Factors Influencing the Functionality of Community-Based Health Information Systems in Embakasi Sub-County, Nairobi County, Kenya

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Abstract- The generation of health information starts at the community level through the Community-Based health information system. At the community level, this source of information is complete in coverage and in planning and action-oriented (Odhiambo-Otieno, 2005). The objective of the study was to assess the internal and external factors influencing the functionality of CBHIS in Embakasi Sub-County, Nairobi County, Kenya. The study was descriptive cross sectional in nature where both qualitative and quantitative methods of data collection were used. The study adopted Key Informants interview, for link health facility workers, and 2 sets of questionnaires for Community Health Unit workers. The data/reporting tools, feedback forums, training and support supervision were available but inadequate and that CHUs did not have data analysis capacity. The community was very supportive to CHUs activities and the linkages were effective as stated by all the respondents. Challenges that were said to face the linkages included; community health workers shortage, inadequate tools, inconsistent indicators and late reporting. However 3(60%) of the CHEWs pointed out that the county leadership was unsupportive to the CHUs while 2(40%) reported the county leadership supportive. The researcher recommend that the local leadership should provide the workers with adequate tools, capacity build them on data analysis, strengthen dialogue and action days, offer frequent refresher training and equip the workers with supervisory skills. The linkages between CBHIS and FHIS should be strengthened and that the local leadership should support the community health unit activities.

Index Terms- Community Based Health Information System, community health information system, functionality, community health.

I. INTRODUCTION

World health organization defines health systems as all the organizations, institutions, and resources that are devoted to producing health actions. The World Health Organization, through its report entitled strengthening health systems to improve health outcomes (WHO, 2007) identified six pillars of a health system. One of the pillars outlined by the WHO report was a well-functioning Health Information System which involves production, analysis, dissemination and usage of information that is reliable and timely. Effective health systems depend on a strong integrated primary health care system and Community Health plays a central role in that system (Suter, Oelke, Adair, & Armitage, 2009). Community Health care is located close to where people live, engages front line health workers who have well developed generalist skills and competencies and maintain regular contact with individuals/families and local communities across a broad range of health issue .

At tier 1 it's the mandate of the Community Health Volunteers to collect data from household that they have been allocated bi-annually through the household register (MoH 513), and monthly through CHW logbook (MoH 514). This data is then passed on to the CHEW who summarizes it in CHEW summary (MoH 515) and this information is transferred to the chalkboard (MoH 516) by a member of CHC (Community Health Committee) for discussion during dialogue days. Furthermore, the summary from the CHEWs is entered to facility health information system.

According to the situation analysis on the state of Community Health Services in Kenya (Oyaya *et al*, 2014), the functionality of CHIS was said to be at 64% and that access to quality data was not guaranteed through the current CHIS. This was attributed to poorly functioning community health information system characterized by lack of proper information management systems and tools. In some areas they completely reported the absence of CHIS in their CHUs. Allotey and Reidpath 2000; Braa and Nermunkh (2000); Khemrary (2001); Rubona (2001); Wilson *et al*. (2001a) stated that poor quality of data, weak analysis of data, lack of an information culture, lack of trained personnel and HIS activities seen as a burden due to high workloads especially at the health facility level. Furthermore, CHUs are funded by different organizations in Kenya where each organization might have their own tools (Aridi *et al,* 2014).

During literature review researcher established that there were no scientific studies that had been done in Embakasi Sub-county to determine the internal factors that influence functionality of CBHIS and external factors influencing functionality of CBHIS. The objective of the study was therefore to: assess the internal factors that influence functionality of Community-Based Health Information System in Embakasi Sub-County; to assess the external factors that influence functionality of Community-Based Health Information System in Embakasi

Sub-county. Issues of human resources availability, Availability and adequacy of CBHIS tools, availability of community forums, training, support supervision, linkages, community support, and local leadership support were addressed. The information enabled the researcher to identify the area weakness/strengths to come up with appropriate recommendations that would strengthen CBHIS, HIS and entire health system.

