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Technical Factors Influencing Information Use for Decision Making Among Health Personnel in Elgeyo Marakwet County, Kenya.

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ABSTRACT

Introduction: Using health information is an essential component in the health industry thus it is factored in as one of the major building block. Health personnel can be able to monitor and evaluate their programs effectiveness using information from the health facilities. Information will guide health professions to identify a problem and give varied interventions to solve the problem.

Objectives: The specificstudy objectiveswas to: determine the skills or trainings, access and networkingthat influence health information use in Elgeyo Marakwet County in order to provide planner with information on how best health personnel at all level use information effectively to inform decision making.

Materials and Methods: The study design wascross sectional descriptive study design,the study subjects were142 respondents which comprised of facility in charges, county and sub county managers. The study used a questionnaire to collect information from facility in charges, county and sub county managers from the entire Elgeyo Marakwet County and analyzed the results using SPSS Version 25.

Results: The study established that the health information level in usage in decision making among health personnel in Elgeyo Marakwet County was high. The level of motivation among the health personnel to use health information for making of decisions was also high. Professional training and years of working experience of the health personnel had significant relationship with health information use for decision making. Additionally, health personnel training on information management and ease of accessing information had significant relationship with health information use for decision making.

Conclusion: In-charges, county and sub-county health management teams should facilitate effective supportive supervision on information and information management at the health facilities in order to enhance health information use among the health personnel.

Key words: *Technical factors, health information use; Decision making; Health personnel*

I. INTRODUCTION

1.1 BACKGROUND OF THE STUDY.

Information use is a major concern in the health care that is a key challenge is successfully delivering health care especially when it comes to decision making. It is a challenge that has been highlighted worldwide. The role of information system is to gather information from various sub-systems, to disseminate them to the various and to make sure the facts are utilized well, correctly and efficaciously to enhance health sector. In sound program improvement and implementation, a strong health information device is crucial and in long-term strategic decision making, it is a prerequisite, it forms a basis on which advanced health care rely on.[1]There is no coordination of various units' efforts in health information production and the mandates are vulnerable or non-existent even in the public sector. Therefore, meeting the human-resource needs in terms of skilled and committed staff has been given little attention.

According to a by research the Ministry of Health and Health Metrics Network showed that 51% of informationwas used and the weakest especially was routinely collected information[2]. WHO expresses that the wellbeing information staffs that are accessible frequently get low compensation and experience poor work and

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advancement conditions, with lacking access to trainings.[1] Indeed, even superior managers and supervisors get practically low training in the study of disease transmission or the utilization of information for arranging and administration. World Health Organizationstates that lack of analytical capacity is coordinated by shortcomings in the introduction of information to various voting demographics and furthermore these connections to a noteworthy requirement distinguished in many settings, in particular the absence of utilization of gathered information and information.[1]

And no more fundamental level of client–health laborer connections, understanding records are an essential wellspring of information, whose utility is not restricted to the individual level.[4] The motivation behind this review accordingly, was to decide the variables that impact wellbeing information use at County and Sub County level going for enhancing wellbeing information for better information - better choices - better wellbeing. The study's purpose therefore, was to ascertain the level of information use, technical factors that influence health information use at County and Sub County level aiming at improving health information for better information - better decisions - better health.

Health information can lack usefulness in the event that it is not used to make choices and endeavors to enhance information quality. Individuals who handle information regularly require trainings, as this will enhance learning and abilities in information accumulation and utilization.[3]

Expansion and usage of the health information available is faced with major technical barriers and privacy concerns regarding health information. An investigation undertaken in Malawi disclosed challenges like lack of systematic information utilization in decision making process, lack of information on district health centre and the attached hospitals and supportive surveillance information.[5]

II. MATERIALS AND METHODS

2.1 STUDY DESIGN.

The study used a descriptive cross-sectional design. This design was give data regarding the presence and how strong the variables' association was, allowing hypothesis testing on such linkages. Mixed method design was used that is using questionnaires for both respondents and key informants to collect quantitative information and using focus group discussions to get qualitative information. Both primary and secondary information were collected.

2.2 STUDY SITE.

The study was done in Elgeyo Marakwet County, which is among Kenya's 47 Counties located in former Rift Valley Province with Iten being its largest town and capital.

