPC) reports of 70 % death registered before the burials take places. MHAISS continued to work with the MoHSS to deliver messages on the importance of birth and death registration to expecting mothers at health facilities and during outreach programmes through churches and community leaders (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020).

4.4.4 Need for data verification by Monitoring and Evaluation (M&E):

There are no periodic audits of Civil Registration data by MHAISS, MoHSS and Forensic Pathology Unit of NamPol to ensure properly recording the causes of death are and in line with the latest International Classifications of Diseases (ICD11). MoHSS ensured that private practitioners are part of the HIS/CRVS system but unfortunately, HIS is still using an old version ICD10 while the E-Notification System is using ICD11. Meaning the two systems need to be on par for them to be able to feed each other or interoperable. The HIS also has a weakness of not working on a principle of timely event reporting system, as it reports death events and their causes either weekly or monthly as opposed to E-Notification System which is timely and event based.

4.4.5 Public ignorance, low awareness and unclear Death registrations processes:

Many villagers are unaware of the need for death registration, as many of them do not know the requirements, procedures and places for death registration. There could be various human, cultural, physical, economic barriers to CR but the distance and cost barriers to registration site is resolved by linking systems under ambit of e-governance. The interoperability of databases (e-Notification System with e-NPR) is addressing and strengthening services of hard-to-reach places in order to discourage late registration. Registration forms and processes (SOPs) are not standardized and clearly understood as different forms are in use in various sectors and there is insufficient coordination amongst MHAI, NamPol, MoHSS and the service seekers (public). There is a need to review the forms and processes and to map these processes clearly with systematic descriptions of the process of registering all vital events in guidelines or manuals.

4.4.6 Poorly equipped Civil Registration (CR) service points:

Civil Registration service points/offices are in short supply of computers and are often not well equipped with fast internet connectivity, with an effective network to allow online registration. There is a need for improved access to Civil Registration service points by means of new and better offices and regular mobile registration, in collaboration with MoHSS, MHAISS and others. There is a need to apply innovative technology and smart partnerships to cover the whole district. Factors such as hard-to-reach areas could delay registration process of deaths. Registration may take long for the deceased without any identification at time of death.

4.4.7 Late registrations of birth, non-registration of death and CoD reporting:

The percentage as well as timeliness of Birth and Death registration needs to be improved, addressing regional differences and various socio-cultural and physical restrictions. Supervision and quality assurance of registrations at local levels need improvement. CoD reporting is incomplete and unreliable. Using of different forms that are in use and no set standards and procedures to follow. Coding is not standardized and often misunderstood. Mortuary records are poor. There is poor integration between NamPol, MHAI and MoHSS. Supervision and quality assurance of reporting need improvement.

4.4.8 Need for an integrated, secured and maintained CR system / eNPRS:

Ideally, capturing of all death events should on eNPRS as soon they occur. In some instances, this is not the case due to challenges such as lack of infrastructure i.e. computers, internet connectivity at some registration offices in remote areas. Delayed capturing of records in the system. Need for capturing Birth, Death and CoD data into one integrated IT system that is secure and well maintained to ensure continuous functioning. Substantial historical records still need to be captured (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020). There is need to review the system functionalities need to include the required variables to generate Vital System. The system needs to link with producers (such as MHAISS and OPM) and users (such as MOHSS, Forensic Pathology Unit). Addressed interoperability with key stakeholders and considering of privacy issues. There is a need to access the eNPRS via satellite to ensure record verification.

4.4.9 Need for most efficient ways to collect other sources of Vital Statistics:

Currently NSA relies 100% on its own censuses and surveys for VS. With access to an improved NPRS, it could redesign its censuses and surveys for improved efficiency. A safe recommended and secured system is required to exchange the data from civil registration system. However, currently there is no data exchange infrastructure in place for the two institutions. The way of exchanging Civil Registration data is by using an external hard drive. Ideally, the department of CR under MHAISS should have a data entry and edit checks in the system for checking the quality of data during the data entry stage. However, there are very limited edit checks in the system. The Statistics office runs basic frequencies for each variable to check for errors in the data.

4.4.10 Summary

Manuals and guidelines were developed and distributed during the conduct of the training for Health Care Workers (HCW) including Medical Doctors, Nurses, Mortuary Assistants and Forensic Pathology Unit Officials, during the rolling-out of E-Notification System (Between 2017 and 2018). Linking systems to communicate with each other enhanced interoperability between MoHSS and NamPol system with eNPRS. As an established system where cadres notify the Civil Registration Department of MHAISS with regard to births and deaths. Existing ICT are often not functional or properly used as the efficiency levels need to improve. An online linked death notification system that uses the same platform as the e-birth notification system is with the eNPRS. This extends the death registration process to the MoHSS and to mortuaries.

It serve as the first official point of contact with the deceased to verify his or her identity electronically, classify the cause of death, and notify the MHAISS electronically of the death. Laws are not talking to each other regarding the CRVS and the production of vital statistics from civil registration Management. The current legislation guiding the registration process of vital events is outdated and unable to respond to the complexity of issues facing the society. There is a need to develop a new National Population Registration Bill (Namibia Inter-Censal Demographic Survey, 2016).

