Routine Health Management Information Use in the Public Health Sector in Tharaka Nithi County, Kenya.

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Abstract: Health information systems are foundations of health systems. Despite their essential benefits at facility level, health workers spend 40% or more of their time filling in HIS forms but may make little or no use of information for decision making. Health Information use is determined by multiple factors. This study aimed at establishing the technical, organizational and behavioral factors influencing Health Information use in the public health sector in Tharaka Nithi County. A descriptive cross-sectional study was conducted among 41 respondents in 16 public health facilities in Tharaka Nithi County. Data was collected using researcher administered questionnaires. Lack of staff competence, multiple HIS tools, lack of computers, lack of information use culture promotion, lack of support of staff training in HIS skills, lack of support supervision on information use, lack of staff motivation and recognition for well done job, were the factors influencing Health Information use. The study concludes: provision of technical, organizational and behavioral factors for health information use in fact-based decisions in Tharaka Nithi County.

Keywords: Health information, Health System, Technical Factors, Behavioral Factors, Organizational Factors

1. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Strengthening of health systems is a top priority of many global and national health agendas to improve health outcomes. Health Systems Strengthening (HSS) is any array of initiatives and strategies that improves one or more of the functions of the health system leading to better health through improvements in access, coverage, quality, or efficiency [18]. With the global health context becoming increasingly complex, national health systems are moving away from a focus on disease-specific health responses to comprehensive strengthening of health systems. Health system is defined as all organizations, people and actions whose primary intent is to promote, restore or maintain health [40]. The World Health Organization’s (WHO’s) Framework for health systems’ strengthening consists of six pillars of a health system which include: a health workforce; health service delivery; health financing; governance and leadership; medical products, vaccines, and technologies; and health information [38, 40]. While each pillar of the WHO’s framework is important to improving health systems and ultimately health outcomes, quality information from HIS are the foundation of the overall system and inform decision making in each of the other five pillars in the health system [1, 34].

Much attention has been paid to information use in the international public health community in
recent years leading to major investments in data collection for public health programs globally. However, there has been a concern that such information is not being used [7, 9], [10], and [39-41]. Programs and other HSs fell short of efficient use of information to inform decisions [37]. This led to the initiation of international commitments to strengthen the quality, relevance, and comprehensiveness of data to ultimately improve information use and decision making based on facts. This effort was put because not unless information are used to inform decisions, then they lack value [7, 9], [10, 37], and [39]. Positive experiences in information use contributes to a demand for additional data and a continued commitment to improving the quality of information and its use; creating a cycle that leads to improved health programs and policies hence, HSS [11]. Information use therefore, is critical to improving the effectiveness and sustainability of the health systems [7].

In OECD countries especially Switzerland, well-intended laws and policies to protect privacy and reduce the potential misuse of personal health information had limited its use. This called for the need of policies and practices to enable privacy-respectful information use in order to strengthen national information infrastructure [30]. Sub-Saharan countries established HIS as a source of routine data; however, they faced challenges of inadequate analysis and use [40, 41]. Health information systems ultimate purpose of collecting and analyzing data is to improve programs through informed decisions based on facts. However, in these countries information was not always available to make decisions or if available, it was not always used. Too often, data sat in reports, on shelves, cabinets or in databases and were not analyzed to be sufficiently utilized in policy and program development, improvement, strategic planning and advocacy [27, 28], [32]. In a study by Bertrand, Echols, and Husein in Sub-Saharan countries, it was found that at the facility level, health workers commonly spend 40 percent or more of their time filling in HIS forms [6] but may make little use of the data for decision making. For instance, parallel information systems were found in Mozambique, Malawi, and Uganda as well as inadequate utilization and un-timeliness in the United Republic of Tanzania [12, 24], [40, 41]. (On the other hand, Uneke found in his study that there was little interest in transfer and uptake of research into policy and practice in Nigeria [36].

