



Evaluation of Utilization of Health Management Information System by Health Unit Management Committees in Luuka District, Uganda

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Abstract: *The study was about Management and Utilization of Health Management Information system (HMIS) by Health Unit Management Committees (HUMCs) in Luuka District. The investigation was based on a realization that inefficiency is occurring at all the levels of HMIS management within the health sector and the line sectors/ stake holders. The intention was to ascertain the type of information generated for use by HUMCs, how the information is generated and establish the information used in planning and monitoring by HUMCs. A descriptive and evaluative survey was used because the findings of the study called mainly for evaluative analysis of the utilization of HMIS by HUMCs. A sample of 68 respondents was selected using stratified and purposive sampling techniques. Data analysis was done descriptively. According to results generated, 94% of the respondents acknowledged that information generated from patients in the various health units is used by HUMCs specifically to; planning and monitoring, for returns to DDHS office at Luuka district, and for review of financial statement. The basic challenge was that though catalogued, limited information is recorded and yet patients do not want to carry information sheets whenever they come back for more treatment. It was therefore concluded that though HUMCs require information to review, plan and monitor activities/services, these tasks are difficult because in most health facilities, information required is not shared by patients and health workers. The study also concluded that in most health units, information is well managed and the effectiveness of using HMIS is moderate. It was recommended that patients should start coming to health units with their documents to ease follow up of their treatment by health workers. In addition, health workers were recommended to make it mandatory to only serve a patient with documents to improve on information flow between patients and medical workers.*

Keywords: Health Management Information Systems, Management, Utilization

1. Introduction

As organisational resources, such as people and time, become more expensive to maintain, and the cost for services and production continues to increase. There is need to obtain information can be used to co-ordinate and control these and other important technologies, which affect all sectors of society (Mendhoza, 2015). The World Health Organisation guidelines advocates for provision of the right health information at the right time to the right people for the right purposes in all the countries (Kabene, 2014).

The Health Metrics Network (HMN), the first global health partnership for developing and strengthening of health information system in low and low-middle income countries was set up to set international standards (WHO, 2012). HMN seeks to achieve standardization by adopting and adapting global health information standards that are aligned to broader efforts to improve the availability and quality of statistics (Ibid).

Health Management Information System (HMIS) was set up to enhance effective health services planning and decision making. Under ideal circumstances health data should be collected from several Health Service delivery units (Shaikh & rRabbani, 2005). These would include government, NGO, and private health units including hospitals, private clinics, drugs shops, Village Health Teams Traditional Healer and formally Traditional Birth Attendants' Reports (Ssali & Kalere, 2013). However, there is still inefficiency in utilization of HMIS. Government, NGOs and Private health units do not normally see a reasonable percentage of patients submit reports but the quality of the reports is not ascertained.

According to WHO (2010), many African countries have established health information systems under deferring names. The Liberian HMIS policy endorsed the adaptation of HMIS framework basing onto arrangement. WHO (et al.) adds that Lesotho Health Sector Reforms Programme (2000 – 2010) acknowledged that successful achievement of the envisaged health service targets depends on the extent to which the proposed strategies for HMIS

implementation are attained. In that context, the Ministry Of Health and Social Welfare (MOHSW) of Lesotho embarked on the process of strengthening the HMIS.

The Ugandan government on the other hand designed the Health Information System (HIS) in 1985 to capture and analyse morbidity data for selected communicable and non-communicable diseases, and other services like immunization and family planning. Information was collected in the health facilities, summarized at district level and forwarded to the Ministry of Health where data analysis would be done (Tuhereze, 2017). However, seven years down the road, it was realized that the system was leaving out vital management information, such as staffing levels, infrastructure, health facility management, medical equipment availability, financial information and drug management (Kintu & Nayunja, 2015).

