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DATA MANAGEMENT PRACTICES AND PERFORMANCE OF HIV PROGRAM IN HEALTH FACILITIES IN MOMBASA COUNTY, KENYA

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ABSTRACT

Health care service provision in the devolved system of governance refer to the various processes undertaken by sub-national governments through which inputs like; finances, human resources, equipment, medical drugs, and other essential supplies are amalgamated to facilitate the delivery of health interventions to the populace. The Kenyan Health Policy 2012-2030 has prioritized the elimination of communicable diseases such as HIV and AIDS in line with the right to the highest attainable standard of health. However, data quality has been found to act as a key barrier to effective HIV/AIDs programming and intervention, a common phenomenon in developing countries. It is against this backdrop that this study sought to assess whether data management practices affect the performance of HIV programs. Specifically, the study examined data handling operating procedures, data capture tools affect the performance of HIV programs in Health facilities in Mombasa County, Kenya. The descriptive research design was adopted. The target population of the study was 285 registered health facilities in Mombasa County Kenya with a sample size of 111 public and private facilities. Primary data was collected with the use of a questionnaire. Quantitative data was analysed using descriptive and inferential statistics with the help of SPSS software. Qualitative data was analysed using thematic analysis. The study results were presented through use of tables and figures. The study concludes that M&E standard operating procedures have a significant effect on Performance of HIV Program in Health Facilities in Mombasa County, Kenya. The study also concludes that data capture tools h a significant effect on performance of HIV Program in Health Facilities in Mombasa County, Kenya. Based on the findings, this study recommends management of health facilities in Mombasa County, Kenya should ensure effective documenting procedure to ensure information is properly stored and can easily be retrieved.

Key Words: Data management practices, Data handling operating procedures, Data capture tools, HIV programs, Health facilities

Background to the Study

In the absence of a vaccine or cure for Acquired Immune Deficiency Syndrome (AIDS), the spread of Human Immunodeficiency Virus (HIV) must be controlled through programs designed to distribute antiretroviral therapy (ART) and encourage adherence. This is in additional to prevention strategies such as Elimination of Mother to Child Transmission (EMTCT), voluntary medical male circumcision and Pre and Post exposure prophylaxis. To mitigate and eventually eliminate HIV epidemics around the world, it remains essential to develop and implement HIV prevention interventions that modify individuals' behaviours and practices. Kenya National AIDS strategic plan (NACC, 2015) report on strategic planning identified data quality as a hindrance to achieving the numerous initiatives that have been put in place to tackle HIV and AIDS. Although the report acknowledges insufficient data provision from Community Based Programme Activity Reporting System (COPBAR) for decision systems supports, limited efforts have been put towards understanding the causes of poor quality of data in the systems. Data quality has been cited as one of the barriers to effective HIV/AIDs programming and intervention. This is common in developing countries such as Kenya which faces numerous institutional and infrastructural challenges in HIV/AIDs management such as lack of sufficiently skilled personnel and operational tools (Chiba *et al*., 2012). This happens at the backdrop of high HIV/AIDs prevalence especially in Nyanza and Western regions of Kenya.

Health care service provision in the devolved system of governance refer to the various processes undertaken by sub-national governments through which inputs like; finances, human resources, equipment, medical drugs, and other essential supplies are amalgamated to facilitate the delivery of health interventions to the populace. Garg and Agarwal (2014) observe that it is the lack of one or several of these inputs that influences the provision of healthcare in the devolved even at the lowest level, primary care. In Colombia, Balasubramanian et al., (2015) reported that budget constraints did lead to the introduction of local taxation measures to enhance the financing of human resources for health (HRH) and health infrastructure by local governments. Yang, et al., (2013) reported on challenges of distribution of human resources for health that did adversely influence the implementation of health care projects by regional governments for the provision of health services in Chile.

Almajali, Masa'deh, and Tarhini (2016) reported that issues of financial planning and inadequate local taxation systems coupled with staffing of hospitals did have a negative influence on the implementation process of health care projects and the provision of health services by municipal governments in Peru. In Bolivia, Flottorp *et al.* (2013) reported failure to form partnerships between traditional healers and biomedical staff (doctors and nurses) did adversely influence the implementation of comprehensive health care projects that would have enhanced the provision of health services by departmental governments. Financial challenges emanating from poor allocation from central government that led to bottlenecks of low staffing of HRH greatly influenced the implementation of health care projects that would have witnessed the provision of health services by municipal governments in Nicaragua.

Ram, Corkindale, and Wu (2013) reported that there existed the need for collaborative communities between provincial governments and religious organizations to enhance the implementation process of health care projects that would enhance the provision of health care services in Papua New Guinea. In New Zealand, Ahmad and Cuenca (2013) reported that the involvement of other stakeholders in the form of collaborative governance integrated into community participation did positively influence the implementation of health care projects and the consequent provision of health care services by regional governments in New Zealand. In the Solomon Islands, Russ *et al.* (2015) reported that the equitable distribution of human resources for health (HRH) as an important factor in the implementation of public goods among them health care projects that enhanced the provision of health care services by provincial governments.