In Kenya, [29], found that, lots of administrative and health programs-related data was being collected at district level and little was being used at that level as it was merely being collected and compiled, then submitted to the Ministry of Health headquarters with little or no feedback provided back to the districts. The author continues to state that it was later clear that the routinely collected data was not useful for planning and evaluation of district level health services. This prompted the development of an information system for the District Health Management Teams that was to provide health information for local use and facilitated achievement of the expected management and planning functions [29]. In another study it was found that at the facility level, health workers commonly spend 40 percent or more of their time filling in HIS forms [6] but may make little use of the data for decision making. In Kenya it was found that data management was very weak with a mean score of 31% and inadequate use of HIS for planning and allocation of resources [16, 17].

Information use is determined by multiple factors ranging from technical, organizational and behavioral factors [14, 15], [23, 32]. This study attempted to find out from the health managers and information producers in the public health sector in Tharaka Nithi County about the factors which influence information use. It helped the researcher to make some recommendations geared towards improving information use so that improvement in other health pillars could be realized, hence, strengthening the health systems.

1.2. STATEMENT OF THE PROBLEM

Lots of routine health information exists in public health sector with minimal interaction by those staffs managing the health systems. Despite their potential benefits of strengthening the health systems performance, little information is used for decision making; hence health systems fail to fully link evidence to decisions. Tharaka Nithi County has only nine (9) trained Health Records and Information Officers against 54 public health facilities according to county staffing gaps given by the county Health Records and Information Manager [25]. This is supported by an assessment done by [16, 17], who found inadequate health information personnel at all levels of public health sector in Kenya. Data is handled by untrained workers compromising information quality. Health information use is always determined by the technical aspects of data processes and tools, the
behavior of individuals who produce and/or use data, and the organizational context that supports data collection, availability and use. For health systems to make use of information that they generate, the three factors need to be at their positive levels. However, since information use improve other health pillars, hence strengthening the health systems; this study endeavored at establishing these factors in the public health sector in Tharaka Nithi County.

1.3. PURPOSE OF THE STUDY

The purpose of this study was to strengthen the available health management information systems to enable them produce the right health information for the right evidence-based decisions in order to strengthen the health systems performance in public health sector in Tharaka Nithi County.

1.4. SPECIFIC OBJECTIVES OF THE STUDY

1. To determine the technical factors influencing Health Management Information use by health managers and information producers in the public health sector in Tharaka Nithi County.
2. To ascertain the organizational factors influencing Health Management Information use by health managers and information producers in the public health sector in Tharaka Nithi County.
3. To establish the behavioral factors influencing Health Management Information use by health managers and information producers in the public health sector in Tharaka Nithi County.

1.5. RESEARCH QUESTIONS

1. What are the technical factors influencing health management information use by health managers and information producers in the public health sector in Tharaka Nithi County?
2. What are the organizational factors influencing health management information use by health managers and information producers in the public health sector in Tharaka Nithi County?
3. What are the behavioral factors influencing health management information use by health managers and information producers in the public health sector in Tharaka Nithi County?

1.6. JUSTIFICATION OF THE STUDY

This study gives insight to decision makers on the factors influencing use of health information in decision making. It also impacts knowledge and creates awareness on the importance of evidence-based decisions in improving other health systems pillars in public health sector in Tharaka Nithi County. The study benefits policy makers, information producers, health managers, other health professionals and the catchment population served by the public health sector in Tharaka Nithi County. The study recommendations encourage empowerment of health staff and enhancement of data management to enable fact-based decisions. In return, when decisions are based on facts, then the utilization of routine health management information strengthens the health systems performance leading to improved health status of the population served by the public health sector in Tharaka Nithi County. Improved health systems with healthy people will help the Kenyan government to realize the vision 2030.

1.7. LIMITATIONS OF THE STUDY

The study was limited to time and financial factors that would not allow the researcher to include other groups in the population. The researcher overcame these by collecting data herself from the respondents as there was no time and funds available to train and pay data collectors.

1.8. SIGNIFICANCE OF THE STUDY

The information from this study creates awareness on the importance of evidence-based decisions in improving other health systems pillars in public health sector in Tharaka Nithi County. The study also adds more knowledge on utilization of routine health management information in strengthening health systems performance to improve health status of the served population.