II.   METHODOLOGY

The study was descriptive cross sectional in nature. This provided a description of the factors influencing the functionality of CBHIS in Nairobi County at that particular time. The study was carried out in Embakasi Sub-county, Nairobi County. Key informant interviews were used to collect data from the facility in-charges and Health Records Information Officers (HRIO) and questionnaires were used to collect data from the Community Health Extension Workers (CHEWs) and Community Health Volunteers (CHVs). The study used a blend of quantitative and qualitative approaches of data collection from the respondents. The population of interest was composed of facility in charges, health records information officers (HRIOs), CHEWs and CHVs from the selected CHUs. Before conducting the study the researcher sought approval from Kenya Methodist University (KeMU) research and ethics board's approval, Nairobi County Health department to and sought consent from the Sub-county community health service focal person. A total of 56 CHVs, 5

CHEWs, 5 facility in-charges and 2 Health records information officers were interviewed. After data collection, all the questionnaires were cross-checked for completeness and any missing entries corrected. The quantitative data collected were coded, processed and cleaned off any inconsistencies and outliers. The qualitative data was analyzed through the selection of concepts, categories and themes. The researcher employed the use of the Statistical Package for Social Sciences (SPSS vs. 20) and MS Excel in the data analysis. Findings were presented in the form of text, charts and graphs.

III.   RESULTS

Internal factors that influence the functionality of CBHIS

The factors discussed are the availability and adequacy of tools, existence of quarterly dialogue days and existence of monthly action days, support supervision and training.

Availability and Adequacy of CBHIS tools

The tools were available but not adequate. 54 (96%) of the CHVs in the research confirmed the availability of the MoH513 (Household Register) and 2 (4%) said they did not have MoH513, 52(93%) said MoH 514 (CHW logbook) was available and 4(7%) said not available and 54(96%) said MoH516 (Chalk board) was available and 2 (4%) said not available.
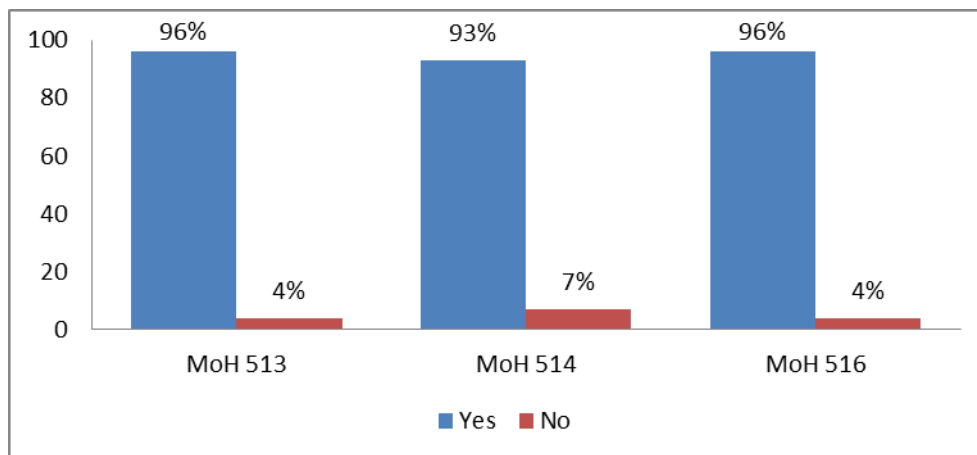

Figure 1: CHVs view on availability of MoH 513, MoH 514 and MoH 516

In addition, 4(80%) of the CHEWs said that MoH514 (CHW logbook) was not available and 1 (20%) said MoH 514 was available. On the other hand, 3(60%) of the CHEWs said MoH 513 and MoH 516 were adequate whereas 2(40%) said that