There have been great challenges in Africa since devolution of the health functions for the implementation of healthcare projects was done. In South Africa, Hendriks, (2013) noted the uneven allocation of finances and the resultant imbalance in health care infrastructure coupled with the consequent uneven distribution of doctors and nurses greatly influenced the implementation of health care projects by provincial governments. Aranda-Jan, Mohutsiwa-Dibe, and Loukanova (2014) reported that insufficient funding and inopportune disbursement of funds from the central government for financing of human resources for health (HRH) coupled with poor and uneven distribution of unqualified human resources and the non-existence of collaborative communities did adversely influence the implementation of health care projects in Tanzania.

Rondinelli (2013) reported that poor distribution HRH and to be specific doctors who were less than nurses posed challenges to local governments in their mission to implement health care projects and provide health care services, mainly in rural Uganda. Barasa, (2014), in Kenya stated the importance of partnerships between civil society and county governments in the implementation of health care projects. Okech and Lelegwe (2016) also reported that budgetary constraints and unequal distribution of human resources for health had adversely influenced the implementation of health care projects by county governments.

According to Ministry of Health (2020), there are 160 privately owned clinics, 22 municipal council-owned, and Government hospitals. The major hospitals include Coast Provincial General Hospital, and the privately-owned Mombasa Hospital, Aga Khan Hospital, and Pandya Memorial Hospital. The Coast Provincial General Hospital serves as a referral level hospital for the other counties in the region and is overwhelmed with work. While the other major health facilities are expensive and out of reach for most people. The government health facilities have few doctors, clinical officers, nurses, clinical officers, and public health officers. The Doctor /patient ratio is about 12:100,000 (MDSP 2005-2010), which among other factors, makes it difficult for the medical personnel to concentrate on early diagnosis of diseases.

Statement of the Problem

The Kenyan Health Policy 2012-2030 has prioritized the elimination of communicable diseases such as HIV and AIDS in line with the right to the highest attainable standard of health (NACC, 2015). Despite the tremendous progress made in more than three decades of the HIV and AIDS response, the epidemic continues to be a significant contributor to the national disease burden (Ministry of Health, 2012). In 2017, HIV accounted for 19% of all years of life lost in that year. Since the first case was officially reported in 1984 in Kenya, about 2 million people have lost their lives due to AIDS-related deaths (National AIDS Control Council (NACC), 2018). The Kenya AIDS Strategic framework II further notes that differences in HIV performance coverage with regards to age, sex, and geographical location persist.

According to the situational analysis for Mombasa County strategic plan (Mombasa County Government, 2020) , implementation of HIV M&E has had several challenges which includes lack of county HIV information hub, Inadequate data use for decision making in the county, Parallel data collection and reporting systems that are not inter-operable and over-dependence on external funding for M&E activities at county level. Kenya Population-based HIV Impact Assessment (KENPHIA) reported noted that the county has the highest HIV prevalence at 5.6% compared to other four coastal counties; this is also higher than the national average of 4.7% (National AIDS and STI Control Programme (NASCOP), 2018). KENPHIA report further recognizes one key indicator in HIV program is prevalence of viral suppression which for Mombasa County is at 69.4% which is below national average of 71.6%.

National AIDS and STI Control Program Data quality assessment (National AIDS and STI Control Program (NASCOP), 2017) found that HIV testing indicators are generally over reported especially the indicator “Number tested for HIV” This could be attributed to either ambitious

targets allocated to counsellors hence causing an inflation in numbers that could not be verified or the absence of all registers in use, including the mobile registers during the DQA. This directly affects the performance on WHO 90-90-90 goal of which the first 90 targets 90% of people living with HIV knowing their status. HIV testing is not currently optimized with at least 40% of population not accessing the annual recommended testing (Nairobi City County, 2018). The family planning units are recommended to offer HIV testing at counselling services however, in Mombasa County, only 45% performed any counselling for HIV testing, 40% perform any HIV testing (Eastment et al., 2019).

Data quality has been cited as one of the barriers to effective HIV/AIDs programming and intervention. This is common in developing countries such as Kenya which faces numerous institutional and infrastructural challenges in HIV/AIDs management such as lack of sufficiently skilled personnel and operational tools (Chiba et al., 2012). This happens at the backdrop of high HIV/AIDs prevalence especially in Nyanza and Western regions of Kenya. For instance, according to Opon (2016), in Nyanza region, Homa Bay County leads with HIV prevalence of over 25% causing the county to contribute the largest data sets related to HIV/AIDs. Kenya has a national body, NACC, mandated with dealing with HIV and AIDS. However, there have been no conclusive data quality assurance (DQA) audits on its COPBAR systems. It is against this backdrop that this study sought to assess whether data management practices affect the performance of HIV programs.

Research Objectives

The main objective of the study was to establish the role of Data Management Practices on the Performance of HIV Program in Mombasa County, Kenya.

i. To assess the role of M&E standard operating procedures on the Performance of HIV Program in Health Facilities in Mombasa County, Kenya
ii. To analyze the role of data capture tools on the Performance of HIV Program in Health Facilities in Mombasa County, Kenya.

LITERATURE REVIEW

Theoretical Review

Normalization Process Theory

The NPT is a new theory which offers trialists a consistent framework that can be used to describe, assess and enhance implementation potential. We encourage trialists to consider using it in their next trial. The NPT focuses on the work that individuals and groups do to enable an intervention to become normalised. There are four main components to NPT: coherence (or sense-making); cognitive participation (or engagement); collective action (work done to enable the intervention to happen); and reflexive monitoring (formal and informal appraisal of the benefits and costs of the intervention). These components are not linear but are in dynamic relationships with each other and with the wider context of the intervention, such as organisational context, structures, social norms, group processes and conventions.