2.3 STUDY POPULATION.

This comprised of the facility in charges, County managers and Sub County from the four Sub Counties (Marakwet west, Marakwet East, Keiyo North and Keiyo South. They were 194facilities in charges, Sub County and county management teams in Elgeyo Marakwet County.

2.4 SAMPLE SIZE DETERMINATION.

A systematic random sampling wasdeployed in selecting participants from the study area and the sample was determined using fisher *et al.* (2003)

$$n = \frac{z^2 \times p \times q}{d^2}$$

$$n = \frac{1.96 * 1.96 * 0.05 * 0.05}{0.05 * 0.05}$$

$$= 384$$

Since population is less than 10,000

$$nf = n/\{1 + (n/N)\} = 384/\{1 + (384/194)\} = 129$$

To take care of non-response (10%) the sample size was13therefore total of 142 respondents were interviewed.

2.5 DATA COLLECTION TECHNIQUES.

All health personnel who were identified, were informed of the purpose of the study, signed consent form and then given a questionnaire to respond to the questions and submit back to the information collector/researcher were done. For the FGD the respondents were assembled in a comfortable place and discussions were held.

2.6 ETHICAL AND LOGICAL CONSIDERATIONS.

Approval to carry out the research was obtained from the KU graduate school, Ethical Review Committee of Kenyatta University and the

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permit from NACOSTI. The County Health Director and hospital Ethics Review Committee gave administrative permission. Confidentiality of the data obtained was highly maintained. A signed informed consent was obtained from the participants and their identities were kept anonymous. Feedback was to be given during review meetings.

2.7 DATA ANALYSIS.

Analysis was done using SPSS version 25. Descriptive statistics such as mean, frequencies and percentages were used to describe, chi-square to get relationship between variables and summarize the information.Information presentation was done using charts, tables and graphs.

III. RESULTS

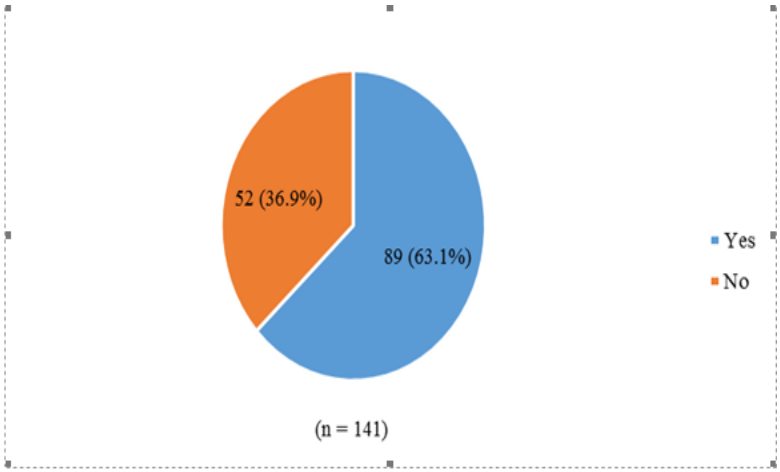
3.1 INTRODUCTION.

Information was collected using semi-structured questionnaires from 142 (100%) health facility in-charges, and sub county and county managers working in Elgeyo Marakwet County, who met the inclusion criteria.

3.2 TECHNICAL FACTORS INFLUENCING INFORMATION USE FOR DECISION MAKING.

3.2.1 Training in Information Management

Majority, 89(63.1%) of the in-charges and managers reported to have attended training on information management. The respondents were further required to list the main topics on information management they had received training on.



3.2.2 Main Topics on Information Management

The results indicate that a high proportion 35(39.3%) of the in-charges and managers reported to have received training on information generation or extractions. None of the respondents had received training on annual work plan, while only 1(1.1%) received training on information presentation and commodities management.

Figure 1: Main Topics on Information Management

TABLE I: MAIN TOPICS ON INFORMATION MANAGEMENT

Main topics	Frequency (n = 142)	Percent (%)
Information generation or extractions	35	39.3
Information presentation	1	1.1
Information tools for documentation &reporting	7	7.9
Information quality	2	2.2
Annual work plan	0	0.0
Information review	7	7.9
DHIS	10	11.2
Commodities management	1	1.1

No Response	26	29.2
Total	**89**	**100.0**

3.2.3 Data Analysis

The results show that majority, 133(95.7%) of the in-charges and managers affirmed that the data collected was analysed. The respondents were further asked to indicate whether the data analysis was done manually or electronically.

