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Organizational Factors Influencing the Adoption of the District Health Information System 2 in Uasin Gishu County, Kenya

Richard Ole Kuyo[1,2]*, Lillian Muiruri[1] and Susan Njuguna[1]

[1] *Department of Health System Management, Kenya Methodist University, Meru, Kenya*

[2] *Department of Health Records and Information Services, Moi Teaching and Referral Hospital, Eldoret, Kenya*

**Corresponding e-mail: richardolekuyo@mtrh.go.ke*

ABSTRACT

Background: *Sound and reliable information is the foundation of decision-making across all health system building blocks that include service delivery, health workforce, health information, medical products, vaccines and technology, financing, leadership, and governance. This study is built on health information system pillar.* ***Objectives:*** *To determine the organizational factors influencing the use of DHIS2 in Uasin Gishu County.* ***Methods:*** *Study was conducted in Uasin Gishu-Sub County health facilities. A questionnaire was used to collect quantitative data from 283 health workers selected randomly while 10 key informants were selected purposively from this sample for in-depth interviews.* ***Results:*** *Total 50.0% of the participants acknowledged that finances were adequate to run DHIS2. The main champions of DHIS2 used in decision-making were the county health records and information officers (56.2%) and the sub-county health records and information officers (39.0%). Up to 78.5% agreed or strongly agreed that organizational hierarchy influenced DHIS2 use and 80.8% agreed or strongly agreed that there was improved staff performance due to DHIS2 utilization. On the other hand, the major challenges experienced in the use of DHIS2 for evidenced-based decision-making were the lack of management support (34.3%), poor skills among the users (48.6%), lack of adequate computers (36.7%), unreliable internet connectivity (47.1%), lack of power backup (27.6%), and resistance to change (21.0%).* ***Conclusion:*** *The main funding for the DHIS2 system comes from the County government while health records and information officers are the main promoters of DHIS2 use. The main determinants of DHIS2 used are the availability of computers, network and internet services, trained staff and legislation. The main challenges inhibiting DHIS2 use are lack of management support, poor skills among the users, lack of adequate computers, unreliable internet connectivity, lack of power backup and resistance to change.*

Keywords: Organizational factors, District health information system, DHIS2, Uasin gishu county

INTRODUCTION

Globally, health information systems are critical for achieving universal health coverage. Information is vital for public health decision-making, health sector reviews, planning, and resource allocation and programme monitoring and evaluation [1]. Organizations have to make complex choices amidst uncertainty, trade-offs, and broad consequences, but responding to such situations in rational ways can be hampered by individual decision-makers' cognitive limitations [2]. Quality information is thus the foundation for health system improvements; however, health programs frequently fall short of the efficient use of data to inform decisions. Too often, data linger in reports and databases and are not sufficiently used to inform programme development and improvement, policy development, strategic planning, or advocacy. Part of the reason for the breakdown in the process is that Health Information System (HIS) are fragmented, complex, and do not fully respond to information needs. As a result, decision-makers are often unable to access the data they need in a timely manner to inform their upcoming decisions [3].

The Health Information System in Kenya covers 5 key areas [4]:

- Information generation: The different forms of information and how they are collected and stored
- Information validation: The process of reviewing the information to improve its accuracy and representativeness

- Information analysis: The process of understanding what the information is saying
- Information dissemination: The process of sharing emerging information from the analysis with relevant stakeholders
- Information utilization: The process of ensuring information available informing the decision-making process

These areas are all interlinked and, together, form the continuum of the Health Information System in Kenya. A number of organizational issues mediate on the decision-making process in Uasin Gishu County. These issues include policies and procedures, organizational hierarchy and organizational politics. Counties have formalized policies and procedures that are designed to resolve common problems and to guide health managers when making decisions. These policies and procedures are in the form of documented disciplinary regulations which guide managers through a process of resolving issues with staff members.

