

Determinants of Data Use for Decision Making in Health Facilities in Kitui County, Kenya

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Abstract

Background: Effective management of today's health systems depends on the critical use of data for the policy-making, planning, monitoring of services, and making decisions. The use of data has been limited and faced with inadequacy hence vital health decisions often relying on political opportunism, donor demand, and infrequently repeated national studies which are insensitive to changes occurring over a shorter timescale.

Objective: This study was designed to identify determinants of utilization of routine data for decision making by health care providers in health facilities in Kitui County in Kenya.

Method: The conceptual framework was constructed from the literature review. This was a descriptive cross-sectional study adopting quantitative and qualitative research paradigms. The district hospital was purposively selected. Multi-stage cluster sampling was used to sample the health facilities in sub-counties and simple random sampling to select the respondents from different cadres in health facilities. The 110 participants completed a self-administered questionnaire. Key informant interviews, focused group discussions, observation, and analysis of documents in health facilities were applied. Recordings were transcribed and key concepts identified. Questionnaire results were edited, coded, tabulated, and analyzed using the SPSS 18.

Result: Respondents interviewed were from different cadres of health care providers including doctors, clinical officers, nurses, and midwives from different levels of health facilities. Among the respondents, 70% were females, and 30% males. The majority, 64% had a diploma level of education. Nurses/ midwives were the majority, making up 81% of the workforce. The overall extent of data utilization was 66% not using data and 34% use the routine generated data. The following actors influence utilization of routine data: frequency of meetings held ($\chi^2=42.036$, $df=1$, $p=0.001$), data storage and analyzing methods ($\chi^2=30.582$, $df=1$, $p=0.001$), and continuous professional training ($\chi^2=49.782$, $df=1$, $p=0.0001$). Organization of the district health system influenced routine data utilization through the frequency of support supervision ($\chi^2=30.000$, $df=1$, $p=0.001$), issues assessed during supervision ($\chi^2=49.164$, $df=2$, $p=0.002$) and feedback report from the supervisors ($\chi^2=5.236$, $df=1$, $p=0.022$).

Conclusion: The study demonstrated limited utilization of routine data for decisions in health facilities and recommended the need for capacity building for data utilization through on job training and strengthening the curriculum in health training institutions in data-related areas. The ministry of health can standardize the parallel reporting levels and unify the reporting tools and finally ensure the districts have structured meetings, support supervision, and feedback to the health care providers.

Keywords: Data use, Decision making, Policymaking, Health systems, Health Information

Paper Type: Research paper

JEL Classification: I10, N37, Y10

Introduction

Across Africa, efforts were underway to improve health care and reduce barriers to service uptake. This was driven by the international health agenda that supported the then United Nations Millennium Development Goals (WHO, 2007) and the current sustainable development goals (UN Statistics Wiki, 2018). Kenya's Ministry of Health (MOH) recognized the need to establish the health information system (HIS), a system for the collection and processing of data from various sources and using the information for policy-making and management of health services. The health information systems were made up of several data sources but the data collected focused on the needs of the Ministry of Health headquarters. Due to this, there was the creation of other units in the health information system and these included the Health Management Information System (HMIS), Vital Health Statistics Unit, and Evaluation and Research Units. The HMIS was meant to support the management of health systems to maintain and improve health in the country by providing health-related information support at all levels of the health system (Sapirie, 2000). In the struggle to restructure the health systems to provide services to its entire population, Kenya pursued various reforms such as decentralization as an indicator of progress towards the health goals. Decentralization is the transfer of decision-making power and administrative responsibilities from the central government to the periphery. The decentralization policy sought to enhance the availability of comprehensive quality health and health-related data and information for evidence-based decision-making in the health sector on HIS.

However, health information is much more than the collection of data. Value and relevance of data can only come when they are analyzed, transformed into meaningful information, and used as pointed out by Adano, (2008). At all levels of the health system; the district (currently the County) and sub-district, had little evidence to show how this data is utilized. There was a striking disconnect between the need for information and the ability to respond to that need, this was because health care did not make any improvement despite the decentralization of the health system. An unfortunate feature of health care systems in many parts of the world is that decisions are taken despite the absence of information use. In practice, decision-making in health is all too often based on political opportunism or donor demand, and at times on infrequently repeated national studies like the census and demographic health survey (DHS) which are not sensitive to changes occurring over a shorter time scale. Kitui County was ranked among the poorest counties in Kenya with over 56% of the population living in absolute poverty according to WHO, (2008). Achievements of many health indicators in the county showed low performance with prevalent diseases such as malaria, respiratory infections, diarrhea, skin diseases, and eye infections. However, the county lacked the necessary equipment, drugs, and specialist personnel to manage and treat these common illnesses. The routine generated data was not used to detect drug stock-outs and this leads to expensive drugs being prescribed to patients who were forced to buy the drug outside the facility, hence using large amounts of family resources.