CHAPTER 5: DISCUSSION

5.1 Introduction

A well-functioning civil registration and vital statistics (CRVS) systems provide governments with reliable and up-to-date information about the number of births and deaths, and causes of death, in their populations, which enables them to deliver health and social development programmes more effectively (AbouZahr et al., 2015). However, many low-income and middle-income countries have registration systems that cover only part of the population, with no cause of death data for those dying outside hospitals and no routine compilation of data for analysis, dissemination and policy purposes (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2019). Although donors and development agencies have recognized the need for vital statistics to monitor the millennium development goals (MDGs), international support for improvement of CRVS has been underfunded and poorly assess national CRVS systems has hindered efforts to advocate and build more reliable CRVS systems (Alipour & Payandeh, 2020).

Although quality assurance should apply during all CR processes, quality control is essential to ensure quality and reliable data in the NPRS. Claimed shortage of staff and skills in MHAISS and MoHSS hampers services delivery, especially in the rural/remote areas hence a need for vital statistics for national planning and monitoring (AbouZahr et al., 2015). Analysis data takes place at the Namibian Statistics Agency (NSA) office. The law mandated NSA to produce official statistics in the country. Individual record level information on registered death and CoD are used.

As a result there is a need for continuous and quality data from MHAISS/NPRS to allow NSA to produce quality and timely vital statistics required by government, the private sector and other users for planning, Monitoring and Evaluation, etc.

5.1.1 Measurement of CRVS performance:

Methodological research suggests that the adequately measuring of performance of CRVS systems are by a single composite metric, the vital statistics performance index (VSPI) (Namibia Mortality and Causes of Death, 2020). The VSPI assesses CRVS performance through use of mortality data as a proxy for the quality and utility of all of the vital statistics produced by the civil registration system. This proposition is justified by the observation that birth registration levels are generally higher than death registration (Namibia health data, 2016). Computing of the VSPI using a continuous scale from zero to one for each calendar year report of vital statistics data since 2018. The dissemination of such reports are publicly available for a country. A generated value of one or close to one signifies that the data for that country in that year (country-year records) accurately represent the epidemiological profile of the population. They are fit for policy use, whereas a value of zero indicates that data are unrepresentative of the epidemiological profile in that population and thus are of little or no use for policy.

5.1.2 Description of the six VSPI components:

The VSPI metric comprises six components: completeness of death reporting, quality of death reporting, level of cause-specific detail, internal consistency, quality of age and sex reporting, and data availability or timeliness, each of which captures a different aspect of data accuracy or utility (Namibia Mortality and Causes of Death, 2020).

A key characteristic of the utility of all CRVS systems is the extent to which they cover the entire population and register all births and deaths. The generation of completeness estimate of the VSPI is by a combination of adult and child mortality estimates and the registered numbers of deaths. A frequently used measure of quality of cause of death reporting is the proportion of ill-defined deaths. The VSPI uses the broader concept of so-called garbage coding from the Global Burden of Disease (GBD) lexicon, with further classification of ill-defined codes into entirely meaningless (such as ill-defined causes) or somewhat meaningful (such as malignant neoplasm of unspecified site) (Rogena et al., 2020). There is a need to meet the needs of public health planners, a minimum level of detail of the cause of death list. The indicator measures the number of separate categories of cause of death reported compared with the GBD 2010 cause list of 192 individual categories (The World Bank, 2017). Another component of data quality assessed is internal consistency, namely, the extent to which reported causes are biologically plausible. Missing data for age and sex of the decedent (i.e. demographic characteristics) contribute to decreased data utility. Finally, an often-overlooked component of CRVS performance is public availability and timeliness of data. A weighted smoothing algorithm that emphasizes consistent and recent data availability over intermittent and untimely data captures this timeliness (Statistics Norway, 2017).

5.1.3 Completeness death reporting:

Complete registration has been achieved when any vital event that has occurred to the members of the population of a particular country (or area), within a specified time, has been registered in the system, i.e. there is a vital event registration record (UN Principles and Recommendations for a Vital Statistics System Rev 3, 2014).

5.1.4 Data sources:

The extraction of data for calculation of the VSPI score and the six quality components for each country were from the mortality database known as eNPRS. The eNPRS database is the most comprehensive database for human mortality assembled so far, and makes use of publicly available sources from E-Notification.

5.1.5 Contribution of data quality components (quality of death reporting):

Although the composite nature of the VSPI enables assessment of overall CRVS performance, the individual scores for each of the six components of the composite metric identify the major determinants of change or stagnation in the vital statistics output. For countries with weaker systems, improvement of registration completeness through interventions such as effective integration of community health workers in notification of vital events. Application of mobile phones and other related Information and Communication Technology (ICT) innovations that enable real-time tracking of vital events across the country. Hence, they are to be of higher priority than other improvement measures. Of the six quality components of the VSPI, implementation of measures to improve completeness is likely to be more complex and time-consuming than the technical interventions available to improve the scores of other components. For example, purposeful and strategic initiatives to train doctors in correct medical certification. Adoption of the international standard cause-of-death certificate, and use of more detailed cause-of-death lists to improve the policy relevance of CRVS data. They are all cost-effective interventions that countries can implement in a short period to improve the quality of cause-of-death statistics (as has been done in some countries).