Generally, despite the volume and variety of data generated through the routine Health Management Information System, the information is systematically under-analysed and under-utilised for planning and programme reviews (Ranganayakulu, 2017). Completeness, timeliness and quality of reporting are often described as problematic, and the data are inevitably biased because they relate only to the populations using public health services. Investments in the information system are often minimal, and there are major lacunae in the availability and statistical capabilities of those charged with collecting, compiling and analysing the statistics. As a result, data generated through the routine system are rarely assessed for their quality and used to support decision-making (Mendhoza, 2015).

In Luuka District, not many reports have ever been got from the drug shops despite the big numbers of community members who consult drug shops when they are sick. This indicates great failure to utilize HMIS. At points of data collection, database indicates that only 815 out of 1140, had no, if any summaries of the HMIS 125 reports, had 45% proportion of health unit HMIS monthly reports with data matching what was captured in the health unit registers/ tally sheets.

2. Literature Review and Studies

According to WHO (2010), modern public health practice requires good and reliable information system. The functions of the system include rapid reporting of notifiable diseases, dissemination of information, outbreak investigation, provision of information on magnitude of health events, monitoring risk factors and disease trends. Managing the health sector effectively requires relevant and reliable information on which to base management decisions, and the Health Management Information System (HMIS) can do this effectively for the manager in a health system.

A study on management of information systems by Mbondji (2014) revealed that in almost all African countries, there is a heavy reliance on household surveys

for most indicators, with more than 121 household surveys having been conducted in the Region since 2000. Few countries have civil registration systems that permit adequate and regular tracking of mortality and causes of death. In terms of frequency, 43 countries have conducted at least one survey since 2000. In both Ghana and Malawi, there have been six surveys since 2000. In Côte d'Ivoire, Ghana and Kenya, 10 or more surveys have been conducted over the past 20 years. During the same period, Cabo Verde and Mauritius each conducted only one survey while Equatorial Guinea and Seychelles did not conduct any.

In Pakistan, the previous health information system collected information on 110 health problems, most of which was not used for any purpose. Nevertheless, later on, the HMIS started monitoring selected diseases narrowing down their number to 18 priority diseases, covering both the preventive and curative aspects. But at the national level, a uniform reporting system has been adopted which not only is flexible (i.e. accommodating other information systems) but also provides information on multiple programmes (Blaya & Holt, 2010).

In a study done in Ethiopia by Abejere and colleagues about the utilisation of health information it was found out that the data use for health planning was below national expectations. This was attributed to poor coordination of health facilities where data is generated. Therefore in service and routine updating training of health workers involved in HMIS data generation is important to improve quality of data (Waju & Abejere, 2011).

Each health information system has an information generating process in which a more or less organised structure involves people interacting with resources, such as data collection instruments, or with machines, such as computers. According to the World Health Organisation, the components of a Health Information System include: Information Process, Resource, Management structure, Organizational rule and framework that ensures data Collection, compilation, analysis, use and data dissemination (WHO, 2012).

A study done by Nabyonga in 2012 in the health centres in Uganda found out that over 60% of HMIS tools were missing in lower health facilities. The same study also found out that the tools that were available were duplicates of the contents and sometimes conflicted with one another (Nabyonga, 2012). Even when such tools are available their use varied across the health facilities based on the motivation of health workers and the level of training the user had. It is therefore important to pool resources and involve stakeholders in the development of HMIS tools to improve their use in the health facilities (White & Thomas, 2017).

Disease surveillance systems generally cover all levels of the health pyramid, from the community or facility through to the national or, indeed, the global levels. Specified sources of data include health facility records, laboratory reports, case reports, and surveys, all of

which are used to identify disease outbreaks, monitor trends in events of public health significance, identify the characteristics of those infected (such as age, sex, and location), and produce mapping of disease incidence. Whereas the reach of such surveillance systems is deep, covering all levels of the health care system, the scope is considerably narrower than that of health information systems as a whole (WHO, 2010).