NPT is a theory of implementation that focuses on what people—both individuals and groups—do instead of what they think or mean. It was built from studies of practise in many different healthcare systems. This means that it puts the focus on parts of individual and group behaviour that studies of implementation processes have shown to be important. Before NPT could be made, a strong generic theory of implementation had to be made step by step. From this, tools were made to help researchers and people who work in implementation think about and measure important parts of implementation processes. In its most recent version, we showed how the basic mechanisms described in NPT work as self-organizing mechanisms in complex adaptive social

systems. The development of theory in NPT has been cyclical, with three stages based on practical questions.

NPT provides a set of sociological tools to understand and explain the social processes through which new or modified practices of thinking, enacting, and organizing work are operationalized in healthcare and other institutional settings. In particular, the theory is concerned with three core problems: 1. Implementation, by which we mean the social organization of bringing a practice or practices into action. 2. Embedding, by which we mean the processes through which a practice or practices become, (or do not become), routinely incorporated in everyday work of individuals and groups. 3. Integration, by which we mean the processes by which a practice or practices are reproduced and sustained among the social matrices of an organization or institution.

Normalization Process Theory is concerned with the social organization of the work, of embedding practices in routine elements of everyday life and integration of embedded practices in their social contexts (May & Finch, 2009). The theory further seeks to explain the operationalization and institutionalization of complex interventions in health care settings (May, 2006; May et al., 2007). This theory links to standard operating procedures (SOP) as a means of institutionalizing practices that improve performance of HIV program.

Document Theory

Document theory examines the concept of a document and how it can serve with other concepts to understand communication, documentation, information, and knowledge. Knowledge Organization itself is in practice based on the arrangement of documents representing concepts and knowledge. The word document commonly refers to a text or graphic record, but, in a semiotic perspective, non-graphic objects can also be regarded as signifying and, therefore, as documents.

After the prehistoric era, advancements in technology made it possible to expand the repertoire of dance, drawing, gesture, speech, and ritual. Writing offers speech a substitute by recording. Multiple copies could be produced by printing and copying, and quick message delivery is now possible thanks to advancements in telecommunications. The impacts of time and distance were gradually lessened as a result of these advancements, and when combined with the rising division of work in society, they caused a sharp rise in the number of papers as well as our reliance on them. It is erroneous to speak of a developing information society since cooperation and the exchange of knowledge are fundamental to all communities, including early hunter-gatherer groups. The novel and important aspect is the growing importance and volume of documents. We are becoming more and more dependent on recorded testimony and second-hand information since we live in a document society (Buckland 2017a) (Wilson 1983).

The steady increase in the variety and number of documents since prehistoric times enables the development of communities, the division of labour, and reduction of the constraints of space and time. Documents are related to data, facts, texts, works, information, knowledge, signs, and other documents. Documents have physical (material), cognitive, and social aspects. Document theory is a field that examines both the concept of a document and how it can serve with other concepts to understand better the complex areas of communication, documentation, information, and knowledge (Buckland, 2018). Furner (2016) confirms that a dataset is made up of documents; and the dataset is a species of document which supports the perceived facts of data contained in the documents (Frohmann, 2017; Furner, 2016). This theory hence links to data capture tools as the primary source documents for demonstrating performance.

Conceptual Framework

Robson and McCartan (2016) defines the conceptual framework as the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs research as a key part of the research design. The conceptual framework serves as a guide and ballast to research (Ravitch

& Riggan, 2017), functioning as an integrating ecosystem that helps researchers intentionally bring all aspects of a study together through a process that explicates their connections, disjuncture, overlaps, tensions, and the contexts shaping research setting and the study of phenomena in that setting. The variables of this study comprised of one dependent variable (performance of HIV projects) and four independent variables (M&E standard operating procedures and data capture tools) as shown in figure 1 below:

