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INFLUENCE OF SOURCE OF DATA, INFORMATION FLOWS AND EXCHANGE PLATFORMS ON LEVEL OF HIS FEEDBACK IN PUBLIC HEALTH FACILITIES.

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ABSTRACT

Purpose: Data collection is the first step of the information process within the health information system, so health information systems are often classified according to data collection method. The general objective of the study was to evaluate influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities

Methodology: The paper used a desk study review methodology where relevant empirical literature was reviewed to identify main themes and to extract knowledge gaps.

Findings*:* The study concludes that there was feedback at all levels in the HIS. The feedback was on referrals, disease prevalence rates and policy implementation. The feedback was beneficial in terms of helping the health facilities improve data collection, information processing and general implementation of the Health policies. Feedback provided was relevant especially from the Ministry of Health.

Recommendations: There is need for Ministry of Health should to increase interaction (feedback) with the lower level health facilities. Ministry of Health should give priority to all health facilities in terms of processing information obtained and feedback given on timely basis. This will improve decision making in all facilities that share information through HIS. Moreover ministry of Health and Administrators of Health facilities should strengthen HIS for the benefit of improving service delivery in the Health Sector. This can be through increasing capacity of the HIS to satisfy needs of all stakeholders

Keywords: *Influence, source data, information flows, exchange platforms, level HIS feedback public health facilities.*

1.0 INTRODUCTION

1.1 Background of the Study

Driven by the international health agenda that supports the United Nations Millennium Development Goals, efforts were underway across Africa to improve the health care and reduce barriers to service uptake (World Health Organization, 2008). In the early 1970's, Kenya's Ministry of Health (MOH) recognized the need to establish the Health Information System (HIS) which is a system for the collection and processing of data from various sources and using the information for policy making and management of health services (MOH, 2019). The HIS was made up of several data sources. Data collected was intended for Ministry of Health headquarters needs. The information generated was expected to assist in the formulation of health policies, setting of priorities and evaluation of health care programs. In the HIS, the Health Management Information System (HMIS) was created followed by subsequent units of Vital Health Statistics Unit and Evaluation and Research Unit. HMIS was meant to support the management of health systems as they strived to maintain and improve health in the country by providing health related information support at all levels of the health system (MOH, 2009). Recreation is the use of free time with intent to gain some refreshment. It is a break from stress of work and a diverging from the daily routine. It is a change from then way of life and involves an active participation in some entertainment activity (Oak, 2010). Akogun (2016) explains that leisure and recreation are classified as tourism activities that involves different sectors like the economy (transportation, education, industry, urban development, forestry, telecommunications, etc) National, State and local socioeconomic policies and socio-political traditions.

Data collection is the first step of the information process within the health information system, so health information systems are often classified according to data collection method. Studies show that there are two basic ways in which to collect data: routinely and periodically (non-routine). Periodic data collection usually means conducting surveys and these can appear to be expensive at first glance. However, they involve one-time costs, and may be less expensive than routine data collection in the long run (Bassi & Lau, 2013). Without external financial and technical assistance, most developing countries cannot afford to rely on periodic data collection methods for generating information (Jacobs,, 2011).

Many health information systems in developing countries, for example, Mozambique and Tanzania deal with routine data collection at the health facility level, which are the main sources of data in healthcare information systems. The routine data collection involves the various health programs: Maternal and Child Health (family planning, antenatal care, deliveries and immunization), Tuberculosis and Drug programs. According to Karuri et. al., (2014), operations of the Health Information Systems (HIS) are collection, collation, compilation, analysis and reporting of health data. This demonstrates how data is collected, processed and disseminated. In addition, the World Health Organization [WHO] (2004) considers operations of HIS to include inputs, process and outputs of health data. The WHO (2004) proposed that inputs of HIS include personnel, finance and infrastructure.

This implies that health records are collected through the facilitation of the health officers, availability of finance and facilities such as computers. Moreover, the WHO (2004) describes the processes of HIS to include: indicators that measure progress; data sources such as census and surveys; and data management to process and aggregate data from the different sources. This

indicates that HIS provides for a platform of monitoring and evaluation of health sector. The HIS also has definite source of data and information and its eventual management. Finally, WHO (2004) explains that operations of HIS culminate into meaningful formats for interpretation by different stakeholders at different levels of the health sector. This implies that the output of health information processes is information for decision making by different parties in the health sector. The relevance of the information thereby depends on the interests of the parties concerned and such information is suitable for realizing their objectives. Based on the system propounded by the WHO, it is evident that there is interaction between the components of the system. This implies that there is back and forth relationship between inputs and process as well as between processes and outputs and eventually outputs and inputs.