2. LITERATURE REVIEW

2.1. TECHNICAL FACTORS

These are aspects that are related to information technology and ability to generate high quality data and analyses. According to [20, 32], a system without well-trained people, and clear norms and standards cannot produce the information needed for making decisions. In his study, [31] pointed out that use of information was the analysis, synthesis,
interpretation, and review of data as part of decision-making processes, regardless of its source. Therefore, fact-based decision making is the proactive and interactive process that considers data during program monitoring, review, planning, and improvement; advocacy; and policy development and review [31]. The path to improving the use of health information is focused mainly on introducing or upgrading technical skills or revamping the technology used to improve the availability and quality of data [20, 32]. While technical rigor is clearly needed in information systems; these essential elements and skills are at the core of effective and efficient health management information system [20, 32]. Nevertheless, technical interventions alone could not translate into use of health information on the ground [20, 32]. Too often, information users are not motivated to use the information system, or the organizational context undermined evidence-based health action [20, 32]. For example, in health systems that use normative rather than strategic planning, decision makers follow traditional patterns of resource allocation based on set formulas. Even the availability of accurate and timely health data could not guarantee that evidence became the basis of decision making. For information to be used consistently, the entire health system must place a high value on health management information and be structured in a way that allows evidence-based decision making [20, 32]. The authors stated that by ensuring that information based on technically sound data is understood by potential users would determine information use and this requires the adaptation of information products to the organizational contexts in which they are intended to be used.

2.2. ORGANIZATIONAL FACTORS

These are aspects within the system that supports or hinder data collection, analysis, presentation, dissemination, availability and use of information. System factors exert pressure and create or limit opportunities for performance of RHIS. In a study to identify barriers that inhibit evidence-based decision making, [2, 21] found that the wider environment in which health system decisions are made includes the institutions and stakeholders that influence data collectors. The authors also found that the internal organization and culture of the health system also matters as in a health system structured around vertical disease control programs, is often at odds with an integrated health information system. The Organizational factors, such as lack of clarity about roles and responsibilities for information use; failure to actively promote the value of evidence-based decision making, lack of norms or standards with respect to data quality; and ambiguity surrounding the flow of information throughout the system, have a direct influence on the use of data [2, 21]. Data quality has become an important issue, not only because of its importance in promoting high standards of patient care, but also of its impact on government budgets for the maintenance of health services through health care financing. This strengthens health systems [8, 11], [22, 39]. Studies also found that use of quality health information from HIS in decision making improves all other health systems’ (HSs) pillars for them to deliver quality services [11, 28].

However, without an organizational context that supports and values data collection and information use, would nearly be impossible to make the links among health data, health information, and health action, declares [2, 21]. In addition, [2, 21], [32] found that organizational processes might not support the use of information. For instance, officials might be reluctant to use information that has not been officially sanctioned. Perhaps the release of certain sensitive information such as figures that reveal a measles outbreak is tightly controlled. This information could be shared only by official protocol. More often, there are simply no channels or systematic processes to share data with people who could use it [2, 21], [32] On the other hand, [3, 4] stated that organizational factors were perceived as more amenable to change by senior management or RHIS implementers. It is always taken for granted that by establishing the information system, a culture of information is created or strengthened. However, the way the management and staff values generated information aids in enhancing evidence-based decision making [2-4], [21], [32], [7].

The culture of information reinforces transparency and improves health system performance, consequently leading to better health status of the communities served [2-4], [21], [32]. At the organizational level, a work culture that is less focused on results and resource allocation decisions that are based on normative practices provides little incentive for evidence-based decision making [7].

2.3. BEHAVIOURAL FACTORS
These are individual actions, attitudes, motivation and capacity of staff to collect, analyze and use health management information [2-4], [33]. Motivating the members of an organization remains a challenge despite giving them training on data collection registers and reporting forms. Poor attitudes such as perceiving data collection as a useless activity or waste of care provider’s time also hinders performing RHIS tasks. Knowledge and skills for data processing, analysis, and interpretation were usually not given due attention and affected the ability to use health management information. Many information systems suffer from shortages of skilled people to manage, interpret, and use the data; and motivation and incentive to generate high quality data [2-4], [33].

