CONSTRAINTS OF HEALTH UNIT EPIDEMIOLOGICAL SURVEILLANCE REPORTING IN MID-WESTERN UGANDA

SUBMITTED BY

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A proposal submitted to the school of Business and Management in Partial Fulfilment of the requirements for the Award of the Degree of Masters of Project Monitoring and Evaluation of Uganda Technology and Management University (UTAMU)

MARCH 2017

DECLARATION

I, Philip Mwesigwa Bakahirwa, hereby declare that, this proposal is my original work and has never been presented to any university or institution for any academic award.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study intends to find out the Constraints of health unit weekly epidemiological reporting in Mid-western Uganda. In this study, Administrative, Technological and Logistical constraints will be perceived as independent variables while epidemiology reporting will be perceived as dependent variables. Epidemiology surveillance reporting will be measured in terms of completeness and timely reporting of weekly surveillance data reported from both public and private health facilities in Midwestern Uganda received through mTrac system at the ministry of health to enable timely response to outbreaks.

In addition to the introduction, this chapter will also deal with the background to the study, the statement of the problem, the purpose, the objectives of the study, the research questions, the hypotheses, the scope of the study, the significance, Justification and operational definition of terms and concepts

1.2 Background of the Study

1.2.1 Historical Background

Public health surveillance dates back to the time of Pharaoh Mempses in the First Dynasty, when an epidemic was first recorded in human history (Choi, 2012). In his Mempses' reign many portents and a great pestilence occurred". The "great pestilence" is now known to have occurred in 3180 B.C

According to Marks and Beatty, the three most devastating epidemics to hit the human race were “The Plague of Justinian” (A.D. 541–591) which lasted 50 years, "The Black Death" (1348–1351) which lasted 4 years, and “Spanish Influenza” (1918) which lasted five months

The idea of collecting and analysing data dates back to Hippocrates (460 B.C.–370 B.C.) an ancient Greek physician who is also known as the father of medicine and the first epidemiologist (Choi, 2012).

The first public health action that can be attributed to surveillance occurred during the 1348 bubonic plague epidemic which started the “Black Death”. The Venetian Republic appointed 3 guardians of public health to detect and exclude ships which had infected people aboard. Quarantine as a means to control the spread of infectious diseases was used again in 1377 in Marseilles to detain travellers from plague-infected areas for 40 days.

The concept of systematic on-going collection of mortality data was first used in 1532 when the town council of London, England started to keep a count of the number of persons dying from the plague. These Bills of Mortality were collected on and off for over 100 years. However, these data were not used for surveillance purpose until the 1600s, when the clerks of London reported the number of burials and causes of death to the Hall of the Parish Clerk’s Company and released in a weekly Bill of Mortality

In 1662, John Graunt first suggested in his book Natural and Political Observations Made upon the Bills of Mortality the need for on-going systematic collection of data and proposed the basic principles for data analysis and interpretation, although he did not conceptualize the link of surveillance information to public health practice

Graunt's method of data analysis was to reduce voluminous data to a few perspicuous tables. Using this method, he was the first to recognize that there were more male than female deaths in London. He tried to interpret the findings and was able to explain the observation by noticing that there were more males than females by counting the number of births, and he suggested that this phenomenon in London should be searched for elsewhere.

The 1986 CDC definition of surveillance reflects Langmuir's view that the concept of surveillance did not encompass direct responsibility for control activities and avoids the use of the term surveillance for control activities, although it states that the final link in the surveillance chain is the application of these data to prevention and control.

In his 1998 paper on "Perspectives on epidemiologic surveillance reporting in the 21st century", Bernard Choi presents arguments why it is important for epidemiologic surveillance to come back full circle in the 21st century and become once again the focus of health research: "Epidemiologic surveillance dates back to the time of John Graunt

The Integrated Disease Surveillance and Response (IDSR) strategy was developed and adopted in 1998 for Africa as a comprehensive public health approach and subsequently, Ghana was the first African country to adopt the IDSR technical guidelines in 2002. Since 2012, the IDSR data is reported through mTrac which is interlinked with the new District Health Information Management System II (DHIMS2) network. The objective was to evaluate the Integrated Disease Surveillance and Response (IDSR) system in northern Ghana

In Uganda, DHIS and mTrac weekly epidemiology surveillance reporting was first used in 2011. The DHIS2 reporting system has improved the availability of IDSR reports, but the quality and frequency of reports and data reported is not sufficient. Particularly the inconsistencies between weekly and monthly data need to be addressed.

Georgia in his landmark 1988 report, a committee of the Institute of Medicine highlighted assessment as one of the three core functions of public health along with policy development and assurance (*1*). The committee recommended that every public health agency regularly and systematically collect, assemble, analyze, and make available information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems. Public health surveillance, often called the cornerstone of public health practice, is an essential element of the assessment function of every community

1.2.2 Theoretical background

This study will dwell specifically on the systems theory of Input-output (Ludwig von Bertalanffy, 1940s) as well as the general systems theory (Ross Ashby, 1968). A systems-theoretical approach influenced by American pragmatism expands the definition of public health epidemiological surveillance and according to the World Health Organization (WHO) as "the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice." Public health surveillance may also be used to "serve as an early warning system for impending public health emergencies; document the impact of an intervention, or track progress towards specified goals; and monitor and clarify the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies."

The systems theory states that all things, living and non-living, could be regarded as systems and that systems have properties that are capable of being studied and can affect the quality of the outcome both in the short and long run. Since the theory defines a system as an

organized whole made up of components that interact in a way distinct from their interaction with other entities and which endures over some period of time, this interaction brings about exchange of information and when manipulated effectively leads to a quality outcome or result.

Therefore, the systems theory input-output brings out clearly that epidemiological reporting is determined by the efficiency in the exchange of information between the system and its environment and this is regulated by a process called feedback, a method of evaluation used to determine whether the system's outputs are consonant with the perceived outcomes (goals) that the system has established for itself (Bertalanffy, 1934).

The theory is advantageous in pure scientific situations because all aspects of systems iterated by the theory can be carefully controlled for environmental effects in timely data management (Bertalanffy, 1934). The systems theory of input-output however assumed a single dimension cause-and-effect relationship between social units within the environment and also had some difficulty with the single-dimension relationship and felt that systems theory did not fully capture the complex dynamics that occur within social systems.

The General Theory of electronic system reporting maintains that true data quality standards are enterprise wide standards providing timely epidemiology data. Timely information standards must always be customized to meet the subjective needs of a specific business process and/or initiative (Kuhn, 1974). Both aspects of this shared perspective of time must not only be incorporated into a single sustained program that enforces a consistent enterprise reporting, but that also provides the information necessary to support day-to-day operations.

Systems theory provides an internally consistent framework for classifying and evaluating the world. There are clearly many useful definitions and concepts in systems theory. In many

situations it provides a scholarly method of evaluating a situation. An even more important characteristic, however, is that it provides a universal approach to all sciences. As von Bertalanffy (1968) points out, "there are many instances where identical principles were discovered several times because the workers in one field were unaware that the theoretical structure required was already well developed in some other field. General systems theory will go a long way towards avoiding such unnecessary duplication of labour."

