HEALTH INFORMATION USE FOR DECISION MAKING AMONG HEALTH PERSONNEL IN ELGEYO MARAKWET COUNTY, KENYA

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Q141/CE/28562/2013

A THESIS SUBMITTED FOR THE DEGREE OF MASTER OF SCIENCE IN HEALTH INFORMATION MANAGEMENT IN THE SCHOOL OF HEALTH SCIENCES OF KENYATTA UNIVERSITY

MAY, 2025

DECLARATION

This thesis is my original work and has never been presented for a degree in any other University.

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DEDICATION

I dedicate this work to the Almighty God, to my late loving husband, Mr Lumumba Kiptoo who taught me the value of discipline and hard work, not forgetting my sons for giving opportunity to study.

ACKNOWLEDGEMENTS

First I thank God for giving me strength during my study. I would like to extend my sincere heartfelt appreciation to my supervisors Dr. George Ochieng Otieno and Dr. Daniel Muthee both of Kenyatta University for their professional guidance and tireless efforts to assist me during the course of my study. My appreciation also goes to all my lecturers who throughout my course work contributed in opening a fresh chapter in my academic career. I can't forget my friends Mr Gilbert Nzomo and Mr Etee Ekaran, who encouraged me and sacrificed their precious time.

My appreciation goes to Ministry of Health Executive Elgeyo Marakwet County for granting me permission to carry out research in various health facilities and health teams. I am indeed grateful all the staffs and respondents in the health facilities where I carried the research, without whom the research couldn't have succeeded.

Lastly, I wish to acknowledge all others who contributed in one way or another directly and indirectly to the entire process and whom I may not have mentioned here by name. Thank you all for rising to the challenge. My God bless you all.

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ABBREVIATIONS AND ACRONYMS

CDH	:	County Director of Health
CEC	:	County Executive Committee
CHMT	:	County Health Management Team
CMEs	:	Continuous Medical Education
DDU	:	Data Demand and Use
DHIS	:	District Health Information System
DQAs	:	Data Quality Audits
EMR	:	Electronic Medical Records
FGDs	:	Focused Group Discussion
HIS	:	Health Information System
HMN	:	Health Metrics Network
HMT	:	Hospital Management Team
ICT	:	Information Communication & Technology
IECs	:	Information Education and Communication
IJSR	:	International Journal of Science and Research
KII	:	Key Informant Interview
KPI	:	Key Programme Indicators
MOH	:	Ministry of Health
NGOs	:	Non-Governmental Organizations
NHSSP	:	National Health Sector Strategic Plan
OJT	:	On Job Training
PRISM	:	Performance of Routine Information System Management
RBF	:	Result Based Funding
SCHMT	:	Sub County Health Management Team
SDGs	:	Sustainable Development Goals
SOPs	:	Standard Operating Procedures
SPSS	:	Statistical Package for Social Scientist
SWAp	:	Sector Wide Approach
USAID	:	United States Agency for International Development
WHO	:	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Data	These are raw facts, observations, events, transactions or set of qualitative or quantitative variables which have been recorded. Data often have little value unless processed by sorting, tabulation into a more usable format.
Information	Is processed data for use.
Health Information	"It's information about people's health status, resources, activities and events as related to health".
Health information Use	The practice or act of using health information for making decision such as planning, allocation of resources.
Health Personnel	Is a health professional trained from college or medical school whose responsibility is the tactical or strategic, financial and daily running of services at various levels.
Decision Making	"Is the cognitive process leading to the selection of a course of action among alternatives that can be rational or irrational."

ABSTRACT

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 it will give varied interventions to solve the problem using information not intuition. Health personnel carry out routine information collection, collation and reporting on all health activities. Studies indicate that local health management at Sub County levels or health facility and the persons collecting the information use very little of this vast amount of information. Ideally, to support local and national use by health management, collection, analysis and use of local information should be done. The study design was cross sectional descriptive study design, simple random sampling was used as this avoided bias. Self-administered questionnaire, key informant interview guide and focus group discussion guide were tools used to collect data. A total of 142 health workers participated in the study. Descriptive statistics and chi-square test to determine significant association was done and results presented in tables, graphs and charts. The results showed 85% use of health information for decision making. 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. The study also established that cadre, age, professional training and years of working experience of the health personnel had significant relationship with health information use for decision making. Additionally, the findings indicated that health personnel training on information management, quality of information, and ease of accessing information had significant relationship with health information use for decision making ($P<0.05$). Lastly, the study found that display of information on key performance indicators, and support from management on matters pertaining to information management had significant relationship with health information utilization in decision making. Therefore, the study recommends that institutions' management should ensure frequent display of information on key performance indicators in order to enhance health information use among the health personnel. The 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 and policy makers at the National and County level.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Information use is a major concern in the health care that is a key challenge in 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 and to disseminate them to the various generators and users and to make sure the facts are utilized well, correctly and efficaciously to enhance health sector decisions for better health care. It is a prerequisite and it forms a basis on which advanced health care relies on. Similarly, the World Health Organization (WHO, 2022) reports that records use, coordination and sharing between specific departments is poor, leading to duplication of information due to external pressures. There is a lack of coordination among 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 thus poor decision are made.

Amouzou et al. (2021), noted that only about 51% of the collected health information is actively used, with routinely gathered data representing the weakest component of the system. Ngugi, Wekesa, and Odhiambo (2021) further noted that health personnel often find that onerous reporting requirements detract from their primary responsibility of patient care. Moreover, the World Health Organization (2020) has reported that health information staff frequently face low compensation, poor working conditions, and limited training opportunities with even senior managers receiving minimal instruction in epidemiological methods and data utilization for planning and management. According to Ochieng, Mutua, and Njoroge (2022), health information systems in Kenya are designed to meet the diverse needs of users at all levels of the healthcare system. At the most fundamental level of provider patient interactions, patient records not only guide individual care but also serve as a crucial data source for broader clinical and administrative decisions. Motivated by the goal of enhancing decision-making through improved health information, the study aimed to identify factors that influence health

information use at both county and sub-county levels. The purpose was to assess the extent of information use and to determine the variables affecting this use, ultimately contributing to the mantra of “better information better decisions better health.

Access to and utilization of quality health information are pivotal in enhancing the efficiency and effectiveness of healthcare delivery systems. For instance, the USAID Health Finance and Governance Activity emphasizes that clearly defined inputs, outputs, and outcomes considering quality and client needs are essential for improving health system performance. Evidence-based decision-making is crucial for refining health services by bolstering the health system's capacity to respond to the population's needs. However, other government states that generated health information was often not used by producer, manager and even user to efficiently update policy and make informed decision. Research indicates that of this quantity of information, little is utilized by those gathering it and local health management at Sub County levels and health facility (Ethiopia Public Health Institute, 2016). The amount of information collected is rarely given sufficient consideration.

The breaking down to address information-based decision making exists as the general population gathering and analyzing the information are ordinarily not the people who makes the ultimate decision in the health care sector therefore 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 training, as expressed by Braa et al. (2022), as this will enhance learning and abilities in information accumulation and utilization. The performance of routine information system management (PRISM) framework remains a valuable tool for evaluating the determinants of routine health information use by examining organizational, technical, behavioral and process factors that affect decision-making by health personnel. Their study emphasizes that understanding the roles of health facility staff in generating, reporting and managing data is critical, as these individuals face challenges that can impede effective information use at all levels of the health system. Moreover, when health facility data including individual patient records is effectively managed, it

provides essential support for informed decision-making and improved health outcomes (Ochieng, Mutua, & Njoroge, 2022).

Health information is a critical pillar it guides actions, supports policy formulation and aids in modifying programs to boost their effectiveness. This system aims to improve the quality and coverage of health services by ensuring that reliable information is available for planning and management. However, challenges persist, including inadequate resources, knowledge gaps, insufficient staffing and lack of training or refresher courses. These issues collectively contribute to unreliable information and poorly informed decision-making. Addressing these challenges is essential for the effective utilization of health information in policy-making and program improvement (Moyo et al., 2018).

1.2 Statement of the problem

The available information according to Kenya Health Policy (2012-2030) has not been utilized in policy making by health practitioners and therefore have not connected the available evidence to the decisions made so far. Recent studies have identified several factors undermining evidence-based decision-making in Kenya's health sector. These include limited demand for information, lack of ownership of data, unawareness of existing information sources, and insufficient understanding of information utilization. For instance, a study highlighted that limited involvement in decision-making processes by service providers and other key stakeholders poses significant challenges to effective health system resource management (Mutale et al., 2022).

In response to these challenges, the Kenya Health Sector Strategic Plan (KHSSP) for July 2018–June 2023 emphasizes Health Information Systems (HIS) as a critical investment area. The plan aims to enhance the alignment and coordination of healthcare resources, thereby improving the overall health system's efficiency and effectiveness.

The Health Information Policy 2014- 2030 and Kenya Health Act, 2017 provides for a NHI Systems that is responsive to the population’s needs. Moreover, Amouzou et al.

(2021) confirms that routine health management information system reports aim to contribute to evidence-informed management and planning and assist personnel in the health sector to make informed decisions.

Kenya Public Sector Monitoring and Evaluation Toolkit (2022) report highlights that poor decision-making in county-level health systems is often caused by the lack of user-friendly information and complex data forms. Additionally, operational and technical challenges continue to hinder the effective use of routine health information for planning and implementation. A study by (Mutale et al., 2022) indicates that even with a large amount of time and resources put into health information systems' development and implementation, no credible decisions have been made. "Anecdotal evidence proposes that while Sub County level managers regularly discuss information and use routine information in the review of Sub County Implementation Plans (SIP), use of information for operational plans and at source for decision-making is limited." Uncertainty exists on whether the available health information from Elgeyo Marakwet County is used by health personnel for decision-making at their various levels.

1.3 Justification of study

Study that discusses similar factors influencing the utilization of health information among healthcare personnel is the research by Duncan Chege Njuguna (2022). His study examines how age, user involvement, knowledge of health information systems, staffing levels, and training impact health information utilization in Nairobi County public health facilities. The research highlights that younger healthcare personnel tend to adapt more quickly to digital health information systems compared to older staff, who may require additional training. Additionally, the study emphasizes the importance of involving users in the design and implementation of health information systems to enhance adoption and efficiency. Njuguna's findings also indicate that understaffing leads to heavy workloads, limiting the time available for health workers to interact with and utilize health data effectively. Furthermore, the study reveals that regular refresher training improves health personnel's ability to navigate information systems and make data-driven decisions. Overall, the research underscores the need for improved infrastructure and continuous capacity-building programs to bridge gaps in health information utilization.

Recent research indicates that many countries risk being overwhelmed by parallel, multiple demands for health information, which can strain existing resources. Health workers are often burdened by excessive reporting requirements from fragmented subsystems, leading to the collection of large volumes of data that are frequently incomplete, inaccurate, or untimely. Despite the abundance of collected data, only a portion is analysed and used to inform evidence-based decision making. The primary goal of collecting and analysing health information is to improve programs and facilitate informed, evidence-based decisions. However, at many health facilities and managerial levels, decision-makers either do not access the necessary information or lack the understanding of how to use it effectively (Amouzou et al., 2021; World Health Organization, 2020).

Recent research indicates that despite the vast amounts of health data collected, planning and resource allocation are often not informed by this evidence. For example, Ndou, Khumalo, and Mokoena (2020) found that in many low- and middle-income countries, less than 10% of the collected health information is actually analysed and used for decision-making. Factors contributing to this challenge include the lack of user-friendly data formats, fragmented reporting systems, and operational as well as technical constraints that limit effective information use. Furthermore, audits at the county level have revealed that the available data are frequently incomplete and underutilized. This situation underscores the urgent need for decision-makers at all levels of the health system to access relevant, reliable, and timely information in order to support evidence-based policies and program improvements.

Health systems worldwide are challenged by excessive, fragmented data demands that overburden health personnel, resulting in under analysed and underused information. Audits indicate that only a small fraction of the data is effectively utilized for decision-making, with many datasets being incomplete and poorly integrated. The World Health Organization (2020) stresses the need for reliable, relevant, and timely data to support planning and funding decisions. Consequently, significant investments in health

information systems are essential to convert raw data into actionable knowledge and meet global health targets by 2030.

The organization gaps include information culture, policy guidelines for Health Information System (HIS) and dissemination mechanism are not found for the County as well as the region. Under individual factors issues such as motivation for collection of quality information, attitude towards information use based on evidence so as to make decisions, there are few studies thus inadequate literature is available, technical factors like the skills, training and access to information. Literature is available for the developing countries they are limited. Developing skills in analysis, interpretation, and decision-making promotes information use. Therefore, the study will identify the gaps that could be address at all levels for all to use information for decision making and inform policy change.

1.4 Research Questions

1. What is the proportion of health workers using information for decision making among health personnel?
2. What are the individual factors influencing information use for decision making among health personnel?
3. What are the technical factors influencing information use for decision making among health personnel?
4. What are the organizational factors that influence information use for decision making among health personnel?

1.5 Main Objectives

To establish determinant factors influencing health information use for decision making among health personnel in Elgeyo Marakwet County.

1.5.1 Specific Objectives

1. To determine the proportion of health workers using information for decision making among health personnel.
2. To identify individual and demographic factors that influence information use for decision making among health personnel.

3. To determine the technical factors that influence information use for decision making among health personnel.
4. To identify organizational factors that influence information use for decision making among health personnel.