This is what is known as a complete system in which Robert (2009) asserts that Ludwig von Bertalanffy (1968) proposed that a complete system has interdependent parts working in harmony to achieve intended goals. The backward interaction between the components of the system is basically feedback of the forward interaction (Hahn, Wanjala & Marx, 2013; World Health Organisation, 2008). In their argument, Hahn, Wanjala & Marx (2013) explain that feedback interaction between components of HIS are intended for improving service delivery of the health sector. The Health Metrics Network [HMN] (2008) articulates how service delivery of health sector is dependent on the feedback mechanism between components of the HIS.

In the context of HIS, exchange platforms for data and information are health facility information centers. Such a relationship between local and Sub County health facilities is replicated between Sub County and regional or county health facilities and between regional health facilities and national level. However, the functioning of the feedback mechanism is determined by data quality, service delivery and health outcomes (Measure Evaluation, 2012). According to Measure Evaluation (2012), data quality is anchored on relevance, completeness, timeliness, accuracy) and continuous use of routine information for decision-making. Service delivery as determinant for a functioning feedback mechanism is anchored on service access, service efficiency, adherence to provider guidelines, reduced medical errors, improved patient tracking, improved tracking of equipment, logistics, and supplies), leadership and governance, human resources for health, financing, medicines and supplies (Bassi & Lau, 2013). Finally, combination of data quality and service delivery ensures system performance evident through health outcomes (level and distribution), responsiveness (level and distribution), and financial protection (Aqil, Lippeveld & Hozumi, 2009).

Based on the source of data, information flows and exchange platforms, it is difficult to determine the extent to which each component of HIS contributes to responsive feedback. Under such situations, there is a threat to achieving good performance in overall provision of health services. Unless the level of feedback is determined in the HIS, the feedback mechanism will remain unresponsive. It is in this line therefore that this study sought to examine the extent to which source of data, information flows and exchange platforms affect level of HIS feedback in public health facilities

1.2 Statement of the Problem

The performance of HIS remains largely under-utilized yet the players in the Health Sector heavily rely on the HIS for improvements in provision of health services. The interaction of the stakeholders or players in the Health sector is mainly done through provision of feedback to health

information. However, in the current HIS it is difficult to determine the extent to which source of HIS data sources support feedback mechanism. In this situation, the level of feedback from health dispensaries, county hospitals and national hospitals remains unknown yet the facilities contribute data that supports health policies and performance of health programmes. In addition, there is no clarity on who the sources of data and recipients of information should provide their feedback to. This situation limits the effectiveness of feedback system. Furthermore, the exchange platforms exist at the interphases between the sources of data and recipients which are mainly institutions yet such platforms are not fully utilized to create impact.

1.3 Objectives of the Study

The general objective of the study was to evaluate influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities.

1.4 Justification and Significance of the Study

This study sought to provide insights on the usefulness of the health information. It sought to inform the government through the Ministry of Health the basis of evaluating Health Information System particularly on whether health information across the republic is used for decision making or not. In addition, this study sought to provide answers to questions on who should use health information, at what level, and for what purposes. These have been hard questions to answer, and they are influenced by factors both inside and outside of the HIS that this study sought to investigate. 8 For the academic purposes, this study sought to identify challenges in the models of information flow. By use of health information, this study focused on the feedback mechanism in the information flow. This is an area that has few academic studies aimed at identifying the efficiency in exchange of health information. In this case, this study will add knowledge to the area of health information systems as well as provide platforms for further research. To policy makers, this study critically provides information suitable for reviewing health information policies. The deficiencies identified will serve as critical information for situational analysis needed in reviewing of the health policy. In addition, the information will also provide feedback information in the health information systems for the purposes of strengthening or correcting anomalies in the system

LITERATURE REVIEW

2.1 Theoretical review

One theory that was found relevant to expound on influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities. The theory that was found to best inform the research constructs system theory (Ludwig, 1968).

2.2.1 Systems Theory

This study adopts the Systems Theory propounded by Ludwig von Bertalanffy in 1968. According to Bertalanffy, a system comprises of interrelated parts that work to achieve common goal (Robert, 2009). In a system, basic principles related to feedback include: a system is greater than its components; output of one component is input for another component in linear form; and there are boundaries for each subsystem and entire system. Bertalanffy emphasizes that to be viable, a system must be strongly goal-directed, governed by feedback, and can adapt to changing circumstances. From this theory, HIS works as a system in which its components include local

health centers, Sub County hospitals, County hospitals and national hospitals as well as National Health Information System Coordinating Committee (NHISCC) and Division of Health Information System (DHIS). The interaction of the components is either external or internal. The outcome of the interaction is facilitated through feedback; two-way communication. For instance, the Sub County health facility is a component that has internal and external environment. The interaction of the Sub County with local health centers is through receiving data from the local level which becomes input for internal working of the system. Data generated within the Sub County facility level can be analyzed and used internally. Sub County facilities interact with either local levels or County levels externally through receiving and sending information. These processes are replicated at other levels making HIS a large closed system linking national, County, Sub County and local level