MoH 513 and 516 were not adequate. According to 4(80 %) of the CHEWs MoH 514 was inadequate and 1(20%) said adequate and 3(60%) said that MoH 515 was not adequate and 2(40%) said they were adequate.
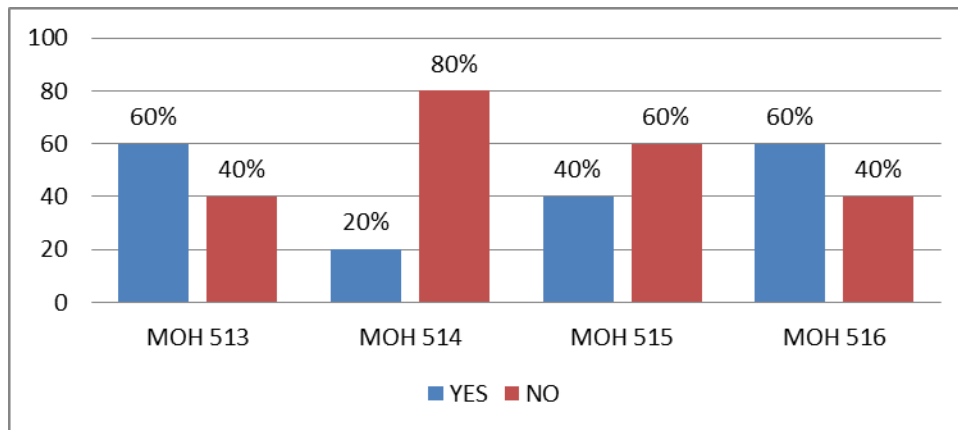
Figure 2: CHEW view on adequacy of the tools

From the CHVs interview, 38 (68%) and (32)58% pointed out the inadequacy of MoH513 and MoH514 respectively. With 18(32%) and 24(42%) saying MoH513 and MoH514 respectively were adequate.

The HRIOs were interviewed on the adequacy of the CBHIS tools and various aspects were highlighted. The tools were missing some indicators and they point out those indicators that showing specific family planning methods (i.e. the number of clients using POP and COC) should be included in the tools as their absence means that they are not being entered on FHIS-KHIS thus affecting the linkage between CBHIS and FHIS-KHIS. The HRIOS commended that the key indicators be harmonized for ease of entry in the FHIS system.

Data Analysis Capacity

The HRIOs observed that the data transmission was effective. However, they said that the CHUs have no data processing capacity. This agreed with CHEWs interviewed who stated that they had been trained on data management and analysis but the training content wasn't sufficient enough to fully perform CBHIS activities. Besides, there was shortage of CHEWs thus making CHUs data processing capacity low. It was also clear that only 2(33%) of the link health facilities interviewed had HRIOs and 4(67%) did not have HRIOs

Dialogue Days

It was clear that majority of the CHU carried out dialogue days based on problems identified from CBHIS. However the dialogue days are not carried out on monthly basis as required by the CHS policy guidelines. 53 (94%) of the CHVs said that they conduct dialogue days based on the problems identified from CBHIS while 3 (6%) said no. On the other hand, 3(60%) of the CHEWs said yes and 2(40%) said no. 45(80%) of the CHVs indicated that they did not conduct monthly dialogue days and about 11(20%) conducted monthly dialogue days. Specifically in the last six months 12(22%) had conducted 1-2 dialogue days, 30(53%) 3-4 dialogue days, 12(21%) 5-6 dialogue days and 2(4%) conducted 7-8 dialogue days.

All the CHVs agreed that there were positive impacts of the dialogue days conducted by the CHUs. Those CHVs who did not conduct dialogue days was associated to lack of funds to hire the venues and facilitate the meetings, poor communication and lack of awareness. Additionally, the CHEWs respondents explained that during dialogue days, they establish and manage community and facility-based information systems, to include data collation, storage, analysis, interpretation and utilization, in dialogue for continuous improvement.

Action Days

After the discussion of the information contained in the Chalk board (MoH 516) during the dialogue day the community agree on the action to be taken in order to improve their health. Majority of the community health units conduct health action days based on problems identified from dialogue forums. The researcher found out that hooping 45(85%) and 4(80%) of CHVs and CHEWs respectively said action days were conducted by the CHUs and 11(15%) and 1(20%) said there were no action days conducted by the CHUs. However it was noted that most of the community health units did not conduct quarterly action days as per guidelines and those who had met a thresh hold of four action days had conducted more than four action days in a year. When asked how many action days they conducted, 22(40%) had conducted 1-2 action days, 12(22%) 3-4 action days, 8(14%) 5-6 action days, 8(14%) 9-10 action days and only 6(10%) had conducted above ten action days.