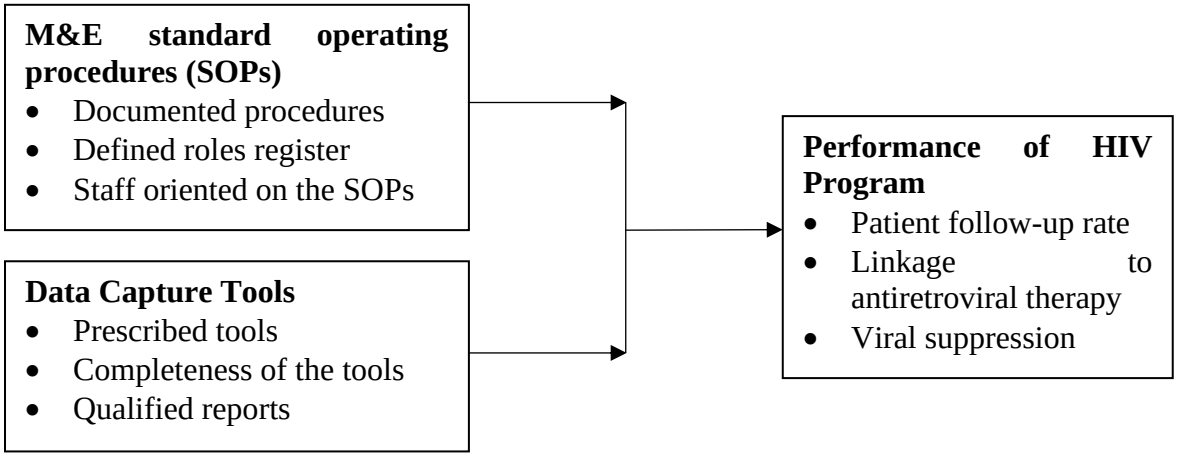

Figure 1: Conceptual Framework

M&E Standard Operating Procedure

Globally Evaluation and Monitoring Standard Operating Procedure has become an integral tool of management. In the period of 1970s M&E was project based and focus was on inputs and outputs with less emphasize on results. During this period the need to establish baseline information about the survey was obtained through administrative records. In the 1980s there was shift from of M&E projects from inputs to results. RBM gained popularity shifting from inputs to results.

Edmunds and Marchant (2008) give an evolution of M&E from the 1990s to 2000s. M&E began in the 1970s as applied research where more emphasis was on evaluation. However, this perception was later challenged by individuals who viewed it as a tool of management. This school of thought put emphasis on performance budgeting, project-level budget management; those involved mainly had financial, M&E reporting systems or management background and project interest.

In 1980s, focus shifted to sectors from projects where sector-wide approach through coordinating and advocating national development planning. Evaluation and Monitoring developed into functions within the ministries and later M&E units were established in the ministries. At the time, National Statistical Offices (NSOs) did not actively participate in evaluation and monitoring of programs, they occasionally did baseline surveys but were not fully set up to do M&E work. This early cooperation between NSOs and sectoral M&E plans were unsuccessful. During 1990s, NSOs became aggressively involved in monitoring the poverty using the household surveys that were multi-topic. Most countries had NSOs as the only agency with the capability to undertake national-wide household surveys. However, their experience and skills were on collecting data but not on data analysis.

Data Capture Tools

Integrated Information Systems or Enterprise Resource Planning Systems (ERP) in healthcare systems that integrate data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels

of health services (Teklegiorgis et.al, 2016). ERPs are information systems that manage the business and consist of integrated software applications such as customer relations and supply chain management, manufacturing, finance, and human resources (Hoch & Dulebohn, 2013). An integrated HMIS is expected to ensure that appropriate data is collected from the various sources, processed, and sent further to all the needy destinations (Karan, Selvaraj, & Mahal, 2014).

The system is expected to fulfil the information needs of an individual, a group of individuals, the management functionaries, the managers, and top management. It is to be noted, however, that the success in implementing IHMIS is not very encouraging (Kyalo, Odhiambo-Otieno, Otieno & Mwaura-Tenambergen,, 2018). Effective strategies to help physicians mitigate risk when working in collaboration with other healthcare professionals include using good communication skills, understanding the scopes of practice, roles and responsibilities of different healthcare professionals, and complying with applicable policies and procedures. The importance of effective written communication cannot be underestimated; including appropriate documentation and review of what is increasingly an interdisciplinary clinical health record. Successful HMIS integration requires "big picture" thinking, such as analysing the impact of service changes and new technologies. Healthcare managers should communicate and exchange ideas about providing coordinated service delivery to achieve desirable outcomes. Information-sharing and appropriate technological support are enablers of HMIS integration. Manager's involvement in monitoring and evaluating quality of service delivery is also required in integrated systems. Valid, useful indicators and standardized reporting allow for performance comparisons among individual, organizations and groups of healthcare providers. Since integration of HMIS favours an interdisciplinary approach to management, team members must have clear roles, responsibilities, and accountabilities, and these should be supported by a policy and procedural framework. Healthcare teams should also know and agree on the care provider with overall responsibility for directing and coordinating service delivery.

Managers should be aware of any organizational policies outlining the expectations at each level of care. Another potential area of concern for doctors in an integrated HMIS relates to appropriate reporting. Hospitals should establish appropriate thresholds and pathways for reporting within the organization. Brazil recognized the need to improve access to health care and hence embarked on a major initiative to reform the health system. As part of the reforms, the present Brazilian National Health system, called SUS (Sistema Unico de Saude) or unified health system was created in 1998. Under SUS, health services are structured in three tiers. Access of services in tier 2 and 3 has to be on referral basis. The HIS system that was developed would handle all requests for healthcare services and allocate resources optimally. The system helps to ensure longevity and continuity of care (Heidemann, Dalmolin, Rumor, Cypriano, da Costa, & Durand, 2017).

In 2004 Zambia decided to streamline the patient record-keeping by introducing a SmartCare program with the vision of ensuring that each person in Zambia has a complete electronic health record that is used to assure them continuity of high-quality and confidential care by providing timely information to care givers at the point of service. Each Zambian now carries a SmartCard to help improve patient care and improve health management information for improving health service (Biemba, Chiluba, Yeboah-Antwi, Silavwe, Lunze, Mwale, Russpatrick, & Hamer, 2017).