The Work of John Snow in cholera epidemics was made possible by using registers (data) of births, deaths, and addresses maintained in the 1800s (Doyle, 2002). Where resources are scarce, it's more important that evidence informs decisions for wise use of the limited resources. In 2010, workload by the level of service delivery showed that level 2, 3 & 4, health facilities in Kitui County had 460,649 newly diagnosed patients and 271,816 revisits from the common illnesses. This number could have been less with good use of routine data generated or could have been reversed by spurring corrective actions (Measure Evaluation, 2007). Data collected would have been used to gauge the community's health outcome and status and link it with health services and treatments. The various levels of the health system cannot identify problems and priority needs neither or track progress and evaluate the impact of interventions hence increased running costs of health facilities due to recurrence of diseases, and inconsistency in patient's management. Overall leading to an increased workload on health care providers and data collectors, compromised quality of health care and limited ability to obtain the overall picture of the community health status, and eventually slow attaining of health goals.

A study on data use and barriers perceived to limited use in Kenya by MOH, (2009) showed a lack of organizational support to analyze, interpret, and utilize information. The data collected at health facilities are sent to the higher levels in the health system and, therefore, the data collectors are not the final users, creating a disconnect. Less than 7% of collected data is analyzed, hence, the ministry is swamped in data, not turned into information and knowledge to produce results. This study, therefore, sought to determine the use of routine data for decision-making among health managers.

The study addressed the following research questions: i) To what extent is the routine generated routine data used in decision making in the health facilities in Kitui County? ii) What are the factors influencing the utilization of generated routine data for decision-making in health facilities in Kitui County? iii) What is the influence of the organization of the district health system on the utilization of generated routine data for decision making in Kitui County? The overall objective of the study was to identify the determinants for use of generated routine data for decision making in health facilities in Kitui County, Kenya. The general objective was achieved by addressing the following specific objectives: i) To explore the level of utilization of generated routine data in decision making in the health facilities in Kitui County. ii) To examine the factors influencing utilization of generated routine data in health facilities in Kitui County. iii) To identify the influence of the organization of district health system on utilization of generated routine data for decision making in Kitui County.

The study could establish areas of the health information system, which needed to be strengthened and supported for routine data to be utilized in decision making in health facilities. It may also contribute to the body of knowledge and literature that would help to strengthen the data used for decision-making in Counties in Kenya. The study made recommendations on the best ways to achieve the goals of strong health information, hence, improve health services through data utilization for decision making.

Further part of the study is comprised as: section ii includes literature review, research method in section iii followed by data analysis and result in section iv and final section concludes the study.

Review of Literature

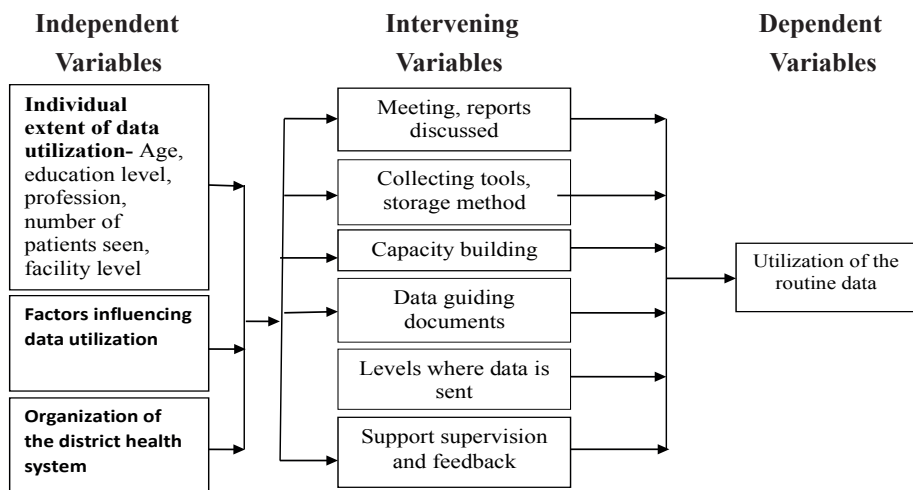
The health system encompasses the personnel, institutions, commodities, information, financing, and governance strategies that support the delivery of prevention and treatment services. It aims to respond to people's needs and expectations by providing services fairly and equitably. The health system has six policy levels where strategic information is made. The most basic and numerous facilities are level 1, which is the community, the dispensaries, sub-health centers, health centers and nursing homes, sub-district hospitals and district hospitals, and the provincial hospitals. At the apex are the national, teaching, and referral hospitals. The data sources in the health information systems may be population-based and health facility-based. The main population-based sources of data are census, household surveys, and vital registration systems. The main health facility-related data sources are public health surveillance, health services data also sometimes known as health management information systems or routine health information systems.