More information about the individual contribution of specific quality components (registration completeness, cause-of-death data quality (garbage coding), demographic information about decedents, implausible diagnoses, and amount of cause of death detail). Phillips and colleagues find each country's VSPI score in their paper (Namibia Mortality and Causes of Death, 2020). Among countries with poor system performance (VSPI < 0.70), three components (registration completeness, cause of death detail, and data quality) account for much of the observed weakness, providing very clear policy guidance about priority interventions; only weaker systems (VSPI < 0.50) show evidence of incorrect reporting of sex or age of decedents or biologically implausible diagnoses.

5.1 6 Vital statistics system:

The Namibia Statistics Agency is the central statistical authority for the state and is located within the National Planning Commission for the Government of Namibia. As the civil registration, authorities have achieved almost universal birth and death registration coverage, the civil register has become a key contributor to the vital statistics system. Produced IT systems of the NSA and MHAISS have not yet been interconnected, which would allow for timely exchange of up-to-date CR data to ensure that vital statistics are for informed planning and decision-making. The MHAISS has worked closely with the NSA since 2014 to strengthen the CRVS system. This work culminated in the drafting of a five-year CRVS strategic plan that same year. Since 2015, the NSA has been working with the MHAISS and the Office of the Prime Minister and other key stakeholders began producing annual vital statistics reports from the

NPRS administrative records. Presented statistics are at the national and subnational (including office levels).

The disaggregation is by sex, age, etc. Use of the report findings to strengthen staff capacity at civil registration offices to minimize obvious errors.

5.1.7 Registration of vital events:

Mandatory death registration is under the terms of the Births, Marriages and Deaths Registration Act 81 of 1963 (Ministry of Home Affairs and Immigration, 2014). Registrars or assistant registrars issue a death certificate. A directly linked online death notification system that uses the same platform as the e-birth notification system is with the eNPRS. This extends the death registration process to the MoHSS and to mortuaries: it is the first official point of contact with the deceased to verify his or her identity electronically, classify the cause of death, and notify the MHAISS electronically of the death.

5.1.8 The population register:

Namibia's NPRS is comprehensive and interoperable. The created register is in conjunctions with section 2 of the Identification Act 21 of 1996, which provides for the compiling and maintaining of a population register for Namibia. The recorded register includes citizens and permanent residents. Section 3 of the Act lists the information to be in the NPRS: Birth details; Citizenship status and/or permanent residence; Identity document information and live status; revocation of ID cards; and any other information the Minister may prescribe by notice in the Government Gazette, including information about conditions, exceptions, or exemptions; and Death details. Interlinking Birth,

identity and death records in the NPRS with children and parents' records. That automatically update the marital status in the event of divorce or the death of one spouse.

This approach has built a family tree over time. The NPRS is inbuilt with the civil register at its core. Creation of every new identity in the system at birth by assigning unique identification numbers and adding biographical identity information when a birth is registered. It means that the digitized capturing eNPRS can function as designed only if civil registration birth and death records for the whole population are within a national database.

5.1.9 Digitization and Mobile technology application:

The completed digitizing of different business processes under the MHAISS's responsibility was holistically. Rather than developing separate systems for civil registration and civil identification, a single system integrates these two responsibilities: The National Population Registration System. It links different registers using a common profile and a unique identification number (UIN). Authorized staff can use e-notification systems on their mobile devices to notify about births and deaths. Issuing of all authorized system users with login credentials created by authorized administrators.

5.1.10 Types of deaths registration

5.1.10.1 Death occurring in health facilities:

A notification of death starts with the attending nurses upon positive identification of the body by an informant who should poses his/her identification card or birth certificate. deceased person's identification card or birth certificate; an electronic Medical

Certificate of the Causes of Death (MCCD) is completed by the attending or certifying Medical Officer and printed for issuing upon request by family members or informant. Body movement section of the e-Death Notification platform are completed by the Mortuary Assistant to illustrate the chain of custody of the body upon removal from the ward/casualty and any other subsequent body handing over or transfer (either to the family members, funeral undertakers or forensic pathology unit).

5.1.10.2 Death occurring outside health facility:

Letter from the headman/traditional authority; declaration from the police; identification card or birth certificate of both parents; if married a marriage certificate and if not, both parents should be present or the absent parent should provide a declaration from the police acknowledging parenthood. Namibian Police Specifically the Forensic Pathology Unit Notifies (unnatural death) deaths that occurred outside of HF or in the community upon completion of the process of determining the cause of death via a post-mortem conducted by a physician. The forensic pathology officials follow more less the same process as HCWs and uses the same e-Death Notification platform in addition to other additional required investigative paperwork. The post-mortem conducting Physician is responsible to complete the electronic MCCD. Ministry of Home Affairs, Immigration, Safety and Security registers all Death Events (Ministry of Home Affairs, Immigration, and Namibia Statistics Agency, 2015).