1.6 Limitation of the Study

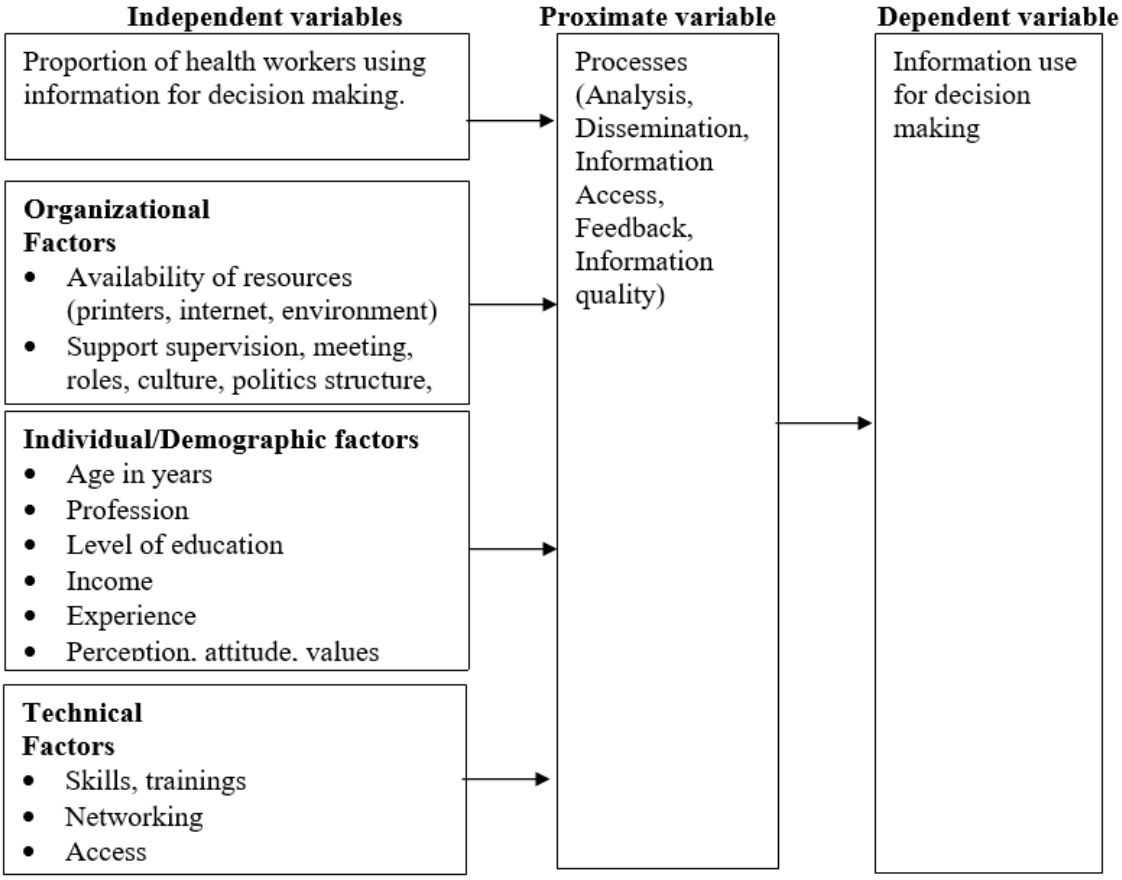
i. The study limits itself to one County only and its Sub Counties due to limitation of funds.
ii. There is a scanty literature with respect to factors determining information use.

1.7 Theoretical Framework

According to Paige, Stellefson, Krieger, and Anderson-Lewis (2020), models of health literacy and eHealth literacy encompass the skills and competencies necessary for individuals to effectively seek, understand, evaluate, and apply health information in digital contexts. These models illustrate how varying literacy levels influence one's ability to use health information for decision-making. They offer a structured framework for examining how health information is accessed, processed, applied, and shared among diverse users including patients, healthcare providers, policymakers, and public health organizations. Rooted in disciplines such as information science, behavioral psychology, and public health, these theoretical frameworks help guide the design of interventions, policies, and technologies aimed at enhancing the effective use of health information.

1.8 Conceptual Framework

The concept pertaining to the research is depicted in this section. It is a broad picture of the connection between the factors and information use by health personnel at all levels. The figure captures the concept in the study.



Source: Modified from Measure Evaluation tools PRISM & DDU.

Measure evaluation tools: PRISM and DDU 2012

Figure 1.1: Conceptual Framework

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section covers literature on what others have done on utilization of health information for decision making. This chapter describes factors influencing health information use among health personnel in making decisions.

2.2 Proportion of health information use for decision making by Health Workers

According to recent research, only about 51% of the health information collected is actually used, with routinely collected data representing the weakest component of the data value chain (Amouzou et al., 2021). Health personnel report that the burdensome reporting requirements divert their focus from primary patient care (Ngugi, Wekesa, & Odhiambo, 2021). Moreover, the World Health Organization (2020) found that in some settings, the use of health information generated from sub-county systems for decision-making can be as low as 10%, largely due to challenges such as limited user capacity, insufficient skilled personnel, and inadequate access to digital health information systems.

According to Asega, Owino, and Njoroge (2023), only about 32% of the routine health information collected in Kenyan facilities is actually used for decision-making, leaving 68% unused. Their study identified several influencing factors, including the frequency of facility meetings, methods of data storage and analysis, and the provision of continuous professional training and support supervision. Similarly, Mugo, Kamau, and Otieno (2021) reported that in the Nathenje area of Malawi, the utilization of health information for decision-making was approximately 45%, underscoring similar challenges in effectively using routine data across different settings.

Other studies reveal that poor information quality hinders the capability of stakeholders in using information for decision making that is evidence-based and negatively influences strategic planning activities and their endeavors in advocating for resources. Moreover, demand for information is affected by delayed reporting, incomplete and inaccurate information. The probability of stakeholders seeking poor information for future decision making because they have had negative experiences. For consistent information use

ought to be of high quality for users to be confident of its timeliness, completeness and accuracy. Program effectiveness and efficiency suffers and decisions making might not happen if there is no quality information.

Moreover, it is prudent that any institution develops procedures for monitoring of the information to ensure that quality is enhanced at all times. They should procedures should be implemented and networked within the institution as well as developing professional development programs for the health information staff in order to improve their skills and knowledge. In many national and global health agendas, a top priority has been given to strengthening of Health systems with the aim of improving health outcomes. National health systems are now starting to move to comprehensive health systems strengthening from focusing on disease-specific health responses since the global health context is increasingly becoming complex (WHO, 2017).

To facilitate information use, stakeholders' need of knowing to effectively track health programs should be focused on rather than the available information. Therefore, World health organization recommends that for information to be used consistently in decision making. The proposed study therefore would look at the level of health information use in Elgeyo Marakwet County and identify gaps to be addressed to increase efficiency and effectiveness of evidence-based decision making in Kenyan health facilities.

All decision-makers have a believe that information quality is positively impacted by information use. Poor quality information I not used hence it remains poor quality but greater information use helps in improving information quality hence leading to more information use (Ethiopian-MoH, 2016).

2.3 Individual/Demographic Factors influencing Use of Health Information

According to Wafula, Ochieng, and Kamau (2020), individual factors significantly influence how health personnel gather and use health information. Their study found that health workers tend to prioritize core clinical responsibilities over ancillary tasks such as budgeting, evidence-based planning, and inventory management. This prioritization means that reporting and information use are often seen as secondary duties, which can

diminish commitment and motivation to utilize health data effectively. Consequently, if individual factors such as adequate incentives, ongoing training, and support for information management are not addressed, interventions aimed at strengthening health information systems may result in poor decision making, infrequent information use, underreporting, and reduced data quality.

Perceptions and attitudes of senior officers/managers towards information determine the influence on the use of health information. Mboro (2017) in his study noted that the probability of the information culture being fostered is low if information use for accountability, transparency and evidence-based decision-making is not promoted. Thus, an organization's senior managers and other members' values, attitudes and perception should be examined in connection to information-related functions.

According to Hall et al, (2021) the value of information in term of valid and reliable information is at a its best. We need to take stock of the existing knowledge in our field through a systematic understanding of how information is treated in public and even private through research, doing so will enable us to identify the gaps and weaknesses that decision makers will face as they move forward in this rapidly changing environment.

2.4 Technical Factors influencing Use of Health Information

Using health information for decisions and actions for the improvement of health service quality and achievement of performance goals is a crucial attribute of shared accountability. It helps the health system in evaluating healthcare service and cost performance and in improving quality of care; though in real sense healthcare information lack governance and accountability Teklegiorgis K, et al (2016)

Skills such as information collection using IT save time, reduces errors and increase information reliability and timeliness. Increased training in information handling and benefits of information at facility level might bring an improvement to how health personnel regard the task of information collection and use at their level. Hence, the system becomes a promoter of quality data for utilization in the process of making decisions WHO, (2020). Skills development in analysis, interpretation, and decision-making promote use information. HMN and WHO in their studies indicated that training

health workers in information use strengthens the capacity of health professionals at all levels in using health information for better health service delivery management. A researcher in Zambia disclosed that "while the Health Management Information System (HMIS) was designed, and health workers were trained in accord with internationally documented practices, a technically sound system, in and of itself, does not mean that information is used as broadly for evidence-based decision-making as hoped, nor does it consistently produce evidence of the quality of information required to support good decisions." RHINO also added that training in information use should be carried out in strengthening health workers' capacity at local and county level in health information utilization for better health service delivery and management. Grimmelikhuijsen et al, (2017) put more emphasis on behavioral approaches that might affect impact on decision making despite staff being trained on information use for decision making therefore we need to look more closely at it effective success on information use.

According to Kumar et al. (2022), research in India demonstrates that a lack of investigative and data utilization skills is a major limitation in health information systems. Their study found that many health professionals reported a need for enhanced training in data quality assurance, analysis, and utilization. Furthermore, respondents indicated that heavy workloads, lack of incentives, inadequate technical skills, and insufficient knowledge of data management and access resulted in missed opportunities for using information for strategic leadership. The study underscores that the availability of timely and accurate information plays a crucial role in effective decision-making.

Design of health management information systems (HMIS) and active stakeholder involvement critically influence how health information is utilized. To improve local use, decentralizing routine health information systems management is essential. This decentralization involves engaging health service providers and local managers in designing and implementing data collection and reporting processes, thereby fostering ownership and better use of information. In addition, ensuring that information is accessible to all potential users is key (Odhiambo, Wanyonyi, & Kimani, 2021). Moreover, fostering an information culture-through continuous supervision, support, and feedback for local health workers-is vital for translating data into actionable insights.

Effective communication between system developers and end users is also crucial, as its absence can contribute to poor decision-making (Johnson & Mwangi, 2021).

According to Health Metrics Network (2017), collection and evaluation of relevant information will be done so that when the information is of good quality and available, it will be utilized. It's evident however that good data is collected by managers but is left in the drawers. Several strategies have been suggested in the facilitation of enhanced use of information among health personnel. Essential information sets help them have an overview of the information available. Evidence indicates that the information quality might increase if the number of information elements gathered is limited RHINO (2013), and this will lead to the enhancement of health personnel trust in it, and facilitation of information use.

According to Patel, Kumar, and Rodriguez (2022), health information systems are designed to address the diverse challenges of multiple stakeholders within the health sector. However, because these systems serve a wide range of information users with varying needs, the data generated may not fully meet the specific requirements of all clients. Moreover, the substantial volume of available data can overwhelm end users who are not adequately prepared to access and interpret these information assets.

Mugo et al, (2021) identifies technical and capacity gaps in utilization of available information in making decisions such as Amhara Regional Health Bureau faces a challenge of high staff turnover in terms of information use and management in decision-making. Generally, all health system functions depend on availability of dependable, accurate and timely information for making decisions. Hence, various factors including behavioural factors, technical skills and ICT infrastructure affect the need for accurate, timely, accessible and organized information at various level.

Mboro, (2017) point out the potential for a positive quantitative bias to crowd out qualitative studies that seek to drill down to an individual, organizational, or decision-level understanding of the cognitive factors at work in information processing and use.

2.5 Organizational Factors influencing Use of Health Information

Health information is the centre of health systems' overall building blocks, states WHO, (2022). Availability and strengthening of information will help health personnel to make use of the same for better policy-making, planning, implementation, monitoring and evaluation of health programmes. Managers require good information regarding the present population health situation to make management possible. It is necessary to acquire a well-functioning HIS and information for collection, processing, and analysis and use of health information.

Demands for improvement in accountability and ensuring making of evidence-based decisions have necessitated the need for better health information, HMN (2018). In the improvement of health information quality, it is necessary that the limited resources are made use of, especially in assisting health services management, planning and analysis and development of evidence-based policy. Performance-based disbursement introduction by international initiatives such as President's Emergency Plan for AIDS Relief (PEPFAR), Tuberculosis and Malaria (GFATM), the Global Fund to Fight AIDS and Global Alliance for Vaccines and Immunization (GAVI) has highlighted the importance of the capability to report on progress towards specific targets.

Quality of Tuberculosis Services Assessment in Uganda (2020) by MEASURE Evaluation research highlights that healthcare workers in various facilities reported using health management information system (HMIS) data for career development, staffing decisions, drug management, and medical supply planning. Additionally, survey data was utilized by some staff for strategic planning purposes. However, the study also found that inadequate ICT equipment-such as computers, printers, and internet access-along with frequent power outages, significantly hindered staff's ability to access records and delayed the reporting process.

A recent study that discusses similar infrastructural challenges affecting health workers is the research by James Avoka Asamani et al. (2024). Their study highlights how inadequate transportation, poor internet connectivity, and substandard infrastructure continue to hinder health workforce efficiency, particularly in the WHO African Region

A principle of HMN is that country information should be made a core part of the day-to-day management of health system planning and delivery. Thus, use and access should be integral to HIS strengthening activities. The dynamic links between information quality, supply and demand should be addressed through the encouragement of a culture of demand and utilization of information promoted through establishing institutional incentives and mechanisms in creating a culture of evidence-based decision-making.

According to Okoth, Muriuki, and Karanja (2022), health information systems must be designed to support evidence-based decision-making by ensuring that the collected data is actively used in planning and management. Their study highlights that at peripheral levels where data is gathered there is often limited capacity for data analysis and subsequent use in management and planning. They emphasize that connecting information with its end users is a critical function of an effective HIS. In this context, those responsible for data collection should also benefit from its use, including planners, health program managers, service providers, donors, technical support agencies, civil society organizations, and senior government policymakers.

According to WHO (2022), organizational factors, which include promoting a way of life of information and quality supervision, have been vulnerable. And there has been little proof of systematic communication regarding performance targets, utilizing facts to make selection, advocate and share fulfillment testimonies among staffs. whilst organizational structures are in place to guide a tradition of information use for selection making, information producers and users are higher capable of recognize the price of information to the fitness gadget, facts have a tendency to be of higher excellent if it's far shared and used for decision.