Health data are collected, analyzed and information used by people who plays professional and personal roles in the health system [3, 4], [20]. The authors found that although building the capacity of these people was at the centre of data collection, analysis and information use strengthening, behavioral aspects of capacity were often the most difficult to identify and confront in a meaningful way. Behavioral factors influencing data demand and use of health management information often involved intangible concepts such as motivation, attitudes, and the values that people hold related to health management information, job performance, responsibilities, and hierarchy, explained [3, 4], [20]. The authors further stated that, influencing many of these behavioral factors required interventions that go beyond simple training that improved knowledge and skills in understanding data and using information. Behavioral factors gave crucial insight into the way in which health workers, managers and policymakers used information or failed to do so. For example, the primary role of health service providers revolved around their roles and responsibilities as health workers or managers of health services. They saw their other duties, such as disease surveillance, stock keeping, and evidence-based planning and budgeting, as secondary to providing health care. If expectations with respect to health management information use are unclear to health professionals at all levels of the system, their motivation and commitment to making informed decisions could suffer [2-4], [20]. At the individual level, factors included lack of skills to analyze data and use health management information, absence of incentives and motivation for health management information use and lack of recognition for performance at work place [7].

Technical, organizational, or individual/behavioral factors of the health management information use in evidence-based public health policy and program design rarely acted alone. They were interconnected. For example, on the technical-behavioral continuum, if policymakers felt that they had not effectively mastered the necessary skills to understand and use information effectively, then they were less likely to demand appropriate data and use information strategically [2-4], [20]. On the environmental-behavioral continuum, competency in collecting and using health management information required not just knowledge and skills but a supportive environment as well. In Tanzania, for example, the routine analysis of disease surveillance data by health workers was improved by clarifying organizational roles and responsibilities. Job descriptions, responsibilities, and accountability mechanisms should be clear to data collectors, and they must have the tools necessary to complete their work. Many health systems were not designed to offer such guidance and support to health workers which lead, to little appreciation of the value of health data and information [20], [32].

2.4. THEORETICAL FRAMEWORK

This study was pinned to systems theory. For the purpose of this study, the researcher applied a theoretical framework of Performance of Routine Information System Management (PRISM) as it aids in establishing the factors to information use [3, 4]. It also defines the various components of the HIS and their linkages to produce better quality data and continuous use of information, leading to better health systems performance and, consequently, better health outcomes [3, 4], [32].

2.5. CONCEPTUAL FRAMEWORK
Figure 1. Conceptual framework

Figure 2 above shows independent variables as factors influencing information use, hence influencing the dependent variable. The dependent variable is the outcome of the effects from the independent variables, whereby technical, organizational and behavioral factors influence the use of health information. This conceptual framework demonstrates the research variables where internal organization and culture of the health system matters as in a health system structured around vertical disease control programs, is often at odds with an integrated health information system. Organizational factors, such as clarity about roles and responsibilities for information use; active promotion of the value of evidence-based decision making, presence of norms or standards with respect to data quality; and clear flow of information throughout the system, promotes use of data directly. An organization with systematic processes to share data with people who could use it and with an organizational context that supports and values data collection and use, made the links among health data, health information, and health action possible.

3. RESEARCH METHODOLOGY

3.1. RESEARCH DESIGN

This is a descriptive cross-sectional study which provided a snapshot of the outcome and the characteristics associated with it, at a specific point in time and entailed collecting data at and concerning one point in time. This design focused on finding the factors influencing information use and relationships between variables at one moment in time and helped the researcher to collect data from a large number of subjects [5], [13]. This design was suitable for this study because it provided a snapshot of the exposed variables (i.e. technical, behavioral, and organizational factors influencing health management information use in the public health sector in Tharaka Nithi County) across a wide population without manipulating or influencing the study population in any way. Cross-section design was also used because it produced multiple outcomes and various variables were studied at a given point in time.