5.1.11 Civil Registration services at health facilities:

Based on the memorandum of understanding with the MoHSS, the MHAISS has installed computerized systems in hospitals to run the e-birth and e-death notification

software platform. This platform is for both birth and death notifications and registrations. The e-death notification system as a frontend application that is online and connect to the NPRS. The launching of E-death notification system at hospitals and sub-regional offices of the MHAISS. This approach ensures that software platforms for registering vital life events follow the same logic and platform design. Meanwhile, there is a systematic approach to developing digitized front-office registration platforms (Namibia Mortality and Causes of Death, 2020). The system allows the MoHSS and the mortuaries, which are the first official point of contact with the deceased's family, to verify identity electronically. The system also enables these authorities to classify causes of death and to notify the MHAISS electronically when a death has occurred. The rolling out of e-death registration system to all 14 regional offices, 23 hospital-based facilities, 18 sub-regional offices, and 11 police mortuaries.

5.1.12 Electronic Death Notification System:

The establishment of e-Death Notification System by the Office of the Prime Minister as a project under the Harambee Prosperity Plan and e-governance programme. Involved key stakeholders such as the Ministry of Home Affairs, Immigration, Safety and Security (NamPol), Ministry of Health and Social Services and the National Statistics Agency. The aim was to further and expand the service delivery capabilities of the digital civil registration and identification system that relates to the management of deaths. The e-Death Notification System extends the death registration process to the Ministry of Health and Social Services and NamPol mortuaries. Both two point of care serve as the first official point of contact with the deceased and electronically verify the identity of the deceased, classify the causes-of-death, before electronically notify the

Ministry of Home Affairs, Immigration, Safety and Security about the death that has occurred.

The integration of the e-Death Notification with the e-National Population Registration System significantly reduces the process of obtaining a death certificate by the family and allows for production of comprehensive vital and mortality statistics.

5.1.13 Causes of death:

Before the introduction of e-death notification system in 2018, the cause of death use to be recorded manually using a medical certificate of causes of death (MCCD) form. However, that specific form could not align with the World Health Organization standard. The medical doctor certifying a death was required to complete the MCCD form with the cause of death but was not required to do coding. In October 2018, Namibia introduced the e-death notification system that collects information about the death and causes of death with a revised MCCD form that follows World Health Organization standards (Namibia Inter-Censal Demographic Survey, 2016). The e-death notification system allows the medical doctors to notify a death electronically with an ICD-11 code (International Classification of Diseases and Related Health Problems, 11th revision) for the causes of death. The accessing of the notification system is readily available on any internet-connected device. Issuing of death certificates without cause of death is now possible since the introduction of e-death registration. A doctor or mortuary only upon request by family can issue the MCCD. Handling of natural deaths are at health facilities, while all unnatural deaths and deaths outside health facilities are handled at police mortuaries, where autopsies are carried out to determine the cause of

death. Namibia does not use verbal autopsy to determine cause of death for deaths in communities.

The development of e-death notification system feeds the e-NPRS system, and is 100 percent government owned. Namibia release its first cause of death report based on 2016 and 2017 civil registration data in the year 2020.

5.1.14 Legislative Framework:

Namibia has no comprehensive legislation on public information, electronic transactions, or data protection and privacy to allow for controlled digital data sharing. However, provisions for data protection and privacy is in another act of parliaments. Whereby the Identification Act 21 of 1996. Section 14 (AbouZahr at el., 2015) provides for secrecy of information found in the population register. The legislation for civil registration is currently under review. There is an awaiting of tabling of the new Civil Registration and Identification Bill in Parliament this year (2021).

5.1.15 Management, organization and operations:

The Department of Civil Registration, within the Ministry of Home Affairs, Immigration, Safety and Security (MHAISS), has two directorates: The Directorate of National Civil Registration is the regional arm. It is responsible for registering and issuing birth and death records and for enrolling identity. The Directorate of National Population Register, Identification, and Production is broadly responsible for producing identity (ID) cards and amending birth records. The Ministry still works with a few magistrate courts on the registration of births and deaths. However, over the past 15 years, the Ministry has opened more offices and taken over this responsibility.

The year 2008 and 2012 saw the opening of Hospital-based offices to make it easier for people to timely register births and death without any further delay (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, (2020).

5.1.16 National CRVS systems coordination mechanisms:

There have been notable stakeholder collaborations and partnerships on improving processes for birth and death registration and automating the vital events registers. This work is building the population register. Support also included delivering on the CRVS Comprehensive Assessment and a developing five-year strategic plan (1 April 2015 - 30 April 2020), among other things. The steering committee consists of executive directors of the relevant line ministries and heads of institutions: Ministry of Home Affairs, Immigration, Safety and Security (MHAISS); Namibia Statistics Agency (NSA); Ministry of Health and Social Services (MoHSS); Ministry of Justice and the Office of the Prime Minister. Cooperation between the MHAISS and the MoHSS has been instrumental in achieving high rates of birth and death registration and ensuring timely registration. These two ministries signed a memorandum of understanding in March 2019 that covers the operations of hospital-based facilities and e-birth and e-death notification systems. Cooperation extends beyond government partners because MHAISS has also rolled out the e-birth and e-death notification systems to private hospitals.