Bangladesh is using some innovative technological approaches to resolve a fragmented health information system. They have developed an electronic birth registration system that provides local citizens with a personal electronic identification card. Citizens are given incentives to register births because the card is required to access local services, such as immunization schedules and school enrolment. This system enables health authorities to reliably track each child's immunization history, replacing a disorganized manual system and effectively provides data to accurately monitor progress and enhance national decision making. On top of that system, they have developed an electronic data central repository for national health data called the National

Data Warehouse. It aims to bridge the gap between fragmented systems by bringing together information from various databases. In a study done in Belize, Belize government contracted the Canadian software developer Access-tee, to develop a health information system that tracked all patient encounters with the health system while managing patient flow, monitoring infectious disease, rapid identification of patients in the event of the release of unsafe medicines, country wide prevention of mother-child transmission of HIV and better care for diabetics (Biemba, Chiluba, Yeboah-Antwi, Silavwe, Lunze, Mwale, Russpatrick, & Hamer, 2017).

The module-based system captures the vast majority of 45 individual encounters with the health care system by linking the ministry of health with the country's health facilities. The goal is an integrated resource management tool that integrates all aspects of the health system, where the various components are able to communicate concerning the needs and possible actions, replacing soiled or disease specific systems. Patient flow, laboratory, pharmacy, HIV/AIDS and human resource management modules comprise the system and are designed to interact with each other. In an attempt to strengthen the health services to meet national and international commitments, the government of Tanzania developed the Primary Health Service Development Program (PHSDP) whose main goal was to accelerate provision of quality primary healthcare services to all by 2017 (Nyamtema, 2010).

The Health Management Information System in Tanzania is called Mfumo wa Taarifa za Huduma za Afya (MTUHA) with an overall goal to optimize the performance of health services at all levels of administration through the timely provision of necessary and sufficient information needed by the health managers to monitor, evaluate and plan their activities. The latest version involves manual data entry into 12 HMIS booklets. The system covers all health programs and health care services, and requires all health facilities, regardless of ownership, to use this system and report to the district health authority on quarterly basis. An improved and harmonized health reporting system is critical for health system strengthening since it can generate timely information for proper planning, monitoring and evaluation of service delivery at all levels of the health system. However, in most developing countries, particularly in sub-Saharan Africa, health reporting has been dominated by paper-based data collection and storage systems that tend to generate incomplete and inaccurate reports (Asangansi, 2012; Nyamtema, 2010).

Evidence shows that the continued use of paper-based systems contributes to poor data quality in terms of reliability, availability, timeliness and completeness of reporting, and compromises health service delivery (Kiberu et al., 2014). This has led to the development of web-based health information systems, which have opened a new chapter for improving health reporting in the developed world and this is slowly taking root in developing countries. Web-based systems have facilitated the ability to collect more accurate and enabled efficient data capture needed to inform planning and decision-making.

Empirical Review

M&E standard Operating Procedures

Mutegi (2019) researched Integrated Database System for HIV/aids Management with a case of Kicoshep. The specific objectives were to develop data collection tools for all programme, to integrate HIV/AIDS data through development of a good quality database system, to train staff on management of database system, to integrate HIV data into database system for planning and decision making. The data collection for the database were from home-based care, palliative care, orphans and vulnerable children, referrals, counselling, voluntary counselling testing (VCT) voluntary medical male circumcision (VMMC), people living with HIV/AIDS (PLHIV) and any other health diseases. The project was implemented through reviewing of the previous data collection tool that was in use, finding out how the data was captured, stored, analysed and utilized. The results were as follows; improved data collection tool and currently being used for data

collection and reporting each week during programme meetings, developed database system using Microsoft Access which is in use by the organization and after the development, integrated all the data from various programmes into one central point for easier retrieval of data when needed urgently, planning and decision making. The database system is being used currently by the organization to capture, store, analyse and disseminate as well as use the data for planning and decision making on matters related to their clients towards service delivery, improved patients follow ups through the use of database system, improved data accuracy and built the capacity of Kicoshep staff trough training on monitoring and evaluation and database system management. Therefore, since the monitoring and evaluation is an important tool for identifying and documenting successful projects and programme in any given organization, Kicoshep need to adopt M/E in their programme in tracking the implementation, resources and outputs of the projects and programmes.

Gesicho, Were, and Babic (2021) studied Evaluating performance of health care facilities at meeting HIV-indicator reporting requirements in Kenya. A retrospective observational study was conducted to assess reporting performance of health facilities providing any of the HIV services in all 47 counties in Kenya between 2011 and 2018. Using data extracted from DHIS2, K-means clustering algorithm was used to identify homogeneous groups of health facilities based on their performance in meeting timeliness and completeness facility reporting requirements for each of the six programmatic areas. Average silhouette coefficient was used in measuring the quality of the selected clusters. Based on percentage average facility reporting completeness and timeliness, four homogeneous groups of facilities were identified namely: best performers, average performers, poor performers, and outlier performers. Apart from blood safety reports, a distinct pattern was observed in five of the remaining reports, with the proportion of best performing facilities increasing and the proportion of poor performing facilities decreasing over time. However, between 2016 and 2018, the proportion of best performers declined in some of the programmatic areas. Over the study period, no distinct pattern or trend in proportion changes was observed among facilities in the average and outlier groups.