3.2. TARGET POPULATION

This study was conducted in tier two (Dispensaries and Health centers) and tier three (Sub County Hospitals) public health facilities in Tharaka Nithi County. The study targeted a population of 68 health managers and 71 information producers drawn from 50 tier two (11 Health Centers and 39 Dispensaries) and three tier three (three Sub County Hospitals) public health facilities in Tharaka Nithi County. This comprised of 18 managers from Sub County Hospitals, 11 health managers from the health centers and 39 health managers from the dispensaries. 21 information producers were from the Sub County Hospitals, 11 information producers from the Health Centers and 39 information producers from the Dispensaries. The study also targeted three Sub County Hospitals, 11 Health Centers and 39 Dispensaries from where the respondents were drawn.

3.3. SAMPLING PROCEDURE

Based on [26], where time and money allows, the researcher can take as high population as possible. They also add that samples less than or equal to 200, usually 50% is recommended to be the sample size, while at least 30% of the cases per group are
required for research. For the researcher to gather the required data for this study, both public health facilities from which the respondents were drawn together with the respondents were sampled. 16 public health facilities comprising of one Sub County Hospital, three Health Centers and 12 Dispensaries and 41 participants comprising of 20 health managers and 21 information producers were sampled. Therefore, the researcher takes 30% of the target population to be the sample size due to the study limitations. Information on population distribution and the sample size for health facilities, health managers and information producers is presented in table 1; 2; 3 below:

Table 1. Health facilities’ distribution.

<table>
<thead>
<tr>
<th>Type of health facility</th>
<th>No. health facilities</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub County Hospitals</td>
<td>4</td>
<td>30% of 3 = 1</td>
</tr>
<tr>
<td>Health Centers</td>
<td>11</td>
<td>30% of 11 = 3</td>
</tr>
<tr>
<td>Dispensaries</td>
<td>39</td>
<td>30% of 39 = 12</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 2. Health managers’ distribution

<table>
<thead>
<tr>
<th>Type of health facility</th>
<th>Health managers</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub County Hospitals</td>
<td>18</td>
<td>30% of 18 = 5</td>
</tr>
<tr>
<td>Health Centers</td>
<td>11</td>
<td>30% of 11 = 3</td>
</tr>
<tr>
<td>Dispensaries</td>
<td>39</td>
<td>30% of 39 = 12</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 3. Information producers’ distribution

<table>
<thead>
<tr>
<th>Type of health facility</th>
<th>Information producers</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub County Hospitals</td>
<td>21</td>
<td>30% of 21 = 6</td>
</tr>
<tr>
<td>Health centers</td>
<td>11</td>
<td>30% of 11 = 3</td>
</tr>
<tr>
<td>Dispensaries</td>
<td>39</td>
<td>30% of 39 = 12</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>21</td>
</tr>
</tbody>
</table>

This study used stratified random sampling since the subjects belongs to different tiers of public health facilities, that is; tier two were 15 information producers(in Dispensaries were 12 & in Health Centers were 3) and tier three were 6 (in Sub County Hospitals were 6). Health managers were also stratified as per tier of public health facilities, where tier two has 15 health managers (in Dispensaries were 12 and in Health Centers were 3 and tier three has 5 (in Sub County Hospitals were 5). After stratifying the sample, the researcher used purposive sampling to choose the respondents to fill the questionnaires per each tier till the required sample was arrived at. Purposive sampling was used because all respondents handle health management information. This study considered health managers and information producers working in public health facilities in Tharaka Nithi County and did not include those not working in public health facilities in Tharaka Nithi County. The Study has independent variables which are the factors that influence the utilization of health management information by health managers in the public health setting in Tharaka Nithi County. They include; technical, organizational and behavioral factors. They cause the variation in the dependent variable [35]. Dependent variable in the study is information use which is the consequence of the independent variables the researcher was attempting to predict [35].