5.1.17 Administrative level registration points and accessibility of CR services:

Registered vital events with the MHAISS network of 55 offices across the country: 14 regional offices: 23 hospital-based facilities and 18 sub-regional offices. Most facilities are in urban centers, near hospitals or clinics.

People living in rural communities may need to travel as far as 100 km to the closest facility. The conducting of regular outreach program with mobile units to rural centers on a regular basis (Ministry of Home Affairs and Immigration, 2014).

5.1.18 Interface with other sectors and operations:

The sharing of NPRS data through the interoperability framework, managed by the Office of the Prime Minister, to enable electronically data sharing in future with other agencies when a legal framework is in place. Currently, in accordance with the Identification Act, MHAISS shares information with government offices, ministries, and agencies. There are linked systems to the NPRS: e-Birth and e-death notification system; Passport system and NPRS Web Service platform. The establishment of all this interlinks in the year 2018 as an external interface for identity validation and has the following functions: Exchanges master reference data between institutions and offices; Validates national ID credential data; and validates birth certificates (Alipour & Payandeh, 2020). The planned NPRS can support the online services that are under the Namibia e-Government project. The NPRS has the capability and potential for further links with functional registers within government and in the private sector.

5.1.19 Data Quality and Checking for errors in the database:

According to the United Nations Statistics Division (UNSD) (2014) based on principles and recommendations for Vital Statistics, "the quality of vital statistics is measured

according to four quality dimensions namely: completeness, correctness or accuracy, availability and timeliness".

It is thus, important that quality control measures be in place from the onset. Ideally, the department of civil registration under MHAISS should have data entry and edit checks in the system for checking the quality of data during the data entry stage. However, there are very limited edit checks in the system. The Statistics office runs basic frequencies for each variable to check for errors in the received data set (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020).

5.1.20 Consistency in data reporting:

Consistency measures whether or not data is equivalent across all systems (National Population Register System and HIS) i.e. the data reflects the same information and are in synch with each other across all institutions (MoHSS, Forensic Pathology Unit, CRVS). There are two dimensions of consistency in measuring data quality, namely internal and external consistency. The assessment of internal consistency refers to checking and ensuring that there are no outliers within the data. Conversely, external consistency refers to the comparability of the data with other different data sources, for example, results using causes of death data should be similar to results from a National Demographic Survey or other data sources such as Health Information System.

5.1.21 Accuracy in data reporting:

Achievement of accuracy of registration when data items for each vital event on the vital registration system are complete. In Rundu district, the accuracy of data depends on different role players involved in the death registration process. If there is no correct

records for causes of death data, it compromises the quality and reliability of estimates from such data.

Inaccurate recording of cause of death compromises the quality and reliability of estimates from such data. High proportion of ill-defined causes of death can d be due to poor medical certification of cause of death, poor coding of cause of death, age misreporting of deaths, or biasness in reporting certain diseases.

5.1.22 Data availability and timeliness:

Timeliness in registration means that every reported event that has occurred in the country (or area) is part of registration within the legally stipulated timeframe. In Namibia, timely registered death refers to a death that has been within 14 days from date of occurrence. However, an internationally standard timeframe for timely death registration is deaths registered within 12 months. The 12 months' timeframe is good for comparability with other countries; therefore, the report also used the 12 months' definition.

5.1.23 Summary

The local Civil Registration System mandatorily requires the Certificate of Cause of Death, duly issued by a medical doctor, in order to register a death prior to the disposal of a corpse (Centre of Excellence for Civil Registration and Vital Statistics (CRVS) Systems, 2020). There are three (3) elements, which are necessary for any country to have robust vital registration and statistics systems in place, which are adequate legislation for the vital registration and statistics system; Coordination of different elements of the system; and ensuring government priority for vital registration/statistics

system. All these elements are present in Mauritius. Several innovations brought in the civil registration and vital statistics systems (CRVS) during the last 25 years may no doubt make Mauritius a leader in the African Region.

Furthermore, the integration of CRVS and identity management systems will support the process of making Mauritius a High Income Country in the years to come.

5.2 Limitations of the study

- The existing inter-ministerial collaboration is only by means of a Memorandum of Understanding between the MoHSS and the MHAISS but it does not stipulate clear business processes and protocols for each ministry.

- Unavailability of coherency diversified internal systems and time constraint negatively affected the quality aspect of the study outcomes.

- The coverage of Forensic Pathological Unit and their serviceable facilities were limited and lack of awareness coupled with acquaintance with the overall Notification system.

- Private hospitals without mortuaries and local undertaker coordination lack capacity on the determination of the ICD-10 compliant MCCD.