Routine health information systems or service statistics, on the other hand, comprise a very broad range of health data including health system inputs, processes, and outcomes, as well as facility-based mortality, morbidity and health status (Ondoa, 2011). As already noted, such information is generated primarily for use in patient or facility management and much of the data collected are not intended to be used at higher levels of the system. In recent years, many countries have sought to limit the amount of data that must be transmitted up through the system from the periphery through the routine system in order to lessen the burden of reporting on hard-pressed health care workers (WHO, 2010).

Acheng (2014) notices that the DHMIS policy focuses on seven high level priority areas, namely: Health Information Coordination and Leadership; Indicators; Data management, Data security; Data analysis and information products; Data dissemination and use and Health information system resources. These priority areas have sub-components, under which detailed policy provisions are made.

A study conducted in Malawi about Design and implementation of a health management information system in Malawi: issues, innovations, and results indicated that lack of reliable data and grossly inadequate appreciation and use of available information in planning and management of health services were two main weaknesses of the health information systems in Malawi. The study established that reasons for inefficiency of HMIS relates to lack of internal desire as well as lack of dedication and commitment of leadership (Chaulagai, Moyo, Koot, Khunga, & Naphini, 2005).

At each level of the health care system, users of health information have differing needs and use information in different ways (Northup & Moore, 2014). At the most basic level of client–health worker interactions, patient records are a vital source of information, whose utility is not confined to the individual level. Record reviews can be used to ascertain the extent of conformity with agreed norms and standards of care. Confidential enquiries and facility-based audits review provider practices in order to determine to what extent care could be improved and the degree to which deaths were avoidable and the potential policy implications of such avoidable factors (WHO, 2010).

At the facility level, managers need information on patient profiles, patterns of admissions and discharges, length of hospital stay, use of medicines and equipment, deployment of different categories of health care workers and ancillary staff, costs and income (Ronskley,

2015). At district level, planners and managers use this information and data on locally relevant population profiles and risk factors in decision-making regarding allocation of resources to different facilities (Karakusevic, 2016). Within the public health sector, such information is transmitted upwards through district and provincial levels to the national level where basic resource allocation decisions are made. More problematic is the extent of such reporting by the private sector – unless there is a strong regulatory framework within which the private sector operates, it is unlikely that such information was transmitted to the planning authorities (Elizabeth, Brugah, & Anthony, 2011).

Although the health information generated through the reporting of routine activities by health care facilities and health care workers provides important and useful information on the activities of the health system, this is insufficient for strategic decision-making regarding the allocation of health resources (Winfred & Ayodo, 2016). Decision-makers need information not only about service activities and users of services, but also about those who for whatever reason do not use the services. Health care facilities may undertake special studies of their catchment populations in order to ascertain demand or need for information and services (Kintu & Nayunja, 2015).

More often, such information is derived from household surveys in which people are asked direct questions about their perceived need for and use of health care services (Mendhoza, 2015). The major advantage of using household surveys for such information is that it is possible to obtain socioeconomically stratified information on use of all types of service, including the private sector (modern, private-for-profit, private, non-profit, traditional providers, social marketing outlets, pharmacies). An important disadvantage, however, is that household surveys are undertaken at national level and for reasons of costs, sample sizes are generally insufficient to permit detailed analysis at the district level (Acheng, 2014).

When making strategic health sector decisions, national level authorities use health-related information from sources such as routine service statistics, household surveys, vital registration, census, national accounts, and education and employment data particularly with regard to the production and availability of human resources for health (Mbondji, 2014). One visible manifestation of this process is the reporting at national level of progress towards national health-related goals such as reductions in child mortality or reduced disease transmission (Blaya & Holt, 2010).

3. Methodology

The study adopted a descriptive and evaluative survey because the findings of the study called mainly for evaluative analysis of the HMIS. Evaluative analysis therefore used the systematic method for investigating the HMISs in the district, which would lead to categorizing the various levels of the various information systems. Data collection was through

quantitative and qualitative methods. Both methods are appropriate in that the needed health information was collected from a cross section of units in the private and public sectors making a total of 17 health units.