3.4. TOOLS FOR DATA COLLECTION

The study used both primary and secondary sources of data. Thus the following instruments were used to collect data: Questionnaires and observation checklist. The questionnaire is the most appropriate instrument to gather large amount of descriptive information in a reasonably quick span of time [19]. According to [26], questionnaires are commonly used to obtain important information about a population under study. It can also be answered at the convenience of the respondent and picked at a later time. A questionnaire was also used for this study because it was simple and inexpensive way of obtaining data. The designed questionnaires were both structured and unstructured. Observation checklist was employed to collect data on the availability or existence of Computers used for data management, space to store computers and support supervision record. The questionnaires consisted two parts, for the information producers and health managers respectively. An observation checklist was an appropriate instrument as it confirmed whether what was said to exist really existed. Validity and reliability are tests of measurement that are used to evaluate the effectiveness of a measurement instrument [19].

[26] refer to validity as the extent to which the instrument measure what it is supposed to measure or designed to measure. The instruments for this study, that is, the questionnaire and the observation checklist were validated through pretesting at Kibung’a Sub County hospital and the responses from the respondents were used to improve the items. It was hoped that draft instruments for data collection were thus validated. Test- retest method of estimating reliability was used to determine the reliability. A quantitative analysis of the inquiry was performed using the SPSS software version 20, to
statistically test the reliability of the research instrument. A correlation coefficient was worked out using Spearman’s Product Moment Correlation. A correlation co-efficient of 0.75 showed a strong reliability of the research instrument.

3.5. METHODS OF DATA COLLECTION

This was a descriptive cross sectional study undertaken in tier two and tier three public health facilities in Tharaka Nithi County. The study collected data from both health managers and information producers from tier two and tier three public health facilities in Tharaka Nithi County from 24th March to 21st April 2015. Primary data was collected using researcher administered questionnaires and observation checklists while secondary data was collected through review of reports available within the sampled public health facilities. After obtaining approval of the KeMU (Kenya Methodist University) Scientific and Ethical Review Committee and Tharaka Nithi County Health Management Committee, the county health records and information officer was approached and requested to provide a list of public health facilities, health managers, and trained information producers as well as those not trained in Tharaka Nithi County. These individuals included medical records personnel, nurses, clinical officers, hospital administrators, casual workers and medical officers.

A researcher administered questionnaire was used to collect information on technical factors influencing information use (staff competence, computers for data management, training of personnel handling information); organizational factors influencing information use (organizational support on information use, prioritization and support supervision) and behavioral factors (motivation and recognition mechanisms on information use). Respondents were interviewed by the researcher at their respective places of work. Each questionnaire lasted for approximately 10-15 minutes with all responses being recorded. An observation checklist was filled concurrently as per issues arose in the process of respondents’ response. The researcher ensured that the data collection instruments did not bear the name of the respondents to assure confidentiality and this was also explained in the consent that was provided in the questionnaire. Data collected was used solely for study purposes. Moreover, informed consent was sought from the study participants and those not willing to participate in the study were not compelled to do so.

3.7. METHODS OF DATA ANALYSIS

The collected data was cleaned, coded and entered into SPSS software version 20, analyzed and presented in form of tables, and charts. The research findings were submitted through a written report and oral presentation to KeMU Department of Health Systems Management.

4. RESULTS AND DISCUSSIONS

4.1. STAFF COMPETENCE, HIS TOOLS AND COMPUTER AVAILABILITY TO INFORMATION USE

On competence of workers collecting data; only 1 (4.8%) information producer was trained in a sub county hospital. The rest of 20 (95.2%) respondents were casual workers and not trained on data and information management. 20 (95.2%) of the respondents had no computers and were not IT compliant while 1 (4.8%) had a computer and was IT compliant. All 21 (100%) respondents stated that HIS tools were not user friendly. These results are presented in Table 4.1.

