

HEALTH SYSTEM ISSUES INFLUENCING HEALTH INFORMATION UTILIZATION FOR DECISION MAKING IN HEALTH FACILITIES IN NANDI COUNTY, KENYA

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ABSTRACT

The purpose of health information system is to provide timely, reliable and accessible quality health information for evidence based decision making to promote the health of the nation. Following the new constitution of 2010, health function was devolved to county level where most decisions pertaining to health are carried out by health managers. Studies have shown utilization of health information to make decisions to be very low. The objective of this study therefore, was to examine health system issues that influence utilization of health information for decision making health facilities in Nandi County. The study adopted a descriptive research design in which desired data was collected from healthcare providers based on cross section. The sample frame was all health staff who generate health data and the managers of health services at various levels with experience of six months and above. The sample population was 179 health workers at various levels of management in the service delivery. The study sample size of 163 was selected through stratified, simple random and systematic methods. The data collection methods were questionnaires, interview schedules and focused group discussion guides. The data collection was done using research assistants who were trained by the researcher. Data analysis was done using the relevant software packages including SPSS (ver 23) as main software and Microsoft Excel among others. The response rate was 92%. The study results revealed that 44.4% indicated that they always use the data in the day-to-day running of the health facility programs, 66.7% discussed and recorded the minutes on management of routine data like quality, reporting or timeliness, 63.3% indicated that they have received continuous professional training on data utilization and data management, planning and computer software. Major difficulty experienced in the use of computers was inadequate computers (40%), other problems evident are lack of access to computers (26.7%) and inadequate training in the use of computers (53.5%). The study concludes that there was routine health information for decision making with majority using it in planning, monitoring and evaluation and supply and drug management. The study recommends that the Ministry of Health should apply appropriate and effective strategies that will promote the consistent health information use for decision making at all levels of management.

Key Words: Health System Issues, Health Information Utilization, Decision Making

Introduction

The purpose of health information system is to provide timely, reliable and accessible quality health service information for evidence based decision making in order to maximize utilization of scarce resources. It has got the mandate to generate, analyze and disseminate health information to facilitate effective policy formulation, management, planning, budgeting, implementation, monitoring and evaluation of health services and program interventions in the health sector by all (Kenya strategic health information 2009-2014). Information systems are important for measuring and improving the quality and coverage of health services. Health management information system is a core building block of the health system as a whole and provides data (Abajabel et al., 2011).

Health information system was started in Kenya around 1970's for the collection and processing of data from various sources and using the information for policy making and management of health services (MOH, 2001). The health information management system (HMIS) was created with two units namely vital health statistics unit and Evaluation & Research unit. The aim was to support the management of health systems hence striving to maintain and improve health in the country by providing health related information support at all levels of the health system (MOH, 2009). Within the last 3 decades, Kenya has strived to improve health services through decentralization (district focus) and the latest adoption of new constitution 2010 (devolved health function) which has led to devolution of services (Constitution of Kenya, 2010). Other achievements in the health sector include

the development of district health information software (DHIS) which is in use now for reporting in all over the country.

The district health information software is a web based application and is available in an internet browser with internet connection with a central repository which was introduced in Kenya in 2010. The following were the rationale for adoption. After devolution, decision-making and resource management authority transferred to districts (now sub counties and county levels); District responsible for improving health services from 1st and 2nd level facilities and outreach; Strengthening the Districts for managing their health systems was a priority and finally improving HIS to respond to the information needs of the Districts was a priority.

The overall objective of DHIS now KHIS was to provide information for management and performance improvement of primary and secondary healthcare services provided by the public health sector at district level. On the other hand Nutly and Raynolds (2013) indicated the following key areas; assessing and improving the data use context; engaging data users and data producers; improving data quality; improving data availability; identifying information needs; building capacity in data use core competencies strengthening the organization's data demand and use infrastructure; and monitoring, evaluating, and communicating results of data use interventions in a given organization to enhance decision making for quality care.

However, research studies have shown that despite these efforts, there are challenges in the level of utilization of information and health information system issues among others. This study therefore aimed at determining health system issues influencing health information utilization in Nandi County.