Moreover, organizational hierarchy, which is the management structure in every county-level government, is characterized by different levels of leadership which carry with them different degrees of authority. The degree of authority directly impacts on the nature of the decisions an individual can make. For example, county health records and information officer cannot make decisions about the overall goals of the County. However, the county health records and information officer can make decisions about how their department which contributes to the achievement of the County's goals. See, et al., posit that perceived threat to managerial value and control is a key barrier to decision process innovation and thus there is a tendency for managers to perceive such innovations as threats to their own value, discretion, and control [2].

Organizational politics refers to behavior displayed by individuals and groups which is designed to influence others on the use of health information systems. Individuals and teams will often use politics to advance their careers, interests, ideas on health information technology adoption; this applies to Uasin Gishu County [2]. Organizations like Uasin Gishu County and its departments are made up of individuals with different beliefs, values, and interests. These differences are often the driving forces behind organizational politics that can influence the use of DHIS2. For example, county health records and information officer may well use politics to influence the county Director of health to allocate more funds for health information technology in their department among other competing demands in the county. Top management support has long been conceived as an important factor in the success of an information system [5]. According to Loonam, et al., a number of approaches are available for use by top managers in organizations to facilitate information system (IS) activities. These include maintaining a positive attitude, building an effective and powerful coalition group, creating an inclusive steering committee, developing a strong vision for IS, aligning the IS strategy with the corporate strategy, communicating the IS initiative across the entire organization, and providing sufficient resources for the IS initiative [6].

Environmental issues are among the external factors that influence the affairs of an organization. Some of these external factors are the market in which the organization operates, the economy, government legislation, customers' reaction to the organization's products and services with respect to the use of DHIS2 [2]. Studies have been conducted in Kenya to assess the performance of HIS and various efforts have been implemented to improve the systems' efficiency. However, after years of investment in HIS, the Government of Kenya still struggles to provide quality and timely data for healthcare decision-making. This is particularly evident at the sub-national levels where there is a lack of systems to improve data access, synthesis, communication, and interpretation, all of which are inhibiting districts from making decisions about key service delivery issues [3]. Nutley, et al., further report that an assessment of the health management information system conducted between 2006 and 2007 described the existing routine HIS as fragmented and vertical with stand-alone systems at the national level. The paper-based, vertical systems resulted in data being "largely unavailable for effective planning, monitoring, and evaluation of the health system at all levels." The National Health Information Strategy, developed in 2009, identified additional gaps related to the insufficient use of data in decision-making. The health information strategy addressed these needs by calling for the elimination of the vertical nature of the routine HIS and the integration of existing data sources into one data warehouse. The DHIS2, an open-source, web-based health management information system, was identified as a key solution to the health information strategy and was implemented beginning in 2010. It was envisioned that the introduction of the DHIS2 would improve data use at all levels of the health system [3].

See, et al., posit that organizational culture is also important, in addition to managers' individual attitudes towards

change, since their perception of the organization's ability to change is expected to play a role in innovation adoption [2]. They suggest that for innovation to occur and be successful there must be a perception among managers and other users that the organization can adapt to and implement the new processes. The PRISM framework assumes that if organizations promote a culture of information, they will also improve their competence in conducting RHIS tasks, thus improving their self-confidence to carry out RHIS tasks. If the work environment does not promote key RHIS attitudes and values, health workers may not internalize the values required to generate, maintain and improve the information system [7].