Conceptual Framework

Figure 1: The conceptual framework

The conceptual framework was guided by the literature review. The utilization of generated routine data is influenced by an individual extent of data utilization, factors influencing data utilization, and the organization of the district health system. The influence is mediated by capacity building, data collecting tools, guiding tools, coordination of health system, feedback, and support supervision. The USAID/Kenya (2010) conducted an assessment of the status of the national Monitoring and Evaluation and HMIS and explains that routine service data is collected based on patient service records and reporting from various health facilities. The service delivery points complete the paper summary forms and submit them to the district levels every month and they are then transmitted from the districts to the national levels through the file transfer protocol system (FTP). The underlying rationale is

improvement in the health status of the population through assisting in the management and planning of health programs and delivery of care.



Marie and Higgins (2001) point out that routine health data play a major role in facilitating integration between individual health and public health interventions. It is an integral part of the local service delivery system and provides the only way to document routinely what occurs at the point of contact between a health system and its clients. Recognition that the HIS in most developing countries is very weak and is not a priority and instead countries have worked around it by relying mostly on ad-hoc national surveys that are not very useful at sub-national levels. One of the key challenges in the health sector identified in the existing information system includes lack of guidelines, inadequate capacities of HMIS staff, many parallel data collection systems, and poor integration and coordination among others. The MOH (2009) points out that currently the data sources are often incomplete and fragmented and the challenge is to integrate all the diverse data sources into one seamless system.

While relevant and timely information allows managers to make accurate decisions, irrelevant information makes decision making difficult, adds to the confusion, and affects the performance of the organization, hence the need for managers to be aware of the information they require, how to acquire it, and to maximize the use. Without a good understanding of what is happening in the health system or health facility, it is impossible to develop strategies to influence the behavior or overall aims of health policy. Health facilities routinely gather large amounts of data, then they can use and are data rich but information poor and yet information is the crux of overall building blocks of health systems strengthening and enabling health managers to utilize the data for better policy-making, planning, implementation, and monitoring and evaluation of health programs (WHO, 2008).

Research Method

Study Area

The study was conducted in Kitui County, situated in the eastern part of Kenya, with a population of about 1,012,709 as per the 2009 census report and covering an area of 20402 sq km (2million acres). It has an arid and semi-arid climate with erratic and unreliable rainfall. The county has 10 administrative sub-counties which are Kitui Central, Kitui West, Kyuso, Katulani, Migwani, Mumoni, Kisasi, Matinyani, Nzabani, and Mutito. It is served by one government level four hospitals (formerly district hospital) situated in Kitui Central, five sub-district hospitals, 14 health centers, and 85 government dispensaries, all of which are unevenly distributed.

Study Population

One definition of the health care workers is the clinical staff who have regular contact and provide close procedures to clients for long periods. These includes nurses, midwives, doctors, and clinical officers. Data were collected from the four cadres working in the GOK district hospital, sub-district hospitals, health centers, and dispensaries. The total number of health care providers in government facilities in Kitui County was 225.

Data Collection Techniques

This was descriptive cross-sectional research adopting both quantitative and qualitative research paradigms. The quantitative approach, using the self-administered questionnaire, was used and the qualitative approach included interviews of key participants, focus group discussion (FGD), and observation. The district hospital was purposively selected being the only district hospital in the County as well as serving a large number of patients. Multi-stage cluster sampling was applied to sample the health facilities. Simple random sampling was used to sample six sub-counties in the county and from these blocks, three sub-district hospitals, six health centers, and 68 dispensaries. Simple random sampling was used to select the respondents to be interviewed in different health facilities and departments in the hospitals.