1.2.3 Conceptual background

The term “surveillance”, derived from the French roots, sur (over) and veiller (to watch), is defined in the dictionary as the “close and continuous observation of one or more persons for the purpose of direction, supervision, or control”

The first question when setting up a new surveillance system is what categories of information should be tracked by the surveillance system. The data framework is usually defined in terms of indicators. An indicator is a measurable factor that allows decision makers to estimate objectively the size of a health problem and monitor the processes, the products, or the effects of an intervention on the population

A conceptual framework for health information surveillance was put forward in 1991 by the National Task Force on Health Information. The health surveillance conceptual template classifies health information into three major areas: individual characteristics, external milieu, and “health-affecting” interventions and can potentially be used as a model for selecting indicators (Choi, 2012) Among the indicators, the definition of what constitutes a “case” is important, especially in infectious disease surveillance

Timely Epidemiology report is very important for the integrity of the data management and quick responses in case of any outbreaks in a society (Juran, 2010). Epidemiology

information is of high importance if, "its fit for its intended users in operations, decision making and planning." (Juran, 2010). Alternatively, epidemiology reports are deemed of high quality if they are timely submitted and represent the real-world construct to which they refer.

Epidemiology Surveillance is the continued watchfulness over the distribution and trends of incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and other relevant data, and the regular dissemination of data to all who need to know. As independently stated by Chrisman (1991) and Strong et al. (1997), Epidemiology data quality and Timely is related to use and cannot be assessed independently of the other. Data is defined as distinct pieces of information, usually formatted in a special way (Akash, 2011).

Public health surveillance (also epidemiological surveillance, clinical surveillance or syndromic surveillance) is, according to the World Health Organization (WHO), "the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. Such surveillance can: serve as an early warning system for impending public health emergencies; document the impact of an intervention, or track progress towards specified goals; and monitor and clarify the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies.

Public Health Surveillance reporting framework provides specific and objective data to measure the numbers and distribution of regional, district, and health facilities incidences in a given society. For example in Uganda, Ministry of Health is guided by the indicators chosen from each priority disease of concern in public health surveillance systems at a national level to be reported on weekly to enable timely response to the outbreak

1.2.4 Contextual background

Uganda's health sector needs timely and reliable information for planning and evaluating interventions (WHO, 2012). This appears particularly important as the world now moves from the era of the Millennium Development Goals (MDGs) to – still undefined – new and more sustainable post-2015 goals, which require timely and accurate data for managers and policy makers to take action. Moreover, the new International Health Regulations (IHR) require WHO member states to strengthen their existing capacity for disease surveillance and response (WHO, 2012). In sub-Saharan Africa, disease-specific routine health data of acceptable quality are usually unavailable. Data collected through routine reporting from health facilities (Health Information Management Systems, HIMS) are rarely complete and usually not representative, as the poorer but more vulnerable sections of the population do less attend health facilities.

Routine reporting is often of limited quality due to several constraints such as poor motivation, lack of supervision and inadequate feed-back, and overburdening of staff by multiple disease-specific reporting requests (WHO, 2012). Besides, community perceptions on specific diseases largely influence their health seeking behaviour and, thus, impact on the representativeness, completeness and quality of facility-based data. National survey and population census data are now increasingly available from nearly all Sub-Sahara African countries but do not provide detailed information on diseases while specific studies normally address only a single disease (WHO, 2012).

Disease-specific programs continue to implement their own separate surveillance systems thus leading to a proliferation of indicators and onerous reporting requirements as well as an unacceptable extra administrative burden on health staff. As a potential solution, in 1998, the

World Health Organization Regional Office for Africa (WHO-AFRO) initiated a strategy for overall strengthening of disease surveillance in Sub-Saharan Africa called Integrated Disease Surveillance and Response (IDSR).

WHO-AFRO played a major role in producing the first version of the IDSR technical guidelines for adoption and modification according to the epidemiological priorities of member states. The primary goals of the IDSR strategy were the integration of multiple existing vertical surveillance systems and linking surveillance data to public health action. Diseases of national priority vary based on endemicity and the public health systems ability to respond. For example, countries outside the meningitis belt usually excluded this disease from their national priorities.

In 2002, Ghana adopted and implemented the first IDSR technical guidelines, which has since been revised in 2011 because of challenges in the country's health, social, economic, environmental and technical environment. In particular, the emergence and re-emergence of diseases resulted in the need to review the public health priorities for surveillance and response. A well-functioning infectious disease surveillance system involves a certain number of core activities such as case detection, confirmation and registration, reporting, data analysis and interpretation, outbreak investigation, dissemination, feedback and response. The health system usually supports disease surveillance activities by providing training, supervision and resources. Again in 2012, the district health information management system (DHIMS) was restructured to the District Health Information Management System II (DHIMS2). This is an internet-based system with the overall goal of reducing the reporting burden in primary health care settings and to improve data quality and reliability.

In Uganda the major burden of communicable diseases remains attributable to preventable diseases ranging from endemic diseases such as malaria to emerging and re-emerging infections such as, viral hemorrhagic fevers and Cholera (MOH Uganda 2000, Somda et al. 2009, Lukwago et al. 2011). Early detection, control and elimination of vaccine preventable diseases heavily rely on adequate surveillance. In 2000, Uganda adopted the Integrated Disease Surveillance and Response (IDSR) strategy, which aims to create a co-ordinated approach to the collection, analysis, interpretation, use and dissemination of surveillance data for guiding decision making on public health actions.

The Uganda Ministry of Health (MoH) in a bid to strengthen active surveillance introduced mTRAC which is an extension of the MoH endorsed DHIS II database. The Mtrac is a platform used to deliver the weekly epidemiological surveillance report (HMIS 033b). It takes advantage of the unprecedented growth of the Telecommunications infrastructure that includes network coverage and high rates of mobile phone penetration in Uganda to strengthen health sector reporting.

The weekly epidemiological surveillance report utilizes this mobile platform to enable health facilities report on notifiable diseases, Malaria Treatment and Arteminsin Combined Therapies (ACTs) and Rapid Diagnostic Tests (RDTs) stock. The report includes such data as cases and deaths of diseases for that week; maternal and peri-natal deaths; summaries of OPD, eMTCT and malaria cases tested and treated; stock balances for tracer medicines, HIV testing kits and eMTCT drugs, which should help the district and the Ministry of Health where the data is submitted to promptly detect and respond to epidemic threats as well as provide feedback to both facilities and districts.

This report should be submitted weekly by a designated person, usually the Records Assistant/Officer or the In-charge of the facility, in all health facilities who is required to send the report by Monday of the following week before mid-day. When the system was introduced, the Records Assistants/Officers and In-charges of lower health units were trained in mTrac system. Others were trained on job by those who attended formal training. In some cases, newly recruited staffs are not formally oriented. Support supervision is done by the DHT headed by the district Biostatistician. When an SMS is sent using mTrac system, there is supposed to be an immediate feedback indicating that the message has been received. But sometimes this feedback is not received. This report is received at Ministry of Health Resource Centre by the web based DHIS 2 system which aggregates this data to analyze core indicators like number of malaria cases registered in the week in the country; number of maternal and perinatal death in the week, number of cases of rare infections, balances of tracer medicines and HIV testing kits that should guide decision making at district and national levels. The Regional Performance Monitoring Teams (RPMTs) is a regional structure established by the Ministry of Health to among other roles support districts to: Aggregate, analyze and present data on specific health interventions and trends of the target diseases; ensure use of correct tools and data quality, completeness and Timely reporting and use data for performance improvement.