The starting point in adopting e-health is the development of coherent national e-health policies and strategies. These requirements are in tune with national development plans, national ICT policies and with buy-in from healthcare workers-the users. The Government of Kenya, in partnership with the private sector, has made important strides towards creating an environment suitable for the uptake of e-health. The efforts include the release of standards and guidelines for Electronic Medical Records (EMR) in Kenya (2010), strategic plan for Health Information Systems (HIS) (2009-2014), Kenya ICT Policy (2006) and the Kenya Communications Act (2009), all of which mark important milestones in the creation of an environment with legal and regulatory framework conducive to the development and adoption of e-health in Kenya [8]. The reasons advanced for the introduction of these systems were health facilities collected information haphazardly and irregularly, information collected was incomplete and unreliable with limited analysis and use at the point of collection, and too much data was collected rendering analysis impossible [9]. Odhiambo-Otieno continues to point out that all the systems within the DHSs in Kenya are characterized by a lack of integration, and are disjointed and widely dispersed, with no effective central coordination to ensure that the information they contain is readily available to other systems. The Kenya Health Sector Strategic and Investment Plan (KHSSP) of July 2013-June 2017 notes a number of problems, among them the lack of comprehensive systems in place to ensure and monitor evidence-based policymaking, the absence of systems to generate data demand and knowledge management, and limited use of information on vital events to guide decision-making [4].

The national, county and facility healthcare levels lack effective referral monitoring systems to promote appraisal, feedback, and accountability for provider actions. As an integral part of the healthcare system, referrals must be included in the health sector performance M and E system. Therefore, a system for maintaining records and information should be mandatory. The current routine Ministry of Health (MOH) do not provide for the collection of referral data. The data collected is of poor quality and is rarely used. The system needs standardized referral tools to communicate referrals and capture referral data. These tools would include referral forms, referral registers, data collection, and update forms, patient tracking forms, feedback forms, and a directory of services. Currently, accountability is absent and referral data collection is not a priority at the facility level [10]. Another concern raised by HIS experts is that most developing countries lack an information culture which would focus on strengthening the supervision, feedback and support aspects for the overall HIS. Feedback constitutes an integral component of the health information cycle as this is necessary for keeping communication lines open to discuss and resolve problems in the system leading to improvements in the entire HIS. However, health workers collating and transmitting health data in developing countries hardly ever receive any feedback, and when such feedback is received it is most of the kind that is negative, marked by long delays and not very constructive [11-14].

The HIS policy states that "while the records (the documents or disks) are unequivocally the property of the practitioner or institution, the data is not." Data is not capable of being owned, and many different people have an interest in it, especially the person to whom it relates. In addition, all the health and health-related data and information shall belong to the Government of Kenya (GoK) [15]. Another problem commonly cited with HIS systems in developing countries is the lack of data ownership occasioned by health workers' perception, the purpose of a HIS is simply to enable submission of reports to the higher levels, leading to a situation where there is no incentive for health workers at levels below the national level to analyze, use and interpret health data [13,16,17].

An improved and harmonized health reporting system is critical for health system strengthening since it can generate timely information for proper planning, monitoring, and evaluation of service delivery at all levels of the health system. However, in most developing countries, particularly in Sub-Saharan Africa, health reporting has been dominated by paper-based data collection and storage systems that tend to generate incomplete and inaccurate reports. Evidence shows that the continued use of paper-based systems contributes to poor data quality in terms of reliability, availability, timeliness, and completeness of reporting, all of which could compromise health service delivery. In

Malawi, for instance, Makombe, et al., have found that the use of paper-based health facility which reports generating national summaries has resulted in a 12% underreporting of persons on first-line antiretroviral treatment because many sites did not submit accurate data to the national level [18]. Effective monitoring and supervision of health care programmes depend on the complete, accurate and timely flow of data between primary health care facilities, hospitals, and a central information hub. However, data routinely collected at healthcare facilities and submitted to district offices are commonly described as being unreliable [19].

A study has been conducted in South Africa to explore and describe staff experiences in managing data and/or information when utilizing the DHIS2 as a support mechanism for data quality improvement, including the strengths and weaknesses of current data management processes. The findings highlighted the strengths, weaknesses and key barriers as experienced by the staff. The strengths, such as having data capturers and DHIS2 software at most if not all facilities, were highlighted. The weaknesses and key barriers highlighted included staff shortages of both clinical and health management information staff, shortage of resources such as computers and internet access, poor feedback, training needs, and data quality issues. Most of the weaknesses and key barriers called for the further and proper implementation of the DHMIS policy, the standard operating procedures (SOPs), the e-health strategy and training of the staff since there were reported gaps between the policy and the reality and/or practice at the facility [14].