During the study, the researcher found out that the action day's activities had positively impacted the community. The main activities during the action days included; Health education Deworming, cleanups, screening and commodity distribution. Lack of financial capability was found to be the most rampant hindrance towards undertaking the events on quarterly basis. The other challenge was lack of cooperation from the community members.

Training

Most of the tier 1 cadres (CHVs and CHEWs) in Embakasi sub-county were trained in year 2011 and 2012. 46(83%) of the CHVs were trained in 2011, 2 (4%) in 2010, 3(5%) in 2012, 4(6%) in 2013 and only 1(2%) 2014.
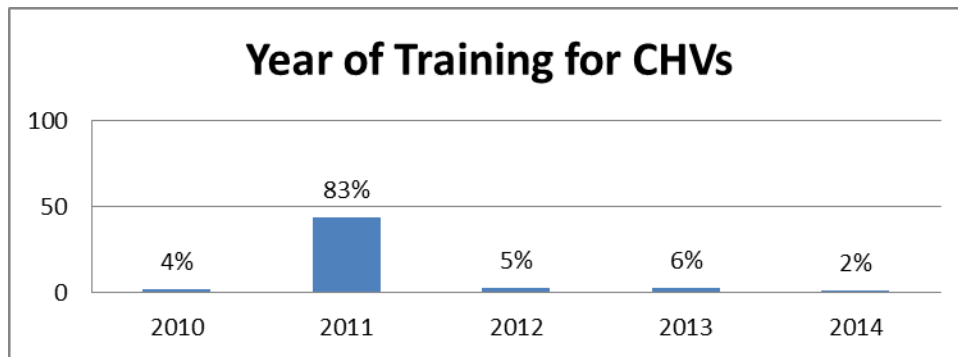
Figure 3: Year the respondents were trained.

Majority 51(91%) of the respondents were trained on data collection while 5(9%) had no training on data collection. However, 31(55%) of the CHVs said that the training content wasn't sufficient in performing their CBHIS activities while 25(45%) were satisfied with the training content offered. In addition all the CHEWs had been trained on data management and analysis but complained that the training content wasn't sufficient enough to fully perform CBHIS activities.

From the discussion held with CHEWs in cases where the CHV drop out and new ones are selected held. It was however established that there was no formal training for the incoming CHVs. The research established that CHC/CHEWs gave the new CHVs on job training.

Support Supervision.

Some HRIOs confirmed that they receive quarterly support supervision from the health facility while others said that they do not receive any support supervision. On the other hand, when asked whether they receive support supervision from the link health facilities, 4(80%) of the CHEWs said yes and 1(20%) said no.

The CHEWs offer Support supervision to the CHU on monthly and weekly basis. It was also clear from the interviews that some HRIOs gave CHU support supervision on quarterly basis and others do not offer such services to the CHUs. Furthermore, the study confirmed that majority of the CHVs receive support supervision from the CHEWs. 48(85%) of CHVs said that they get support supervision from the CHEWs and 8(15%) reported that they don't receive supervision from the CHEWs.

As shown in figure 4.11 below, 2 (50%) of the CHEWs confirmed to provide support supervision to the CHUs on quarterly basis while 2(50%) was on weekly basis.
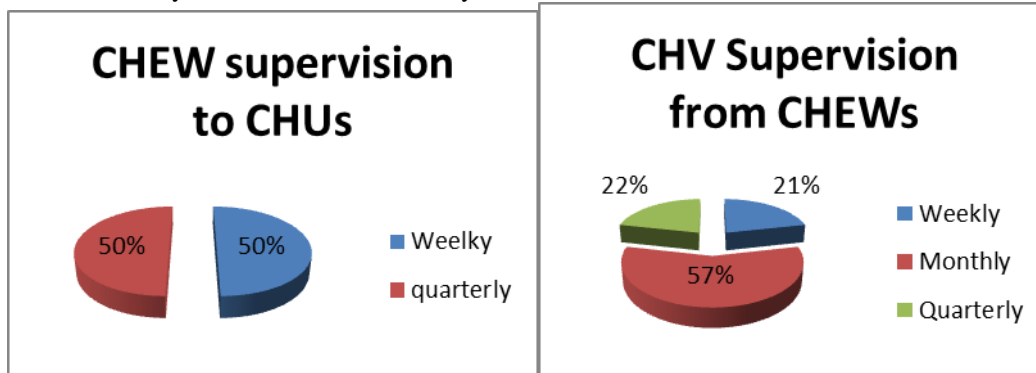

Figure 4: frequency of CHV supervision

External factors influencing functionality CBHIS

The factors discussed include Linkages, community support and county support.