As per HMN (2018) and WHO (2022), making plans and priority setting became now not primarily dependent on health information and fitness employees confirmed concerns and said that there should be a change in the trend for evidence application. The HIS information should be the basis for government aid allocation. There has been a translation in plans into movements but participants stated that considering the fact that plans aren't related to HIS records, implementation became tough. Moreover, the assets

allocation for guide of reports for wider dissemination changed into a primary issues and electronic mail or computers were not offerings to be had at the decrease degree to flow into it. There’s no coverage for HIS and advocacy turned into vulnerable. WHO advocated that there's need for the health quarter for development of a policy guiding principle for fitness information and assist wider feedback or reports dissemination at all degrees. Information now not used to make allocations and therefore had little large growth that couldn't be found out.

Kaburi and Mwaura-Tenambergen (2022) highlights the role of effective communication and feedback in improving health data usage among clinicians in Kiambu County, Kenya. Their research emphasizes that structured feedback mechanisms such as written reports, supervision visits, and verbal briefings enhance data quality and ensure timely dissemination. Additionally, they found that presenting feedback using tables, graphs, and comparative reports fosters a sense of ownership among healthcare providers, encouraging better utilization of health information for decision-making.

Global Health Leadership Training Report (2022) by the Annals of Global Health emphasizes that for health information to be effectively used in decision-making and sustained, adequate funding is required. Additionally, training in advocacy and leadership skills is essential in equipping managers to leverage funding and secure stakeholder buy-in for implementing and sustaining interventions aimed at improving the demand for and use of health information.

2.6 Summary of literature

The use of health information generated from sub-county HIS for decision making ranks as low as 10%, due to a number of issues. These include low knowledge & skills among the users, DHIS infrastructure, lack of enough personnel or skilled staff for data gathering, analysis and inadequate access to DHIS. Poor information quality hinders the capability of stakeholders in using information for decision making that is evidence-based and negatively influences strategic planning activities and their endeavors in advocating for resources.

To bring an improvement to local usage of health information, there should be a decentralization of routine health information systems management. This entails the involvement of health service providers and local level managers who take part in the design of for collecting and reporting of data. A team should be responsible for information management at all level for ownership and better usage of information as decisions making is a journey, not the end. It is an on-going knowledge-driven process that requires continuous collection, analysis and sharing among all parties in the health industry. Some of the studies which were available and reviewed were out dated and operationalized within contexts which may not be not similar to this study.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This section discusses the research methodology. It covers the study design, location, targeted group, techniques for sampling, instruments and procedures for data collection, analysis and ethical considerations.

3.2 Study Design

The study used a descriptive cross-sectional design. Mixed method for data collection was adopted 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.

3.3 Variables

3.3.1 Dependent variable

Information use for decision making in health department. This was measured generally based on using information and the purposes or decisions that were made by the specific task by health personnel.

3.3.2 Independent variables

Individual and demographic factors were age in service, gender, roles and responsibilities, experiences, perception and attitude. Technical factors such as Knowledge and skills, networking, access to information. Organizational factors such as Leadership and governance, supervision, politics, structure.

3.4 Location of study

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. It bounders the counties of Trans Nzoia to the north west, Uasin Gishu to the southwest and west, Baringo to the east, southeast and south, and West Pokot to north. The population density is 122 people per Km^2 and has a population of 369,998 people. The sex ratio is male 49%: female 51%, according to the 2009 National Census. There are four units (Marakwet west, Marakwet East, Keiyo North and Keiyo South) in Elgeyo Marakwet

County. Elgeyo Marakwet County was selected conveniently. The County has a total of 131 health facilities of which 110 are GOK, 5 FBO and 16 private health facilities. The indicators such as Fully Immunized Children is at 79%, Deliveries by Skilled Birth Attendance is 65% as indicated in KDH (2014) and reporting rate is 90% HMIS bulletin (2014).

3.5 Study Population

This comprised of the facility in charges, County and Sub County managers from the four Sub Counties (Marakwet west, Marakwet East, Keiyo North and Keiyo South that will be selected to participate in the study. The target population was a total of 194 staffs who are eligible and comprise of facilities in charges 131, 48 Sub County health managers and 15 County health management teams in Elgeyo Marakwet County.

Those who were included are staff who had worked for at least six months preceding the information collection period and have consented as they have right to participate. And those who were excluded are unwell or terminally ill staffs.

Table 3.1: Total number of study population per cluster

Sno.	Sub County/County	Facility in-charges	Sub County managers	County Managers	Total
1	Keiyo North	21	12	0	33
2	Keiyo South	37	12	0	49
3	Marakwet East	29	12	0	41
4	Marakwet West	44	12	0	56
	Elgeyo Marakwet	0	0	15	15
	Total	**131**	**48**	**15**	**194**

3.6 Sample Size & Sampling Techniques

3.6.1 Techniques for Sampling

Stratified random sampling technique was utilized to select the study subjects who are facility in-charges, county and sub-county managers working in Elgeyo Marakwet

County. The sampling frame was the facility in charges, county and sub-county managers who are tasked with the responsibility of making decisions in the four sub counties. Elgeyo Marakwet County was selected purposively. The three levels were sampled using proportionate to size until the required sample size was obtained. FGD comprised of 8 members each from the facility level, Sub County and County Health Management Team was done and KII to the County Director, COH and the CEC-Health was done.

Table 3.2: Number of Respondent to be interviewed per cluster

Sno.	Sub County/County	Facility in-charges	Sub County managers	County Managers	Total
1	Keiyo North	15	6	0	21
2	Keiyo South	27	10	0	37
3	Marakwet East	21	8	0	29
4	Marakwet West	33	11	0	44
	Elgeyo Marakwet	0	0	11	11
	Total	**96**	**35**	**11**	**142**

3.6.2 Sample Size Determination

A systematic random sampling was deployed 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 was 13 therefore total of 142 respondents were interviewed.

3.7 Construction and Research Instruments

The study deployed qualitative and quantitative methods of data collection. A semi structured self-administered questionnaire for quantitative data and 2 Focused Group Discussion were conducted with 8 staffs each, this was used to gather qualitative data from the facility in charges and county and subcounty managers and KII for the 3 County members director, CEC and COH.

3.7.1 Pre-Testing

The data collection tools were pretested prior to use. Pretesting centre was selected purposively i.e. Uasin Gishu Sub County hospital to determine tools consistency, flow of questions because Uasin Gishu has the same settings as my study area. Result from the pretesting showed that some questions need to logically flow, corrections were also noted on the qualitative tools that it requires recording and later transcription to get more insight.

3.7.2 Validity

To ensure the validity of the data collection tools, a pre-test was conducted before the actual data collection in Uasin Gishu. The pre-test aimed to identify any ambiguous or leading questions and to assess the clarity and consistency of the items. The pre-test also provided an opportunity to refine the tools based on feedback from the pilot participants.

Additionally, several strategies were employed to ensure the validity of the data collected: **Double-entry**: Data was entered twice to detect and correct any discrepancies or errors in data transcription, **Identification of outliers**: The data was scrutinized for any extreme values that could distort the analysis or lead to incorrect conclusions, **Error detection**: Missing values and omissions were carefully identified and addressed, **Cross-checking questions**: The data collection tools included in-built cross-checking questions to ensure consistency and accuracy across responses, helping to verify the validity of the information provided by respondents.

3.7.3 Reliability

A semi structure self-administered questionnaire was used by all respondents. All the respondents had standard instructions to follow in filling in the questionnaire. Also questions that counter-check each other were formulated. Reliability was checked using Cronbach's alpha and the questionnaire was found to be satisfactory.

3.8 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.

3.9 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 independent variables that were significantly associated with information use at P value of < 0.05 (95% confidence interval), for instance using predictor variables like whether training, access to data, experiences and age in service influence health information use. and summarize the information. Information generated were presented in tables, bar graphs and pie charts. The qualitative data was analysed into themes to identify emerging trends within and between variables and used to interpret, discuss and triangulate the quantitative results.

3.10 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 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.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the results and discussions on health information use for decision making among health personnel in Elgeyo Marakwet County, Kenya. The study was successfully carried out and the information collected was analysed using IBM SPSS version 25 (IBM Corp, 2012) and Microsoft Excel 2013 software. The results are presented in graphs, charts and tables, followed by interpretation of the same. The results are organized in relation to the research objectives and displayed in various categories.

4.2 Response Rate

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. The response rate was deemed adequate as Mugenda and Mugenda (2003) recommends a response rate of 50% or more to be representative of the target population. In addition, 2 FGDs were conducted with 8 and 7 members respectively Sub County and County Health Management Team. Additional information was also obtained through KII for the County director, CEC and COH.

4.3 Characteristics of Participants

The demographic characteristic for the study participants were as shown in table 4.1 below. Majority 62% of the personnel interviewed were male, 49% were between the age 30-39 years and 54% were diploma holders.

Table 4.1: Characteristics of Participants

Variable	Category	Frequency	Percentage
Gender	Male	88	62%
	Female	54	38%
Age of Respondent (Years)	20-29	17	12%
	30-39	70	49%
	40-49	43	30%
	50+	1	9%
Level of Education	Certificate	15	11%
	Diploma	76	54%
	H. Diploma	22	16%
	Degree	27	19%
	Masters	2	1%
Professional Training	RCO	20	14%
	Nurse	69	49%
	HRIO	14	10%
	MLT	8	6%
	Others	31	4%

4.4 Health Information Use for Decision Making

The first study objective was to determine the proportion of health workers who use information for making decisions among health personnel in Elgeyo Marakwet County. The results are discussed below.

4.4.1 Proportion of Health workers using information for Decision Making

The participants were required to indicate whether they had ever used health information generated from their level.

The results reveal that majority, 136 (95.8%) of the in-charges, and county and sub-county managers reported to have used health information.

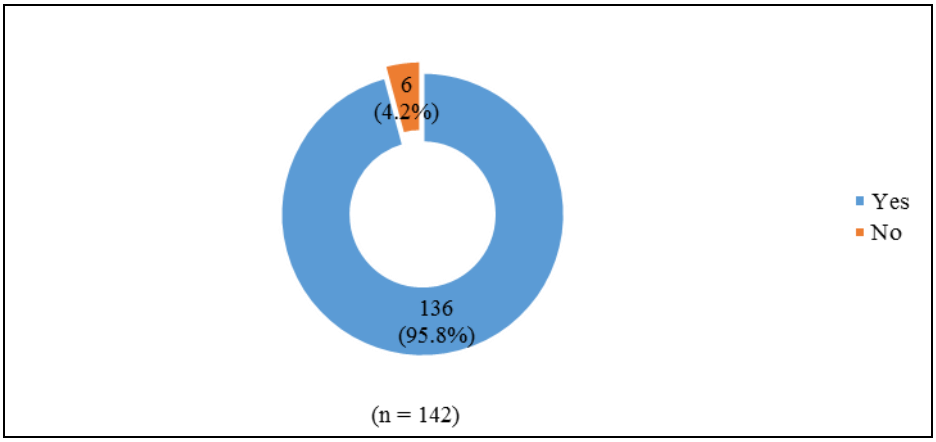


Figure 4.1: Extent of Information Utilization

The in-charges, county and sub-county managers were further required to indicate the frequency with which they had used the information generated for decision making.

The results show that majority, 84 (61.8%) of the in-charges, county and sub-county managers reported to have always used the information generated for decision making, while only 7(7.1%) reported to rarely use health information for decision making.

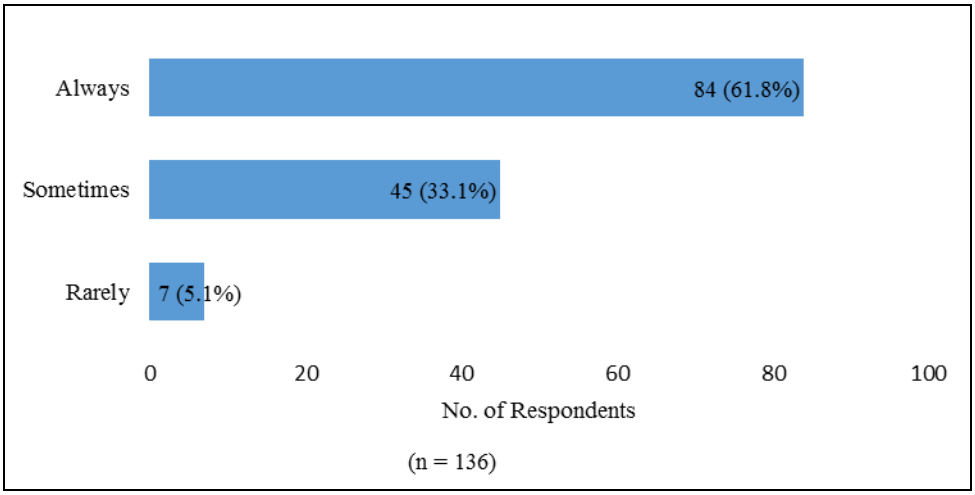


Figure 4.2: Frequency of Information Utilization for Decision Making

The participants were further required to point out the kinds of decisions they had ever made at their level.

The results show that a high proportion, 67(47.2%) of the in-charges, County and Sub-County managers reported to make decisions relating to planning, while 33(23.2%) made decisions relating to forecasting and ordering. Therefore, information use was based on the health personnel who used to make specific decisions 85% and went ahead to do a task like planning, ordering of commodities based on the available information.

Table 4.2: Type of decisions made by in-charges, county and sub county managers

Kind of Decisions	Frequency	Percent (%)
Forecasting and ordering	33	23.2
Resource allocation	8	5.6
Planning	67	47.2
Identifying gaps on staffing	10	7.0
Project population	3	2.1
No response	21	15.0
Total	**142**	**100.0**

4.4.2 Level of Motivation to Use Health Information for Decision Making

The in-charges, county and sub-county managers were asked to indicate their motivation level in using routine information for decision making, using a four-point Likert scale (1 – Low, 2 – Moderate, 3 – High, 4 – Very high).

The results indicate that a high proportion, 57(40.4%) of the in-charges and managers reported high level of motivation, while 33(23.4%) reported very high level of motivation to use routine information for decision making.