A health system needs internal mechanisms to develop performance targets, track progress as well as create and manage knowledge for continuous improvement. PRISM allows countries to assess the causal pathways of the determinants for RHIS performance and how they affect systems prior to implementing interventions to improve the quality of the data and use of information, and to later evaluate the change brought about by the interventions. As such, it creates opportunities for improvement by identifying the strengths and weaknesses of the health information system [7]. An efficient and effective healthcare delivery system must have a proper linkage of the 6 pillars on which it is founded. However, little attention has been given to the health information pillar as the critical component that glues together the other pillars making up the health system [1]. Public hospitals face challenges in collecting, analyzing, evaluating and interpreting critical health data and information to guide evidence-based decision-making [7]. Incomplete, incorrect and inconsistent data affect managers' confidence to use data.

Hospitals still lack the necessary capacity to use the information in DHIS2 for decision-making at various tiers [20]. Knowledge gaps among the users of DHIS2 on how to use information for evidence-based decision-making in Uasin Gishu Hospitals, coupled with critical shortages of human resources, continue to affect the quality of data generated and used. Consequently, inadequate use of data and information in DHIS2 could affect management of workload in specific areas to inform, for instance, justification for additional health workers to address critical shortages, or their redistribution, interventions and better management of communicable and non-communicable diseases, including service access and availability, e.g. where to place new facilities. In addition, it may affect the referral system of patients from the community level. Through the cases referred, the county health managers would miss out on very important data to determine if such cases qualified to be referred and whether or not there was need to improve local facilities and staffing to handle such cases and thus decongest referral hospitals. Failure to use data and information in DHIS2 may also affect budgetary allocation adversely.

There is an emphasis on improving maternal, neonatal and child health indicators, the primary target in the SDG 3. Progress has been hindered by poor policy implementation and weak health systems, which do not engage with or respond to, community needs. This results in poor access and utilization of preventive and curative health services [21]. Therefore, the researchers sought to determine the organizational factors influencing the use of District Health Information System (DHIS2) in Uasin Gishu County health facilities with a view to recommending better ways of using information in DHIS2 for sound decision-making and healthcare improvement.

PATIENTS AND METHODS

A cross-sectional descriptive research design employing both qualitative and quantitative approaches was used in the study. The study was conducted in Uasin Gishu County which has 6 Sub-County hospitals. The county has a population of 894,179 people with a growth rate of 3.6% based on the 2009 population and housing census and it is located on a plateau with a cool climate [22]. The total health workforce in Uasin Gishu County was 1061 at the time of the study. The target population for the study comprised all healthcare providers in the study area. A simple random sampling technique was used to select the participants in the study, but 10 members of the CHMT were purposively

selected for in-depth interviews. The formula for proportions, $\{n_0=Z^2pq/e^2\}$, was used to determine the sample size of 385 and adjusted to the small population using the formula below.

$$n = \frac{n_0}{1+\frac{(n_0-1)}{N}}$$

The sample for each cadre of health workers was calculated in proportion to the total population for each group using the following formula: $n_x=x/N_0 \times n$; where n_x is the sample for specific cadre of health workers; x is the total number of the health workers in a specific cadre; N_0 is the total number of health workers in the study area while n is the sample size. Using the formula, each cadre of health workers included in the study is shown in Table 1.