3.1 Area of Study

Investigations were made in Luuka, a district in Eastern Uganda bordering Buyende in the North, Kaliro in the North east, Iganga to the South East, Mayuge to the South, Jinja to the Southwest and Kamuli to the North West. By road map, Luuka is situated in a distance of approximately thirty-three kilometers from Iganga Municipality, the nearest large town. The district is administratively divided into 2 divisions, 42 parishes, and 255 villages. It has a population of more than 240,000 people, less than 5 percent of whom live in urban areas. More than half (59.9%) of the population are aged 0-17 years. Those under five years constitute 18.5% of the population and 7% are under 2 years old. One-fifth (22.1%) of the households are located 5km or

more to the nearest public health facility. Luuka District operates 36 health facilities distributed evenly through the district with one HCIV.

3.2 Study Population

The study was carried out in the health facilities, private clinics, and drugs shops. All institutions based health units both government and non-government were included in the survey. The study included the Doctors, In-charges of the Health facilities; Clinical officers, Nurses, Midwives, Nursing Aides/Assistants, Records Assistants and the Chairpersons of the Health Units Management Committees (where they existed) or their representatives in the interviews about the HMIS and the VHTs. the DHT members, the CAO, the chairperson LC V and the District Secretary for Health.

3.3 Sample Size

Table showing the categories of respondents and the respective proportional sample size for each category.

Table 1: Distribution of sample size of the study

No.	Department	Population (N)	Sample (s)
1.	Administration	3	$\frac{3}{90} \times 73 = 2$
2.	DHT members	5	$\frac{5}{90} \times 73 = 4$
3.	HSD in charges	2	$\frac{2}{90} \times 73 = 2$
4.	HSD HMIS focal persons	2	$\frac{2}{90} \times 73 = 1$
5.	Health unit in charges	18	$\frac{18}{90} \times 73 = 15$
6.	Other health facility staff	18	$\frac{18}{90} \times 73 = 15$
7.	Staff of private clinics and drug shops	5	$\frac{5}{90} \times 73 = 4$
8.	Staff of Maternity home	1	$\frac{1}{90} \times 73 = 1$
9.	Chairmen Health Unit Management committee	18	$\frac{18}{90} \times 73 = 15$
10.	VHTs	18	$\frac{18}{90} \times 73 = 15$
	Total	90	73

3.4 Sampling Strategies

A list of all the existing health units and drugs shops was sought from the District Health Office and was stratified according to the levels. Stratified sampling was used to get a study area that would ease data collection in terms of providing comprehensive data. The implication is that there are only 2 Health Centre IVs in Luuka District. HCIVs are centers of information for HCIIIs and HCIIIs thus instead of visiting each health center individually, the researcher sought it necessary to stratify them and considered HCIV as main collection centers. Further, to cater for some information that would have not been brought at HCIVs, the researcher included some HCIIIs and the study became balanced since a sub county level is nearer to the grass-root than a county.

Purposive sampling was used for the members of the DHT like the DHO, District Statistician, in charges of

the health units because they are expected to be informed in matters related to HMIS. Also convenience or availability sampling was used as it is quick, economical and takes whichever members are available. This means the staffs that were met at the facilities were interviewed.

3.5 Data Collection Instruments

The main measurement tool that was designed to obtain data on the evaluation of Utilization of HMIS in Luuka District were questionnaires and the key informant interviews schedule. Design of the questionnaire was in such a way that respondents were asked to give their views by ticking the most appropriate items using various scales. The demographic characteristics were established in terms of age, sex, and level of education to portray the structure of study population to the reader.

Observation was also be used to: establish the infrastructure in place; note the storage methods, view displays/posters from HMIS if any and to ascertain whether HMIS is valued or not. In the key informant interviews the questions used to scale the processing and utilization of information were designed to gather more qualitative data in order to better understand the subject.