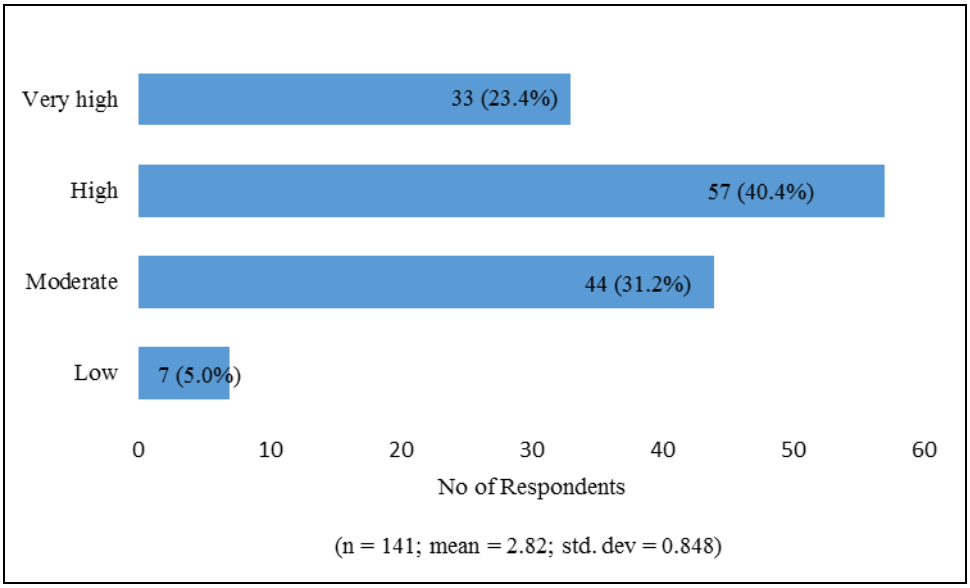


Figure 4.3: Motivation level to use Health Information for Decision making

4.4.3 Areas of Health Information Use

The in-charges and managers indicated their level of agreement or disagreement on the use of health information for various purposes using a four-point Likert scale. Frequencies/percentages of the responses were obtained and standard deviation and mean calculated to rate their views. Every point's width in the scale is 0.75 [(4-1) ÷ 4], thus, a 1.00 to 1.75 mean indicated strongly disagree, 3.25 to 4.00 strongly agree, 2.50 to 3.25 agree, and 1.75 to 2.50 disagree.

Table 4.2: Decisions made by the in-charges, county and sub county managers

	N	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean	Std. Dev
Planning	142	6 (4.2%)	0 (0.0%)	70 (49.3%)	66 (46.5%)	3.38	.70
Programs' monitoring and evaluation	140	4 (2.9%)	1 (0.7%)	73 (52.1%)	62 (44.3%)	3.38	.65
priority areas/ gaps identification	140	3 (2.1%)	5 (3.6%)	75 (53.6%)	57 (40.7%)	3.33	.65
Outbreak detection and prediction	139	5 (3.6%)	7 (5.0%)	79 (56.8%)	48 (34.5%)	3.22	.70
Service performance target examination as a review strategy	141	5 (3.5%)	4 (2.8%)	83 (58.9%)	49 (34.8%)	3.25	.78
Resources shifting/mobilization based on comparison by services	141	6 (4.3%)	8 (5.7%)	92 (65.2%)	35 (24.8%)	3.11	.68
Ensuring of limited resources' effective and efficient use	136	4 (2.9%)	9 (6.6%)	75 (55.1%)	48 (35.3%)	3.23	0.70
Drugs management and medical supply	137	7 (5.1%)	4 (2.9%)	76 (55.5%)	50 (36.5%)	3.23	0.74
Staffing decisions	137	13 (9.5%)	6 (4.4%)	65 (47.4%)	53 (38.7%)	3.15	0.89
Improvement of service delivery	141	8 (5.7%)	2 (1.4%)	66 (46.8%)	65 (46.1%)	3.33	0.77

The results show that the in-charges and managers agreed (mean > 2.5 < 3.25) that health information was used for prediction and detection of outbreaks, staffing decisions, drugs management and medical supply, ensuring of limited resources' effective and efficient use and resources shifting/mobilization based on comparison by services.

4.4.4 Challenges Experienced in Utilizing Health Information for Decision Making

The in-charges, county and sub-county managers were asked to list the specific challenges they experienced with regards to the health information use for decision making.

The results show that a high proportion, 43(30.3%) of the in-charges and managers reported to have experienced challenges in quality of information, while 22 (15.5%) reported to have experienced high cost as a challenge.

Table 4.3: Specific challenges in using Health Information for Decision Making

Specific Challenges	Frequency	Percent (%)
Information quality	43	30.3
No/ Lack of information	9	6.3
Cost	22	15.5
Not able to draw graphs	3	2.1
Unclear information sources	3	2.1
No response	62	43.7
Total	**142**	**100.0**

4.5 Individual Factors Influencing Information Use for Decision Making

The second objective was to identify individual and demographic factors influencing information use for decision making among health personnel in Elgeyo Marakwet County. The individual factors considered in the analysis included cadre of the respondents, gender, age, professional training, level of education and working experience. Percentages and frequencies were calculated to summarize the findings for each individual factor, while cross tabulation and Chi-square test was utilized to determine any significant connection between the individual factors and health information use for decision making. The results are presented as below.

4.5.1 Cadre of the Respondents

The in-charges, county and sub-county managers were asked to indicate their cadre. Figure 4.4 has the results.

The results show that a high proportion, 69(48.6%) of the in-charges and managers were nurses, while only 1(0.7%) was a pharmacist.

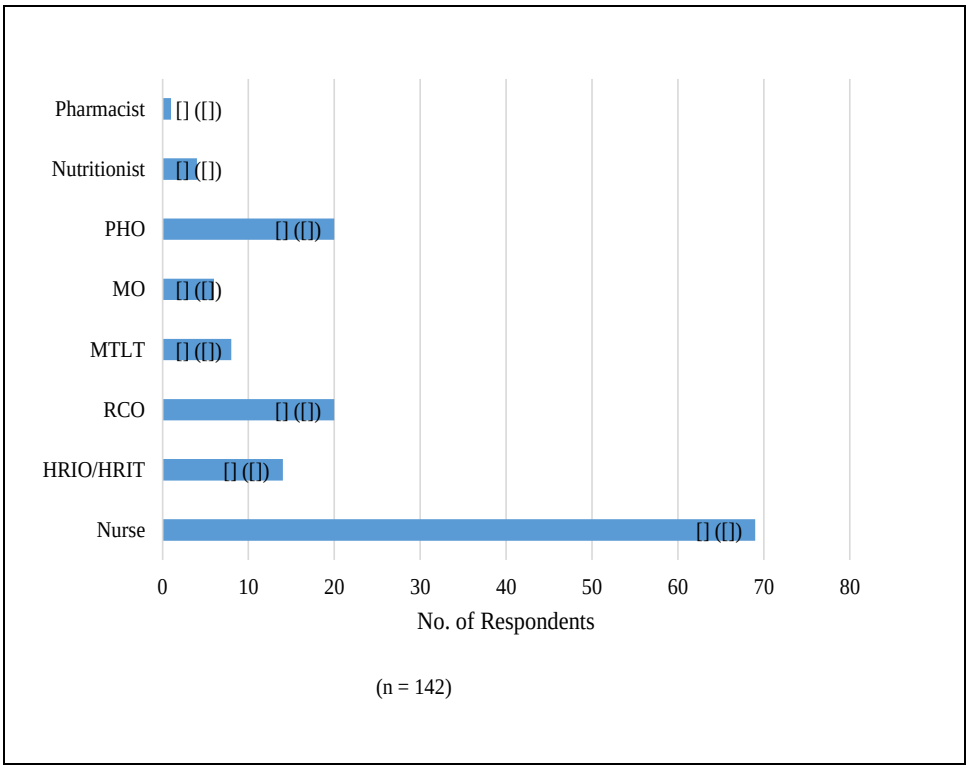


Figure 4.4: Cadre of the Respondents

4.5.2 Gender of the Respondents

The in-charges, county and sub-county managers were asked to indicate their sex. Majority, 88(62.0%) of the in-charges and managers were male, while 54(38.0%) were female.

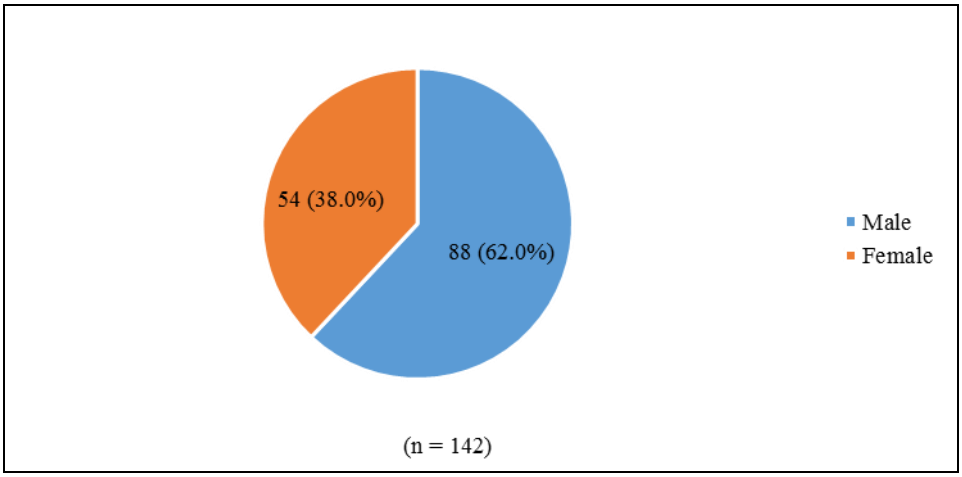


Figure 4.5: Sex of Participants

4.5.3 Age of the Respondents

The in-charges, county and sub-county managers were asked to indicate their age. Majority 70 were between age 30-39, while only 12(8.5%) were aged above 50 years.

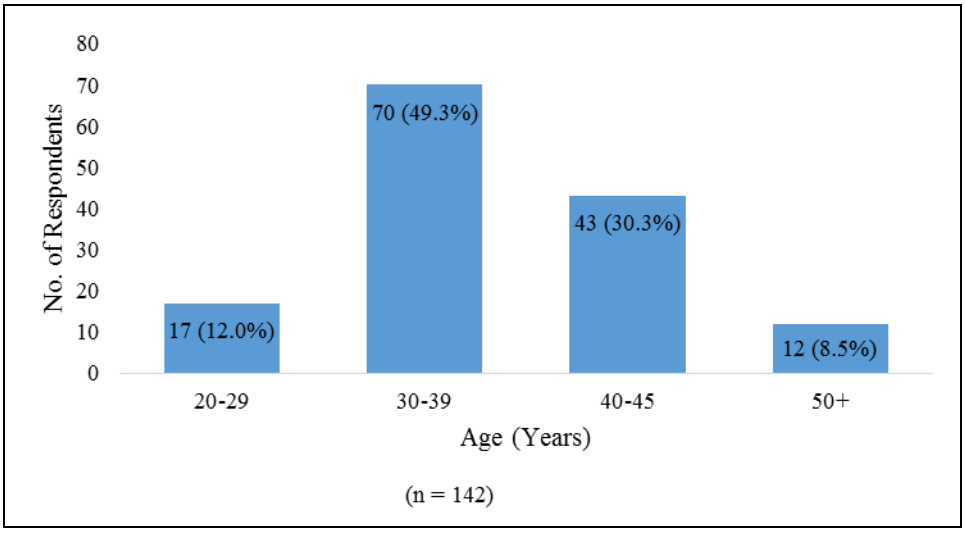


Figure 4.6: Age of the Respondents

4.5.4 Respondents' Professional Training

The in-charges, county and sub-county managers were asked to indicate their professional training. Half, 71(50.0%) were trained in nursing, while only 1(0.7%) was trained in pharmacy.

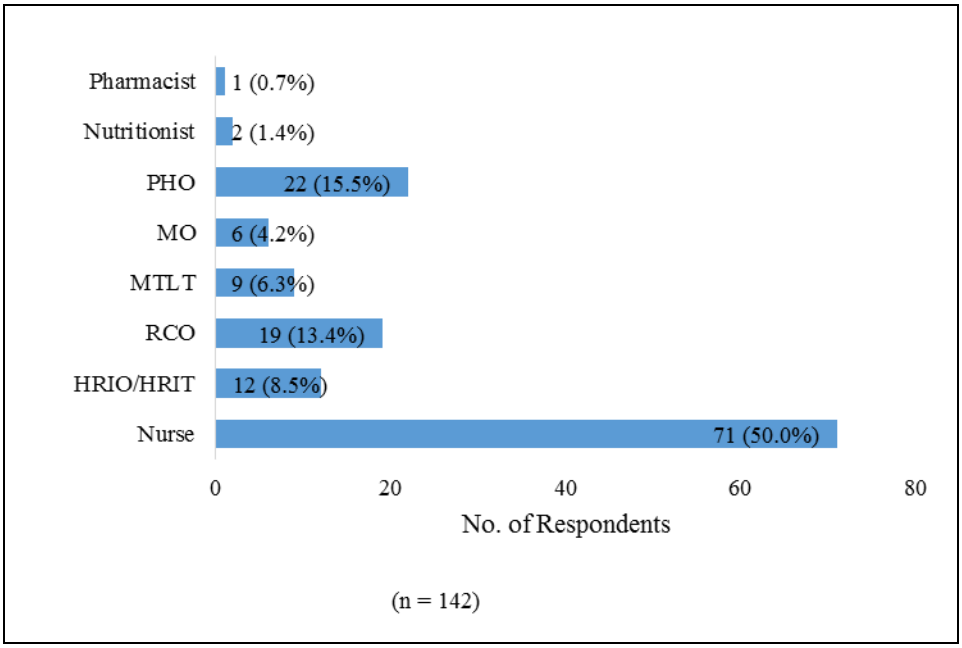


Figure 4.7: Respondents Professional Training

4.5.5 Respondents' Level of Education

The in-charges, and county and sub-county managers were asked to indicate their education level. Majority, 76(53.5%) had Diploma, while only 2(1.4%) were master's degree holders. None of the respondents had attained doctoral degree.