2.2 Empirical Review

Mbatha, (2019) conducted a study to understand the information seeking behavior of agricultural researchers and extension officers within Nairobi County, Kenya. The research objectives were understanding of agricultural researchers' and extension workers' information seeking behavior, establishing their opinion on the quality of information resources in their information centers, extent to which they use agricultural information in their information centers, and identifying challenges they faced in the retrieval of agricultural information from their information centers. Two of the major agricultural research agencies in Kenya, Kenya Plant Health Inspectorate Service (KEPHIS) and Horticultural Crops Development Authority (HCDA), were sampled as representative locations for the study. Additionally, four research objectives were proposed together with their corresponding questions in order to guide the entire research process. Suitable theoretical and conceptual frameworks were also developed from an extensive review of various literatures to help guide the researcher as well as widen his understanding of the research topic. A descriptive research design was selected as a suitable method through which the objectives of the research would be achieved. This methodology involved development and administration of semi-structured questionnaires to 97 sampled respondents. The collected data was analyzed quantitatively. The research used tables to present research findings in line with the pre-established research objectives. The study findings revealed impressive trends in the search and use of agricultural information resources among extension workers and agricultural researchers in the two sampled agencies. The two categories of agricultural information users were found to prefer agricultural information from electronic journals and organizations' websites compared to print materials from public libraries and information centers.

Mugambi, (2017) conducted a study to assess the information literacy competency skills of practicing nurses at KNH with the objective of establishing, the information needs of practicing nurses, awareness of potential sources of information in nursing profession, ability to evaluate the retrieved information and establish their knowledge of ethical, legal and social-economic issues surrounding information use. The research adopted a case study focusing on single case of KNH, with a target population of 1723 registered nurses and a sample size of 347 respondents was selected. Structured questionnaires were used to collect data. Data was analyzed by use of likert scale and SPSS and presented through tables, charts, figure, graphs and percentage. The study established that information literacy program is taught at nursing schools in Kenya, four professional information needs were cited by practicing nurses at KNH; patient care, in-house

presentation, presentation at a professional meeting/seminar and scholarship application/career development.

Langat, (2016) conducted a study to assess information seeking behaviour among health professionals in public health facilities in Garissa County. The specific objectives included: to establish the socio-demographic characteristics influencing information seeking behaviour of health professionals in Garissa County; to determine facility factors influencing information seeking behaviour of health professionals in Garissa County; to establish technological factors influencing information seeking behaviour of health professionals in Garissa County; to determine information needs of health professionals in Garissa County. The study used a cross-sectional study design employing mixed methods of data collection. Stratified sampling was used to select a study sample of 222 health professionals to participate in the study while purposive sampling was used to select participants for Key Informant Interviews and Focus group discussions. Descriptive and multinomial logistical regression was used to analyze quantitative data using SPSS version 20 while thematic analysis was used to analyze qualitative data from Key Informant Interviews and Focus group discussions. Results showed that mority of health professionals (86%) sought information only when and work experience (P=0.013) had a statistically significant relationship with information seeking behaviour. Among the facility factors, workload (P=0.000), and information sharing (P=0.0000) had a statistically significant relationship with information seeking behaviour. Among technological factors, computer proficiency (P=0.000), ability to search information from internet (P=0.000, ability to analyze and interpret digital data (P=0.000) and internet connectivity (P=0.001) had a statistically significant relationship with information seeking behaviour. In conclusion, there is insufficient effort made to understand information behaviour and address information needs of health professionals in Garissa County.

Gichiri,(2012) conducted a study to assess the quality (accuracy, adequacy and relevance) of the available information on HIV/AIDS, to discuss the inhibiting factors to its accessibility, assess the convenience of using this information and to establish the existing gaps in the current HIV/AIDS information service. This study established that indeed quality was lacking in the available information on HIV/AIDS, this was mainly due to lack of adequate information to address varied needs, irrelevance and inaccuracy was prevalent in the available sources. A number of inhibiting factors to accessibility of this information were also identified including: language barriers cost of information, and attitude of information providers among others. Convenience of using the available information was also lacking according to this study, this was mainly due to unfriendly information formats and also the language of presentation. This study also established that the current information service on HIV/AIDS does not address all the requirements of individuals living with HIV/AIDS and therefore there exist information gaps in the current HIV/AIDS information service in Kenya.