Furthermore, one of the key mandates of this structure is Monitoring and ensuring Health Management Information System (HMIS) reporting and completeness by districts. In the Mid-Western region, the RPMT among other works towards improvement of timely HMIS reporting and completeness of a number of reports by districts in the region. These include, among others, Outpatient Department monthly report (HMIS 105), In-patient monthly report (HMIS 108), HIV/AIDS Quarterly report (HMIS 106a) and Weekly Epidemiological

Surveillance report (HMIS 033b). Of these, the HMIS 033b report enables the Ministry of Health to quickly detect an epidemic in the country as soon as it breaks out. Thus, it is a very important report which needs greater attention in terms of its timeliness and completeness by all health facilities in Uganda.

Despite all efforts applied by different stakeholders to improve health unit epidemiological surveillance reporting, the reporting rates have remained low at 57.0% yet other monthly HMIS reports have improved their reporting rates to close to 100% . The researcher therefore seeks to find out the reporting rate constraints of health unit epidemiological surveillance reporting in Midwestern Uganda.

1.3 Statement of the problem

In public health, we can't do anything without surveillance. That's where public health begins. (Satcher, 2002). The ultimate goal of epidemiology surveillance reporting and outcome information is to improve the quality of health care and this can be achieved through timely responses to the disease outbreak and tracing of contact persons to the epidemic outbreak (Hibbard, 2001). However, there are often specific purposes for Epidemiology surveillance reporting. Chaudhry, 2006; IOM, 2001, 2009 noted that epidemiology surveillance data and its transformation into meaningful information is a central concern for consumers, healthcare providers, the healthcare industry, and the government decision makers. Safran et al., (2007), further noted Standards, technologies, education, and research and responses are required to capture, use, and maintain accurate healthcare data and facilitate the transition from paper to electronic systems in order to effectively inform epidemic response teams about the dangerous outbreaks formulate measures regarding how these epidemics can be contained.

However, an analysis of the District Health Information System 2 (DHIS2) for the period August 2014 to July 2015 for the 7 districts of Mid-Western Uganda clearly showed that the

average reporting rates for these districts for weekly epidemiological surveillance reports was very low (MOH report, Oct 2015). It was at 53.6% compared to the other two key HMIS data reporting forms (HMIS 105, HMIS 108) which were at 99.7% and the weekly epidemiology reports were always submitted late i.e after the deadline of Monday mid-day for the weekly reports and after 15th of the following month for monthly reports (MOH report, Oct 2015). For weekly epidemiological surveillance report, the average reporting rates for the seven districts was 53.6% and timeliness was 57.0%. This low reporting rate and untimely submission deters timely detection and response to potential epidemics like Ebola, Marburg, cholera, measles, typhoid, dysentery among others both by the districts and the Ministry of health where the data is eventually submitted. Therefore, this study intends to find out constraints of epidemiological surveillance reporting in Midwestern Uganda

1.4 Purpose of the study

To find out Constraints of Health Unit weekly Epidemiological surveillance reporting in Midwestern Uganda districts of Kiryandongo, Masindi, Buliisa, Hoima, Kiboga, Kyankwanzi and Kibaale.

1.5 Research Objectives

I. To find out the technological constraints of health unit epidemiological surveillance reporting in Midwestern Uganda
II. To find out the administrative constraints of health unit epidemiological surveillance reporting in Midwestern Uganda
III. To find out the logistical constraints of health unit epidemiological surveillance reporting in Midwestern Uganda

1.6 Research questions

I. What are the technological constraints of epidemiological surveillance reporting in Midwestern Uganda?

II. What are the administrative constraints of health unit epidemiological surveillance reporting in Midwestern Uganda?

III. What are the logistical constraints of Health Unit epidemiological Surveillance reporting in Midwestern Uganda?

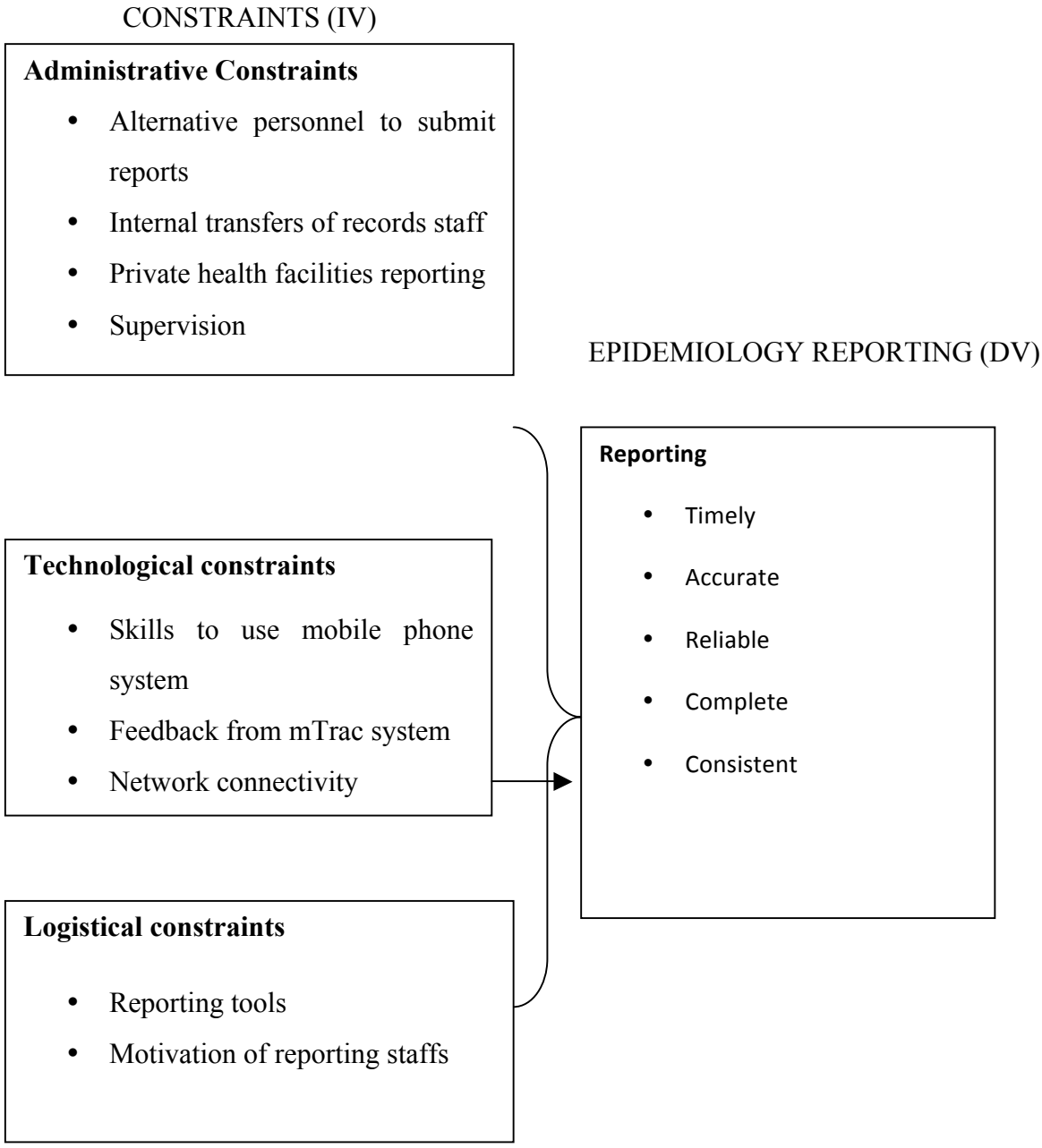
1.7 Research Hypotheses

i. Technological constraints of health unit affect epidemiological surveillance reporting in Midwestern Uganda.

ii. Administrative constraints of health unit affect epidemiological surveillance reporting in Midwestern Uganda.

iii. Logistical constraints of health unit affect epidemiological Surveillance reporting in Midwestern Uganda.