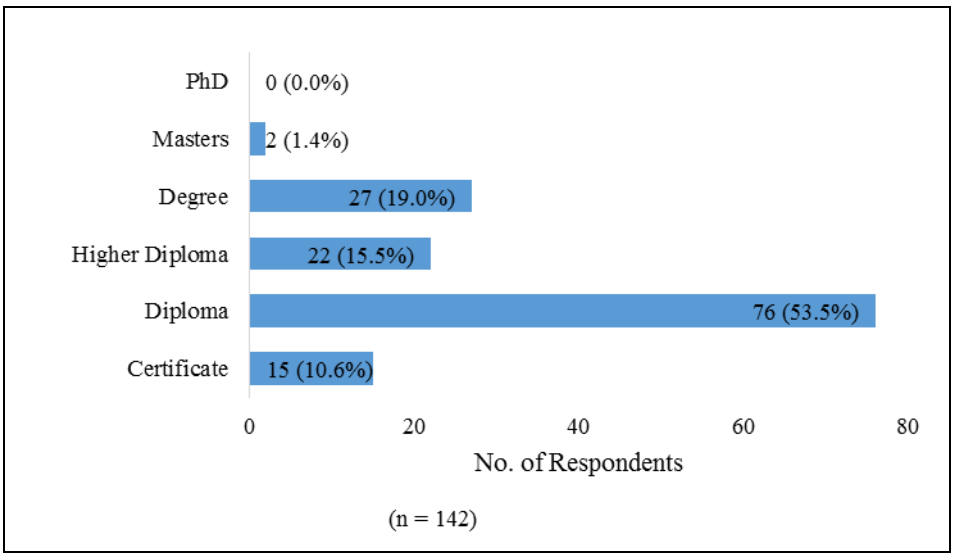


Figure 4.8: Respondents Education Level

4.5.6 Respondents' Working Experience

The in-charges, county and sub-county managers were asked to indicate their work experience. The results shows that a high proportion, 60(42.3%) of them had worked for between 1-5 years, while 18(12.7%) had worked for less than one year and 20(14.1%) had worked for 21 years and above.

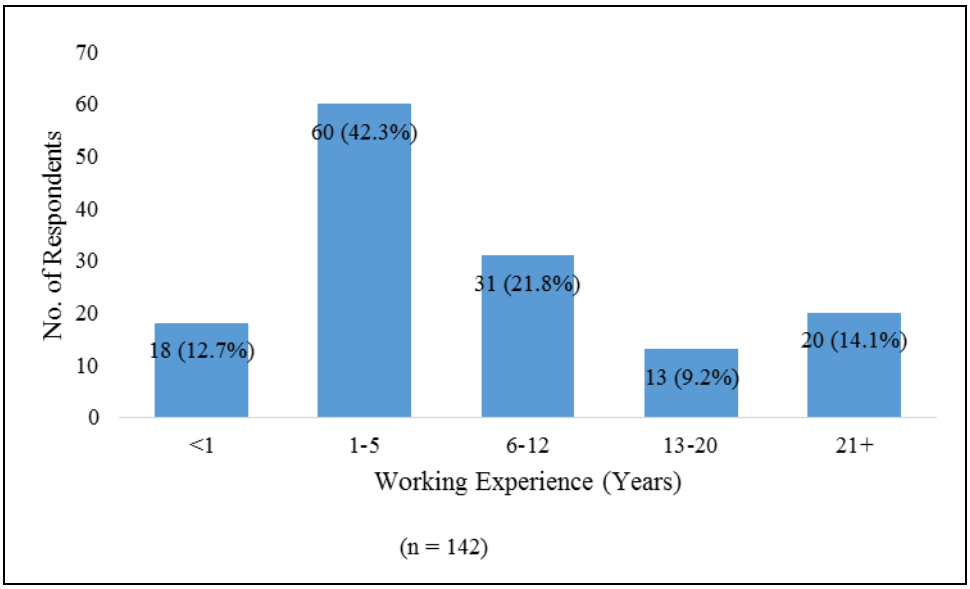


Figure 4.9: Respondents work Experience

4.5.7 Association between Individual Factors and Health Information Use for Decision Making

The researcher performed bivariable analysis using Chi-square test of association at alpha=0.05 significance level in order to identify individual factors influencing health information use in making decision among healthcare personnel in Elgeyo Marakwet County.

The results indicate that four individual factors had significant associations with health information use in making decisions. The factors included cadre of the respondents [X^2(14, n=136) = 30.526, p < 0.05], age of the respondents [X^2(6, n=136) = 31.618, p < 0.05], respondents' professional training [X^2 (14, n=136) = 25.351, p < 0.05], and respondents' years of working experience [X^2(8, n=136) = 16.024, p < 0.05].

Table 4.4: Association between Individual Factors and Health Information Use for Decision Making

Individual Factors		Information use for decision making			Chi-square Test		
		Rarely	Sometimes	Always	X^2	df	Sig.
Cadre	Nurse	1 (2%)	21 (33%)	42 (66%)			
(n = 136)	HRIO/HRIT	1 (7%)	5 (36%)	8 (57%)			
	RCO	0 (0%)	6 (30%)	14 (70%)			
	MTLT	0 (0%)	2 (25%)	6 (75%)	30.526[a]	14	0.006
	MO	0 (0%)	2 (33%)	4 (67%)			
	PHO	5 (26%)	5 (26%)	9 (47%)			
	Nutritionist	0 (0%)	4 (100%)	0 (0%)			
	Pharmacist	0 (0%)	0 (0%)	1 (100%)			
Sex	Male	5 (6%)	28 (33%)	52 (61%)	.252[a]	2	0.881
(n = 136)	Female	2 (4%)	17 (33%)	32 (63%)			
Age	20-29	1 (6%)	9 (53%)	7 (41%)			
(n = 136)	30-39	0 (0%)	27 (39%)	42 (61%)	31.618[a]	6	0
	40-45	2 (5%)	9 (24%)	27 (71%)			
	50+	4 (33%)	0 (0%)	8 (67%)			
Professional training	Nurse	1 (2%)	21 (32%)	44 (67%)			
(n = 136)	HRIO/HRIT	1 (8%)	5 (42%)	6 (50%)			
	RCO	0 (0%)	5 (26%)	14 (74%)			
	MTLT	0 (0%)	3 (33%)	6 (67%)	25.351[a]	14	0.031
	MO	0 (0%)	2 (33%)	4 (67%)			
	PHO	5 (24%)	7 (33%)	9 (43%)			
	Nutritionist	0 (0%)	2 (100%)	0 (0%)			
	Pharmacist	0 (0%)	0 (0%)	1 (100%)			
Education level	Certificate	2 (13%)	4 (27%)	9 (60%)			
(n = 136)	Diploma	3 (4%)	24 (33%)	45 (63%)			
	Higher Diploma	1 (5%)	5 (25%)	14 (70%)	7.214[a]	8	0.514
	Degree	1 (4%)	10 (37%)	16 (59%)			
	Masters	0 (0%)	2 (100%)	0 (0%)			
	PhD	0 (0%)	0 (0%)	0 (0%)			
Working experience	<1	1 (6%)	9 (50%)	8 (44%)			
(n = 136)	01-May	2 (4%)	20 (35%)	35 (61%)			
	06-Dec	2 (7%)	13 (46%)	13 (46%)	16.024[a]	8	0.042
	13-20	0 (0%)	2 (15%)	11 (85%)			
	21+	2 (10%)	1 (5%)	17 (85%)			

During the FGD, one of the health workers pointed out that, "……. *more people are seeing information as a responsibility in their day-to-day jobs, and not just the responsibility of health records officers like ancient days". FGD-07*

4.6 Technical Factors Influencing Information Use for Decision Making

Objective three of the study 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. Percentages and frequencies were calculated to summarize the findings for each technical factor, while cross tabulation and Chi-square test helped in determining any significant association between the technical factors and health information use for decision making. Findings are presented in the following sub-sections.

4.6.1 Training in Information Management

The in-charges, county and sub-county managers were required to indicate if they had attended any training on 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.

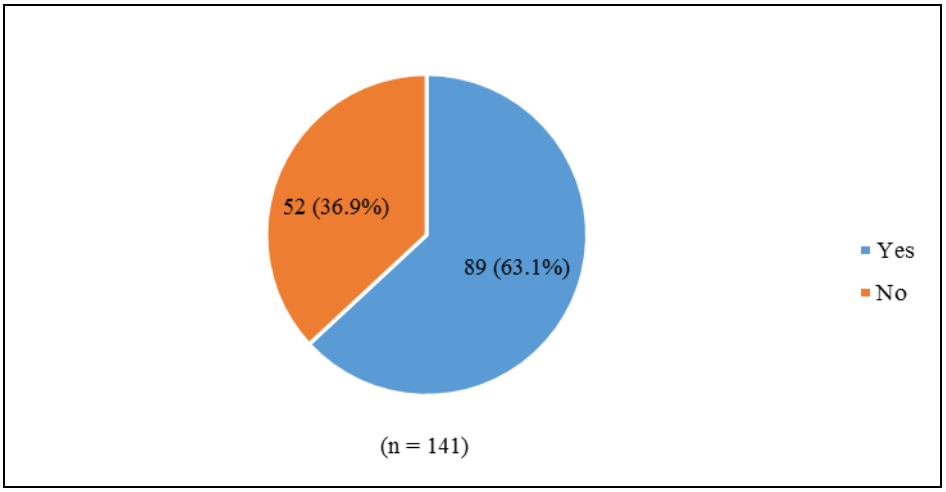


Figure 4.10: Training on Information Management

The results indicate that a high proportion 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, this was amplified in the following statement, *"....most cadres are not trained in-depth on data issues in KMTC apart from HRIO's .....we learn this data things on the job, therefore not very good data management… no induction… FGD-3.*

Table 4.5: 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**

4.6.2 Data Analysis

The in-charges, county and sub-county managers were asked to indicate whether the information collected is analysed.

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.

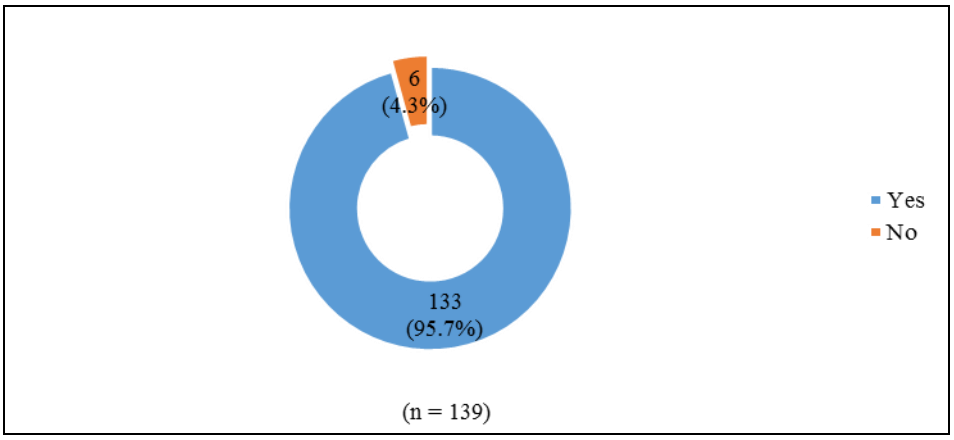


Figure 4.11: Data Analysis

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, a report form one health worker said, *"....Attitude is there with technology*…..and *fear of technology*.. *FGD 2*" and it was also indicated from one key informant that,*"…….trainings that are always conducted to staff on basic data analysis .....mainly through the support of donors…" KII-02*

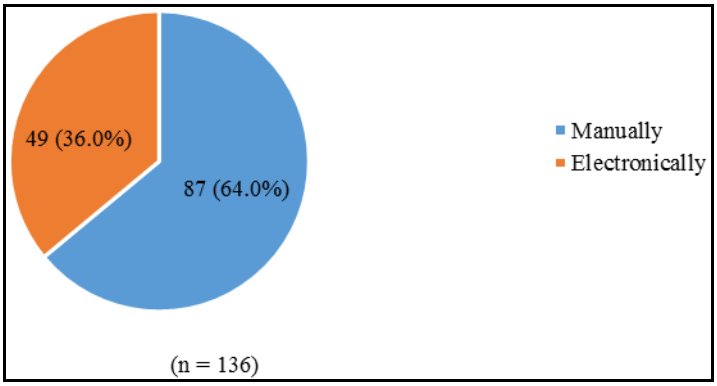


Figure 4.12: Data Analysis Methods

4.6.3 Sources of Health Information

The in-charges, county and sub-county managers stated the main source of health information at their level.

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, *"……. confirmed that skills on electronic information analysis was to easy but staff fear computers" FGD 5*

Table 4.6: 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**

The in-charges, county and sub-county managers were also asked to indicate who was responsible in the 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 as confirmed by one key informant *"....this is the responsibility of HRIOs but we can't afford …to employ as many as the facilities in the county…." KII 03*

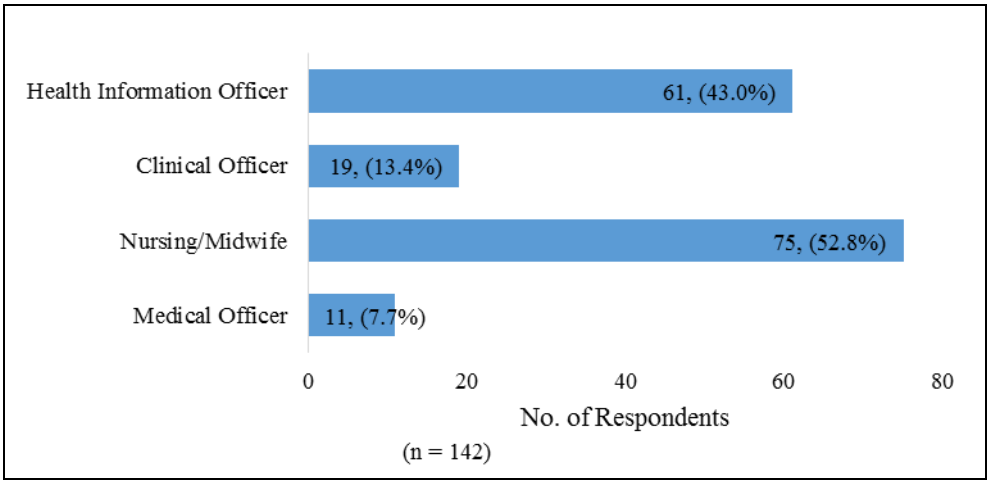


Figure 4.13: Responsibility in Preparation of Monthly Reports

4.6.4 Forums for Information Review

The in-charges, county and sub-county managers were asked to indicate whether there were forums to share health information.