3.2.4 Data Analysis Methods

The results show that majority, 87(64.0%) of the in-charges and managers reported that data analysis is conducted manually, while 49(36.0%) indicated that data analysis is done electronically.

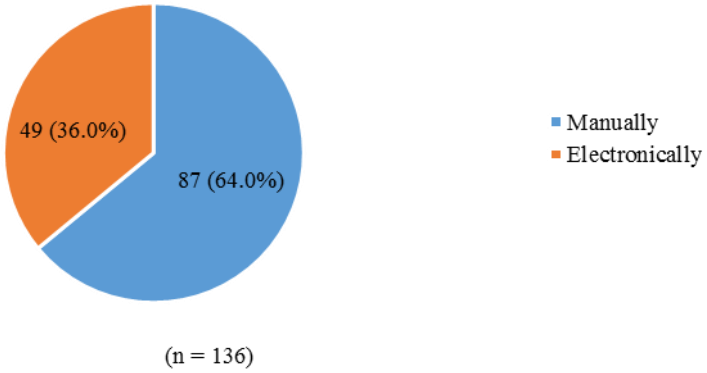


Figure 2: Data Analysis Methods

3.2.5 Sources of Health Information

The results show that 39(27.5%) of the in-charges and managers reported that the main health information source was registers, while 32(22.5%) indicated summary tools as the main health information source. Participants in the FGDs indicated that sources of health information for use at their level include registers, guidelines, reports, IECs, and SOPs.

TABLE II: MAIN SOURCES OF HEALTH INFORMATION

	Frequency (n = 142)	Percent (%)
Summary tools	32	22.5
DHIS	23	16.2
Registers	39	27.5
Not aware	2	1.4
No Response	46	32.4
Total	**142**	**100.0**

3.2.5 Responsibility in Preparation of Monthly Reports

The results show that slightly more than half, 75(52.8%) of the in-charges and managers reported that nurses/midwives were responsible for preparing monthly reports, while 61(43.0%) indicated that health information officers were responsible.

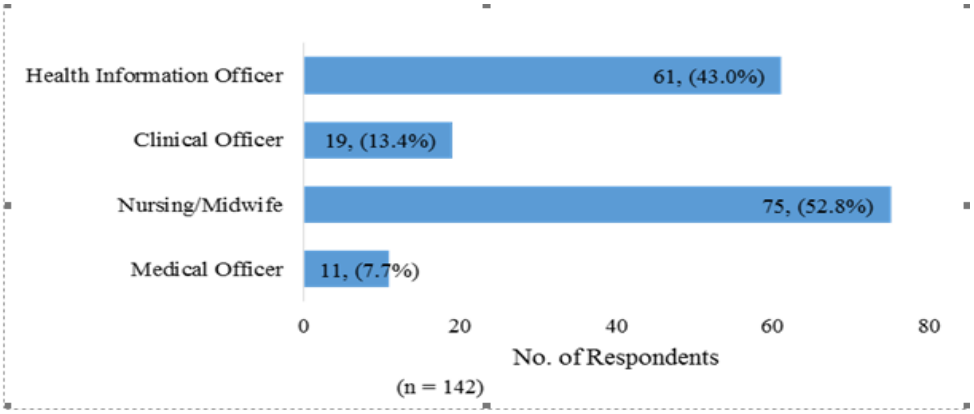


Figure 3: Responsibility in Preparation of Monthly Reports

3.2.6 Forums for Information Review

Majority, 130(91.5%) of the in-charges and managers affirmed that there were forums to share health information. Participants in the FGDs also confirmed that feedback on information generation and information use was given to the health care providers by conducting data review meetings. Other ways of giving feedback indicated by the FGDs include doing CMEs, conducting DQAs and during supportive supervision.

3.3: FREQUENCY OF MEETINGS FOR REVIEW OF HEALTH INFORMATION.

The results show that a high proportion, 62(48.1%) of the in-charges and managers reported that meetings to review health information were held once every month, while 59(45.0%) indicated that the meetings were held once every three months. The respondents were further asked to indicate what topics were being discussed during the meetings.