1.8 Conceptual framework



Source: Adopted with modifications from Koontz and Weihrich (1988:12)

The conceptual framework shows the effects of administrative, technological and logistical constraints have on reporting and these three constraints are independent variables. These variables have a direct influence on health unit epidemiology reporting in terms of timeliness, accuracy, reliability, completeness and consistence

1.9 Scope of the Study

1.9.1 Content scope

The study will focus on constraints like administrative, technological and logistical constraints and viz-a-viz timely reporting in mid-western Uganda. Administrative, technological and logistical constraints are independent variables while reporting is the dependent variable.

1.9.2 Geographical scope

The study will be conducted in selected both government and private not for Profit health facilities that are registered in District health information system in Midwestern Uganda. About 42 health facilities will be selected from 7 districts in Midwestern Uganda.

1.9.3 Time scope

The study will focus on a time frame from July 2015 to June 2016. This will be a reference period for the study. This will be a guidance period which will give a clear picture on how different constraints have affected reporting taking into consideration that this is the period when Ministry of health increased its interventions in improving reporting rates and completeness in the region in all health management information reports

1.10 Significance of the study.

A lot of research has been carried out on Constraints of health unit weekly epidemiological reporting but there is less information about reporting rates for Health Management Information (HMIS) reports. This study will enable the researcher come up with recommendations to the ministry of health especially the Resource Centre which is the department responsible for Health Information Management System (HMIS) in Uganda and

the Quality Assurance unit under the Planning department of ministry of Health on what measures and policies can be put in place to improve on reporting rates of Weekly surveillance reports in Midwestern and Uganda at large. The findings will help the district Health office to review their methods of enforcing health facilities to report using the right tools and observing deadlines. The report will also be a source of reference for other researchers intending to study weekly epidemiological surveillance reporting rates in Uganda.

1.11 Operational definition of terms and concepts

For purposes of this study, the concepts below are defined as assigned thereof not necessarily reflecting their ordinary or dictionary meanings. These are:

Epidemiology: It is the study of how often diseases occur in different groups of people and why. Epidemiological information is used to plan and evaluate strategies to prevent illness and as a guide to the management of patients in whom disease has already developed.

Epidemiological Surveillance: It is the continued watchfulness over the distribution and trends of incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and other relevant data, and the regular dissemination of data to all who need to know

Surveillance: is the monitoring of the behaviour, activities, or other changing information, usually of people for the purpose of influencing, managing, directing, or protecting them.

DHIS2: District Health Information System 2 (DHIS2) is a tool for collection, validation, analysis, and presentation of aggregate statistical data, tailored to integrated health information management activities

mTrac: mTrac is an SMS and web-based data collection and analysis platform developed to enable health facility workers and community health workers to submit routine health management information system (HMIS) reports, covering weekly disease surveillance and drug stocks, at zero cost via their personally owned basic mobile phones.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the scholarly material regarding the study. Theories regarding surveillance reporting will also be reviewed and it is arranged according to the study objectives. The gaps identified in the literature review will also be indicated,

2.2 Theoretical Review

This study will dwell specifically on the systems theory of Input-output (Ludwig von Bertalanffy, 1940s) as well as the general systems theory (Ross Ashby, 1968). A systems-theoretical approach influenced by American pragmatism expands the definition of public health epidemiological surveillance and according to the World Health Organization (WHO) as "the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice." Public health surveillance may also be used to "serve as an early warning system for impending public health emergencies; document the impact of an intervention, or track progress towards specified goals; and monitor and clarify the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies."

The systems theory states that all things, living and non-living, could be regarded as systems and that systems have properties that are capable of being studied and can affect the quality of the outcome both in the short and long run. Since the theory defines a system as an organized whole made up of components that interact in a way distinct from their interaction with other entities and which endures over some period of time, this interaction brings about

exchange of information and when manipulated effectively leads to a quality outcome or result.

The theory is advantageous in pure scientific situations because all aspects of systems iterated by the theory can be carefully controlled for environmental effects in timely data management (Bertalanffy, 1934). The systems theory of input-output however assumed a single dimension cause-and-effect relationship between social units within the environment and also had some difficulty with the single-dimension relationship and felt that systems theory did not fully capture the complex dynamics that occur within social systems.

The General Theory of electronic system reporting maintains that true data quality standards are enterprise wide standards providing timely epidemiology data. Timely information standards must always be customized to meet the subjective needs of a specific business process and/or initiative (Kuhn., 1974. Both aspects of this shared perspective of time must not only be incorporated into a single sustained program that enforces a consistent enterprise reporting, but that also provides the information necessary to support day-to-day operations.

The General theory of epidemiologic data transition focuses on the complex change in patterns of health and disease and on the interactions between these patterns technology and their demographic, economic and sociologic determinants and consequences. An epidemiologic data transmission has paralleled the demographic and technologic transitions in the now developed countries of the world and is still underway in less-developed societies

The only short coming with the General Theory is that too often late or failure to report is not traced to their real cause in the process.

Systems theory provides an internally consistent framework for classifying and evaluating the world. There are clearly many useful definitions and concepts in systems theory. In many

situations it provides a scholarly method of evaluating a situation. An even more important characteristic, however, is that it provides a universal approach to all sciences. As von Bertalanffy (1968, p. 33) points out, "there are many instances where identical principles were discovered several times because the workers in one field were unaware that the theoretical structure required was already well developed in some other field. General systems theory will go a long way towards avoiding such unnecessary duplication of labour

Therefore, the systems theory input-output is relevant to this study because it brings out clearly that epidemiological reporting is determined by the efficiency in the exchange of information between the system and its environment and this is regulated by a process called feedback, a method of evaluation used to determine whether the system's outputs are consonant with the perceived outcomes (goals) that the system has established for itself (Ludwig von Bertalanffy, 1940s).

Review of Related Literature

2.3Technological constraints and epidemiological surveillance reporting

Although electronic data systems that monitor for health threats reporting are becoming increasingly automated, human expertise is, and always will be, critical to recognizing potential cases of disease, diagnosing disease, reporting diseases or conditions, analysing and interpreting data, and communicating results to all stakeholders. For this reason, the Uganda's health professionals from all disciplines and at all levels are fundamental to sustaining and enhancing public health surveillance capacity through the new mTrac surveillance reporting technology.

Processes that manipulate the data inside the health care databases affect surveillance reporting. Some of these processes are routine, while others are brought upon by periodic system upgrades, mass data updates, database redesign, and a variety of ad-hoc activities.