Linkages

The study found that only 5(50%) of the CHUs had active CHEWs. Most of the CHEWs had redeployed by the county to their original cadres except those with community development background thus creating gap in-terms of numbers. Besides, most of the facilities did not have a health records information officer. From the six facilities that were visited 2(33%) (Mukuru and Umoja) health facilities had HRIOs.

CBHIS and FHIS linkage

The respondents said that there existed a functional Community-Based Health Information System. However, there were mixed reactions on the existence of linkage between CBHIS and Health Facility Information System (FHIS). While all the facility in charges and HRIOs said the two systems are well linked 3(60%) of the CHEWs indicated that the CBHIS had a clear linkage with the FHIS and 2(40%) said there was no clears linkage between the two systems. The facility in charges also added that the linkages between the CBHIS and the FHIS were effective. Those that said the two systems were well linked was attributed to the fact that the two systems use the same indicators; there existed coordinated approaches towards problems at the community level, and the fact that all the reports and the data collected were being submitted to the health

facilities. However challenges like confusion in the use of MoH515 were noted. For example MoH 515 has an indicator on the number of children not dewormed while the indicator on the facility is the number of children dewormed. In addition other major challenges affecting the linkage reported by the respondents were; lack of referrals books, lack of motivation on the side of the CHUs, insufficient reporting tools, inadequate reports from the CHUs and inconsistency in the tools used.

Community data and KHIS linkage

Similarly, all the participants agreed the community data was linked to the Kenya health information system (KHIS) as they mainly used same indicators and health data dash board. This was so especially when establishing the indicators. The other linkages that existed were through referrals and the fact that the community data was to be submitted to the KHIS. The major challenges affecting the linkage included lack of efficient reporting tools, issues on reporting deadlines, and poor cooperation among the stakeholders.

Community Support

All the CHVs interviewed confirmed that there was community support towards the CHU initiatives. This was attributed to the fact that communities were cooperating in giving data during household visit and the fact they were involved in community forums like dialogue days and community health action days.

County Support

When asked to rate county leadership support towards the CHUs, 3(60%) of the CHEWs pointed out that the county leadership was unsupportive to the CHUs while 2(40%) reported the county leadership supportive. All the facility in charges pointed out that the county government was partially supportive to the CHU initiative. Figure 5 below demonstrate the CHEWs response on county support.
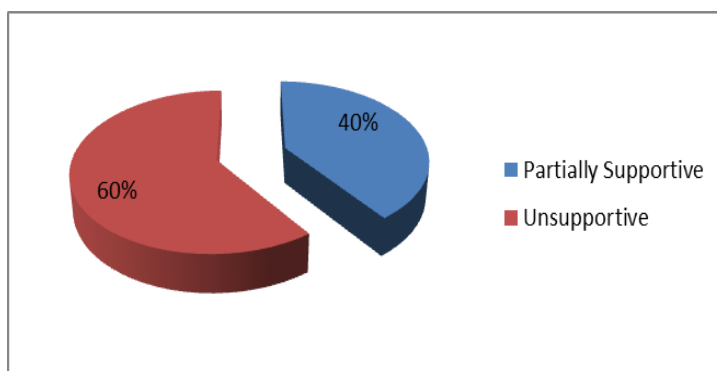

Figure 5: CHEWs view on county support

IV. DISCUSSION

From the results it was clear that the data collection and reporting tools were available but inadequate. This confirmed the findings of (GOK, 2010) which stated that CBHIS was not working very effectively due to lack of data collection tools, bulkiness of the data tools and difference of data tools. Those tools that are not used regularly (MoH513) and those that are

bought one off (MoH 516) were fairly adequate compared to the tools used on monthly basis (MoH 514 and MoH515) which were fairly inadequate.