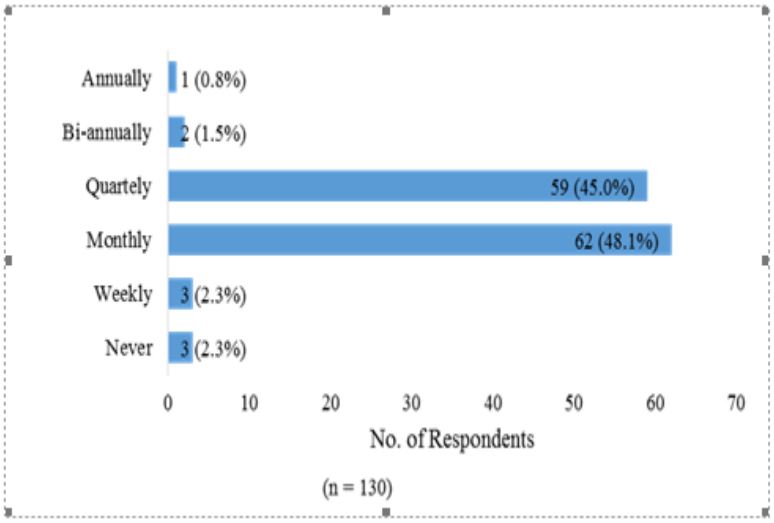


Figure4: Frequency of meetings for review of health Information

3.4: TOPICS DISCUSSED DURING MEETINGS TO REVIEW HEALTH INFORMATION.

The results show that 50(38.5%) of the in-charges and managers reported that the topic discussed during the meetings was service delivery, while 25(19.2%) indicated that health information system was discussed during the meeting.

TABLE III: TOPICS DISCUSSED DURING MEETINGS TO REVIEW HEALTH INFORMATION

	Frequency (n = 142)	Percent (%)
Service delivery	50	38.5
Leadership and governance	4	3.1
Health systems financing	1	0.8

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Health product and technologies	7	5.4
Health information system	25	19.2
Health infrastructure	1	0.8
Health workforce	6	4.6

3.4.1 Quality of Data

Health information quality was rated using timeliness, accuracy, relevance, reliability, completenessand credibility. To rate their views, frequencies/percentages of the responses were obtained and standard deviation and mean calculated. Each point's width in the scale is 0.75 [(4-1) ÷ 4], hence, a 1.00 to 1.75 mean indicated very good, 3.25 to 4.00 poor, 2.50 to 3.25 fair, and 1.75 to 2.50 good. The results show that the in-charges and managers were of the opinion that the timeliness of health information was very good (mean > 1 < 1.75), while they were of the view that the accuracy, reliability, completeness, relevance, and credibility of health information was good (mean > 1.75 < 2.50). Participants in the FGDs were of the opinion that information accuracy, adequacy, completeness, accessibility, timeliness and reliability are some of the factors that influence health information use for decision making.

TABLE IV: QUALITY OF HEALTH INFORMATION

Quality Components	n	Very good	Good	Fair	Poor	Mean	Std. Dev.
Timeliness	141	67 (47.5%)	53 (37.6%)	20 (14.2%)	1 (0.7%)	1.68	.740
Accuracy	141	40 (28.4%)	71 (50.4%)	25 (17.7%)	5 (3.5%)	1.96	.778
Reliability	137	49 (35.8%)	66 (48.2%)	19 (13.9%)	3 (2.2%)	1.82	.747
Completeness	141	50 (35.5%)	62 (44.0%)	28 (19.9%)	1 (0.7%)	1.86	.752
Relevancy	141	39 (27.7%)	80 (56.7%)	19 (13.5%)	3 (2.1%)	1.90	.700
Credibility	141	32 (22.7%)	87 (61.7%)	19 (13.5%)	3 (2.1%)	1.95	.669

3.4.2 Competence in Health Information Management

The results show that the in-charges and managers were of the opinion that their ability to check information accuracy, calculate percentages/rates, plot information, explain findings and their implications, identify gaps, set targets, make various decisions and provide timely feedback, was good (mean > 2.50 < 3.25).