5.3 Delimitation of the study

- Treatment of incomplete data as missing values and reported the level of data quality was as it unfolds.

- The researcher used dataset for the period of 2018 to 2021 in order to have comparative analysis for this report.

- State of agreement in documentation, processes and reporting system was determined as it appeared.

- Handling of bureaucracy in accessing data was by going through the most senior officials.

5.4 CONCLUSION

Namibia has a sound nationwide administrative and decentralized institutional framework in place in regional offices, health facilities and police offices. This framework brings services to the people, enabling efficient civil registrations. It has successfully completed the third phase of the rollout program of the country's e-birth and e-death notification systems. Strong government leadership on the value of strong systems further reinforces Namibia's civil registration system. This led to the country building an interoperable electronic National Population Register System (NPRS). The country has achieved improved customer service and efficient service delivery by restructuring its CR management business processes. Although there are untimely registered new-borne children, a complete birth registration is a critical base preceding the death notification linked to the NPRS.

Death registration allows for timely updates on the live status of individuals, which promotes good data integrity. Complete registration death and causes of death is critical for updating the living status of individuals and completing personal profiles on NPRS. The NPRS is a solid infrastructure that is ready to take on linkages with functional registers as required, both within government and with registers in the private sector. The reports provides vital statistics and evaluate the quality and completeness of civil

registration data. The usage of data quality issues is to inform the introduction of edit and controls in the NPRS system to improve the data quality.

5.5 RECOMMENDATIONS

i)   Implementation of built-in data validation checks in the e-death system should considered by the system designer (Office of the Prime Minister) to minimize data entry errors.

ii)   Conducting regular quality review by stakeholders (MHAISS, MoHSS and NSA) of the mortality and cause of death data.

iii)   The system designer should consider to include the variable "place of usual residence" to link mortality to usual residence for accurate measuring of geographic variations as opposed to birthplace and place of death.

iv)   The system designer to look into the additional information that should be a requirement for any unknown value in the data set.

v)   The legislature or policy makes should strengthen the existing policies and develop new strategies to improve the CRVS system including causes of deaths in Namibia.

vi)   Forensic Pathology Service and Health Facilities (MoHSS and MHAISS) should build common understanding on the tools, strategies, and processes for strengthening death registration systems.

vii)   Key stakeholders should initiate the development of a practical roadmap for country-level implementation, and rollout of standard ICD-compliant death reporting, Medical Certification and Postmortem.

viii) Key stakeholders (MHAISS, MoHSS and NSA) should build common understanding about approaches towards sustainable and harmonized systems, including strengthening linkages between the health sector and civil registration on death reporting, medical certification of cause of death and Postmortem.

ix) Key stakeholders (MHAISS, MoHSS and NSA) should enhance mentorship, cross-country learning and knowledge sharing on death registration system strengthening experiences.

x) Key stakeholders (MHAISS, MoHSS and NSA) should align with international standards; fast tracking draft national legislation; fixing of loop holes and ban registration of births without names (notification of birth at health facilities).

xi) MoHSS should strengthen the standardized training on certification of causes of death.

xii) The legislature and policy maker in consultation with key stakeholders should lay the legislative and administrative foundation by: reforming existing legislation and policies by developing new ones; ensure coordinated structures and strong leadership; and securing of a sufficient number of staff with the right set of skills.

xiii) Key stakeholders (MHAISS, MoHSS and NSA) should improve efficiency by improving the business processes and use of technology.

xiv) Key stakeholders (MHAISS, MoHSS and NSA) should look into improving the civil registration data. That can be done by working toward increasing demand and understanding of CRVS by the public and partners; improving access to equipped civil registration service points; ensure timely still-birth and death registration; improving

recording of cause-of-death information; maintaining and further enhancing the NPRS/civil registration system; and strengthen quality assurance and data validation.

xv) Key stakeholders (MHAISS, MoHSS and NSA) should consider improving the quality and timeliness of vital statistics by piloting other registration methods such as Short Messaging Services (SMSs) and exploring of online registration.

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7. APPENDIX

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UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: OSHAC /578/2020   Date: 6 August, 2020

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Assessment of Death Notification and Registration: Case Study of Rundu District in Kavango East Region, Namibia

Researcher: HENOK EGUMBO

Student Number: 20064225056

Supervisor(s): *Prof H K Mitonga*

Campus: Oshakati Campus

Take note of the following:
(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the HREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the HREC.
(c) The Principal Researcher must report issues of ethical compliance to the HREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by HREC.
(d) The HREC retains the right to:
(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
(ii) Request for an ethical compliance report at any point during the course of the research;
(iii) *Cognizance and the observation of Namibia's Research Science and Technology Act, 2004 which makes it compulsory for Non-Namibian based researchers to obtain the compulsory Research Permit from the National Commission on Research Science and Technology (NCRST), FIRST, BEFORE the research can commence.*

HREC wishes you the best in your research.