Table 1 Population sample size distribution

Staff Cadre	Sample Size (n_x)	Total Population (x)
Health Records and Information Officers	8	31
Nurses	150	563
Clinical Officers	22	82
Pharmacists	17	65
Laboratory Technologists	22	81
Radiographers	2	8
Nutritionists	6	22
Medical doctors	8	29
Public health officers	43	160
Physiotherapists	2	8
Occupational Therapists	1	5
Hospital administrators	2	7
Total	**N=283**	**N_0=1061**

Only participants who had worked for the Ministry of Health for a period of more than 6 months at the time of the study were enrolled. Trained assistants collected data using structured questionnaires and interview schedules for in-depth data. Tape-recorders and field notebooks were used to record the proceedings during the in-depth interviews. Participation in the study was completely voluntary. The collected data were checked for accuracy and completeness. Thereafter, direct data entry was done using Excel spreadsheets. Descriptive statistics were used to analyze quantitative data. The tape-recorded information was transcribed into transcripts in MS Word. The transcripts were then imported into the qualitative data analysis (QDA) software and coded into themes for thematically analyzing. Ethical clearance and approval to conduct the study were sought from the Scientific Ethics Research Committee (SERC) of the Kenya Methodist University (KeMU) and the Moi University, as well as from the National Commission for Science and Technological Institutions (NACOSTI). The researchers further sought informed consent from all participants of the study and permission from other respective institutions within the research site.

RESULTS

Total 134 participants (61.8%) were aged above 30 years, 35.8% were male, 78.8% had a certificate or diploma level of education, and 35.0% had worked for more than 10 years as detailed in Table 2 below.

Table 2 Social demographic characteristics

Variable	N	n (%)
Site		
Ainabkoi	220	49 (22.3%)
Kapseret		41 (18.6%)
Kesses		24 (10.9%)
Moiben		32 (14.5%)
Turbo		45 (20.5%)
Ziwa		29 (13.2%)
Age (Years)		

18-24	217	11 (5.1%)
25-30		72 (33.2%)
31-40		81 (37.3%)
41-50		41 (18.9%)
51-60		12 (5.5%)
Gender		
Male	212	76 (35.8%)
Education Level		
Certificate	217	21 (9.7%)
Diploma		150 (69.1%)
Degree		43 (19.8%)
Masters		3 (1.4%)
Years Employed		
1-5	206	85 (41.3%)
6-10		49 (23.8%)
11-15		31 (15.0%)
>15		41 (19.9%)

A total of 10 key informants, 8 males and 2 females, drawn from the County Health Management Team (CHMT) were approached for interviews. However, one of them, a female, declined. Total 107 (50.0%) of the participants acknowledged that there were adequate finances to run DHIS2. Of this number, 92 (86.0%) responded when they were asked about the financiers of DHIS2. Of the 92, 72 (79.1%) and 11 (12.0%) said that the county government and donors, respectively, financed DHIS2. Three-quarters (75.6%) agreed or strongly agreed that there was adequate support on matters of DHIS2 from Sub-County or county health records and information officer. Table 3 below summarizes the main champions of DHIS2 information useful for decision-making at the county.

Table 3 Champions of DHIS2 information used for decision-making in the county

Champion(s)	N	n (%)
County Governor	210	28 (13.3%)
Deputy Governor	210	3 (1.4%)
County Director of Health	210	61 (29.0%)
Medical Superintendent	210	27 (12.9%)
County Health Records and Information Officer	210	118 (56.2%)
Sub County Health Records and Information Officer	210	82 (39.0%)

The main champions of DHIS2 information use in decision-making were the county health records and information officers (56.2%), and the Sub-County health records and information officers (39.0%). The determinants of use of DHIS2 information were mainly availability of computers (67.0%), availability of network and internet services (53.0%), and presence of trained staff (53.0%) (Table 4).