Problem Statement

According to WHO (2006), utilization of information generated from District Health Information System (DHIS) for decision making ranks 10% due to a number of factors. These include low knowledge and skills on DHIS infrastructure, and low utilization of information in decision making. A study in Iran by Raeisi et al. (2012) found out that in most developing countries, DHIS is inefficient in provision of management information. The elements limiting DHIS utilization included lack of DHIS infrastructure, lack of proper assessment of essential information needs, lack of proper data gathering system, data processing & analyzing methods and lack of appropriate information based decision making and policy development.

In Kenya, DHIS was adopted and rolled out Country wide in 2011 after successful pilot studies. DHIS was installed on a central server using the cloud based computing infrastructure and as such users were expected to access the system via internet both for data entry and information use purpose. The objectives were to establish a central database with health facility reporting, link service delivery and other health input databases scale up ICT infrastructure to support the new software and to build staff capacity to support the system. This new development was in line with the Kenya vision 2030 to provide equitable and affordable quality health services to all Kenyans.

However, Kenya faces a number of challenges in the system utilization. This is because of inadequate access to computers, inadequate access to internet connectivity, inadequate access to telephone & electricity services and poor sustainability. Karuria et al (2014) identified problems in HIS resulting from incomplete, inaccurate and untimely data which hence is not useful for decision making. Therefore, this study aimed at establishing the health system issues influencing health information utilization in Nandi County.

Conceptual framework

The independent variable in this study was Health information system issues affecting data utilization and the dependent variable was utilization of health information for decision making. Figure 1 shows the hypothesized Associations between the independent variable and the dependent variable.

Independent Variable Dependent Variable

Figure 1: Conceptual framework

Health Information Utilization in Health Facilities

The utilization of health information generated from district health information system for decision making ranks low (10%) as per WHO (2008) due to a number of issues. These include low knowledge & skills among the users

on DHIS infrastructure, lack of enough personnel for data gathering, analysis and distribution of information, inadequate access to DHIS skilled personnel. The other problems include poor attention to district information technology, health system managers having little managerial/information skills and no user participation in district health information software.

Studies shows that Kenya faces challenges in information system utilization due to inadequate access to computers, internet connectivity, access to telephones and electricity services, skilled human resource on information communication technology (ICT) and poor sustainability. According to Karijo (2013), the overall extent of utilization of routine data ranked 34% and not using routine data 66% for decision making. The factors she found to influence this include frequency of meetings at facility, data storage & analysis methods, continuous professional trainings and support supervision among others. Kawale (2011) on the other hand noted similar findings in Malawi whose overall use of health information in Nathonje area stood at 44.6%. The proposed study therefore would look at the level of health information use in Nandi and identify gaps to be addressed in order to increase efficiency and effectiveness of evidence based decision making in Kenyan health facilities in Nandi.

Health Information Issues Affecting Utilization of Health Information for Decision Making

Many studies conducted points out some issues affecting & compromising efficient use of health information for decision making. Anwar et al (2011) found out that most developing societies face challenges in establishing & elevating health information structures such as insufficient infrastructure and IT experts, connection fees & maintenance, inadequate technological sophistication and lack of e-readiness of medical profession hence low information use for decision making. Qureshi et al (2013) in his article in European journal of sustainable development mentions infrastructure as the back bone of every communication based information system irrespective of field or organization. Ajami and Arab-Chadegani (2011) outlined various system issues such as lack of national information standards & code sets, lack of interoperability, concerns about privacy/ confidentiality and frequent changes in technology among others issues. The expert instruction in health informatics also is seriously over looked & is not included in the syllabus of health institutions for students at higher learning institutions hence compromising utilization of health data (Yasen et al., 2010). The other factors as outlined by Kawale (2011) include low availability of health information equipment in health facilities Computers (25%), data backup (20%), Printer (20%), Generators (0%), telephone (20%), internet (0%) and calculators (40%). The underutilization of health data results from data being kept in reports in shelves/cabinets under lock & key hence low access (Nutley & Reynolds, 2013).