Unfortunately, in practice most of these health procedures lack time and resources, as well as reliable meta data necessary to understand all surveillance reporting implications. It is not surprising, then, that technology often leads to numerous surveillance reporting problems which affects data quality (Arkady, 2007).There are aspects in health data management that cause accurate data to become inaccurate overtime, without any physical changes made to it (Abdelhak, Grostick & Hankin (2001). The data values are not modified, but their accuracy takes a plunge. This usually happens when the real world object described by the poor reporting, but the data collection processes do not capture the changes.

Jones (2003) argued that good data entry health forms and instructions somewhat mitigate data entry and reporting problems. In an ideal fantasy world, electronic data entry interface is as easy to the user as possible: fields are labelled and organized clearly, data entry repetitions are eliminated, and data is not required when it is not yet available or is already forgotten.

Health data which is continuous reduces data quality. The information must ensure continuity between those caring for the patient today and those who will care for the patient in the weeks or years to come (Taulbee, 2000). Effective health surveillance reporting can reduce or eliminate unnecessary disease outbreaks since it can be noticed early and immediate response from the line ministry is employed. This leads to higher quality patient care, cost savings, and helps to eliminate duplicative processes.

Data processing is at the heart of all operational systems. It comes in many shapes and forms from regular transactions triggered by users to end-of-the-year massive calculations and adjustments. In theory, these are repetitive processes that should work "like a clock." In practice there is nothing steady in the world of computer software. The first part of the

problem is the change in the programs responsible for regular data processing and surveillance reporting. Minor changes are as regular as normal use. These are often not adequately tested based on the common misconception that small changes cannot have much impact but they reduce data quality in the long run (Hall, 2004). Burger (2007) argued that timeliness affects surveillance data quality. More and more data is exchanged between the systems through real-time (or near real-time) interfaces. As soon as the data enters one database, it triggers procedures necessary to send transactions to other downstream databases. The advantage is immediate propagation of data to all relevant databases. You can close your eyes and imagine the millions of little data pieces flying from database to database across vast distances with lightning speed, making our lives easier. Furthermore, a more subtle problem is when reporting is accidentally done at the wrong time. Then the correct program may yield wrong results because surveillence report is not in the state it is supposed to be. A simple example is running the program that calculates weekly compensation before the numbers from the hours tracking system were entered. There, timeliness is a very important aspect of data quality management for better report writing and interpretation (Volmink, 2007). According to AbouZahr (2005), wrong precision with data sets have affected surveillence reporting in many countries. This is worsened by poor reporting specifications which often do not reflect actual data requirements. As a result, surveillence reporting may be brought in compliance with some theoretical model but remain incorrect for actual use. A limitation to this study is that it was not carried out in Uganda and given the fact that Uganda has different socio-economic and technological status with where the study was done; it leaves a gap that this study intends to fill, thus making the study inevitable in health facilities in Midwestern Uganda's districts.

In study done by Moyo (2005) in Zimbabwe showed that data reliability considerations consist of whether the record is cohesive in terms of the field contents and whether the reporting makes sense or is usable in a real world context. This can be considered at any of the steps in the lifecycle of a record – original source, production of an export, import into another system, downstream processing. A record with good integrity will have data in all appropriate fields and surveillance reports will conform to best current practice standards. Data values should be within specified bounds in the system interface but once it loses this logic, it affects quality of the report in different dimensions.

The quality of the report is directly proportional to the amount of time spent to analyse and profile surveillance report and uncover the true data content (Hotchkiss, 2010). It should be noted that in most cases, the source register itself is never perfect. Existing erroneous data reports tends to mutate and spread out during conversion like a virus.

Consistency specifies that two data values drawn from separate data sets must not conflict with each other, although consistency does not necessarily imply correctness. Even more complicated is the notion of consistency with a set of predefined constraints. More formal consistency constraints can be encapsulated as a set of rules that specify consistency relationships between values of attributes, either across a record or message, or along all values of a single attribute in the surveillance report. Deviation from consistent data set in the report, reduces the quality of surveillance reporting (Mate & Bennett, 2009). For surveillance systems to be useful, they must adapt to the changing environment in which they operate and accommodate emerging public health requirements that were not conceived previously (Joseph S. Lombardo, 2002).

Use of computer technology, although not without problems, continues to contribute to the evolution of public health surveillance. For example, by 1991 in the United States, the National Electronic Telecommunications Systems for Surveillance (NETSS) had linked all state health departments in the country by computer for the routine collection, analysis, and dissemination of information on modifiable conditions. In 2001, the US CDC began implementing the National Electronic Disease Surveillance System (NEDSS) to better manage and enhance the large number of current surveillance systems and allow the public health community to respond more quickly to public health threats (e.g., outbreaks of emerging infectious diseases and bioterrorism). In 2007, 35 US states had integrated public health surveillance systems as articulated in the NEDSS vision. When NEDSS was fully implemented across the United States, public health professionals and government agencies were able to quickly recognize and respond in real-time to disease outbreaks or bioterrorism attacks. The Minitel system used in France has also demonstrated the essential utility of office-based surveillance for a variety of conditions of public health importance.

Public health surveillance relies on public health information systems that have been defined to include a variety of data sources essential to public health action. Computer technology can improve these public health information systems which vary from a simple system collecting data from a single source, to electronic systems that receive data from many sources in multiple formats, to complex surveys. As the number and variety of systems will likely increase, future efforts of public health surveillance should focus on advances in electronic data interchange and integration of data, which will also heighten the importance of patient privacy, data confidentiality, and system security

2.4 Administrative constraints and epidemiological surveillance reporting

According to CDC report July 27, 2012, it was noted in that serious public health workforce shortages exist in disciplines that perform surveillance reporting functions, and these shortages limit the nation's capacity and plans for enhancement and surveillance reporting (CDC, 2012). The report further stressed that throughout the country in Uganda, districts and communities report a need for more public health nurses, epidemiologists, laboratory workers, informaticians, and environmental health professionals.

In USA, The Association of Schools of Public Health (ASPH) estimates that 250,000 more public health workers will be needed by 2020 to maintain capacity Data are lacking for the numbers of workers in the diverse disciplines that perform surveillance functions.

Although reports indicate that the number of public health workers is insufficient, enumeration studies of the public health workforce are dated, incomplete, and lack specificity. For example, the Council of State and Territorial Epidemiologists (CSTE) reports biannually on epidemiologic capacity as determined by each state epidemiologist (CDC,2012) but this type of information for other disciplines is lacking or incomplete. Knowledge also is limited regarding the disciplines that are new to performing or supporting surveillance. Their roles, contributions, and extent of their surveillance activities have not been described and warrant articulation.

An on-going systematic approach for monitoring the workforce is needed, including strategies that characterize the workforce for surveillance — who they are, where they work, and their roles by discipline, program areas, and geography. According to Patricia et al. (2012), more information is needed regarding existing surveillance workforce gaps and the diversity and balance or mix of disciplines to determine which are underrepresented, what new disciplines are needed, and where they are needed

CDC (2012) further noted that developing the workforce to support public health surveillance reporting requires multiple actions. A workforce analysis is necessary to provide information about the composition and numbers of workers. This activity would include enumeration of the workforce and existing gaps, forecasting and identifying future needs, and monitoring how a workforce analysis is applied to addressing programmatic needs. Immediate training needs could be addressed by conducting a surveillance training needs assessment and job task analysis; developing surveillance competencies that complement other competency sets; designing, developing, providing, and supporting training for the existing workforce; establishing systems for continuous learning and making resources available; and evaluating the effectiveness of existing and future training.