Data Capture Tools

Rice *et al*., (2018) studied strengthening routine data systems to track the HIV epidemic and guide the response in sub-Saharan Africa. The study indicated that global HIV response has entered a new phase with the recommendation of treating all persons living with HIV with antiretroviral therapy, and with the goals of reducing new infections and AIDS-related deaths to fewer than 500,000 by 2020. This new phase has intensive data requirements that will need to utilize routine data collected through service delivery platforms to monitor progress toward these goals. With a focus on sub-Saharan African, the research presented the following priorities to improve the demand, supply, and use of routine HIV data: (1) strengthening patient-level HIV data systems that support continuity of clinical care and document sentinel events; (2) leveraging data from HIV testing programs; (3) using targeting data collection in communities and among clients; and (4) building capacity and promoting a culture of HIV data quality assessment and use. When fully leveraged, routine data can efficiently provide timely information at a local level to inform action, as well as provide information at scale with wide geographic coverage to strengthen estimation efforts.

Ogondi, Pereira, Sutinen, Canavarro, Sintonen, and Roine (2018) studied Quality of HIV and Aids Data Reported in Community Based Health Information System in Homa-Bay County, Kenya. The study used a cross-sectional study design employing mixed methods of data collection. Simple random sampling was used to select a study sample of one hundred and thirty eight (138) active Community-Based and Faith Based HIV/AIDS implementing Organizations representatives in Homa-Bay County to participate in the study questionnaire. Purposive sampling was used to select fifteen (15) participants for Key Informant Interviews. Interviews were conducted using standard

interview quide. Descriptive statistics and Chi-square tests were used to analyse quantitative data using SPSS software while thematic analysis was used to analyse qualitative data using Nvivo Software. Results showed that more than half (58%) of the respondents ranked quality of HIV/AIDS data in the CBHIS to be of low quality. In regard to socio-demographic factors, analysis showed that only level of education influenced quality of data in CBHIS (p=0.001). In regard to technical factors, analysis showed that availability of Computers (p=0.001), and frequency of Data Quality Checks (p=0.001) were statistically significant in explaining the variations in HIV/AIDS data quality. In regard to organizational factors, analysis showed that the four organizational factors (staff training on data collection, frequency of data collection, staff knowledge and skills in data processing and staff qualifications) were individually insignificant (p>0.05). However, qualitative findings indicated that the organization factors were jointly crucial in improving HIV/AIDs data quality.

RESEARCH METHODOLOGY

Research design refers to the strategy chosen to integrate the different components of the study in a coherent and logical way. It involves the blueprint for the collection, measurement and analysis of data (Creswell, 2013). A descriptive research design was also appropriate as it is structured and is free from bias and represents data as it is (Kothari & Garg, 2019). Mugenda and Mugenda (2012) defines population as a well-defined set of people, services, elements, and events, group of things or households that are being investigated. They argue that target population in statistics is the specific population about which information is desired. There are 285 registered health facilities in Mombasa County in the Kenya master facility list e-health portal (Ministry of Health Kenya, 2022). The focus on the study was the HIV program In-charges because based on their day to day interaction with program activities, they offer unique perspective as they can understand role of Data Management Practices on the Performance of HIV Program. The facilities were divided into broader categories of private and Ministry of Health facilities and a sample drawn.

Systematic Random Sampling was preferred in this study. The sample size in this study was drawn by coefficient of Variation. Nassiuma recommends coefficient of variation in the range of 21% to 30% and a standard margin of error in the range of 2 to 5% (Nassiuma, 2000). This study therefore used coefficient of variation of 21% and standard error of 2%. The sample size for this study was 75 HIV program in charges from private facilities and 36 from public health facilities totalling to 111 health facility HIV Program. The researcher collected both primary and secondary data. Primary data was collected using a questionnaire. The questionnaire shall have both structured and unstructured questions.

The researcher issued questionnaires individually to all respondents of the study. A pilot study was conducted on 10% of the sample population of 111. According to Whitehead et al., (2016) a pretest sample range from 1% to 10% depending on the population is adequate for pretesting of research interments. The data analysis included both qualitative and quantitative methods. The research results were firstly presented as an analysis of the qualitative data by use of descriptive and inferential statistics. The analysis of the qualitative data was followed by an analysis of the quantitative data. The quantitative data was hence analysed by electronic spreadsheets SPSS program. Multiple regression analysis was also done to establish the relationship between the independent variables on dependent variables.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

From the 100 questionnaires 71 were completely filled and returned hence a response rate of 71%. The response rate was considered as suitable for making inferences from the data collected. As indicated by Mugenda and Mugenda (2012), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is

classified as excellent. Hence, the response rate of this study was within the acceptable limits for drawing conclusions and making recommendations.

Descriptive Statistics Analysis

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency (mean), measures of dispersion (standard deviation), frequencies and percentage (Baggio & Klobas., 2017). This study used descriptive statistics with the help of Statistical Package for Social Sciences to analyze the study variables.