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.

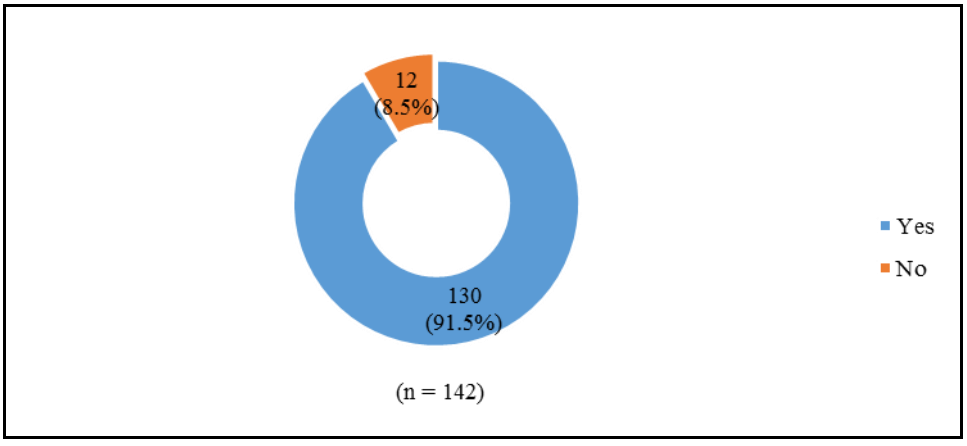


Figure 4.14: Availability of forums to share health information

The in-charges, county and sub-county managers were also required to state the frequency of the 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.

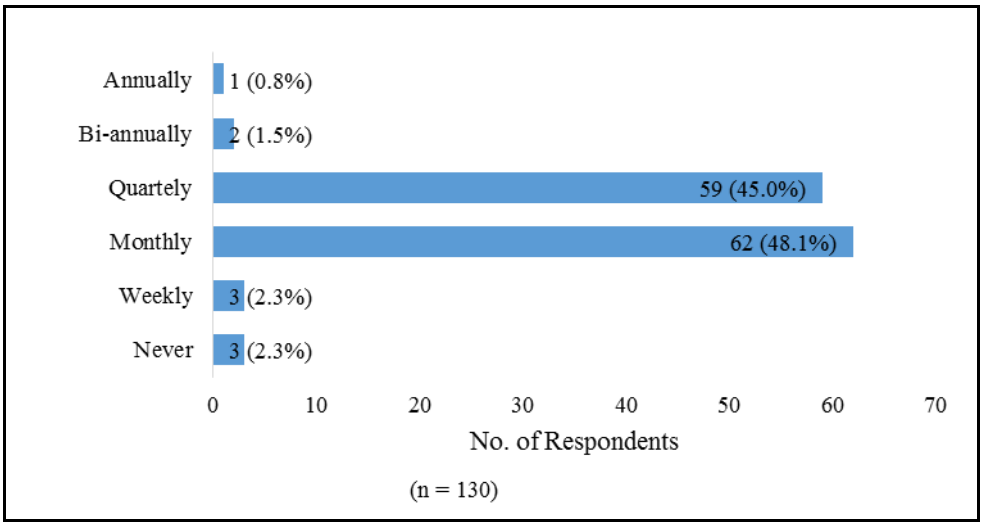


Figure 4.15: Frequency of meetings for review of health Information

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 4.7: 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
Health product and technologies	7	5.4
Health information system	25	19.2
Health infrastructure	1	0.8
Health workforce	6	4.6

4.6.5 Quality of Data

The in-charges, and county and sub-county managers were required to rate the quality of health information from their source using a four-point Likert scale (1 – Very good, 2 – Good, 3 – Fair, 4 – Poor). Health information quality was rated using timeliness, accuracy, relevance, reliability, completeness and 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 4.8: 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

4.6.6 Competence in Health Information Management

The in-charges, and county and sub-county managers were required to rate their competence in health information management using a four-point Likert scale. Competence in information management was rated in terms of ability to check information accuracy, calculate percentages, plot information, explain findings and their implications, identify gaps and set targets, and make various decisions and provide feedback. 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 poor, 1.75 to 2.50 fair, 2.50 to 3.25 good, and 3.25 to 4.00 excellent.

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 4.9: 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

4.6.7 Accessibility of Information

The in-charges, county and sub-county managers were asked to indicate whether it was easy for them to access routine health information whenever they needed it.

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.

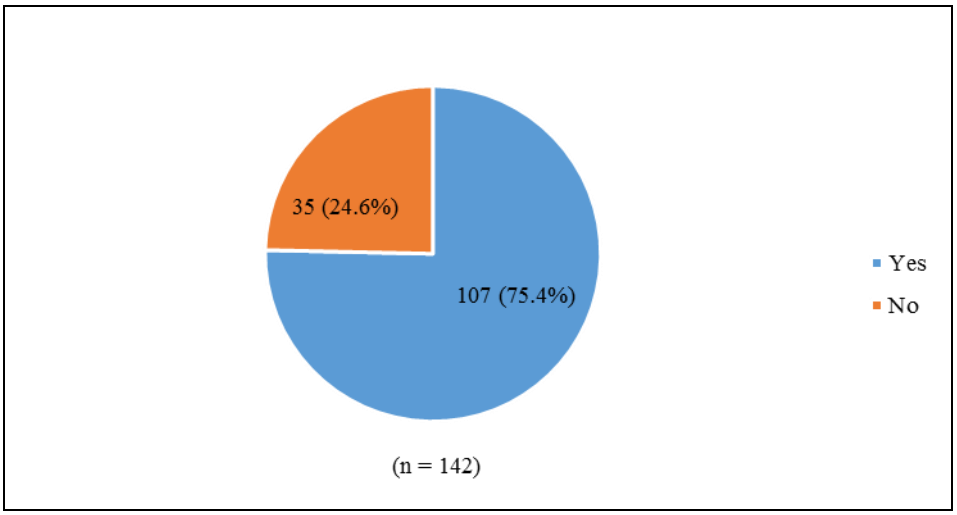


Figure 4.16: Ease in Accessing Health Information

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

The researcher performed bivariable analysis using Chi-square test of association at a significance level of alpha=0.05 in order to identify technical factors influencing health information utilization in making decisions among healthcare personnel in Elgeyo Marakwet County.

The 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 [$X^2(2, n=134) = 22.522, p < 0.05$], Four health workers who participated during the FGD pointed out that: *"...some data are not accessible like in DHIS... FGD-2 others especially before DHIS we can't access that data." FGD-5 "...some data are under lock and key thus not accessible to all staffs ...no rights..." FGD-8 while another participant indicated that "...some data are not complete thus not reliable for use..." FGD -3.*

Table 4.10: 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	0.043
	No	5 (10%)	20 (40%)	25 (50%)			
Information analysis done (n = 133)	Yes	7 (6%)	41 (32%)	79 (62%)	3.117[a]	2	0.21
	No	0 (0%)	4 (67%)	2 (33%)			
Information analysis method (n = 130)	Manually	7 (8%)	24 (29%)	53 (63%)	4.883[a]	2	0.087
	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	0.522
	No	0 (0%)	4 (50%)	5 (50%)			
Quality of Information (n = 135)	Very good	0 (0%)	21 (47%)	37 (45%)	12.779[a]	6	0.047
	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	0.468
	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	0
	No	6 (18%)	16 (49%)	11 (33%)			

4.7 Organizational Factors Influencing Information Use for Decision Making

Objective was to identify organizational factors that influence information use for decision making among health personnel in Elgeyo Marakwet County. The organizational factors considered in the analysis included display of health information on key performance indicators, management support, administrative meetings, and record keeping. Percentages and frequencies were calculated to summarize the findings for each organizational factor, while cross tabulation and Chi-square test helped to determine any significant connection between the organizational factors and health information use for decision making. The results are presented below:

4.7.1 Basis for Health Systems Decision Making

The in-charges, county and sub-county managers were asked to indicate their opinion on what formed the basis for health system decisions making using a five-point Likert scale (1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly Agree). Each point's width in the scale 0.8 [(5-1) ÷ 5], hence, a mean of 1.00 to 1.8 depicted strongly disagree, 1.8 to 2.6 disagree, 2.6 to 3.4 neutral, 3.4 to 4.2 agree, and 4.2 to 5 strongly agree.

The results show that the in-charges and managers were in agreement (mean > 3.4 < 4.2) that health system decisions' basis was on cost considerations, facts/evidence, health needs, and strategic health objectives. However, the respondents neither agreed nor disagreed (mean > 2.6 < 3.4) whether health systems decisions were based on supervisors' directives, personal liking, political interference and international NGOs/Donors.

Table 4.11: Basis for Health System Decision

Basis for decision	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev.
Personal liking	133	37 (27.8%)	22 (16.5%)	5 (3.8%)	57 (42.9%)	12 (9.0%)	2.89	1.44
Superiors directive	135	20 (14.8%)	19 (14.1%)	23 (17.0%)	56 (41.5%)	17 (12.6%)	3.23	1.27
Evidence/Facts	140	9 (6.4%)	5 (3.6%)	12 (8.6%)	78 (55.7%)	36 (25.7%)	3.91	1.03
Political interference	136	45 (33.1%)	18 (13.2%)	27 (19.9%)	36 (26.5%)	10 (7.4%)	2.62	1.37
Strategic health objective	135	1 (0.7%)	4 (3.0%)	13 (9.6%)	82 (60.7%)	35 (25.9%)	4.08	.73
Health needs	136	8 (5.9%)	2 (1.5%)	7 (5.1%)	82 (60.3%)	37 (27.2%)	4.01	.96
Considering Cost	138	19 (13.8%)	9 (6.5%)	21 (15.2%)	69 (50.0%)	20 (14.5%)	3.45	1.23
INGOs/Donor	135	26 (19.3%)	22 (16.3%)	20 (14.8%)	59 (43.7%)	8 (5.9%)	3.01	1.27

4.7.2 Display of Health Information on Key Performance Indicators

The in-charges, county and sub-county managers were asked to indicate how often their departments displayed information on key performance indicators.

The results show that a high proportion, 56(39.7%) of the in-charges and managers reported that information on key performance indicators was always displayed by their departments, while 6(4.3%) indicated that their departments never displayed information on key performance indicators.

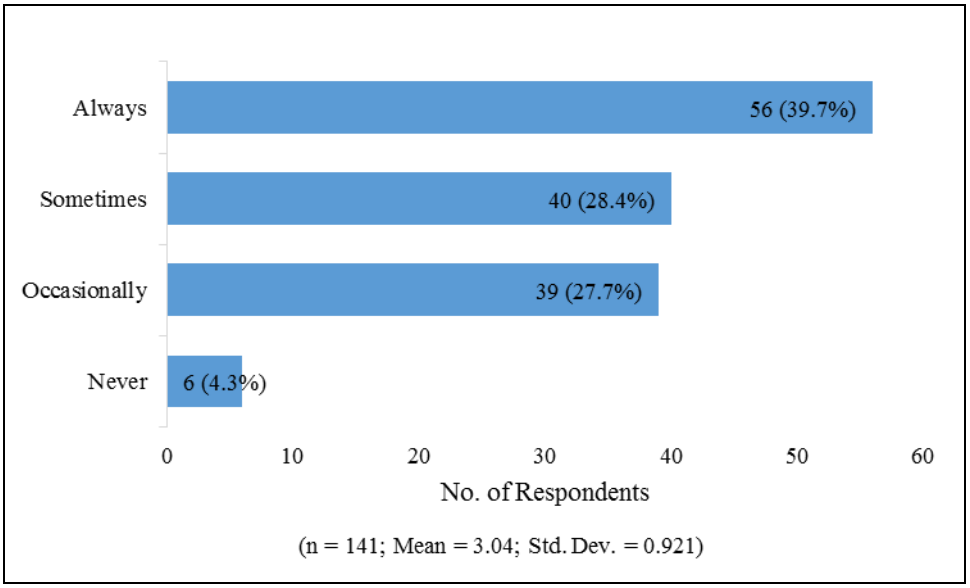


Figure 4.17: Display of Information on Key performance indicators

4.7.3 Support from Management

The in-charges, county and sub-county managers were required to state level of support they received from management on matters pertaining to information/information management. The results show that a high proportion, 60(42.9%) of the in-charges and managers reported that the level of support they received from management on matters pertaining to information management was high, while 6(4.3%) indicated that the level of support was very low.