TABLE V: COMPETENCE IN HEALTH INFORMATION MANAGEMENT

Ability	n	Poor	Fair	Good	Excellent	Mean	Std. Dev.
Check information accuracy	141	0 (0.0%)	9 (6.4%)	92 (65.2%)	40 (28.4%)	3.22	.549
Calculate percentage/rates	141	0 (0.0%)	15 (10.6%)	88 (62.4%)	38 (27.0%)	3.16	.593
Plot information by months or years	141	0 (0.0%)	20 (14.2%)	82 (58.2%)	39 (27.7%)	3.13	.635
Explain findings and their implications	141	3 (2.1%)	17 (12.1%)	86 (61.0%)	35 (24.8%)	3.09	.671
Use information to identify gaps and set targets	141	0 (0.0%)	22 (15.6%)	86 (61.0%)	33 (23.4%)	3.08	.622
Use information to make various types of decisions and provide feedback	140	2 (1.4%)	15 (10.7%)	87 (62.1%)	36 (25.7%)	3.12	.64

3.4.3 Accessibility of Information

The results show that majority, 107(75.4%) of the in-charges and managers reported that they found it easy to access routine health information whenever they needed it.

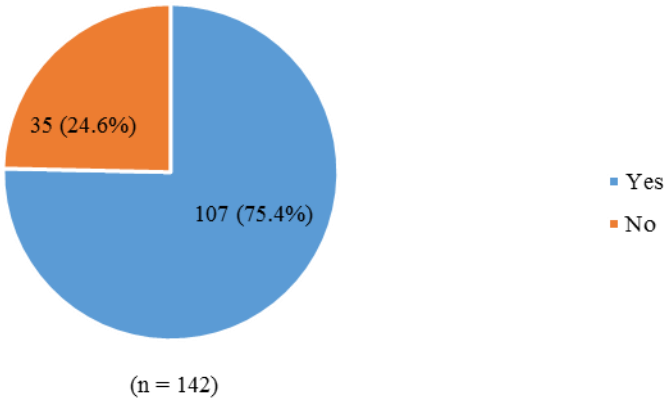

Figure 5: Ease in Accessing Health Information

3.4.4 Association between Technical Factors and Health Information Use for Decision Making

Chi-square results indicate that three technical factors had significant associations with health information use in making decisions. The factors included training on information management [X^2(2, n=135) = 6.312, p < 0.05], quality of information [X^2(6, n=135) = 12.779, p < 0.05], and ease of accessing information [X^2(2, n=134) = 22.522, p < 0.05].

TABLE VI: COMPETENCE IN INFORMATION MANAGEMENT

Technical Factors		Information use for decision making			Chi-square Test		
		Rarely	Sometimes	Always	X^2	df	Sig.
Trained on information management (n = 135)	Yes	2 (2%)	25 (29%)	58 (68%)	6.312[a]	2	.043
	No	5 (10%)	20 (40%)	25 (50%)			
Information analysis done (n = 133)	Yes	7 (6%)	41 (32%)	79 (62%)	3.117[a]	2	.210
	No	0 (0%)	4 (67%)	2 (33%)			
Information analysis method (n = 130)	Manually	7 (8%)	24 (29%)	53 (63%)	4.883[a]	2	.087
	Electronically	0 (0%)	18 (39%)	28 (61%)			
Held forums to share information (n = 135)	Yes	7 (6%)	41 (33%)	78 (62%)	1.302[a]	2	.522
	No	0 (0%)	4 (50%)	5 (50%)			
Quality of Information (n = 135)	Very good	0 (0%)	21 (47%)	37 (45%)	12.779[a]	6	.047
	Good	4 (57%)	15 (33%)	38 (46%)			
	Fair	3 (43%)	8 (18%)	6 (7%)			
	Poor	0 (0%)	1 (2%)	2 (2%)			
Competence in information mgt. (n = 135)	Fair	0 (0%)	5 (36%)	9 (64%)	3.565[a]	4	.468
	Good	6 (8%)	24 (34%)	41 (58%)			
	Excellent	1 (2%)	16 (32%)	33 (66%)			
Ease in accessing information (n = 134)	Yes	1 (1%)	29 (29%)	71 (70%)	22.522[a]	2	.000
	No	6 (18%)	16 (49%)	11 (33%)			

IV.DISCUSSION, CONCLUSION AND RECOMMENDATIONS

4.1 DISCUSSIONS.

4.1.1 Proportion of Health Information Use for Decision Making

The findings revealed that majority of in-charges, and county and sub-county managers had used health information at one point or the other, with majority reporting to have always used information for decision making. The results also indicated that there was a high level of motivation among in-charges and managers to use health information in decision making. Additionally, the in-charges' role, and county and sub-county managers in health information management were identified as information collection and entry, maintaining information accuracy and adequacy,

information evaluation, ensuring safety of information collected, submission of information to the next level, and retrieval of informationand analysis when needed for decision making.