Table 4 Factors favoring DHIS2 information use in decision-making

Variable	N	n (%)
Availability of computers	215	144 (67.0%)
Network and internet services	215	114 (53.0%)
Power backup	215	65 (30.2%)
ICT support supervision	215	94 (43.7%)
Conducive policy and legal framework	215	53 (24.7%)
Trained staff	215	114 (53.0%)
Management support	215	89 (41.4%)
Organizational politics	215	24 (11.2%)

Up to 78.5% agreed or strongly agreed that organizational hierarchy influenced the use of DHIS2 and 80.8% agreed or strongly agreed that there was improved staff performance due to the utilization of DHIS2. About 82 (38.0%) participants thought that the ownership of the data rests with the national government and 87 (40.3%) thought that it

rested with Uasin Gishu County government. Only 2 (0.9%) thought that the patient owned the data (Table 5). The external factors influencing the use of DHIS2 included government legislation (54.8%) and customer reaction to DHIS2 services (28.1%).

Table 5 Ownership of the data and external factors influencing DHIS2 use

Variable	N	n (%)
Owners of the data		
National Government	216	82 (38.0%)
Uasin Gishu County Government	216	87 (40.3%)
Department	216	55 (25.5%)
Patient	216	2 (0.9%)
External factors		
Market	219	14 (6.4%)
Government legislation	217	119 (54.8%)
Customer reaction to DHIS2 services	217	61 (28.1%)

The major challenges experienced in the use of information in DHIS2 for evidence-based decision-making in Uasin Gishu County included lack of management support (34.3%), poor skills among the users (48.6%), lack of adequate computers (36.7%), and unreliable internet connectivity (47.1%) (Table 6). Others included a lack of power backup (27.6%) and resistance to change (21.0%).

Table 6 Challenges in the use of DHIS2 information for evidenced-based decision-making

Variable	N	n (%)
Lack of management support	210	72 (34.3%)
Poor skills set among users	210	102 (48.6%)
Lack of adequate computers	210	77 (36.7%)
Unreliable internet services	210	99 (47.1%)
Lack of power backup	210	58 (27.6%)
Lack of antivirus software	210	34 (16.2%)
Resistance to change	210	44 (21.0%)
Lack of accurate and quality data	210	57 (27.1%)

The key informants highlighted the following as the main factors that determine the utilization of data in the organization:

- **Demand for information:** Demand for information was highlighted as among the organizational factors that influenced the use of the DHIS2 system. The respondents explained that the information should be availed to all those in need, especially the health professionals. Participant 1 explained this point as follows: "Eh….one is the need for information for all to be able to access so that demand for information" (personal communication, participant 1, male, county clinical officer).
- **Teamwork:** Additionally, participant 1 highlighted the importance of teamwork thus: "…… it is also the issue of teamwork…. unlike previously where it was a preservative of HRIOs (laughter) where only one person was the main player. Whereas all of us need information and create the same. You cannot be told that you can take this food but you cannot enter the hotel."
- **Hierarchical utilization of data:** It was also reported that utilization of data within the DHIS2 system has been affected by the hierarchical arrangement which limits access to the system in favor of senior officers in the organization. This was vividly explained as follows: "Utilization of data and DHIS2 varies with levels top sub-county and county level managers use the data more than lower level staff" (personal communication, participant 5, male, county director of health).
- **Policy:** The presence of strong policies was also highlighted by participant 5 who explained that policy influences the use of the DHIS2 system: "Policies also influence the use of data in DHIS2" (personal communication, participant 5, male, county director of health).
- **Interest in the utilization of data:** The respondents also said the utilization of DHIS2 data could be influenced

by the individual interest of top-level management. Therefore, if they are really interested in it the rest of the system will certainly embrace DHIS2: "…. if top management is interested in our data, it is that obvious by this will improve data use" (personal communication, participant 5, male, county director of health).

- **Internal and external factors:** Internal factors such as staff knowledge and external factors like management support and provision of adequate servers to the staff reportedly influenced the utilization of DHIS2 data. Participant 5 explained this point as follows: "External and internal factors such as staff knowledge and management support, provision of adequate servers to the staff" (personal communication, participant 5, male, county director of health).
- **Political interference:** The respondents also said political interference tend to influence how reports were made from the DHIS2 system data. This point was expressed in the following words: "Political really affects legal, e.g. report requests" (personal communication, participant 5, male, county director of health).