Adequate support structures and access to essential tools are necessary for the surveillance reporting workforce to perform their jobs. Additional actions might include, identifying administrative inefficiencies (e.g., conduct cost analyses) and needed technologic tools; acquiring resources to ensure access to those tools; providing opportunities for career advancement; and monitoring workforce retention (Patricia et al., 2012)

Finally, partnerships among stakeholders can be strengthened to increase visibility of workforce needs and influence supportive policies within organizations and at federal, state, and local levels. Partner collaborations can include identifying and sharing successful interventions, developing an overarching workforce strategy, identifying existing laws and policies relevant to the public health workforce and leveraging these among the stakeholders and their constituencies, and monitoring and evaluating the effect of policy changes on the workforce (e.g., accreditation standards and (Patricia et al.,2012).

Because of the changing epidemiology of diseases and related reporting requirements, combined with the opportunities offered by the advances in information technology and

enhanced public health surveillance, education and training are critical to strengthening public health workforce capacity. An adequate, educated, knowledgeable, and skilled health workforce that is equipped with necessary tools is vital for an effective public health surveillance system. To achieve these goals, collaboration with partners is essential for enhancing the public health surveillance workforce of the future.

Government policies also greatly impact on epidemiology surveillance reporting: In the report by the Uganda Ministry of Health; Assessment of the Health Information System in Uganda (MOH, 2007), the key findings and recommendations were on all the six main components of Health Information System development, namely: Health Information System resources, core health indicators, data sources, information management, information products or data availability, and dissemination and use. Though core health indicators were found to be well defined and comprehensively captured through both routine facility-based and population-based data sources, there were severe inadequacies identified in terms of capacity (skill and infrastructure), resources to support data capturing and management, availability and appropriate disaggregation, dissemination and utilization.

Lower administrative levels chronically lack adequate capacities to capture data on vital events such as births and deaths that occur in their communities, and yet this is key information for bottom-up planning.

In most districts, the challenges of harmonization and streamlining data sources still constrain provision of quality data for planning, implementation and performance evaluation. Investment in infrastructure, such as ICT will facilitate improvement in data flow and management through internet connectivity and automated data-warehousing.

2.5 Logistical constraints and epidemiological surveillance reporting

Choi (2012) suggests that to avoid fragmentation in national surveillance reporting efforts, there is a need for government to provide national facilitation to foster inter-district and inter-facility collaboration.

Ministry of health guidance on surveillance reporting can lead to coordination across regions and districts, inter-region and district technology transfer, and opportunity to learn from the successes and failures of other health facilities. No attempt to meet the current challenges in public health surveillance in Uganda will succeed unless it recognizes the fundamental importance of providing and maintaining a cadre of highly trained and motivated public health professionals in every local health facility in Uganda (MOH and CDC , 2014)

Thacker and Berkelman, (1988) noted that, to use surveillance information to better prioritize, plan, deliver, and evaluate programming, public health staff must possess the required knowledge and skills. While it is neither feasible nor necessary for all staff to receive in-service training, a greater proportion of the public health workforce will need to acquire the knowledge and skills necessary to effectively understand and use surveillance tools and techniques. Public health surveillance systems must be strengthened by allocating resources, including reporting resources like tools and even human resource, logistical resources like separate monthly incentives for the effective use of health surveillance data and tools and lastly recognizing the need for existing staff to acquire new skills in epidemiology surveillance.

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2.6 Empirical studies

2.6.1 Globally empirical studies

Chretien (2008) study and Quick, Niandou (2003) study, these two studies have a similarity of using survey method for surveillance reporting thou they each obtained different findings.

2.6.2 African empirical studies

Ndiaye, Quick , and Sanda, Niandou (2003), in their study "the value of community participation in disease surveillance" these two studies were methodologically similar in some way though findings obtained appear different as per each of the studies.

Link, Osborn and Brachman's, (2009) study findings were similar with the findings in Valleron, Bouvet, and Garnerin (1986) in which both findings pointed to use of computer network for the surveillance of communicable diseases despite the fact that they had both used a different methodology. Link, Osborn and Brachman, (2009) study used some similar methods of interviews, document review study with Ndiaye SM (2003) study, the value of community participation in disease surveillance findings helped to revise the methodology of surveillance reporting into a more African related while Link, Osborn and Brachman, (2009) pointed out that public health surveillance requires systematic application of information and computer science and technology to public health practice, research, and learning

2.6.3 Ugandan empirical studies

Kabatereine (2010) and Zaramba (2009), How to (or not to) integrate vertical programmes for the control of major neglected tropical diseases in sub-Saharan Africa. This study findings helped in surveillance program revision as the Ministry of health began publishing publically weekly analysis of weekly surveillance findings via District Health Information System

version 2 to all districts for all the health stakeholders to see which were similar with the Oren, Sseengooba, Mijumbi, Tashobya, Marchal and Criel (2014) study in which findings were evidence that contributed to instrumental use when ministry of health used evidence to guide discussions to determine budget allocation to health sector in an effort to cover short fall from loses in user fees thou different methods were used in both these two.

2.7 Conclusion

The studies reviewed above stipulated different views on Administrative, technological as well as logistical constraints that affect epidemiological reporting. Brachman and Abrutyn, (2009) noted that emerging infectious diseases, such as human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), severe acute respiratory syndrome (SARS), and pandemic influenza, and emerging epidemic conditions, such as the Ebola, Marburg epidemic, have demonstrated that we remain vulnerable to health threats. The importance of strengthening public health surveillance to provide early warning and develop actions has been a primary focus in public health. However, despite improvements in the past decades, public health surveillance reporting capabilities remain limited and fragmented, with uneven global coverage. It is hoped that learning from the past, reflecting on the present, and planning for the future can further enhance public health surveillance reporting for the good of humankind.

This study is unique only to Uganda and specifically to Mid-Western Uganda which makes it an important step to closing the gap for this particular study on weekly epidemiology reporting.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the procedure that will be followed in conducting this proposed study in terms of; research design, study population, determination of the sample size, sampling techniques and procedure, data collection methods, data collection instruments, pre-testing validity and reliability, procedure of data collection, data analysis and measurement of variables.

3.2 Research design

According to Kothari (2004:31), a research design is a plan and blue print for collection, measurement and analysis of data so as to obtain answers to the research question. In this proposed study an explanatory research design will be adopted because of the hypothesis in the study which needs to be tested as suggested by Dudley (2011:108). Opinions from Health workers will be sought aiming at finding out the extent to which Technological, Logistical and administrative constraints have contributed to health Unit Weekly epidemiological reporting in order to generate answers to the hypothesis. Approaches that will be used in this study are qualitative data in word by key informant interviews and quantitative data in numerical form by survey because of need to clarify on the results and to examine the consistency of findings obtained from both the survey with those from key informant interviews as noted by Amin, 2005:71 in addressing the research question of this proposed study.

3.3 Study population

The population in this study is 89 government and private not for Profit health facilities in mid-western Uganda from which a sample to represent that entire population is Health Management Information system (HMIS) staff from health facilities and at the district level. Therefore, categories of the likely population to be studied are 7 District Surveillance Focal Person, 7 District Biostatistician, 7 HMIS focal persons, 89 Medical records assistants and some health facility in-charges

3.4 Determination of the sample size

The actual sample size that will be studied is 110 respondents since it is a mixed methodology. They will be determined from the sample size determination table as described by (krejcie and Morgan, 1970) as cited by (Amin, 2005:454). Below; table 1 illustrates the sampling procedure that will be followed in this proposed study.