The sample size was calculated using Slovin's Formula. This is because the total number of the Health care worker is less than 10000 (that is, $225 < 10000$).

$$n = \frac{N}{1 + N(e)^2}$$

n=Desired Sample Size,

N=Population Size=225

e= Level of Precision (error Margin) =5%= 0.05

The sample size was 110. Interviews of key participants were also conducted with eight focal opinion leaders, purposively selected under their positions.

Inclusion and Exclusion Criteria

Inclusion Criteria: Health care providers working in the government health facilities, willing to be interviewed, and having worked for six months and above.

Exclusion Criteria: Health care providers working in a private, faith-based organization or the Level 1 (Community) were excluded. Those who have worked for less than six months and those not willing to be interviewed. All the other cadres in health systems such as radiographers, nutritionists among others too were excluded.

Validity and Reliability

A pretest was undertaken and tools refined for precision, clarity, and inclusiveness. This was conducted in the neighboring Makueni County with 11 participants (10% of the sample size). The research assistants were identified based on academic qualifications, relevant experience, and knowledge of the local terrain and underwent a one-day training on the study objectives, data collection instruments and methods, and ethical aspects.

A random error was avoided by adequately coding the instruments and adhering to sampling techniques and questions framed because of the study objectives. Attention was paid to the triangulation of multiple data sources.

Ethical Considerations

The principal researcher oversaw the overall coordination of the exercise. The necessary clearance and approval were obtained from Kenyatta University (KU) and the ministry of science and technology in Kenya. Notification of the study was sent and confirmed to participants before the research. Institutional entry protocol was adhered to. Informed voluntary consent to participate was sought.

Data Analysis and Results

General Characteristics of the Respondents

Out of the 110 interviewees, 70 (63%) were female and 40 (37%) were male. Table 1 shows that 44 (40%) respondents were between the age group of 20-29 years. This age group formed the highest number of participants and the lowest numbers were of the age group of 50 years and above and this group formed 9 (8%). The majority 71(65%) of the respondents had a diploma in their profession and the majority 89 (81%) of the professionals were nurses and midwives.

A high proportion of the respondents 72 (66%) work in dispensaries, with 22 (20%) working at the district and sub-district hospitals and only 16 (15%) at the health centers. The majority of the health facilities had been in existence for more than six years, 25 (23%) existed for four to six years and only 14 (13%) were established in the last one to three years. In the health facilities, 28 (25%) reviewed one to 20 patients daily, two (20%) saw approximately 21-40 patients, with 47 (43%) seeing 41-60 patients and 13 (12%) seeing 61 and above patients daily. All the health facilities offered antenatal clinic services and outpatient department services.

Table 1: Summary of the Background Characteristics

Characteristics	Frequency(n=110)	Percentage (%)
Gender		
Male	40	37
Female	70	63
Age		
20-29	44	40
30-39	30	27
40-49	27	25
50 and Above	9	8
Education level		
Diploma	71	64
Certificate	33	30
Degrees	6	6
Type of facility that the interviewees work in		
District /sub district hospital	22	20
Health center	16	15
Dispensary	72	65
The profession of the respondents		
Nurse/Midwives	89	81
Doctors/COs	21	19
Number of patients seen daily		
1-20	28	25
21-40	22	20
41-60	47	43
61and above	13	12

Overall Level of Data Use for Decision Making

The overall data use among the health care workers was 37(34 %) used data for decision making and 73(66%) did not use data for decision making. To categorize the extent of data use for decision making all the 110 respondents were asked to show where the data from each category was recorded and to briefly demonstrate how each category data was used and its performance compared to the previous year. For each category, a score of 1 showed that data was utilized and 0 showed that data is not utilized. The overall median calculated was 4.0. A categorical data was formed ranking all health care workers scoring 4 and above as using data and those scoring 3 and below as not using data.

Decision Categories in Health Facilities

The results in Table 2 show the extent of data utilization on various tasks in the health facilities.