M&E Standard Operating Procedures and Performance of HIV Program

The second specific objective of the study was to assess the role of M&E standard operating procedures on the Performance of HIV Program in Health Facilities in Mombasa County, Kenya. The respondents were requested to indicate their level of agreement on the statements relating to M&E standard operating procedures and the Performance of HIV Program in Health Facilities in Mombasa County, Kenya. The results were as shown in Table 1

From the results, the respondents agreed that they have documented procedures on data handling procedures. This is supported by a mean of 4.196 (std. dv = 0.865). In addition, as shown by a mean of 4.019 (std. dv = 0.945), the respondents agreed that monitoring and evaluation Roles registers are well defined. Further, the respondents agreed that staff are regularly oriented to the Standard operating procedures (SOPs). This is shown by a mean of 3.998 (std. dv = 0.611). The respondents also agreed that SOPs reduces errors in management of data. This is shown by a mean of 3.861 (std. dv = 0.908).

With a mean of 3.831 (std. dv = 0.776), the respondents agreed that there are clear SOPs for data cleaning. In addition, as shown by a mean of 3.823 (std. dv = 0.786), the respondents agreed that procedures for data handling are standardized. Further, the respondents agreed that roles for the personnel are known. This is shown by a mean of 3.786 (std. dv = 0.934). The respondents also agreed that there are no duplications due to staff orientation. This is shown by a mean of 3.675 (std. dv = 0.876).

Table 1: M&E Standard Operating Procedures and Performance of HIV Program

	Mean	Std. Deviation
We have documented procedures on data handling procedures	4.196	0.865
Monitoring and evaluation Roles registers are well defined	4.019	0.945
Staff are regularly oriented to the Standard operating procedures (SOPs)	3.998	0.611
SOPs reduces errors in management of data	3.861	0.908
There are clear SOPs for data cleaning	3.831	0.776
Procedures for data handling are standardized	3.823	0.786
Roles for the personnel are known	3.786	0.934
There are no duplications due to staff orientation	3.675	0.876
Aggregate	**3.772**	**0.841**

Data Capture Tools and Performance of HIV Program

The fourth specific objective of the study was to analyze the role of data capture tools on the Performance of HIV Program in Health Facilities in Mombasa County, Kenya. The respondents were requested to indicate their level of agreement on various statements relating to data capture tools and the Performance of HIV Program in Health Facilities in Mombasa County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3

symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 2.

From the results, the respondents agreed that there are available tools for capturing data. This is supported by a mean of 3.968 (std. dv = 0.905). In addition, as shown by a mean of 3.959 (std. dv = 0.885), the respondents agreed that the tools are able to capture complete data. Further, the respondents agreed that qualified reports are used as source of data. This is shown by a mean of 3.900 (std. dv = 0.605). With a mean of 3.885 (std. dv = 0.981), the respondents agreed that their organization has automated data capture tools.

With a mean of 3.877 (std. dv = 0.873), the respondents agreed that the tools are capable of conducting preliminary analysis. The respondents agreed that tools allow for capture of data at service delivery point. This is supported by a mean of 3.786 (std. dv = 0.876). In addition, as shown by a mean of 3.743 (std. dv = 0.798), the respondents agreed that their organization has an effective content strategy. Further, the respondents agreed that their organization has an effective data storage strategy. This is shown by a mean of 3.687 (std. dv = 0.921).

Table 2: Data Capture Tools and Performance of HIV Program

	Mean	Std. Deviation
There are available tools for capturing data	3.968	0.905
The tools are able to capture complete data	3.959	0.885
Qualified reports are used as source of data	3.900	0.605
Our organization has automated data capture tools	3.885	0.981
The tools are capable of conducting preliminary analysis	3.877	0.873
Tools allow for capture of data at service delivery point	3.786	0.876
Our organization has an effective content strategy	3.743	0.798
Our organization has an effective data storage strategy	3.687	0.921
Aggregate	**3.799**	**0.867**

Performance of HIV Program

The respondents were requested to indicate their level of agreement on various statements relating to performance of HIV Program in Health Facilities in Mombasa County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 3.

From the results, the respondents agreed that in their organization, there is increased patient follow up rate. This is supported by a mean of 3.984 (std. dv = 0.997). In addition, as shown by a mean of 3.907 (std. dv = 0.831), the respondents agreed that HIV Program Linkage to ART. Further, the respondents agreed that there is viral suppression. This is shown by a mean of 3.828 (std. dv = 0.563). The respondents also agreed that quality service output has improved over the years. This is shown by a mean of 3.821 (std. dv = 0.851).

With a mean of 3.801 (std. dv = 0.935), the respondents agreed that organization has recorded reduced infection rates. The respondents agreed that in their organization there is increased beneficiaries served. This is supported by a mean of 3.795 (std. dv = 0.834). In addition, as shown by a mean of 3.765 (std. dv = 0.814), the respondents agreed that number of tests conducted has increased significantly. Further, the respondents agreed that percentage of HIV patients reached has increased significantly. This is shown by a mean of 3.711 (std. dv = 0.912).

Table 3: Performance of HIV Program

	Mean	Std. Deviation
In our organization, there is increased Patient follow up rate	3.984	0.997
Linkage to ART	3.907	0.831
Viral suppression	3.828	0.563
Quality service output has improved over the years	3.821	0.851
Our organization has recorded reduced infection rates	3.801	0.935
In our organization there is increased beneficiaries served	3.795	0.834
Number of tests conducted has increased significantly	3.765	0.814
Percentage of HIV patients reached has increased significantly	3.711	0.912
Aggregate	**3.749**	**0.818**

Inferential Statistics

Inferential statistics in the current study focused on correlation and regression analysis. Correlation analysis was used to determine the strength of the relationship while regression analysis was used to determine the relationship between dependent variable (Performance of HIV Program in Health Facilities in Mombasa County, Kenya) and independent variables (M&E standard operating procedures data capture tools).