Prof. R Verbeeck: Acting HREC Chairperson   Ms. P. Claassen: HREC Secretary

R. Verbeeck   *Paula Jouuuy*

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

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Namibia	Windhoek	E-mail: itashipu87@gmail.com

OFFICE OF THE EXECUTIVE DIRECTOR

Ref: 17/3/3 HE
Enquiries: Mr. A. Shipanga

Date: 22 September 2020

Mr. Henok Egumbo
P O Box 65139
Katutura
Windhoek

Dear Mr. Egumbo

Re: Assessment of death notification and registration process: Case Study of Rundu District in Kavango East Region, Namibia.

1.   Reference is made to your application to conduct the above-mentioned study.

2.   The proposal has been evaluated and found to have merit.

3.   **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1   The data to be collected must only be used for academic purpose;

3.2   No other data should be collected other than the data stated in the proposal;

3.3   Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

Assessment of Death Notification and Registration: A Case Study for Rundu District, Kavango East Region, Namibia

CONSENT: My name is Henok Egumbo, a 2nd year Master of Applied Field Epidemiology and Laboratory Management Resident at the University of Namibia in collaboration with the MoHSS. I am conducting a Research project on the above-mentioned topic. Would you be interested in taking part in it? **Yes** **No**

All answers will be treated confidential and there will be no way to link answers to participants, should you agree to participate.

Please carefully provide answers to all the posed questions to the best of your knowledge.

Number of registered deaths for the year 2018 to 2021 will be assessed and verified between the two pronged system (HIS and Civil registration databases). In order to determine the state of agreement between the two units of studies.

Questions/guiding points	MoHSS (Coroners, Mortician, Pathologists, HIS officers etc.)	NamPol (Forensic Pathologist Unit Officials or Regional/Sub-regional Crime Investigation Department (ICD).	MHAISS (Civil Registration officials)
What is your mandate concerning death registration processes (notification to reporting)?			
What are your roles and responsibilities about death registration processes			

(notification to reporting)?			
What is your area of jurisdictions concerning death registration processes (notification to reporting)?			
How do you learn about death occurrences in your area of jurisdiction and what happens thereafter?			
Which type of death events do you deal with, how and where? (Unnatural deaths, natural deaths, inpatient/ hospital admission death, crime related deaths, suicides or accidents induced death event).			
Do you perform any form of documentation? If so, demonstrate the performance and show evidence.			
How do you capture, store, share transmit documented data in respect of death events?			
Are there any existing written SOPs or protocols available and in use?			

Do you report death events, if so who do you report death events to, how, how often and when?		
Who determine the cause of death and how is it assigned?		
Do you perform any death data analyses, if so how often and what happens to the outcome of the report?		
Do you perform any dissemination of death event reports, if so how, how often and who are the targeted audiences (target group) of death statistic reports dissemination?		

Other Considerations

Governance, Strategy and Planning, Processes	Yes	No
Is there an active national CRVS TWG?		
Are there mortality committees/TWGs at national and subnational levels?		
Do you have costed implementation plans that you monitor regularly?		
Is your legal framework up-to-date?		

Have you reviewed and improved your business processes to improve efficiency?		
Have you reviewed human resource needs and gaps?		
Are death reporting and notification processes active?		
Are there sufficient registration points?		

Linkages with other database/system platforms:	Yes	No
Are your country's birth and death registration systems linked?		
Are these also linked with the national ID system?		
Are there linkages with non-health actors (e.g. police, burial sites, etc.)		

Data use:		
Is data quality regularly assessed and improved?	Y	N
Is timely mortality data available for rapid mortality surveillance?	Y	N
Are timely vital statistics produced?	Y	N
Are birth and death data used for planning and policy development?	Y	N

Hospital death notification and cause of death ascertainment	Response	
Does your country have a strategy or policy for improving death reporting from health facilities?	Y	N
Who is required to report deaths from health facilities?	Y	N
Does your country use the updated WHO MCCD form?	Y	N
Is this used nationwide? Is it legislated?	Y	N
Is MCCD training institutionalized in clinical curriculums?	Y	N
Are you implementing ICD?	Y	N
Which version? Since when?	Y	N
Do you carry out regular data quality assessments and review?	Y	N
Do you have adequate human resources (clinicians trained in MCCD, ICD coders, analysts)?	Y	N

Community death notification and cause of death ascertainment	Response	
Does your country have a strategy or policy for improving death reporting from communities?	Y	N
Who is required to report deaths from communities in urban settings? In rural settings?	Y	N
Does your country ascertain cause of death on community deaths notified to civil registration authorities?	Y	N
Does your country use a recent WHO verbal autopsy tool to capture COD?	Y	N
What % of deaths in the community have a COD through VA?	Y	N
Is there collaboration with HDSS sites or other sites doing VA?	Y	N
Do you have adequate human resources (verbal autopsy interviewers, analysts)?	Y	N

Mapping Performance Issues on Death Registration and Cause of death reporting: Health Facility/Institutional Deaths

Leadership and Governance	Data quality and analysis	Mortality data generation, transmission and storage	Communication and use of Mortality

Mapping Performance Issues on Death Registration and Cause of death reporting: Community Deaths