Table 2: Data Utilization on Various Tasks

	Percent (%)
Data in day to day program management	46
Medical supply and drug management	37
Formulating plans	51
Reviewing financial statements	31
Budget reallocations	35
Human resources management	33
Monitoring key objectives and policy	40
Identification of emerging epidemics	70

Demographic Factors in Data Utilization

Table 3: Cross-Tabulation of Demographic Factors and Data Utilization

	Variable	Not utilizing data	Utilizing data	Total	χ^2 (df)
Profession (cadre)	Drs/COs	14(13%)	7(6%)	21(19)	42.036(1)
	Nurses/Midwives	63(57)	26(24%)	89(81)	P=0.001*
Education level	Certificates	22(20%)	11(10%)	33(30%)	58.164(2) P=0.002*
	Diploma	51(46%)	20(18)	71(64%)	
	Degree/Masters	4(4%)	2(2%)	6(6%)	
Gender	Male	27(25%)	13(12%)	40(37%)	7.259(2)
	Female	50(46%)	20(17%)	70(63)	P=0.007*
Years of work	1-5 years	36(33%)	15(13%)	51(46%)	0.703(2) P=0.703
	6-10 years	23(21%)	8(7%)	31(28%)	
	11 and Above	18(16%)	10(9%)	28(26%)	

*Significant results

Table 3 shows the associations between the health care providers and the data utilization for There is a statistical significance between the profession or the cadre, education, and gender of the health care providers with utilizing data for the decisions made.

Health System Factors and Data Utilization

Table 4 shows the association between the health system factors and the data utilization. There is a statistical significance between the levels of health facilities, years of existence, and the approximate number of patients seen daily.

Table 4: Cross-Tabulation of Health Systems Factors and Data Utilization

Variable	Not utilizing data	Utilizing data	Total (%)	x² (df)
Level of health facility				
Dispensary	49(44%)	23(21%)	72(65%)	51.564(2) P=0.001*
district/sub-district hospitals	16(15%)	6(5%)	22(20%)	
Health center	12(11%)	4(5%)	16(15%)	
Existence of health facility				
months-3 years	12(11%)	2(2%)	14(13%)	49.873(2) P=0.001*
4-6 years	15(14%)	10(9%)	25(23%)	
7 years and above	50(45%)	21(19%)	71(64%)	
An approximate number of patients seen daily				
1-20	22(20%)	6(6%)	28(26%)	22.582(3) P=0.002*
21-40	15(14%)	7(6%)	22(20%)	
41-60	29(26%)	18(16%)	47(42%)	
61 and above	11(10%)	2(2%)	13(12%)	

*Significant results

Factors Influencing Utilization of Generated Routine Data Monthly Report, Frequency of Meetings, and Topics Discussed

In 91 (83%) of the facilities, the monthly reports were filled by the support staff and 19 (17%) had the health care providers filling the monthly reports. The results showed that the majority of the health care providers held bi-annual or annual meetings 98(89%) and only 12(11%) had monthly meetings. This has statistical significance with data utilization for decision making ($x^2 = 67.235$; $df=1$; $p=0.00$; $n=110$). In 91 (83%) of the health facilities, there was the presence of official records of the meetings held and 19 (17%) did not have any records maintained. Of the topics discussed and recorded during the meetings, 64% of the respondents did not discuss management of routine data quality and 70% never discussed findings of routine data.

Factors That Decisions were Based Upon

The respondents indicated that decisions made in the health system were majorly based on (87%) health needs, (74%) considering costs, (73%) NGOs or donors influence, and comparing data with strategic plans respectively, (69%) agreed that decisions are based on superior directives, (68%) on evidence and facts, (54%) political interferences and (51%) on personal liking.

Available Data Tools

Among the available data collection tools, 92 (84%) of the health facilities had patients registers, 64 (58%) had stock cards and 50 (45%) had financial statements. There was a statistically significant between the availability of patients register and data use ($n=110$; $df=1$; $p=0.000$; $x^2= 49.782$). The presence of the available data collecting tools and the use observed and tallied at the checklist. For the above data collection tools, only 33 (30%) reported to have had a stock out in the past 12 months and 77 (70%) have not had any stock out in the last 12 months.

How the Collected Data is Stored and Analyzed

Table 5 shows how the data was stored and analyzed after collection. Among all the health facilities 84 (78%) analyzed and stored data manually in cabinets and shelves and only 26 (24%) were computerized. The presence and use of computers, cabinets, and shelves were observed and indicated on the checklist.