Table 4. Staff competence, HIS tools and computer availability to information use

<table>
<thead>
<tr>
<th>Factor</th>
<th>Information producers N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical factors</td>
<td></td>
</tr>
<tr>
<td>Computer availability</td>
<td>1 (4.8%)</td>
</tr>
<tr>
<td>No computer</td>
<td>20 (95.2%)</td>
</tr>
<tr>
<td>Trained personnel</td>
<td>1 (4.8%)</td>
</tr>
<tr>
<td>Untrained personnel</td>
<td>20 (95.2%)</td>
</tr>
<tr>
<td>User friendly HIS tools</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>HIS tools not user friendly</td>
<td>21 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>21 (100%)</td>
</tr>
</tbody>
</table>

The above study results have revealed that lack of technical competence on collecting, analyzing and processing data, multiple HIS tools that consume time in filling, and lack of computers to handle data as technical factors that influence utilization of health management information. The above findings are in agreement with the theoretical findings by [2-4], [20, 42], and [33] who found out that a system without well-trained people, cannot produce the information needed for making decisions. The findings are also in line with the theoretical findings of [2-4], [33] who found that many information systems suffer from shortages of
skilled personnel to manage, interpret data, and use the information. The authors also assert that for health management information to be used consistently, the entire health system must place a high value on health management information and be structured in a way that allows evidence-based decision making. Additionally, the authors’ state that by ensuring that information based on technically sound data is understood by potential producers, determines information use and this requires the adaptation of information products to the organizational contexts in which they are intended to be used.

Moreover, [16, 17] reported too many data collecting and reporting tools as well as majority of HMIS staff being untrained as technical constraints to using information in the public health sector. On the other hand, the author found inadequate Health Records and Information Personnel, inadequate capacity for data analysis and management skills and inadequate capacity in the existing manpower as some of the individual constraints influencing use of information in the public health setting. With these findings, the study objective of determining the technical factors influencing use of health management information in public health sector was achieved adding to the body of knowledge on technical factors that influence health management information use in public health setting.

4.2. SUPPORTS ON STAFF TRAINING, SUPPORT SUPERVISION AND PROMOTION OF INFORMATION USE CULTURE

Concerning organizational factors influencing information use, 38 (92.7%) of information producers and health managers indicated lack of support on staff training in skills on facts-based decision making while 3 (7.3%) stated that there was organizational support on staff training in skills on facts-based decision making, 39 (95.1%) stated lack of support supervision on health information use while 2 (4.9%) indicated that there exist support supervision on health information use, 40 (97.6%) indicated lack of promotion of information use culture and 1 (2.4%) stated that there is promotion of information use culture. These results are presented in Figure 2.

![Figure 2. Support on staff training, support supervision and promotion of information use culture](image-url)

The study findings have shown that, lack of support supervision on health information use, lack of support on staff training in skills on facts-based decision making, lack of support on prioritization and information use in decision making and lack of a culture supporting use of information as the organizational factors influencing use of health management information. These findings were in tandem with the theoretical findings by [2, 21], who assert that the Organizational factors, such as lack of clarity about roles and responsibilities for information use; failure to actively promote the value of evidence-based decision making, lack of norms or standards with respect to data quality; and ambiguity surrounding the flow of information throughout the system, have a direct influence on the use of information. Moreover, the authors also found that without an organizational context that supports and values data collection and information use, will nearly be impossible to make the links among health data, health information, and health action.

On the other hand, the findings are in agreement with the scholarly works of [7], who found that at the organizational level, a work culture that is less focused on results, and resource allocation decisions that are based on normative practices provide little incentive for evidence-based decision making. In
their report, [16, 17] found inadequate utilization and feedback of the available data at all levels and lack of management of information to support epidemiological data, lack of elaborate feedback at all levels, inadequate supportive supervision and monitoring of HMIS activities in the field leading to lack of verification at the point of collection and inadequate supportive supervision to districts and provinces as some of the organizational constraints influencing use of information in the public health sector. This clearly proves the achievement of the study objective of ascertaining the organizational factors influencing information use in the public health setting.

4.3. STAFF MOTIVATION MECHANISM AND RECOGNITION MECHANISM FOR WELL-DONE JOB

Both information producers and health managers were interviewed on behavioral factors influencing information use. 39 (97.6%) indicated lack of staff motivation mechanism to generate quality data while 2 (4.9%) stated that there existed staff motivation, and 40 (97.6%) stated lack of recognition mechanism for well-done job while 1 (2.4%) indicated that there are recognition mechanisms for well done job. These results are presented in Figure 3.