Some of the challenges in health information use for decision making include poor information quality, lack of materials, registers and reporting tools, inadequate skills in information analysis, inadequate storage facilities, poor documentation, and lack of information backup system where digitization is used. This is also in line with a study by WHO 2017, which depicts that less than 10% of the information is used for decision making because of the issues or challenges such as inadequate skills in information gathering, analysis skills and access to information in DHIS.Moreover other studies agree to this in that poor information quality hinders stakeholders' from using the information for any decisions. Other challenges include high workload, understaffing, inadequate funding for training, employment, OJT on specific skills, and negligence, laziness and stress. In order to minimize the challenges various suggestions were put forward including regular training on health information systems, motivation of staffs through RBF, appreciation of existing staff, employment of more staff, acknowledgement, strengthening supportive supervision, considering digitization or automation - EMRs, and revision of policies.

4.2.2 Technical Factors Influencing Health Information Use for Decision Making

The third objective was to determine the technical factors influencing information use for decision making among health personnel in Elgeyo Marakwet County. The technical factors considered in the analysis included training in information management, information analysis, information analysis method, availability of forums to review information, quality of information, competence in information management and ease in accessing information all this promotes information use as noted in a study by Measure Evaluation (2017) and they also added that training health workers at all level strengthen the capacity of health professionals thus increase information use. The descriptive results indicated that majority of the health personnel had been trained on health information management. The findings also revealed that the information collected was analysed, with the method of analysis being mainly manual but participants in the FGDs also confirmed that skills on electronic information analysis was to easy "Attitude is there with technology…..and fear of technology."Feedback on information generation and information use was given to the health care providers by conducting information review meetings. The main sources of health information were identified as registers, summary tools, DHIS, guidelines, IECs, and SOPs, while nurses/midwives and health information officers were identified as the most responsible in preparation of monthly reports.

The findings also revealed that forums to discuss/review health information were organized mainly on monthly and quarterly basis. The quality of generated health information (timeliness, accuracy, reliability, completeness, relevance and credibility), was reported to be good. Additionally, the competence of the health personnel, in terms of their ability to check information accuracy, calculate percentages/rates, plot information, explain findings and their implications, identify gaps and set targets, and make various decisions and provide feedback timely, was reported to be good. Majority of the health personnel also reported that they found it easy to access routine health information whenever they needed it for decision making. Using cross tabulation and Chi-square test of association (at a 0.05 significance level), training on information management, quality of data, and ease of accessing information were found to significantly associate with health information use for decision making.

However, participants in the FGDs indicated that despite health care providers having access to health information for use at their level, it was not always easy. One of the participants noted that "…some information are not accessible like in DHIS… others especially before DHIS we can't access that information." another participant reported that "…some information are under lock and key thus not accessible to all staffs…" while another participant indicated that "…some data are not complete thus notreliable for use…". A research undertaken by Ethiopian Public Health Institute (2016), equally disclosed similar results on verification of information and that the already scarce resources allocation and decisions are compromised by poor quality and incomplete reports.

4.2 CONCLUSION.

The study concludes that the proportion of health information use for decision making among health personnel in Elgeyo Marakwet County was 62%. The level of motivation among the health personnel to use health information for decision making was also high. Further, cadre, age, professional training and years of working experience of the health personnel had significant

relationship with health information use in making decisions. Additionally, health personnel need to betrained on information management especially on information collection, informationuse and analysis for decision making. Moreover,quality of information, and ease of accessing information had significant relationship with health information use for decision making.Use of information in decision-making plays a positive to improve the informationquality thus improved service delivery in terms of reduced waiting time, right diagnosis and treatment and shared accountability.

4.3 RECOMMENDATIONS.

4.3.1 Managerial Recommendations

1. Conduct continuous training to health workers focusing specifically on information use through OJT, mentorship and strengthening the curriculum in health training and conduct effective supportive supervision on information and information management.
2. Enhance perception on information use among staffs through staff attitude change management and institutionalizing proactive information quality assurance, accountability mechanisms to identify and address information flaws and strengthen feedback among data producers and users in all levels.

4.3.2 Further Research

This study should be replicated in other counties with a view of expanding knowledge on technical factors influencing health information use among health personnel in the counties and thus inform policy changes towards strengthening HIS and service delivery in a devolved healthcare set up.

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