Table 5: Cross-tabulation of Storage and Analyzing Methods

Variable	Manual	Computerized	χ^2 (df)
Data storage and analyzing method	84(76%)	26(24)	30.582(1) P=0.001

Experience and Frequency in Computer Usage

Of all cadres of health care providers, 88 (80%) of the respondents had low experience in computer use, 20 (18%) had medium experience and only 2 (2%) had a high level of experience of computer usage. The 77 (70%) of the health care workers had never used computers for their tasks, 15 (14%) used computers less than once per week, 14 (13%) used computers daily and 4 (3%) used computers once or more per week but not daily.

Difficulties Faced by Health Care Providers in Using Computers

The difficulties and challenges reported by health care workers in computer use were 78 (71%) reported no access to computers, 18 (17%) did not have enough computers, 13 (12%) had no training in computers.

Similar views were reported during the focused group discussion, with one health care worker explaining, "...since I got employed, I have never seen a computer at my workplace. We store our data in cabinets. So why would I even go to learn computer if I will not use that knowledge?"

One of the key participants also pointed out, "In the whole of the district, the facilities with a computer are less than twenty. This has discouraged many health care providers from using computers. It has also made the work of data processing, analyzing and use very difficult."

Continuous Professional Training in Data Areas

Table 6 shows the association between the training in data areas and data use for decision making. There is a statistical significance between having continuous professional training in data-related areas and the use of data for decision-making among health care providers.

Table 6: Cross-Tabulation of Training in Data Areas and Data Utilization

Continuous professional development	Number not trained	%	Chi-square (χ^2)	df	P-values
HMIS	85	77	32.727	1	0.000*
Survey	96	87	61.127	1	0.000*
Data analysis	84	76	30.582	1	0.000*
Data utilization	84	76	30.582	1	0.000*
Planning	92	84	49.782	1	0.000*
Computer software	91	83	3.299	1	0.065
Other related data areas	89	81	0.810	1	0.0259

*significant result

Less than 26% of the health care workers received training on areas related to data and data use.

Available Guiding Documents at the Health Facilities

Table 7 shows the association between the available guiding tools and the data utilization for decision making.

Table 7: Cross-Tabulation of Available Guiding Tools and Data Utilization

Guiding Tools	Available	Not available (n)	Chi-square(χ^2) (df)
Guidelines/recommendation for action	42(38%)	68(62%)	6.145(1) P=0.013*
Annual/monthly planned targets from district office	59(54%)	51(46%)	0.582(1) P=0.4446
District/national office newsletter	27(25%)	83(76%)	28.509(1) P=0.000*
Published research	22(20%)	87(80%)	109.655(1) P=0.000*
Report showing success stories	17(15%)	93(85%)	52.509(1) P=0.000*

*significant results

The majority of the health facilities do not have useful guiding documents. Only 42 (38%) of the facilities had guidelines and recommendations for actions and 59 (54%) had annual or monthly targets from the district office. Only 22 (20%) of the facilities published research studies and 17(15%) had reports on success stories of information use. The availability of these documents has statistical significance to data utilization for decision making. The presence of the guiding documents in the health facilities was observed and tallied on the checklist.

Challenges Experienced by Health Care Workers in Using Data

The respondents ranked 11 issues seen as challenges in using the data for decision making. Of the participants, 93% ranked duplication on the top of the list, the second-ranked challenge by 82% was too much information asked, 73% ranked the third challenge as workload and overworked staffs, and fourth was 54% indicating lack of technical skills. The issue with the fewest respondents was indicators being output-oriented at 16%.

During the focus group, discussion one health care worker pointed out, “The paperwork is too much. You see the same information asked in one form is still asked in other forms like almost three other or more”. Another participant explained, “the forms we fill ask too many questions. Like the latest form introduced for one of the clinics have almost a hundred questions. Some of the questions are irrelevant. You don’t see how it will help. It is just put there”. Forms filled were observed and tallied on the checklist. Several forms asked for similar information repeatedly.

Organization of the District Health System Influencing Data Utilization outside Technical Support to Health Facilities on Data

Some health facilities receive technical support in data areas from NGOs: 46% of the respondents said no outside technical support was given, 45% had NGOs supporting data production and 9% were not aware if there is any support or not. The NGOs mentioned were AMREF, ICAP, World Vision, Liverpool, and Aphia Plus.