Materials and Methods

This study design was cross sectional descriptive research which was a type of observational study design. Data was collected from all cadres of health care providers working in the hospitals, health centers and the dispensaries. The study intended to include the managers and health officers' in-charge of the health facilities. The number of respondents targeted was 283 health care workers working in managerial sections in various health facilities. Table 1 shows the various staff at varying levels of decision making process for the health care in the county.

Table 1: Number of Managers at Various Levels of Health Care Management in Nandi County

Source: Nandi Strategic Health Plan 2013-18

In selecting the sample size of the study the researcher made use of the table by Amugune (2014), who indicated that the desired sample size when $e=+5\%$ precision levels where confidence level is 95% and $P=5$ was 163 distributed across all health sector management levels at the county. Stratified and Simple random sampling was applied to get individual respondents. To take care of non response, 10% shall be added (16) to make a total of 179 respondents.

Data collection tools included self-administered questionnaires, key informant interviews and focused group discussions. Self-administered questionnaires were used for the facility Managers and department In-charges. Key informant interviews were conducted as face to face using an in-depth interview schedule to collect information from the experts. Focused group discussion was conducted using a focused group discussion guide. A small scale pre-test was conducted in Nandi Hills Sub County with 8 participants (5% of the sample size) which

ensured that the questions elicited the information needed, check the clarity as well as validity and reliability of the research instrument.

The completed questionnaires were observed for compliance and the data was analyzed using the SPSS (Scientific Package for Statistical Software). Frequencies and percentages were generated. Categorical data was analyzed using cross tabulation to test for associations of variables through the Chi-square. The results were considered significant with P values of less than 0.05 at 95% confidence interval. The qualitative data was triangulated with quantitative data to enhance validity and reliability of findings. The semi-structured interviews and observation from the field was analyzed by a qualitative content analysis and summarized to bring out major features and interpretations outlined in the study objectives. This study on utilization of health information for decision making in the health sector underwent the relevant authorities for ethical clearance. These authorities included the School of Public Health; Ethical review committee; the Graduate School, the National Commission for Science, Technology and Innovation (NACOSTI); the Nandi County administration and consent from the participants in the study. Informed consent was obtained from every respondent before collection of relevant data. The researcher also assured confidentiality by protecting identity of each respondent (No name nor identity number was allowed).

Results

Out of the 163 respondents targeted in the study, 150 completed and returned the questionnaire which constitutes a response rate of 92%.

Health Information Utilization for Decision Making

Extent to Which Collected Data is used in Making Decisions

The respondents were asked to indicate on a category of 1-3 their level of agreement on whether the collected data is used in making decision on the nine parameters in decision making. The study findings based on the nine parameters revealed that 44.4% of the respondents always use health information for decision making. However, an average (49.6%) partially use data for decision making while the rest (5%) never use health data for decision making. Planning and budgeting scored higher 93% and 63% respectively while policy implementation scored lowest (20%). Details of the findings are as shown in Table 3.

Table 3: Extent to Which Collected Data is used in Making Decisions

Personnel who compile the Monthly Reports/ Data

The respondents were asked to indicate the personnel who compile their monthly reports/ data. As shown in the Figure 2, the study results reveals that 4% said support staff, 16% all the staff, 20% health information officer, 13% clinical officer, 7% medical officer and 40% nursing/midwife were involved in compiling the monthly data. From the analyzed results, it is evident that the majority 40% said that the nursing/midwifery compiles the monthly reports while the minority 4% indicated that the support staff compiles the monthly data. The study result reveals that in most of the health facilities the nursing/midwife compiles the monthly reports/data.

Figure 2: Who compiles the monthly reports

Data Collected is discussed in the Health Facility/Department

The respondents were asked to indicate whether they discuss the collected data in their facilities or departments with other members of the facility or department and the results showed majority (66.7%) indicated that they discussed the collected data with other members of the facility or departments while the rest (33.3%) said that they do not discuss. The analyzed data reveals that most of the facilities discuss the collected data in their facilities or department with other members of the facility or department.

Table 4: Data Collected is Discussed in the Health Facility/Department

Health system issues influencing utilization of health information

The objective of the study was to investigate the health system issues influencing health information utilization in Nandi County. Health system issues included frequency of meetings, points of discussions, availability of tools and use of information, communication technologies.