2.3 Research gaps

Methodological gap is the gap that is presented as a result in limitations in the methods and techniques used in the research (explains the situation as it is, avoids bias, positivism, etc.). Mugambi, (2017) conducted a study to assess the information literacy competency skills of practicing nurses at KNH with the objective of establishing, the information needs of practicing nurses, awareness of potential sources of information in nursing profession, ability to evaluate the retrieved information and establish their knowledge of ethical, legal and social-economic issues

surrounding information use. The research adopted a case study focusing on single case of KNH, with a target population of 1723 registered nurses and a sample size of 347 respondents was selected. Structured questionnaires were used to collect data. Data was analyzed by use of likert scale and SPSS and presented through tables, charts, figure, graphs and percentage. The study established that information literacy program is taught at nursing schools in Kenya, four professional information needs were cited by practicing nurses at KNH; patient care, in-house presentation, presentation at a professional meeting/seminar and scholarship application/career development.. The studies presented a methodological gap as it used a case study approach while our current study adopted a desktop literature review method

Conceptual gap arises because of some difference between the user's mental model of the application and how the application actually works. Langat, (2016) conducted a study to assess information seeking behaviour among health professionals in public health facilities in Garissa County. Langat, (2016) conducted a study to assess information seeking behaviour among health professionals in public health facilities in Garissa County. The study used a cross-sectional study design employing mixed methods of data collection. Stratified sampling was used to select a study sample of 222 health professionals to participate in the study while purposive sampling was used to select participants for Key Informant Interviews and Focus group discussion. Results showed that majority of health professionals (86%) sought information only when and work experience (P=0.013) had a statistically significant relationship with information seeking behaviour .The study presented a conceptual gap as it assessed information seeking behaviour among health professionals in public health facilities in Garissa County a, while the current study is on evaluating influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities.

3.0 METHODOLOGY

The study adopted a desktop literature review method (desk study). This involved an in-depth review of studies related to evaluating influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities. Three sorting stages were implemented on the subject under study in order to determine the viability of the subject for research. This is the first stage that comprised the initial identification of all articles that were based on evaluating influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities from various data bases. The search was done generally by searching the articles in the article title, abstract, keywords. A second search involved fully available publications on the subject on influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities. The third step involved the selection of fully accessible publications. Reduction of the literature to only fully accessible publications yielded specificity and allowed the researcher to focus on influence of source of data, information flows and exchange platforms on level of HIS feedback in public health facilities which was split into top key words. After an in-depth search into the top key words (influence ,source data, information flows, exchange platforms, level ,HIS feedback, in public health facilities), the researcher arrived at 4 articles that were suitable for analysis. The 4 articles were findings from Mbatha, (2019) who conducted a study to understand the information seeking behavior of agricultural researchers and extension officers within Nairobi County, Kenya. This methodology involved development and administration of semi-structured questionnaires to 97

sampled respondents. The collected data was analyzed quantitatively. The research used tables to present research findings in line with the pre-established research objectives. The study findings revealed impressive trends in the search and use of agricultural information resources among extension workers and agricultural researchers in the two sampled agencies

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SUMMARY, CONCLUSION AND POLICY IMPLICATION FOR FURTHER STUDY

4.1 Summary

Unclear or absence of information flows therefore indicate inefficiency and ineffectiveness in the HIS. It is therefore important for HIS to have strong, relevant, effective, efficient and versatile information flow and exchange structures and platforms. The presence of such well-defined information flow and exchange structures and platforms guarantee suitable HIS that creates impacts and sustainability in the Health sector.

4.2 Conclusion

The study found out that there was feedback at all levels in the HIS. The feedback was on referrals, disease prevalence rates and policy implementation. The feedback was beneficial in terms of helping the health facilities improve data collection, information processing and general implementation of the Health policies. Feedback provided was relevant especially from the Ministry of Health.

The study concludes that the source of data and health information as well as exchange platforms have negative but significant association with HIS feedback. In view of the findings, the study concludes that source of information or data and exchange platforms are causes of unresponsive HIS while information flow is significant but not a major factor that influence HIS feedback. The influence of information flow on feedback implies that without data and information flows, feedback is highly unlikely. In this regard, source of data or information and exchange platforms do not significantly matter in the provision of feedback. Unclear or absence of information flows therefore indicate inefficiency and ineffectiveness in the HIS. It is therefore important for HIS to have strong, relevant, effective, efficient and versatile information flow and exchange structures and platforms. The presence of such well-defined information flow and exchange structures and platforms guarantee suitable HIS that creates impacts and sustainability in the Health sector

4.3 Recommendations

There is need for Ministry of Health should to increase interaction (feedback) with the lower level health facilities. Ministry of Health should give priority to all health facilities in terms of processing information obtained and feedback given on timely basis. This will improve decision making in all facilities that share information through HIS. Moreover ministry of Health and Administrators of Health facilities should strengthen HIS for the benefit of improving service delivery in the Health Sector. This can be through increasing capacity of the HIS to satisfy needs of all stakeholders.

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