Table 1 Respondents by category, population, sample size and sampling strategy.

Category	**Population**	**Sample size**	**Sampling Strategy**
General Hospitals , HCIVs, IIIs	89	89	Purposive sampling
District Surveillance Focal Person	7	7	Purposive sampling
District Biostatistician	7	7	Purposive sampling
District HMIS Focal Person	7	7	Purposive sampling
Records Assistants	89	89	purposive sampling
Total	110	110	

3.5 Sampling techniques and procedure

This study will use non-probability sampling of purposive sampling as stated by Amin, (2005:247) in selecting the 89 records staff from all health facilities with level III and above in order to have a gender sensitive representative sample to fill in the questionnaires. The researcher will select a sample with a mind-set that, they are more knowledgeable in regards to the research topic. In this proposed study, will be used in selecting District Surveillance Focal Person, District Biostatistician, District HMIS Focal Person (21 in number) and 89 records assistants who possesses more knowledge concerning facility surveillance reporting

3.6 Data collection methods and instruments

The specific method to be used in collection of data in this study is the survey method. The data collection instrument will be given to respondents to fill in and return as stated by Dudley, (2011:170) will be drafted in accordance to recommendations by Kothari (2005), Saunders, et al (2009) and Sekaran (2003). It will be used to collect quantitative data, instructions on how to tackle the various sections of the questionnaire will be provided. Section A of the instrument will address respondent's bio data (sex, age, education level and duration of service in the district health facility, section B will address questions related to reporting, section C structured question.

Key informant interview is the second method that will be used in collection of qualitative data of this proposed study. Key informants who are respondents selected to be part of a study because of their special knowledge and experience on the study topic as noted by Dudley, 2011:145 will be consulted in this proposed study especially those from the district health office. The researcher will conduct a semi structured interview where a researcher has a list of questions to be covered often referred to as an interview guide as described by Bryman, 2001:314. Therefore in this proposed study, the researcher will draft the instrument of a key informant interview guide which will begin with an introduction message about the

study and its rationale, a question on gender and position of the respondent and any other relevant questions aiming at collecting the key informant's views in regards to this proposed study topic.

3.7 Quality of Instruments

3.7.1 Validity

Amin, 2005:285 notes that validity is ensuring that data obtained through the instruments is measuring what is supposed to be measured.

Validity describes the extent to which a measure accurately represents the concept it claims to measure (Punch, 1998). There are two broad measures of validity, external and internal.

External validity addresses the ability to apply with confidence the findings of the study to other people and other situations, and ensures that the 'conditions under which the study is carried out are representative of the situations and time to which the results are to apply' (Black, 1999).

Internal validity addresses the reasons for the outcomes of the study, and helps to reduce other, often unanticipated, reasons for these outcomes.

Three approaches to assessing internal validity are content validity, criterion-related validity, and construct validity (Eby, 1993 and Punch, 1998).

The researcher will adopt to use content validity because it is concerned with the relevance and representativeness of items, such as individual questions in a questionnaire, to the intended study. The researcher will use this approach because the study is designed to ascertain respondents' knowledge about epidemiology surveillance reporting (Eby, 1993). This will be achieved through conducting a pilot study with people who are similar to the intended study participants

3.7.2 Reliability

The researcher will take reliability as the proportion of variability in a measured score that is due to variability in the true score (rather than some kind of error). A reliability of 0.9 means 90 per cent of the variability in the observed score is true and 10 per cent is due to error. A reliability of 80 to 90 per cent is recommended for purposes of this research

3.8 Procedure of data collection

The researcher will present the data collection introduction letter from the university to the participating districts, a upon their approval of the proposed study, the researcher will then administer the questionnaires to the staff chosen as a sample and the researcher will also conduct key informants' interviews with the Key district health office team following the key informant interview guide.

3.9 Data analysis

The data obtained through the instruments will be processed and summarized in the following ways, Quantitative data will be processed and summarized into graphs, charts and statistics with the aid of statistical package for social sciences (SPSS) so as to convey meaning from data obtained, to examine the relationships between the independent and dependent variable and to meet the objectives of the proposed study as noted by Saunders, Lewis and Thornhill, 2009. While qualitative data will be analysed by summarizing responses to open ended questions through listing all the responses to each question together on the same page so that they are clearly examined together, similar responses are grouped under one category, counting the number of responses that fit each category into frequencies so that results are reported into quantitative form as suggested by Dudley, 2011. Statistical tests as noted by Dudley, 2011 of testing for relationship between the hypothesis in order to determine the casual relationship between the independent variable utilization of evaluation findings and

the dependent variable performance of public agencies will then be carried out and the resulting information will be used in writing the research report.

3.10 Measurements of variables

The Measurements of the variables identified in the study will be as follows in order to increase validity and reliability. Nominal measurements as stated by Sarantakos, (2005) of assigning numbers to categories only for identification purposes without having any mathematical meaning will be used in the questionnaire in questions asked on sex, age, education level and duration of service. Ordinal measurements which Sarantakos, (2005) noted as assigning numbers to categories for purposes of ranking them according to magnitude from the lowest to the highest point so as to identify the degree of impact at which a given statement has been experienced in the facility will be used.

So therefore the likert scale as stated by Mbabazi, (2008:74) which shows the amount of agreement or disagreement with each response category will be adopted, statements of strongly agree, agree, neutral, disagree and strongly disagree where each contains a numerical values will be used on the questions asked in the questionnaire and the numerical value attached on each response circled out by the respondents in the questionnaire will be processed using statistical package for social sciences (SPSS) so as to develop relevant conclusions on the statements asked about in the questionnaire. The statements asked about in the questionnaire and the key informant interview guide will be questions that are focusing on both the independent variable and dependent variable of the study as stated in the study objectives. Therefore, questions concentrating on asking about the indicators of each of the following dimensions of instrument, administrative, technological and logistical constraints as they appear in the conceptual frame work will be drafted.

3.11 Description of Human Subject Protection

The researcher will first introduce himself; explain the relevance of the study to the participants which is an academic oriented study aimed at generating knowledge on Constraints of health unit weekly epidemiological surveillance in Midwestern Uganda's districts. Then requests permission from respondents to please participate in the study and lastly informs respondents that confidentiality will be upheld in the study so their names won't be required.

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APPENDIX I: QUESTIONNAIRE FOR HEALTH FACILITY STAFF

Research Questionnaire to analyse the Constraints that affect Health Unit Epidemiological Surveillance reporting in Midwestern Uganda

Dear Respondent,

My name is Bakahirwa Philip, student of UTAMU carrying out an academic research for an award of a master's degree in Project Monitoring and Evaluation.

Please kindly answer the questions as they relate to you as possible. All data collected will be treated with confidentiality and analysed for academic purposes.

Please Note;

- The exercise is purely for academic purposes. Therefore, any information given shall be treated with due confidence.
- The researcher will maintain anonymity in quoting specific statements unless permitted otherwise by the person(s) concerned.

Please tick appropriate option in the box provided and the researcher will highly appreciate your responses.