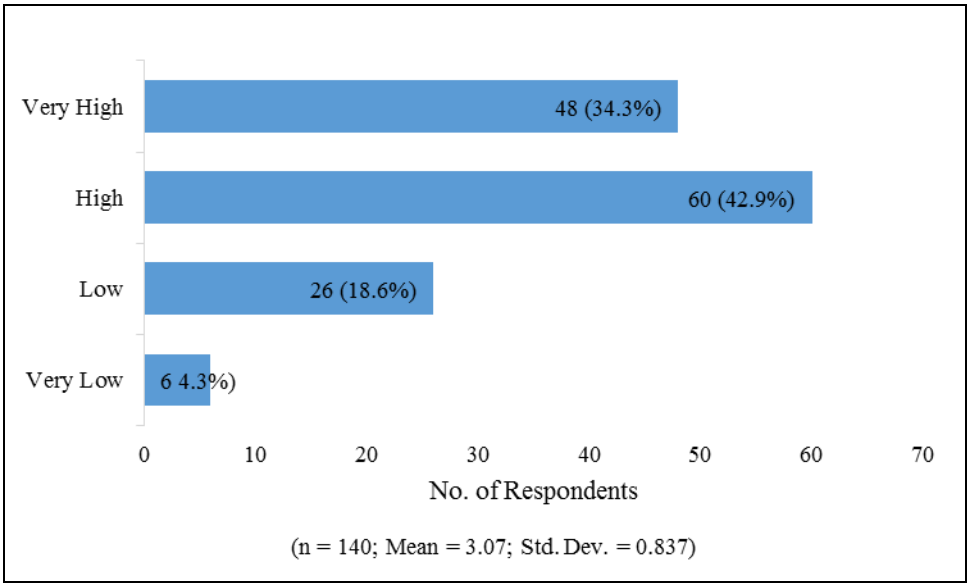


Figure 4.18: Management Support on Information Management

4.7.4 Meetings to Discuss/Review Managerial/Administrative Matters

The in-charges, county and sub-county managers were asked to indicate how frequent they held departmental meetings to discuss or review managerial/administrative matters.

The results show that a high proportion, 61(43.6%) of the in-charges and managers reported to hold departmental meetings once every month to discuss/review administrative matters, while 4(2.9%) indicated that they did not hold any departmental meeting. The respondents who reported to hold departmental meetings were asked to indicate whether an official record of schedule meetings was maintained.

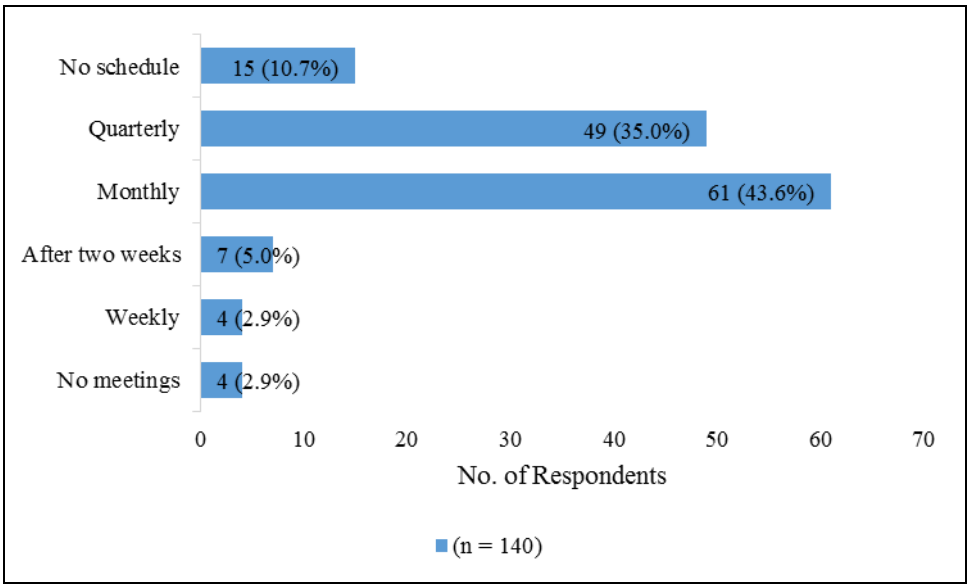


Figure 4.19: Frequency of Departmental Meetings

The results show that majority, 116 (85.3%) of the in-charges and managers confirmed maintenance of official schedule meetings record, while 20 (14.7%) indicated that there was no maintenance of an official record of the meetings, One of the participants during the KII pointed out that,*"……if you ask of evidence of meetings conducted….many staff would take time to produce minutes of meetings or activities done in their facility….. poor record keeping…."KII-01*

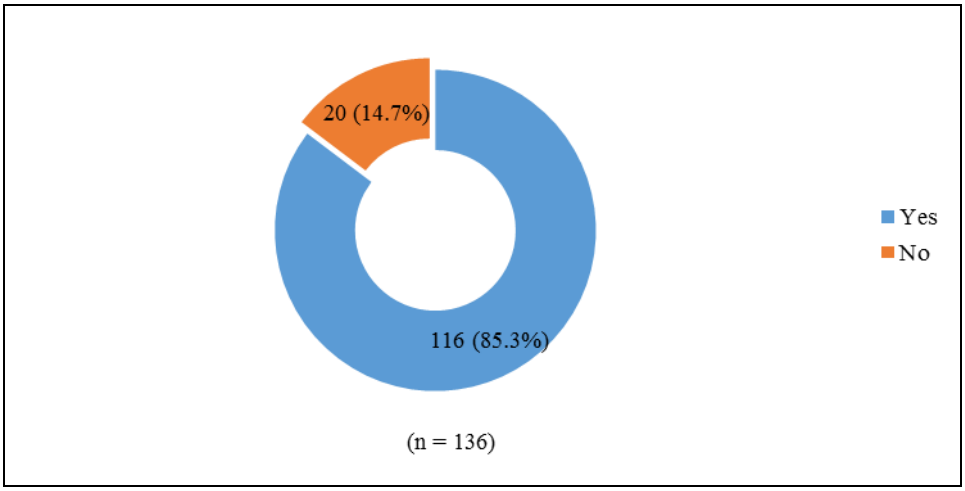


Figure 4.20: Schedules of meetings maintained

4.7.5 Association between Organizational Factors and Health Information Use for Decision Making

The researcher performed bivariable analysis using Chi-square test of association at an alpha=0.05 significance level in order to identify organizational factors influencing health information use in making decisions among healthcare personnel in Elgeyo Marakwet County. Table 4.12 presents the results.

The results indicate that two organizational factors had significant associations with health information utilization in decision making. The factors included display of information on key performance indicators [$X^2(6, n=135) = 13.536, p < 0.05$], and support from management on matters pertaining to information management [$X^2(6, n=134) = 14.246, p < 0.05$].

Table 4.12: Association between Organizational Factors and Health Information use for Decision Making

Organizational Factors		Information use for decision making			Chi-square Test		
		Rarely	Sometimes	Always	X^2	df	Sig.
Display of information on KPI	Never	1 (17%)	2 (33%)	3 (50%)			
(n = 135)	Occasionally	3 (8%)	18 (47%)	17 (45%)	13.536[a]	6	0.035
	Sometimes	3 (8%)	13 (34%)	22 (58%)			
	Always	0 (0%)	12 (23%)	41 (77%)			
Support from management on information mgt	Very Low	0 (0%)	2 (50%)	2 (50%)			
(n = 134)	Low	1 (4%)	10 (39%)	15 (58%)	14.246[a]	6	0.027
	High	5 (9%)	25 (42%)	29 (49%)			
	Very High	0 (0%)	8 (18%)	37 (82%)			
Frequency of meetings to discuss administrative matters	No meetings	0 (0%)	1 (25%)	3 (75%)			
(n = 134)	Weekly	0 (0%)	2 (50%)	2 (50%)			
	After two weeks	1 (14%)	3 (43%)	3 (43%)	17.452[a]	10	0.065
	Monthly	0 (0%)	20 (34%)	39 (66%)			
	Quarterly	3 (7%)	10 (22%)	32 (71%)			
	No schedule	2 (13%)	9 (60%)	4 (27%)			
Maintenance of official records of meetings	Yes	4 (4%)	36 (33%)	70 (64%)	2.261[a]	2	0.323
(n = 130)	No	2 (10%)	8 (40%)	10 (50%)			

CHAPTER FIVE: DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions drawn from the results of the study generated by both quantitative and qualitative research instruments. In addition, recommendations, in terms of implications of these findings are presented and areas for further research and policy are suggested.

5.2 Discussions

The study identifies several critical factors affecting the use of health information for decision-making in healthcare settings.

5.2.1 Proportion of Health Information Use for Decision Making

The high proportion of health personnel (95.8%) utilizing health information suggests that there is substantial recognition of its value in decision-making. This may be attributed to organizational mandates or an increased awareness among health workers of how data-driven decisions can enhance outcomes in healthcare. The frequent use of health information in areas such as planning (47.2%) and forecasting (23.2%) further reinforces that health workers rely on data to shape service delivery and resource allocation.

This result aligns with global trends where data-driven healthcare has been shown to improve efficiency, responsiveness, and overall service quality. It also underscores a broader trend in health system strengthening, which advocates for information systems that empower healthcare managers to make informed decisions. However, the study identified several challenges in the use of health information for decision-making. These include:

- Poor Information Quality: Inaccurate or incomplete data reduces the utility of health information.
- Lack of Resources: Insufficient reporting tools, materials, registers, and inadequate storage and backup systems hinder effective data management.

- Skills Gaps: Limited analytical skills among some staff reduce the depth and accuracy of data interpretation.
- Documentation and Accessibility Issues: Challenges in proper documentation and digitization restrict efficient data handling.

These findings align with WHO's 2020 report, which noted that less than 10% of health data is used in decision-making due to skill deficiencies in information gathering, analysis, and DHIS (District Health Information Software) access issues. The primary challenges are data quality (30.3%) and costs (15.5%) highlight obstacles that could undermine the effective use of health information. Poor information quality can result in mistrust or underutilization of data, potentially causing decision-makers to rely on anecdotal evidence or intuition instead of robust data. Additionally, costs associated with accessing or managing data can deter health workers from fully embracing health information systems.

MOH Ethiopia (2016) also confirm that poor data quality obstructs stakeholders from using health information effectively. Further obstacles identified include high workloads, understaffing, limited funding for training, and factors such as negligence and stress among healthcare staff. Addressing these challenges requires investment in improving data quality through better training for data collection and management, as well as implementing cost-effective solutions for accessing and processing data. This may include leveraging digital health technologies that streamline data collection and reporting. These strategies can enhance the integration of health information into daily decision-making, thereby improving resource allocation, planning, and service delivery across the health sector in Elgeyo Marakwet County.

5.2.2 Individual and Demographic factors

This including cadre, gender, age, professional training, and work experience, show that personnel who have been in service longer and those with specific health training backgrounds (e.g., nurses) are more likely to utilize information effectively. The finding that cadre significantly influences health information use highlights the role-specific

nature of data application in healthcare settings. With nurses forming the largest cadre (48.6%) and showing high information use, it's evident that healthcare decisions in this context are often guided by data-driven insights specific to nursing and clinical care. Roles with direct patient interaction and clinical responsibilities, such as nurses, Registered Clinical Officers (RCOs), and Medical Laboratory Technologists (MLTs), are more likely to use health information regularly. This may be due to the clinical relevance of timely data in diagnosing, planning treatments, and managing resources effectively. This suggests a strong link between direct patient care roles and the demand for data in guiding these day-to-day decisions, underlining the importance of tailoring health information tools to the needs of specific cadres to enhance utility and uptake.

While the study observed a higher number of male respondents (62%), gender did not significantly influence information use for decision-making. This lack of gender disparity suggests an equitable approach to data-driven decision-making across genders, which might reflect equal training, support, and expectations within the county's health system. The balanced information use between male and female health workers is encouraging, as it suggests that decision-making responsibilities and capacities are not limited by gender. This can serve as a foundation for promoting gender-inclusive policies and practices in data utilization training and access to decision-making roles.

Age showed a significant association with information use, particularly among those aged 30-49, who reported the highest frequency of data use in decision-making. This group likely combines sufficient experience with openness to new practices, making them ideal users of health information. Younger health workers (20–29 years), who may still be building experience, and older workers (50+ years), who may rely more on traditional methods, reported less frequent data use, this concur with a study by Mboro 2017 that say that information culture should be promoted for all ages of employees.

This pattern highlights a need to ensure that younger workers are well-trained in data applications early in their careers, while older workers may benefit from refresher training that emphasizes the importance and ease of integrating data into decision-

making. For healthcare systems, this insight points to age-sensitive training that can enhance engagement and ensure consistent information use across age groups.

Professional training significantly impacts health information use, with nurses, RCOs, and MLTs reporting the highest frequency of information use. This finding underscores that specific training backgrounds correlate with greater engagement in data-driven practices, particularly among cadres who rely heavily on clinical data for service delivery and decision-making.

In contrast, variability in data use among other professional categories, such as Public Health Officers (PHOs) and nutritionists, may indicate differing levels of emphasis on data during their training or differences in their operational roles. For instance, these roles may not interact with data as directly or may require specialized training to make data applicable to their specific functions. Addressing these variations through targeted, role-specific training could enhance uniformity in data use across different professional backgrounds.

The study finds a significant relationship between work experience and health information use. Health workers with moderate experience (1-5 years) through to more seasoned workers (21+ years) show greater use of health information, suggesting that familiarity with health information systems and experience with decision-making enhance data use.

However, individuals with limited experience (<1 year) may lack the confidence or understanding needed to apply health information effectively. Providing additional training and mentorship for early-career health workers could therefore foster early adoption of data-driven practices. Moreover, creating a supportive environment for those with extensive experience could help reinforce consistent data use, preventing reliance on non-data methods due to habituation with older practices.

5.2.3 Technical factors

Majority of respondents (63.1%) reported having received training in information management. The training topics most frequently covered were information generation/extraction (39.3%), followed by DHIS (11.2%), and data review (7.9%). However, there was a notable gap in training on areas such as annual work plans and information presentation. The Chi-square test revealed that training in information management significantly influenced health information use for decision-making. Those who had received training were more likely to use information regularly (68%) compared to those without training (50%) 【$X^2(2, n=135) = 6.312, p < 0.05$】.

The study found that most managers (95.7%) confirmed the data collected was analysed, with a majority (64%) relying on manual methods of data analysis. Only 36% used electronic methods, despite the obvious potential for more efficient, accurate, and timely analysis with digital tools. The reliance on manual data analysis despite the availability of electronic methods points to a possible barrier related to attitudes toward technology, as indicated in the FGDs. This suggests a need to further invest in digital training and change management initiatives to reduce the fear or reluctance toward electronic data tools. Transitioning to more efficient and scalable electronic methods could significantly enhance the speed and accuracy of decision-making processes.