![Figure 3. Staff motivation mechanism and recognition mechanism for well-done job](image_url)

The results above have revealed lack of recognition systems for well done job and lack of staff motivation and incentive mechanism to generate quality data as behavioral factors influencing use of health management information. These findings are in tandem with the scholarly works of [3, 4], [20] who found that behavioral factors influencing data demand and use of information often involve intangible concepts such as motivation, attitudes, and the values that people hold related to health management information, job performance, responsibilities, and hierarchy. The findings are also in line with the theoretical findings of [2-4], [33] who found that many information systems lack staff motivation to generate high quality data and information. The authors also assert that motivating the members of an organization remains a challenge and knowledge and skills for data processing, analysis, and interpretation are usually not given due attention and affect the ability to use health management information. Additionally, [7] found that at the individual level, factors influencing information use include absence of incentives and motivation for information use and lack of recognition for performance at work place. This helped the study to achieve the objective of establishing behavioral factors influencing health management information use in our public health sector.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. CONCLUSIONS

Lack of staff competence on collecting, analyzing and processing data, lack of computer to handle data and multiple data collection tools are the technical factors that influence information use in the public health sector in Tharaka Nithi County. This concludes that public health systems in Tharaka Nithi County lack well-trained personnel to collect analyze and use health information, lack computers to handle data and lack user-friendly data collection tools, leading to inefficiency to produce the information needed for making decisions. The need to complete multiple reporting forms results in data backlogs and decrease the motivation of staff to analyze and use health information. The lack of computers requires staff to complete reporting forms manually which increases the frequency of errors and contributes to poor data quality. The ability to interpret health information and apply it requires a skill set that is often never addressed in training of health professionals. Capacity building in data analysis and use creates enabling environments for evidence-based decision making.

Additionally, lack of support on staff training in skills on facts-based decision making, lack of support supervision on health information use and lack of a culture supporting use of information are the organizational factors that influence information...
use in the public health sector in Tharaka Nithi County. This concludes that there exists a work culture that is less focused on results, and decisions are based on normative practices hence providing little incentives for evidence-based decision making. Valuable data often remain unused when they could yield better decisions that improve the effectiveness of programs and organizations, and, in turn, benefit the lives and health of countless more people. For routine health information to be used in decision making, service providers, information producers and health managers need to be supported in the collection, analysis and use of that information. When organizational systems are in place to support a culture of data-informed decision making, information producers and users are better able to understand the value of information to the health system, information tends to be of higher quality, data is communicated and shared through the health system and, as a result, it is used in decision making. Lack of regular systems support supervision on health information use, affects the importance and quality of data collection and information use. The lack of promotion of information use by decision makers decreases staff’s motivation to seek, share or use information.

Moreover, lack of staff motivation mechanism for information use and lack of recognition systems for well-done job at place of work are the behavioral factors that influence health information use in the public health sector in Tharaka Nithi County. When the organization fails to provide staffs with incentives to motivate them collect data and use information, it compromises the quality of data collection and the use of the information. It is believed that incentives and accountability are central to enhancing evidence-based decision making. For a health system to use health information for fact-based decision, both motivation and recognition must be provided to the workers.

5.2. RECOMMENDATIONS

1. To capacity build information producers and health managers on HIS skills, provide computers and user-friendly HIS tools to enhance evidence-based decision making;
2. To promote adoption of context-appropriate information use culture for evidence-based decisions, support supervision on HIS and support staff training in HIS skills;
3. To initiate and implement motivation and recognition mechanisms in empowering workers’ commitment to produce high quality data; analysis and information use in evidence-based decisions.

5.3. SUGGESTED AREAS FOR FURTHER RESEARCH

The researcher suggests further studies to;
1. Establish other factors influencing health information use in the public health sector other than those covered by this study;
2. Establish interventions to enhance health information use in decision making in public health setting.

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7. REFERENCE

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