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (M&E standard operating procedures, and data capture tools) and the dependent variable (Performance of HIV Program in Health Facilities in Mombasa County, Kenya) dependent variable. Pearson correlation coefficient range between zero and one, whereby the strength of association increase with increase in the value of the correlation coefficients. The current study employed Taylor correlation coefficient ratings where by 0.80 to 1.00 depicts a very strong relationship, 0.60 to 0.79 depicts strong, 0.40 to 0.59 depicts moderate, 0.20 to 0.39 depicts weak.

Table 4: Correlation Coefficients

		Program Performance	M&E standard operating procedures	Data Capture Tools
Program Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	71		
M&E standard operating procedures	Pearson Correlation	.851**	1	
	Sig. (2-tailed)	.001		
	N	71	71	
Data Capture Tools	Pearson Correlation	.911**	.189	1
	Sig. (2-tailed)	.000	.081	
	N	71	71	71

Moreover, the results revealed that there is a very strong relationship between M&E standard operating procedures and Performance of HIV Program in Health Facilities in Mombasa County, Kenya (r = 0.851, p value =0.001). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings conform to the findings of Mutegi (2019) that there is a very strong relationship between M&E standard operating procedures and program performance.

The results also revealed that there was a very strong relationship between data capture tools and Performance of HIV Program in Health Facilities in Mombasa County, Kenya (r = 0.911, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant

level). The findings are in line with the results of Rice *et al.,* (2018) who revealed that there is a very strong relationship between data capture tools and program performance.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (M&E standard operating procedures and data capture tools) and the dependent variable (Performance of HIV Program in Health Facilities in Mombasa County, Kenya

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.935	.874	.875	.10582

a. Predictors: (Constant), M&E standard operating procedures, and data capture tools

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.874. This implied that 87.4% of the variation in the dependent variable (Performance of HIV Program in Health Facilities in Mombasa County, Kenya) could be explained by independent variables (M&E standard operating procedures, and data capture tools).

Table 6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.027	4	3.018	30.48	.000[b]
	Residual	6.568	66	.099		
	Total	18.595	70			

a. Dependent Variable: Performance of HIV Program

b. Predictors: (Constant), M&E standard operating procedures, and data capture tools

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 30.48 while the F critical was 2.511. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of M&E standard operating procedures and data capture tools on Performance of HIV Program in Health Facilities in Mombasa County, Kenya.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.211	0.039		5.410	0.000
	M&E standard operating procedures	0.486	0.107	0.482	4.121	0.001
	Data Capture Tools	0.454	0.088	0.452	5.057	0.000

a Dependent Variable: Performance of HIV Program

The regression model was as follows:

$Y = 0.211 + 0.486X_1 + 0.454X_2$

The results also revealed that M&E standard operating procedures has significant effect on Performance of HIV Program in Health Facilities in Mombasa County, Kenya, $\beta 1=0.486$, p value= 0.001). The relationship was considered significant since the p value 0.001 was less than the

significant level of 0.05. The findings conform to the findings of Mutegi (2019) that there is a very strong relationship between M&E standard operating procedures and program performance.

In addition, the results revealed that data capture tools has significant effect on performance of HIV Program in Health Facilities in Mombasa County, Kenya β1=0.454, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are in line with the results of Rice et al., (2018) who revealed that there is a very strong relationship between data capture tools and program performance.

Conclusions

In addition, the study concludes that M&E standard operating procedures have a significant effect on Performance of HIV Program in Health Facilities in Mombasa County, Kenya. Findings revealed that documented procedures, defined roles register, and staff oriented on the SOPs influences performance of HIV Program in Health Facilities in Mombasa County, Kenya

The study also concludes that data capture tools h a significant effect on performance of HIV Program in Health Facilities in Mombasa County, Kenya. Findings revealed that prescribed tools, completeness of the tools and qualified reports influences performance of HIV Program in Health Facilities in Mombasa County, Kenya.

Recommendations

In addition, the study found that M&E standard operating procedures have a significant effect on Performance of HIV Program in Health Facilities in Mombasa County, Kenya. This study therefore recommends that the management of health facilities in Mombasa County, Kenya should ensure effective documenting procedure to ensure information is properly stored and can easily be retrieved.

The study also found that data capture tools have a significant effect on Performance of HIV Program in Health Facilities in Mombasa County, Kenya. This study therefore recommends that the management of health facilities in Mombasa County, Kenya should adopt and implement effective data capture tools to collect the right information.

Suggestions for Further Studies

This study focused on establishing the role of Data Management Practices on the Performance of HIV Program in Mombasa County, Kenya. Having been limited to the Performance of HIV Program in Mombasa County, Kenya, the findings of this study cannot be generalized to performance of other programs. The study therefore suggests further studies on the role of Data Management Practices on the Performance of other Programs in Kenya.

Further, the study found that the independent variables (M&E standard operating procedures and data capture tools) could only explain 87.4% of Performance of HIV Program in Health Facilities in Mombasa County, Kenya. This study therefore suggests research on other factors affecting performance of HIV Program in Health Facilities in Mombasa County, Kenya.

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