Health workers at the community and facility level did not have the capacity to analyze data thus the information is passed to the next level without being utilized at CHU level. This is in agreement with Mukama (2003) who stated that in Tanzania, information still flowed from the district and provincial levels to the national level without local analysis for local decision-making and there is lack of feedback from the national level to local levels. Mostly, the community members do simple analysis on the trends during dialogue day and discuss on the action to be taken.

A community dialogue is a process of joint problem identification and analysis leading to modification and redirection of community and stakeholders' actions towards preferred future for all GoM, (2007). Community dialogues are participatory forums in which the community is empowered to analyze, share and use information contained in MoH 516. It is after their discussion during dialogues days that the community discuss on the action to be taken to solve the problem identified. As stated by Aridi *et al* (2014) deliberations on community dialogue days were intended to inform the planning of community action days for health service delivery in the community. The study confirmed that dialogue days and action days were being conducted but not on monthly and quarterly basis as stipulated by the guidelines. However, during the action days CHUs carried out health education, deworming, cleanups, screening and commodity distribution.

According to Nzanzu *et al* (2014), sources of information are many and varied which requires continued updates and refresher training so that the CHWs are skilled in gathering this information and collating them. The results showed that basic training for the CHVs and CHEWs was carried out. However there was no refresher training on data collection and data management since the year 2011.The lack of refresher training was associated with the lack of sufficient funds and overreliance on donor partners to carry out the training. Aridi *et al* (2014), stated that there was poor coordination between agencies and inadequate commitment to deliver training in sufficient quantities. The study further stated that training duration depended on sponsoring organization the training was organized on irregular interval and that the training content would largely depend on the organizations responsible for funding the training. This was with agreement with the study finding that the CHEW and CHVs training content was not sufficient to carry out their day to day activities.

To carry out their tasks successfully, CHWs need regular training and supervision and reliable logistical support (WHO, 2007). Although the CHVs supervision by the CHEWs should be done at least on a monthly basis, this was not the case for 12(22%) of the CHVs interviewed which may be a reflection of the poor performance of some CHEWs in their areas of responsibility. The CHVs who were not supervised could be associated with the fact that most of the CHEWs had redeployed to their original cadres as stated by the CHEWs. These findings agree with (GOK, 2010) that stated that lack of continuity of supportive supervision as a result of frequent transfers of these focal persons.

Usefulness of CBHIS is greatly enhanced when linked to Health Facility Information System, and used for dialogue, for timely evidence-based decision making Nzanzu *et al.* The linkage between the community data, FHIS and KHIS cannot be complete without the availability of the human resources to collect the data (CHVs), to summarize and analyze the data (CHEW) and HRIO whose work is to enter the data into the respective information system. Although there is a scheme of service for community health personnel's approved in 2013 it has not been implemented by the counties so as to employ adequate CHEWs.   It was clear that the CHEWs and HRIOs were inadequate. This human resource gap is a major impediment to proper functioning of CBHIS.   Linkage between CHU and Health facility was therefore compromised since it's the CHEW who is the secretary to the CHU who sits at health facility management committee to present community issues. Although there are several challenges facing the linkages most of the various respondents interviewed indicated that the linkage was effective. This could be associated with the fact that the systems use same indicators and health data dash board. The study findings disagree with Roberton *et al* (2016) who stated that the necessary data collected by CHWs are only submitted to health facilities and not sent up the chain to district offices, either because the data are not included in a health facility report, or because the data are aggregated in such a way that the relevant indicator cannot be calculated.

Effective interventions rely on community participation and are achieved when the community supports the identified health needs, priorities, capacity and any barriers to action. The study established that the community was very support. This finding agrees with (GOK, 2010) report which stated that participation of community members in strengthening health systems elicits grassroots acceptance, support and sense of ownership. However the county leadership was not supportive CHU's activities. This is derailing the community health unit functionality and at the same time CBHIS functionality. This could be attributed to the lack of clear community health services structure in Kenya. Due to this the county might not considering the community health units activities as priority in their budgets. According to Oyaya *et al* (2014) , there is need to establish a well-structured national community health service with clear governance and management system that clearly specifies roles and functions at the national, county, sub-county and community levels.

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