During the focused group discussion, one of the health care workers pointed out, “The NGOs only support the data that they are interested in. If an NGO deals with HIV, it will only help and supervise

that area. If it deals with VCT, it's also the same, this is as long as they achieve their objectives. So there is not much difference. The problems remain with all other data.

A key participant pointed out, "To the best of my knowledge, we have no NGOs in the area, supporting the information and data"

Levels and Frequency of Data Sharing

Results showed that the data collected is shared with the community through the community information system by 53%, to the district office by 87%, and the ministry of health by 75%. The levels have a significant influence on the use of generated routine data for decision making. The different levels impact negatively on the use of generated routine data for decision making in health facilities.

In the frequency of sending data to various levels, 48% sent their returns to the community on monthly basis and 52% send irregularly, 85% sent the data to the district office monthly and 15% irregularly and 71% sent the data returns to the ministry of health on monthly basis and 29% sent irregularly.

Feedback to the Health Facilities

The frequency of health facilities getting their feedback was indicated as 48 (44%) of the health facilities did not get feedback from the community level, 37 (33%) of the health facilities got feedback from the district office irregularly and 35 (32%) got the feedback monthly. The facilities that got feedback from the ministry of health monthly were 34 (31%) and 31 (28%) got feedback irregularly.

Districts Support Supervision Visit to Health Facilities

For the frequency of the district supervisor's visits in the last three months, among the respondents, 60 (54%) said the visits were made one time and 23 (21%) said no visit done at all, 15 (14%) were visited twice, 3 (3%) had three visits and only 9 (8%) received more than three visits from the supervisor. The visit from the district supervisor had a significant statistical relationship with data utilization for decision making ($n=110$; $df=1$; $p=0.000$; $\chi^2= 30.000$).

One of the key participants interviewed pointed out, "At times, it is impossible to make support supervision to all facilities as it is supposed to because of challenges like lack of transport. The health facilities in Kitui are very far from each other and in most places, there are no matatus (public means of transport). If given a motorcycle, this would minimize these problems"

Topics Assessed and Discussed by the District HIS

The topics that were assessed and discussed during support supervision visit by the district supervisor officers were issues on data quality at 38 (34%), issues on performance of health facilities were discussed in 67 (61%) and only 5(5%) had a discussion on decision making based on routine data. There is a statistical significance between issues assessed and discussed with the data utilization ($n=110$; $df=2$; $p=0.002$; $\chi^2= 49.164$).

Report and Feedback on Supervisory Visits

Among the health facilities that had a supervisory visit, only 43 (39%) received any feedback of the supervisory visits. However, 67 (61%) of the respondents did not receive feedback or reports on the visits made. The feedback or reports from the district supervisor has a statistical significance to data use for decision making ($n=110$; $df=1$; $p=0.022$; $\chi^2= 5.236$).

During the FGD, one of the participants pointed out, "Feedback is lacking, once in a while, the district supervisor comes and looks at the record books, but there is no feedback after that. Therefore, I do not know if the work is good or not".

Implications of Findings

Strong data utilization is a crucial element in planning and improving the quality of health services in Kenya. However, significant barriers and weaknesses influence Kenya's health system. Many health providers did not appreciate the importance of utilizing the generated routine data for decision-making. Some felt that this was a Ministry of Health issue, which implied that no person is answerable to any data which may be inaccurate, omitted, and of poor quality. The health care providers are also handicapped due to lack of resources needed in data areas hence very little appreciation to areas related to data collection, analysis, or utilization.

Conclusion and Recommendations

This study demonstrates limited utilization of routine data to make decisions for health facility management with strategies and interventions being done arbitrarily and not informed by data. Therefore, not many health care providers will be keen on the results within the health facilities. The use of routine generated health data for decisions determines the effectiveness in detecting problems, defining priorities, identifying innovative solutions, and allocating the limited resources for improved health outcomes. Several factors identified to influence the data utilization ranging from individual, structural and health system organization, leading to data not being used to its full potential.

To strengthen the utilization of routine generated data in health facilities, the national ministry of health and the county ministry of health can collaboratively avail the resources to strengthen data utilization and distributed it to every health facility. This would include the availability of guiding documents, research results, and equipment like computers for use. In collaboration with partners and donors, the government can standardize the parallel reporting levels and consolidate a unified data form or tool with relevant key indicators to be captured.