3.6 Data presentation and analysis

Data generated from each Health Unit were entered in a database separately to ensure that the data generated from the sample size is adequate enough for the investigation. The technique improved on the reliability and reduces on the explicability of the observations and interpretations. Units with incomplete entries were excluded from the study during the analysis. Health Centres with viable information systems were grouped separately for each health sub district to ensure no mix up. Attention was paid to issues of validity, reliability and triangulation. The main purpose was to borrow from different methods in order to have an integrated approach with attention paid to issues of validity, reliability and triangulation.

3.7 Limitations of the study

Much of the information recorded by health workers is not relevant to the tasks they perform. Data collected tends to focus on disease reporting and only partially addresses service functions at the health unit or

patient/client level. Requirements for recording or reporting data are frequently drawn up without reference to the technical skills of the personnel concerned or to the diagnostic equipment in peripheral health facilities. Furthermore, health workers receive little or no training in methods of data collection.

Duplication and waste exist in multiple parallel health information systems instead of addressing management functions comprehensively. The result is that health workers are often overwhelmed by having to prepare monthly overlapping reports. And a considerable amount of time is spent on the collection of redundant information because the data are not cross-referenced between different systems.

The process of transmitting, compiling, analyzing and presenting data is so protracted. So it is often obsolete by the time a feedback report is prepared, and decisions are consequently made without any information input. In strong vertical programmes, the transmission of data does not follow hierarchical line of communication, with the results that reports often fail to reach line managers, particularly at the district level.

4. Results and Discussion

The demographic characteristics consist age category, sex of respondents, and education level.

Table 2: Demographic characteristics of Respondents

No.	Attribute	Description	Frequency	Percentage (%)
1.	Age	15-24	11	16
		25-34	18	26
		35-44	17	25
		45-54	10	15
		55-64	12	18
		Total	68	100
2.	Sex	Male	33	49
		Female	35	51
		Total	68	100
3.	Education Level	No education	19	28
		Primary	13	19
		Secondary	14	21
		Tertiary	22	32
		Total	68	100

Age: Findings about age-group revealed that most respondents (26%) were in the age-group of 25 – 34 and the lowest percentage (15%) was in the age-group of 45 – 54. Findings also identified that there was a significant percentage of respondents in 35 – 44 age group.

Sex: Findings identified that most respondents in categories selected for study (51%) were females. However, the percentage of females is less than that of males by just 2%.

Level of education: The study identified a considerably high percentage of illiterate respondents who were 28% of the sample population. Nonetheless, the highest percentage (32%) of respondents had completed tertiary education.

Services offered are health units

Table 3: Services offered at health units

No.	Services	Frequency	Percentage (%)
1.	OPD	56	82
2.	ANC	53	78
3.	Maternity Services	45	66
4.	Admissions	44	65
5.	Family Planning	23	34
6.	Dental Services	21	31
7.	Laboratory services	13	19
8.	Drugs dispensed	28	41

The findings revealed that most health units receive more than 100 patients a week; a clear indication that health units receive many patients per week and therefore an expectation of great information generated by workers. Services offered at health units were also used to establish the type of information at health facilities. Various services were offered in different health units included OPD, ANC, Maternity Services, admissions, Family Planning, Dental Services, laboratory Services and Drugs dispensed as illustrated below;

OPD was identified as the most offered service at health facilities as reflected by 82% of the responses obtained. Other services include ANC rated at 78% of the

responses obtained, maternity services (66%) support from responses, and admissions (65%) of the responses obtained. The information on patient numbers is useful because Ssali & Kalere (2013) notices that HUMCs base on it to determine inefficiency in utilization of HMIS. In addition, such information is helpful in establishing the number of patients that endeavors to report back for treatment.

4.1 Availability of records at Health Units to be used by HUMCs

Table 4 below indicates results about the availability of records at health units.