Frequency of Meetings

The study sought to know how often the facility meets for reviewing managerial or administrative matters; the study results are as presented in Table 5. An average (46.7%) of the respondents indicated that they do their meetings for reviewing managerial or administrative matters on a monthly basis, 33.3% indicated that they do their meetings for reviewing managerial or administrative matters on a quarterly basis and 20% of the respondents said that they do their meetings for reviewing managerial or administrative matters on a bi annual/annually basis. Majority of the facilities carry out their meetings for reviewing managerial or administrative matters on a monthly.

Table 5: Frequency of Meetings

Official Record of Meetings Maintained

The researcher sought to know whether the official records of meetings are kept. The findings revealed that majority (60%) of the officers, maintained official record of meetings while the rest (40%) indicated that they do not maintain the official record of meetings.

Table 6: Official Record of Meetings Maintained

Topics were discussed and recorded during the meetings

The study findings on whether the data on management of routine data like quality, reporting or timeliness are discussed and recorded during the meetings ,the study results ($\chi^2=31.727$, $df=1$, p value= 0.000) its evident that majority discussed and recorded the minutes on management of routine data like quality, reporting or timeliness. There was a statistical relationship between topics discussed and recorded during the meetings and utilization of health information.

The findings ($\chi^2=61.127$, $df=1$, p value= 0.000) also revealed that findings on routine data like disease data are discussed and recorded during the meeting. This implies that discussion on routine data like disease data has a significant relationship with data utilization of health information.

However, facilities with less frequency of meetings had low utilization of health information. On Patient utilization, 56.7% indicated that they discuss and record the minutes on patient utilization while 43.3% who represent the minority indicated that they do not discuss or record the minutes on patient utilization. Table 6 below shows the association between discussion of topics discussed and data utilization.

Table 7: Cross tabulation of Meeting Topics Discussed and Data Utilization

*significant results

Data Collection Tools/Forms in Use

The study sought to know the kind of data collection tools and forms in use in the facility. The study findings are as follows; 68% indicated that they use outpatient register or record as a data collection tool while 32% who represent the minority said that they do not. 66.7% said that they use antenatal register as data collection tool while 33.3% said they do not have the antenatal register. 70% said that they use maternity and postnatal register as a data collection tool while the minority 30% who represent the minority said that they do not use the maternity and postnatal register. 63.3% said that they use family planning register as a data collection tool while the minority 36.7% were of the contrary opinion. 73.3% indicate that they use tally sheet and summary tools as a data collection tool while 26.7% who represent the minority do not use the tally sheet and summary tools as a data collection.

On summary the findings reveals that most of the health facilities use the following as data collection or forms as collection tools; outpatient register or records, antenatal registers, maternity and postnatal register, family planning register and tally sheets and summary tools. There was significant association between availability and use of

tools and utilization of health information in facilities.

Table 8 Cross tabulation of data collection tools/forms in use and data utilization

Shortage of Data Collection Forms in the Past 12 Months

The respondents were asked to indicate whether they have ever run out of the data collection forms in the past 12 months. As shown in Figure 3, majority (60%) of the respondents stated that they have not run out of the tools while the rest (40%) experienced shortages. Shortage of tools impacted negatively to availability of data for decision making.

Figure 3: Shortage of data collection tools

Difficulties Faced in Using Computers

The respondents were asked to indicate the difficulties they face while using the computers. The study findings on the difficulties faced in using computers, it was evident that majority (53.3%) of the respondents had no training in computer while only 10% had no problem. From the analyzed data it is evident that most of the respondents in the health facilities had poor literacy in ICT. Availability of computers in health facilities especially dispensaries and health centers was a major problem.

One member in FGD stated that “since I was posted to this facility no computer has been provided nor training on the same” (FGD 012)

Table 9 Difficulties Faced in Using Computers

Discussion

Health Information Utilization for Decision-Making

Kenya faces challenges in information system utilization due to inadequate access to computers, internet connectivity and access to telephones and electricity services, skilled human resource on information communication technology (ICT) and poor sustainability. According to Karijo (2013), the overall extent of utilization of routine data ranked 34% and not using routine data 66% for decision making.