Building capacity and skills of health care providers in routine data utilization through on-job training for those already working and strengthening the curriculum by health training institutions for sustainability through integrating data modules will support strengthening data use for decision in health facilities. A set of performance indicators can help in ensuring structured support supervision, meetings, and feedback on routine data utilization. This will promote consistent data utilization for decision-making in health facilities.

This being a descriptive cross-sectional study, there is a need for an interventional longitudinal study to assess the use of data in other counties in Kenya. A study to make a comparison between the rural health facilities and those in the urban areas is recommended. A study to compare the data quality and data utilization should be conducted. A study to check the correlations between private facilities and government facilities on data issues should also be carried out.

Conflict of Interest

The authors declared that they have no conflict of interests.

References

- AbouZahr, C. & Boerma, T. (2005). *Health information systems: The foundations of public health*. Bulletin of the World Health Organization 78-583.
- Adano, U. (2008). *Building the bridge from human resources data to effective decisions: Ten pillars of successful data-driven decision-making*. USA: The Capacity Project Intra Health International Inc.
- Amalga, M. (2009). *The transformative power of data in healthcare: How Microsoft Amalga Unified Intelligence System 2009 leverages data to empower people to improve healthcare*. USA: Microsoft Corporation.
- Brosio, G. (2000). *Decentralization in Africa*. Conference on Fiscal Decentralization. Retrieved from <http://www.imf.org/external/pubs/ft/seminar/2000/fiscal/>

- Campbell, B. (2003). *Enhancing the quality and use of health information at the district level*. Data to Decision Making: Delusion or Destiny? Harare: MEASURE Evaluation, USAID, JSI, and The Equity Project.
- Doyle, D. (2002). *Knowledge-based decision-making: Moving beyond intuition through data-laced wisdom leading to informed actions*. School Administrator. Retrieved from http://findarticles.com/p/articles/mi_m0JSD/is_11_59/ai_94893402
- Gething, P. W. (2007). *Information for decision making from imperfect national data: tracking major changes in health care use in Kenya using geostatistics*. UK: University of Southampton
- Global Health Council, (2011). *The importance of health systems and health equity: The voice for global health*. USA: Global Health Council.
- Kaen, K., (2006), *Evidence from systematic reviews to inform decision making regarding financing mechanisms that improve access to health services for poor people*. Thailand: Alliance for Health Policy and Systems Research.
- Kothari, C., R. (2004). *Research methodology: Methods and techniques*. 2nded. New Delhi: New Age International (P) Limited.
- Marie (Gina) de Alwis, S. & Higgins S. E, (2001). *Information as a tool for management decision making: A case study of Singapore*. Division of Information Studies Nanyang Technological University Singapore Information Research, 7 (1).
- Measure Evaluation (2007). *Decision maker perceptions in Kenya and Nigeria: An assessment of data use constraints*. Carolina: Carolina Population Centre
- Ministry of Medical Services & Ministry of Public Health & Sanitation, (2010). *Annual operational plan consolidated Kitui district health sector 2010/2011*. Nairobi: MMS/MoPHS
- Mogere, S.N. (2010). *Development and application of a geo- medical information decision support system for malaria surveillance and risk modeling in Nyanza Province, Kenya*. Nairobi: Kenyatta University.
- MOH, (2009). *Strategic plan for health management information system 2009-2014*. Nairobi: Ministry of Medical Services & Ministry of Public Health and Sanitation.
- Murray, C., J., L., Lopez, A., D. & Wibulpolprasert, S. (2004). Monitoring global health: Time for new solutions. *British Medical Journal*, 329, 1096-1100.
- National Coordinating Agency for Population and Development, (2005). *Kitui district strategic plan 2005 – 2010*. Nairobi: Ministry of Planning and National Development.
- Sapirie, S., (2000). *Assessing health information systems*. In: T. Lippeveld, R. Sauerborn, and C. Bodart, eds. Geneva: World Health Organization.
- UN Statistics Wiki (2018). *E-handbook on SDG indicators*. Retrieved from <https://unstats.un.org/wiki/display/SDGeHandbook/Indicator+3.1.1>
- WHO, (1998). *District health systems: An overview report on the challenge of implementation of district health service for primary health care*. Geneva: World Health Organization.
- WHO, (2007). *Everybody's business: Strengthening health systems to improve health outcomes* Retrieved from <http://www.wpro.who.int/>
- WHO, (2008). *Utilization of health information for decision-making: Report of the Regional Consultation*. Colombo, Sri Lanka: WHO.