Leadership and Governance	Data quality and analysis	Mortality data generation, transmission and storage	Communication and use of Mortality

Mapping Priority Action Areas to Improve Death Registration and Cause of death reporting: Health Facility/Institutional Deaths

Leadership and Governance	Data quality and analysis	Mortality data generation, transmission and storage	Communication and use of Mortality

Mapping Priority Action Areas to Improve Death Registration and Cause of death reporting: Community Deaths

Leadership and Governance	Data quality and analysis	Mortality data generation, transmission and storage	Communication and use of Mortality

E-DEATH GUIDELINES

A. HOW TO REGISTER A DEATH WITH NAMIBIAN IDENTIFICATION (ID)?

1. LOG IN WITH USER YOUR USER NAME

2. CLICK DEATH NOTIFICATION

3. CLICK NEW ENTRY

4. CLICK FIND AND POPULATE

5. PUT IN ID NUMBER AND CLICK SUBMIT

6. VERIFY WETHER THE INFORMATION IS CORRECT

7. PUT IN THE DEATH DETAILS   **e.g. Death registration, date of death, place of death, capacity verifier, capacity informant etc.**

8. CLICK SAVE & SIGN- OFF

9. WRITE DOWN THE **DEATH REFERENCE NUMBER ON THE NOTICE OF DEATH THAT GOES WITH THE BODY TO MORTUARY**

10. CLICK NOTIFICATION

11. CLICK SAVE AND SIGN-OFF ALL NOTIFICATION PARTS (**Give the Notification number to the relatives)**

12. CLICK NAVIGATE & SELECT BODY MOVEMENT

13. CLICK NEW

14. AT MOVEMENT TYPE: SELECT TRANSFER

15. CLICK SAVE & SIGN- OFF

16. CLOSE THE WINDOW

B. HOW TO REGISTER A DEATH WITHOUT ANY DOCUMENTS OR NON -NAMIBIAN (e.g. ID, Birth certificates, Passports)?

1. CLICK DEATH NOTIFICATION

2. CLICK NEW ENTRY

3. FILL IN ALL THE FIELD e.g. (Surname**, Name, Date of Birth, place of birth (unknown), date of birth, date of death, death registration, capacity verifier, capacity informant, death occurred,**

4. CLICK SAVE & SIGN- OFF

5. CLICK NAVIGATE & SELECT BODY MOVEMENT

6. CLICK NEW

7. AT MOVEMENT TYPE: SELECT TRANSFER

8. CLICK SAVE & SIGN- OFF

9. CLOSE THE WINDOW

10. CLICK HOME

C. HOW TO SEARCH A RECORD AND EDIT (if you want to put a passports number, ID number, Birth certificate number

1. CLICK DEATH NOTIFICATION

2. CLICK SEARCH

3. AND SELECT PERSON CORE

4. **PUT IN THE SURNAME, SEX OF THE DECEASED THAT YOU WANT TO SEARCH AND CLICK SEARCH BUTTON (YOU CAL ALSO SELECT SIGN-OFF AND SELECT THE HOSPITAL AND THE DATE YOU REGISTER THE DEATH)**

5. CLICK THE RECORD THAT YOU WANT TO EDIT ONCE

6. CLICK EDIT ENTRY

7. AT DAT SOURCE SELECT 11 ID NUMBERS AND AT DATA SOURCE NUMBER PUT IN THE ID NUMBER

8. CLICK SAVE AND SIGN-OFF

9. CLICK NOTIFICATION

10. CLICK SAVE AND SIGN-OFF

11. WRITE DOWN THE NOTIFICATION NUMBER AND GIVE IT TO THE DECEASED FAMILY

12. CLOSE WINDOW

D. HOW TO SEARCH A RECORD AND ENTER/DO THE CAUSES OF DEATH

1. CLICK DEATH NOTIFICATION

2. CLICK SEARCH

3. AND SELECT REFERENCE NUMBER

4. CLICK THE RECORD ONCE AND THEN CLICK EDIT ENTRY

5. CLICK ON NAVIGATE PARTS

6. CLICK FIND AND AT CHAPTER PUT IN THE UNDERLINE CAUSE OF DEATH AND CLICK SEARCH

7. CLICK YOUR WINDOW AND

8. AT DEATH CAUSE (a) THE CAUSE WILL APPEAR WITH (ICD11 code e.g. CARDIAC ARREST, UNSPECIFIED code MC82.Z)

* AT DEATH CAUSE (b) REPEAT # 6 AND THE CAUSE WILL APPEAR WITH (ICD11 code e.g. DESEASES OF THE MYOCARDIUM OR CARDIAC CHAMBERS, UNSPECIFIED) AND CLICK WINDOW

9. CLICK SAVE AND SIGN-OFF

11. CLOSE WINDOW

MCCD ARE ON REQUEST FROM FAMILY MEMBERS

13. CLICK @ PRINT MCCD TO PRINT THE MCCD CERTIFICATE SIGN IT AND PUT THE HOSPITAL STAMP