The analyzed results revealed overall data utilization at 44.4% with variation within the nine parameters in the running of the health facility programs. The figure was arrived at by finding the average of the nine parameters in the running of the health facility programs. 93.3% indicated that they always use the data in the day-to-day planning in the facility while 6.7% who represent the minority indicated that they partially use the data in making decision on planning, 63.3% indicated that they partially use collected data in budgeting while making the decision. The findings are similar to a study by Nzomo (2017) which showed 69.6% of health workers utilizing health data for decision making in Mombasa General Hospital.

Also from the analyzed data its evident that majority 49.6 % partially used the collected data in budgeting, it is evident that most of the health facilities 56.7% partially use the data collected in making decision on resource allocation. 46.7% indicated that the collected data is always used in making decision on human resource management. 53.3% revealed that they partially use the collected data in making decision on monitoring and evaluation of plans, 70% indicated that they partially used the collected data in making decision on policy implementation, 60% indicated that they partially use the collected data in surveillance.

The study results further reveals that the facilities partially use the collected data in making decision on surveillance. The data collected in the health facilities is compiled by the facility nurse/midwife .The analyzed data reveals that most of the facilities discuss the collected data in their facilities or department with other members of the facility or department. Atsede et al. (2017) in his study revealed 45.8% of the health workers had good level of routine health information utilization in North West Ethiopia which coincides with this findings.

Health system issues affecting utilization of health information

Some of the factors that influence the utilization of health information systems include age, lack of user involvement, lack of adequate knowledge on the use of the health information system, understaffing, change

implementation, lack of refresher training, duration taken to repair the system in case it breaks down and motivation.

The study results on the health systems on issues affecting utilization of health information. Majority of the health facilities carries out their meetings for reviewing managerial or administrative matters on a monthly basis. 60% of the respondents said that they maintain the official record of meetings. From the study results its evident that majority 66.7% discussed and recorded the minutes on management of routine data like quality, reporting or timeliness. 60% who represent the majority said that routine data like disease data are discussed and recorded during the meeting. Those not utilizing health information mentioned lack of adequate knowledge, understaffing and poor motivation among others. Similar findings were observed by Njeri (2015) on factors affecting utilization of information for projects in Nairobi.

The results further revealed that 56.7% discuss and records minutes on service coverage while 30% said they don't discuss and record the minutes on medicine stock out. 70% who represented the majority indicated that they discuss and record minutes on the medicine stock out. 56.7% indicated that they discuss and record the minutes on patient utilization .68% indicated that they use outpatient register or record as a data collection tool. 70% said that they use maternity and postnatal register as a data collection tool. 63.3% said that they use family planning register as a data collection tool. 73.3% indicate that they use tally sheet and summary tools as a data collection tool. 60% of the respondents indicated that they have not run out of these forms in the past 12 months.

Conclusion

Based on the discussion, the study makes the following conclusion;

The routine health information is used for decision making in planning, monitoring and evaluation and supply and drug management. The general level of health information utilization is 44.4% as per the research findings.

Health facilities need to be provided with computers and internet connectivity, this will facilitate easy processing, storage and onward submission of data to sub county then to county level, where computers and internet connectivity are unavailable, facilities should be provided with means of transport to facilitate timely submission of data. Facilities should be networked to enable easy sharing of experiences. Delays in re-imbursement of transport and lack of timeliness of data as leading to haphazard planning & health interventions.

Recommendation

Based on the discussion and the conclusion; the study recommends the following;

Recommendation from the study

On the level of utilization, it is proposed to strengthen routine health information utilization county/sub-county health facilities in liaison with Ministry of Health should apply appropriate and effective strategies that will promote the consistent health information use for decision making in Nandi County.

On health system issues, it is important to create organizational culture through increased demand for and use of routine health information for evidence based decision making in all aspects

Recommendation for further research

Based on the conclusion and recommendation the study suggests the following;

Assessing of tools used for health data collection and reporting formats to ensure that these are simplified enough and also collect relevant health data to be used in decision making.

Analysis of type of data generated and its actual utilization level in decision making in the development of health interventions.

A similar and comparative study should be done on health system issues influencing health information utilization for decision making in health facilities in other Counties in Kenya.

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