Table 4: Responses on availability of records at health units

Response	Frequency	Percentage (%)
Yes	12	18
No	56	82
Total	68	100

About the presence of records at health units, the study established that there are no records of patients in many health units as indicated in Table 3. This creates difficulty for health workers to make follow-up of the treatment prescribed for patients. The fact that there are many patients who attend health units (over 100) per week yet there are no records reflects lack of free flow of information between medical workers and patients. Respondents were asked to state whether or not records were present at health units and findings were as follow; Going by the table above, it is clear that there are records available in health facilities. In fact, 56% of the responses obtained indicate that many health facilities do not value MHIS thus most of the planning done by the central government is based on assumptions. This approach to planning is not good because it fosters implementation of an inverted pyramid whereby the pattern of planning is from top to bottom. Under normal circumstances, views of local citizens are important because it is themselves that know what must be done to make life move on. According to one of the VHTs, it is very difficult to get information required for planning about health issues because many of the patients conceal information. Through experience, one of the VHTs who

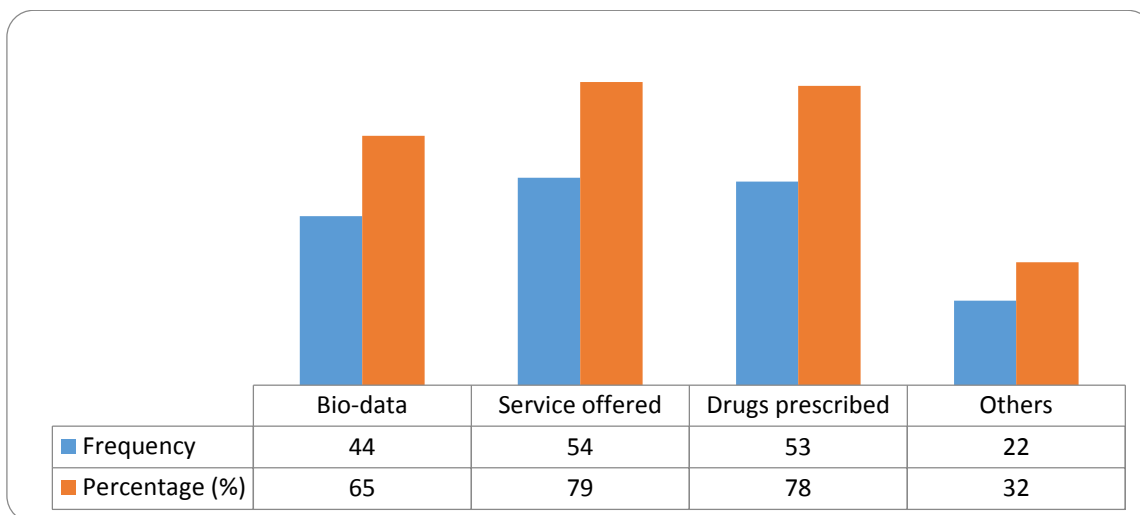
used to work with District Social demographic survey reported:

...you may reach someone's home and ask whether they have ever had sleeping sickness or any form of fever in their home and you know what, a parent may fail to report facts even when neighbors have told you that or the other home has ever had such victims...therefore, it is still so difficult....

According to Acheng (2014), availability of information but not effectively utilized hinges on the need to obtain socioeconomically stratified information on use of all types of service, including the private sector (modern, private-for-profit, private, non-profit, traditional providers, social marketing outlets, pharmacies.

4.2 Kind of information collected (Multiple responses)

Findings identified various information collected at health units, which included, drugs prescribed, services offered and bio data. Health facilitators retain this information at health units.



The figure above contains the tabular and graphed findings about the kind of information collected by health workers at health units. Seventy nine percent (79%) of health workers register services offered to patients at health units, 78% identified that drugs prescribed are registered and 65% identified that Biodata of patients is registered. Prescription of drugs is helpful because Shaikh & rRabbani (2005) notices that HUMCs use it to enhance effective health services planning and decision making concerning adequacy of drugs and estimate the required quantity of drugs to cover available number of cases for a particular infection.