DISCUSSION

The study's main objective was to determine the organizational factors influencing the use of DHIS2 in Uasin Gishu County. The findings showed that there were adequate finances to run DHIS2 and most of the funding (79.1%) came from the County Government. The research further underscored that support on matters of DHIS2 came mainly from Sub-County or county health records and information officers. Besides, the same cadre of professionals was found to be the main champions promoting the use of DHIS2 information for decision-making in the County. Some of the main determinants in the use of information in DHIS2 for decision-making included the availability of computers, networking and internet services, and presence of trained staff. In addition, the majority of the participants affirmed that the utilization of DHIS2 improves staff performance and can be influenced by the organizational hierarchy.

The study also showed that the use of DHIS2 can be influenced by government legislation and customer reaction to DHIS2 services. However, major challenges experienced while using information in DHIS2 for evidenced-based decision-making included lack of management support, poor skills among the users, lack of adequate computers, and unreliable internet connectivity. Others included lack of power backup and resistance to change. In agreement with the findings of the study, a previous research has established the use of computers systems, training and harmonization of indicators which facilitated the increased use of HMIS data but lack of capacity to analyze, interpret and use data by both data producers and users which was the main challenge in data utilization for decision making [23]. Additionally, another study notes that organizational factors, especially support, for data review and sharing forums were seen to affect information use [24].

The challenges found in the present study have been recorded elsewhere, among them inadequate infrastructure, low computer proficiency, inadequate staffing capacities, lack of proactive leadership and information ownership at all levels, as well as the still unmet demand for better quality and complete health data [25]. On the same issue, a Botswana study cites several challenges in the national health information management system, including inadequate IT infrastructure including computers and unreliable internet access; limited skills in using the system and inadequate human resource capacity [26]. In addition, a similar trend was observed in Cameroon [27]. Another study in Iran investigated the relationship of resources of the organizations, organizational knowledge, processes, managerial structure, values and goals with the use of computer and demonstrated a significant relationship between managerial structures, resources of the organizations and attitude [28].

Health information systems are critical to reaching universal health coverage. Information is vital for public health decision-making, health sector reviews, planning, and resource allocation and program monitoring and evaluation. However, it seemed that no assessment has been done to ascertain that the tiers use information derived from DHIS2 to make evidence-based decisions in the Uasin Gishu County health facilities. The findings of the study would help the Uasin Gishu County Health Managers and Health System, in general, to adopt and periodically assess relevant health information systems to enhance the use of DHIS2 information for evidence-based decision-making and to ensure return on investment in county public health facilities and Kenyan health care delivery system as a whole. In addition, the study results would strengthen HIS pillar and fast-track the realization of Kenya Vision 2030, SDGs, as well as HSS, adds to the existing knowledge in health information systems.

Whereas the findings of this study are important, the researchers experienced a number of limitations. Some

participants, especially those in management, were not conversant with the use of DHIS2. The study is cross-sectional, the researchers were unable to control the truth of the information because the information was collected at a particular point in time. Therefore, what happened before or after was not captured during the study.

CONCLUSION

Based on the study findings, it is evident that the main funding for the DHIS2 system comes from the County Government. Health records and information officers are the main promoters of DHIS2 information use. Additionally, the main determinants of DHIS2 information use are the availability of computers, network and internet services, trained staff and legislation. Lastly, the main challenges inhibiting the use of information in DHIS2 for evidenced-based decision-making include lack of management support, poor skills among the users, lack of adequate computers, unreliable internet connectivity, lack of power backup and resistance to change. In light of these findings, the study recommends for more support and funding from the national government for DHIS2 activities. The political elite and entire healthcare workforce should be involved in championing and promoting the use of DHIS2 information. Moreover, there is a need for an ample supply of computers, network, internet services, and other accessories as well as training staff to boost ICT infrastructural prerequisites for the proper functioning of DHIS2.

DECLARATIONS

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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