Thank you in advance

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Gender

Male ☐ Female ☐

2. Age

18-25 ☐ 26-35 ☐ 36-45 ☐ 40+ ☐

3. Period spent on the job/years

<1 ☐ 1 – ☐ 6 – ☐ ☐

4. Level of education

Diploma ☐ Degree ☐ Postgraduate ☐

5. How do you rate Epidemiology surveillance data reporting in your health facility?

Very Goo ☐ Good ☐ Poor Very ☐ Poor ☐ Not sure ☐

6. How do you compile Epidemiology Surveillance data?

Electronic system ☐ Tools/Regis ☐ Both ☐

7. Do you take part in the compilation of reports?

Yes ☐ No ☐

8. If Yes, Have you ever received any formal training in epidemiology surveillance Data Management?

☐ ☐

Yes No

SECTION B: EPIDEMIOLOGY SURVEILLANCE REPORTING DMIENSIONS IN HEALTH FACILITIES

In the table below, indicate your level of agreement on the following items regarding Epidemiology surveillance reporting at your health facility using the following dimensions

Epidemiology surveillance reporting dimensions

Item	Strongly	Agree	Disagree	Strongly	Not

	agree			disagree	sure
Our facility's weekly epidemiology surveillance report is timely					
Our facility's weekly epidemiology surveillance report is complete					
Our facility's weekly epidemiology surveillance report is valid					
Our facility's weekly epidemiology surveillance report is reliable					
Our facility's weekly epidemiology surveillance report is consistent					
Our facility's weekly epidemiology surveillance report is current					

10. In your own view, what other dimensions show that epidemiology surveillance reports collected by your health facility is submitted in time to the next level

……

……

……

……

SECTION C: ADMINISTRATIVE, TECHNOLOGICAL AND LOGISTICAL CONSTRAINTS OF WEEKLY EPIDEMIOLOGICAL SURVEILLANCE REPORTING

11. In the table below, indicate YES/ NO on the following statements regarding administrative Constraints of epidemiology surveillance reporting at your health Facility

DIMENSIONAL ITEM	**YES/NO**
Most Health workers are not trained on the HMIS tools and documentation for reporting	
Poor staff attitude and perception towards Epidemiological surveillance reporting	
Limited Human Resource leading to overload hence documentation isn't made a priority and reporting becomes a problem	
Few Standard Operating Procedures at the facility to facilitate Surveillance data compilation and reporting?	
IS the District or MOH giving u frequent support supervision on weekly surveillance reporting issues	

Do internal transfers of records staff affect your epidemiology surveillance reporting trends at your health facility?	
Poor documentation within health facility have adverse effects on the timely epidemiology surveillance report to be compiled	
Lack of alternative personnel to compile and submit epidemiological reports affects our facility's reporting rates	

12. In the table below, indicate YES/ NO on the following statements regarding technological Constraints of epidemiology surveillance reporting at your health Facility

DIMENSIONAL ITEM	**YES/NO**
Our health facility lacks epidemiological surveillance reporting tools and it causes our staff gets demotivated to report	
There is insufficient internet communication data which result in delays and adverse incidents in final epidemiology surveillance report submitted	
Cases of poor network connection, sharing, and reporting impacts on the number of reports submitted by your health facility	
Our records person lacks technological skills to manage mTrac reporting system	
Epidemiology report depends on the availability of data recorded and collected in the health facility	

Limited resources at this facility to embrace technology advancement affects epidemiological surveillance reporting	

13. In the table below, indicate YES/ NO on the following statements regarding logistical Constraints of epidemiology surveillance reporting at your health Facility

DIMENSIONAL ITEM	**YES /NO**
Lack of feedback to the Lower facilities on the report submitted and they end up guessing whether they use their report is correct	
No motivating driving force to report, we are not appreciated for reporting on time but they will be recognized once they fail to report	
Unavailability of HMIS 033b summary reporting tools	
Are facilities in hard to reach areas (remote) always accessed and supported in programs like data mentorship and reporting?	
Completeness of information compiled at the health facility is not dependable because you are not sure of the report format?	
Is your facility's filing systems makes it possible to tress registers for data compilation and reporting on epidemiology surveillance?	
Does Presence of very many source documents to consider while collecting epidemiology surveillance report affects reporting?	

APPENDIX II: KEY INFORMATIVE INTERVIEW GUIDE FOR FACILITY IN-CHARGE AND DISTRICT HEALTH TEAM (DHT)

Thank you for receiving me, my name is **Bakahirwa** M. **Philip** a student of Uganda Technology and Management University. I'm collecting data for a study on the Constraints of the health unit weekly epidemiology reporting. I have learnt that you are one of the key stakeholders in Data management from all health facilities be private or public. For this reason, am interested in getting information from you and I would like you to share your experiences, views, knowledge, and opinions with me in an open and honest manner.

If you find the information sensitive to discuss you reserve the right not to answer the question or to quit the discussion at any time. Never the less I want to assure you that the information obtained from you will be important for this study. The interview will take approximately 30 minutes.

Are you willing to proceed?

Thank you

Basic information from health facility in-charges

a) Date of interview……

b) District of the respondent …….. ….

c) Title/ occupation of the respondent…….. Sex……..

d) How do you collect epidemiology surveillance data for reporting in this facility?

e) What other HMIS reports are collected from your Health Facility/District?

f) What challenges do you face in your efforts to produce quality epidemiology surveillance reports?

g) Do private health facilities report in time

h) Do you often submit the Weekly Surveillance Report (HMIS 033b)?

i) What makes the epidemiology surveillance report (HMIS 033b Report) easy to submit?

j) What hinders the submission of epidemiology surveillance report (HMIS 033b Report)?

k) Have you been trained on the various aspects of the epidemiology surveillance report (HMIS 033b Report)?

l) What can be done improve the epidemiology surveillance reporting (HMIS 033b Report) in the district/ facility?

m) Is there anything else you would like to add?

n) Who else should we talk to that is a key stakeholder in overseeing epidemiology surveillance reporting?

Responses from the District Health Team (DHT)

Today, I want to discuss with you an important aspect of health systems which is health information. We are interested in knowing how epidemiology surveillance Health Information is collected, aggregated and sent to Ministry from your Health Centre/ District

o) Do you monitor epidemiology surveillance data collection and reporting by health facilities?

p) If yes, how often do you monitor them?

……

q) How do you handle epidemiology reports from the lower health facilities?

……

r) What kind of support do you offer to private health facilities to improve reporting?

……

s) How do you rate the quality of reports submitted by private health facilities

t) Do you have any challenges with the weekly epidemiological surveillance reports provided by health facilities……

…….

u) If yes, what are some of the challenges with their data?

……

v) Do health facilities meet deadlines to submit their weekly epidemiology reports?

……

w) What do you recommend to be done in order to improve data compilation in lower health facilities?

APPENDIX III: TIME TABLE FOR THE RESEARCH PROJECT

ACTIVITY	TIMELINE
Working on the research proposal and its final submission.	Apr-16
Development of Tools	Jun-16
Data collection	Jun-16
Data entry	Jul-16
Data analysis	Jul-16
Desertation writing	Jul-16
Review and Submission of the dissertation	Aug-16
VIVA	Aug-16

APPENDIX IV: GANTT CHART

ACTIVITY	April-May 2016	June 2016	July 2016	August 2016
Working on the research proposal and its final submission.				
Development of Tools				
Data collection				
Data entry				

Data analysis				
Dissertation writing				
Review and Submission of the dissertation				
VIVA				