Reports from VHTs indicated that at almost all levels of administration, there is an indicator of how many girls/females and boys/males in a community. The information about immunization has also been somehow provided simply because there are direct programs to cater for heavily funded programs like immunization. However, at the moment, health workers are encouraging immunization against contentious disease but issues related to jiggers and related health

concerns are not adhered to simply because either no one is available to investigate ,or because there is no willingness for community to deliver required information. These results contradict advocacies by the World Health Organization (2010) report for each Health Unit to have laboratory and case reports and case reports which health unit management committees can use to identify and quickly respond to disease outbreaks, as well as monitor trends in public health. In this case, we can justify why in most cases, health services at facilities are not rendered evenly in consideration of gender balance.

4.3 Levels of Utilization of Health Data/Information

This was measured based on information generated by facility utilized, the person who uses information collected, the ways in which information is used and ways in which record sheets are managed. Table 5 indicates multiple results obtained respectively.

Table 5: Level of Utilization of information by HUMCs in Luuka District

No	Attribute	Response	Frequency	Percentage
1.	Is information generated from facility used?	Yes	64	94%
		No	17	25%
2.	Who uses information collected	Public	27	40%
		Doctors	64	94%
		Ministry of health	54	79%
		NGOs	33	49%
3.	What is the information used for?	Review, planning and monitoring	60	88%
		From returns to DDHS office	56	82%
		Tax assessment	23	34%
		Review of financial statement	33	49%
4.	How are records sheets managed?	Bound	34	50%
		Catalogued/classified	57	84%
		Entered into comp	18	28
		Others	48	71

The study established that the information generated is used at health units. This is reflected by 94% of responses in support. In most health units, the information is mostly used by doctors and in many health centres, it is sent to the ministry of health for review, planning and monitoring, for returns to DDHS office at Luuka district, and for review of financial statement. However, reviewing of financial statement and tax assessment were not largely recognized as ways of utilizing health data obtained at health facilities. In many health units, record sheets are catalogued. However, though catalogued, limited information is recorded and yet patients do not want to carry information sheets whenever they come back for more treatment.

Remarks obtained about the state of data obtained revealed that in most health units, data is well managed while in others it is either fairly or poorly managed. Better management of information means that the information is so beneficial to users and patients in assessing the improvement in health of patients as well as making evaluation reports to DDHS. While information is well managed, it is mainly used for reference in resource centres. Besides, the level of effectiveness of using HMIS is moderate. 85% of the responses revealed that there is information normally sent to community, health sub district, district health office and ministry. Results tend to differ significantly from the situation in countries such as Ethiopia where Waju and Abejere (2011) study indicated data use for health planning was below national expectations and that it was attributed to poor coordination of health facilities where data is generated. A study by WHO (2012) showed that each health information system has an information generating process in which a more or less organised structure involves people interacting with resources, such as data collection instruments, or with machines, such as computers. However, at the same time, Nabyonga (2012) report indicates that over 60% of HMIS tools were missing in lower health facilities

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and that available tools were duplicates of the contents and sometimes conflicted with one another.

5. Conclusions and Recommendations

5.1 Conclusions

According to the survey, the most common information collected by health officials is about biodata of patients and services offered. However, based on results from District health officer, the information is not obtained regularly from the various health facilities. Out of ten health facilities, only three or even no one can provide required information to ease planning that be based on information from the public.

Though it is largely acceptable that doctors require information to review, plan and monitor activities/services, these tasks are difficult because in most health facilities, information required is not shared by patients and health workers. The study also concluded that in most health units, information is well managed and the effectiveness of using HMIS is moderate.

5.2 Recommendations

The following recommendations were made;

1. Health workers in public and private units should carry their records containing drug prescriptions whenever they go for more treatment to ease monitoring of the sickness by a medical worker.
2. The ministry of health should make it its task to sensitize communities about the value of keeping records to a patient.
3. Health workers should make it a mandate to serve only patients with recent documents containing drug prescriptions.

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