The quality of health information was rated positively, with timeliness rated as "very good" (mean = 1.68) and other components like accuracy, reliability, and relevance rated as "good" (mean range = 1.75 - 2.50). Chi-square analysis revealed that information quality had a significant association with its use in decision-making. Those who rated information quality highly were more likely to use health data regularly (45% of those who rated the information as "very good" reported frequent use for decision-making) 【$X^2(6, n=135) = 12.779, p < 0.05$】. This concur with a study by WHO(2016), quality information will promote its use in service delivery by all.

A majority of respondents (75.4%) indicated that they found it easy to access routine health information whenever needed. Chi-square analysis confirmed a strong association

between ease of access and frequent use of health information for decision-making 【$X^2(2, n=134) = 22.522, p < 0.05$】. The ease of accessing health information plays a crucial role in fostering an environment where data-driven decision-making is the norm. This finding suggests that infrastructure improvements (e.g., digitization of records, better data management systems) that ensure timely access to data can have a significant impact on health personnel's ability to make informed decisions quickly. Improving data accessibility through centralized databases or cloud-based platforms can streamline the decision-making process, particularly in remote areas.

Forums for information review were widely available (91.5%), and the frequency of these forums varied, with 48.1% of respondents indicating monthly meetings, while 45% reported quarterly meetings. These forums primarily discussed service delivery (38.5%) and health information systems (19.2%). Regular review forums are an effective mechanism for enhancing data use among healthcare workers, providing a space for feedback, clarification, and collective decision-making. Ensuring these forums are consistently held and that the discussions are relevant to current health challenges is key to improving health information application at all levels.

5.2.4 Organizational factors

Health system decisions were predominantly based on evidence/facts (mean = 3.91) and strategic health objectives (mean = 4.08), with a strong agreement from respondents that health decisions should be grounded in factual information and aligned with strategic goals. Similarly, health needs (mean = 4.01) were also considered a key factor. On the other hand, decisions based on personal liking, superiors' directives, political interference, and international NGOs/donors were rated more neutrally (mean < 3.4).

The results indicate that health managers and in-charges prioritize objective criteria like health needs, facts, and strategic objectives when making decisions, which is a positive sign for evidence-based decision-making. However, factors like political interference and personal preferences still play a role in some decisions, which could undermine the effectiveness of health interventions. The influence of subjective factors, such as personal

liking or political interference, highlights the need for improving transparency and accountability in decision-making processes to ensure they are based on reliable and objective data.

A significant proportion of respondents (56 or 39.7%) reported that their departments always displayed information on key performance indicators. However, 4.3% reported that KPIs were never displayed in their departments. The frequent display of KPIs is a positive sign for fostering transparency and helping personnel stay informed about the performance of various health programs. KPIs are essential for monitoring progress and identifying areas of improvement. The fact that some departments do not display KPIs regularly may indicate gaps in communication or management, which could hinder the timely use of performance data for decision-making. Ensuring consistent visibility of KPIs across all departments could improve the effectiveness of decision-making and promote a more results-driven culture.

A majority of respondents (42.9%) reported that the support they received from management regarding information management was high, while 4.3% indicated very low support. The strong support from management in information management is a critical factor in facilitating the effective use of data for decision-making. When managers and in-charges receive the necessary resources and encouragement from leadership, they are more likely to prioritize data-driven decisions. However, the presence of very low support in some cases may point to inconsistencies in management commitment to information systems. Strengthening support and ensuring all levels of management are equally invested in data use could improve decision-making across the health system.

A large portion of respondents (43.6%) reported holding monthly meetings to discuss administrative matters, while 2.9% indicated that no departmental meetings were held. Most respondents (85.3%) confirmed that official records of meeting schedules were maintained. Regular meetings are essential for keeping everyone in the loop regarding administrative and managerial issues. These forums provide opportunities to review

performance, identify issues, and discuss corrective actions. The maintenance of official meeting records further ensures accountability and helps track the decisions made during these meetings. However, the fact that some departments do not hold regular meetings may indicate a lack of communication or organizational challenges that could impair decision-making. Encouraging consistent meeting schedules and the use of meeting records can improve organizational coherence and decision-making efficiency.

The results revealed that there was a significant association between the frequency of KPI displays and the use of health information for decision-making ($X2(6, n=135) = 13.536$, $p < 0.05$). The more frequently KPIs were displayed, the more likely health personnel were to use information for decision-making. A significant relationship was also found between the level of support from management and information use for decision-making ($X2(6, n=134) = 14.246$, $p < 0.05$). Higher levels of support from management were associated with more frequent use of health information for decision-making.

These findings underscore the importance of organizational factors like the visibility of performance data and management support in encouraging the use of health information for decision-making. It suggests that increasing the frequency of KPI displays and enhancing management support could directly improve how health personnel utilize data to make informed decisions making point to the importance of fostering an organizational culture that prioritizes transparency, accountability, and support for data-driven decision-making. It concurs with Mugo et al., (2021). To enhance the use of health information in decision-making, the county should ensure consistent displays of KPIs across all departments, strengthen management support for information management, and encourage regular meetings to discuss performance and review data. Addressing these organizational factors will likely result in more effective and evidence-based decisions, ultimately leading to better health outcomes.

Statistically significant association between age of respondent, working experience and use of information and also the technical factors that are significant are training on data management, quality of data and ease accessing of information was contributing to

information use. Lastly the two factors are display of information on key performance indicators and support from management on matters pertaining to data management were vital for information to be used by health personnel in Elgeyo Marakwet at <0.05 significant level, the study itself to Elgeyo Marakwet county because of limitation of resources but it can be done in other regions in the country.

5.3 Conclusion

The study concludes that the proportion of health information use for decision making among health personnel in Elgeyo Marakwet County was 85%.

1. The high level of health information use for decision-making among health personnel underscores a strong foundation in data-driven health management. The reliance on health information for planning and forecasting demonstrates recognition of the value of data in shaping healthcare delivery and resource allocation. This aligns with global trends advocating for information-based decision-making, which enhances efficiency and responsiveness
2. The findings point to a need for role-specific or individual, experience-sensitive, and targeted training initiatives to foster a consistent culture of health information use among all health workers, which can improve the effectiveness of decision-making across the healthcare system.

3. Regular trainings on data management, forums for data review, such as monthly or quarterly meetings, provide a valuable setting for discussing health information system performance and service delivery challenges. These forums enable collective problem-solving, foster accountability, and reinforce the use of health information in planning and service delivery. Strengthening the consistency and relevancy of these forums can further embed data use into the decision-making culture at all levels of healthcare.

4. Fostering a transparent and supportive organizational culture is key to promoting data-driven decision-making. Consistent KPI visibility, stronger management support, and regular performance meetings will reinforce a structured environment where

health information can effectively guide actions and policy, ultimately leading to improved health outcomes and service delivery.

5.4 Recommendations

1. **Investment in Digital Tools, Systems that will improve data quality and access**: Moving from manual to electronic data analysis tools will increase accuracy, efficiency, and timeliness in decision-making. Upgrading digital systems can streamline information flow and support data-driven decisions. Ensuring that health information is complete, timely, and accessible will allow healthcare personnel to make well-informed decisions. Regular audits and feedback mechanisms should be established to maintain data quality standards.
2. **Enhanced Training Programs and provision of infrastructure**: Providing regular training sessions on information management, data analysis skills, and data interpretation for healthcare personnel will improve data literacy and ensure that more personnel can utilize health information effectively.
3. **Strengthening Organizational Support and Culture**: Management should prioritize the establishment of regular review meetings and support the continuous display of KPIs. By reinforcing a culture that values information-driven decision-making, healthcare personnel can be more motivated and aligned with organizational goals.
4. **Policy and Infrastructure Development**: Health departments should develop policies that standardize information use protocols across all levels, ensuring consistent and strategic use of health information.

By addressing these areas, Elgeyo Marakwet County's health department can strengthen its decision-making processes and improve service delivery and health outcomes.

5.4.1 Further Research

This study should be replicated in other counties with a view of expanding knowledge on factors influencing health information use among health personnel in the counties and thus inform policy changes towards strengthening Health Information System (HIS) and service delivery in a devolved healthcare set up that is changing every day.

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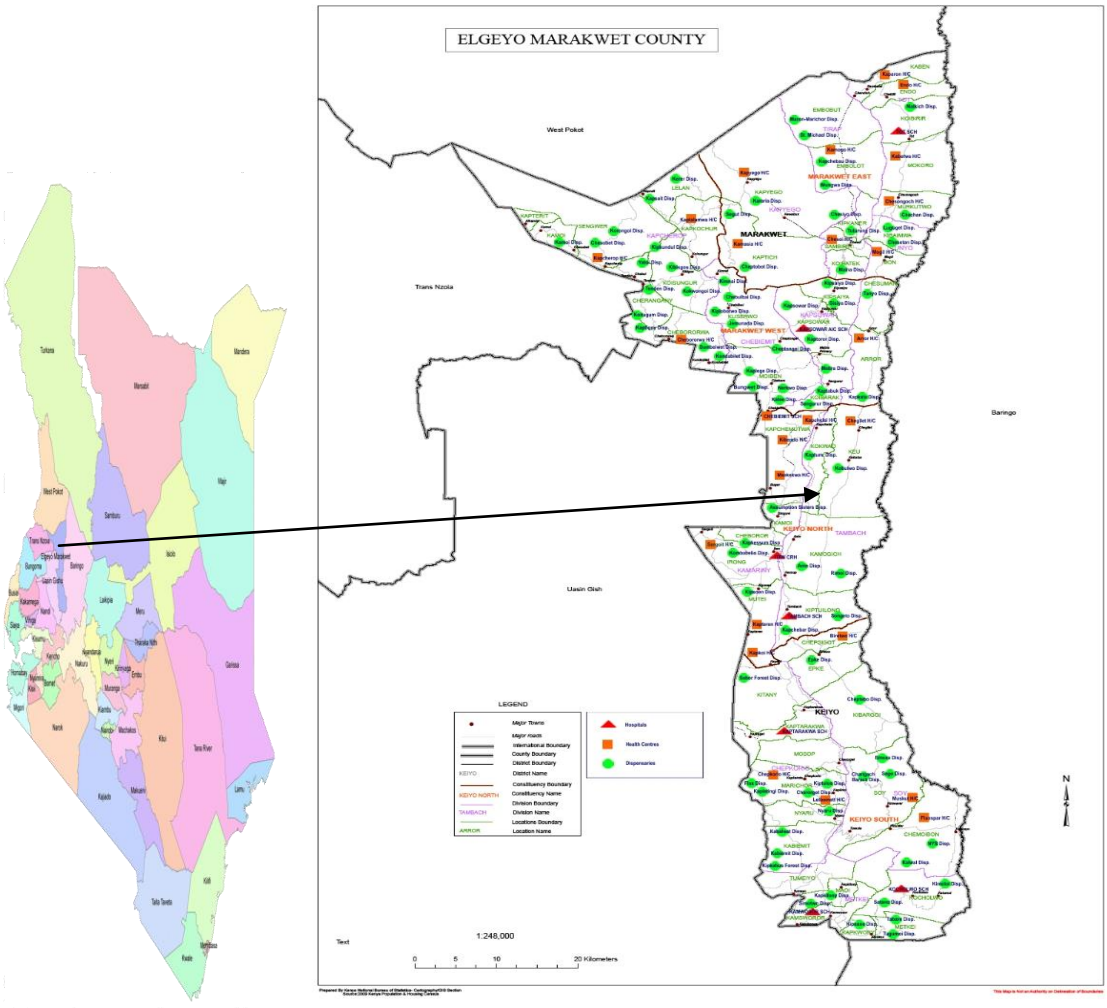
APPENDICES

APPENDIX I: Map of Kenya and Study Area



Source: Kenya National Bureau of Statistics, 2023

Figure 3.1: Map of Kenya and Study Area

APPENDIX II: Respondent Informed Consent Form

Introduction

My name is Leonidah Bayas. I am Master's student from Kenyatta University. I am conducting a study on **'identify factors that influence information use for decision making'.** You are being invited to participate in this study because you are among the sampled respondents believed to have useful information on the study subject.

Purpose

The purpose of this study is to appreciate factors influence information use for decision making. The information will be used by the facilities, Sub County, County and Ministry of Health to inform strategies and opportunities for improving information use in this and County level as well as other regions of Kenya.

Procedure to be followed

If you agree to be in this study, you will be asked to respond to some questions either through self-administered questionnaire, interview schedule or focus group discussion guide.

Study time

Study participation will take a total of approximately 45 minutes.

Benefits

There is no direct benefit to you anticipated from participating in this study. However, it is hoped that the information gained from the study will help to identify strategies and opportunities for improving information use at all levels of health care.

Risks/Discomforts

Some of the study instruments may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to or to leave the group at any time.

Confidentiality

Your study information will be handled as confidentially as possible. If results of this study are published or presented, individual names and other personally identifiable information will not be used

Rights

Participation in research is completely voluntary. You have the right to decline to participate or to withdraw at any point in this study without penalty or loss of benefits to which you are otherwise entitled.

Question /Contact information

If you have any questions or concerns about this study, you may contact Dr. George O. Otieno on Mob. 0719506770 or Dr. Daniel W. Muthee on Mob. 0723934169 or the Kenyatta University Ethical and Review Committee Secretariat on chairman.kuerc@ ku.ac.ke, secretary.kuerc@ku.ac.ke or ercku2008@gmail.com

Participant(s) statement

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntarily. I understand that my record my records will be kept private and that I can leave the study at any time.

Participant's Name *(please print)* _____

Participant's Signature _____ Date_____

Investigator's statement

“I, the undersigned, have explained to the participant in the language s/he understands, the procedure to be followed in the study and risks and benefits involved.”

Person Obtaining Consent _____

Person obtaining consent Signature _____ Date _____

APPENDIX III: Questionnaire

Serial No._____

INSTRUCTIONS

Please tick in the box provided or write the correct answers in the blank spaces provided.

Name of Sub County _____ OR Name of Facility _____

SECTION I: INDIVIDUAL CHARACTERISTICS OF THE RESPONDENT

1. Cadre held by the respondent at the Sub-County or Facility level _____
2. Gender

   i) Male ☐ ii) Female ☐

3. Age bracket

   i) 5-9 ☐
   ii) 10-19 ☐
   iii) 20-29 ☐
   iv) 30-39 ☐
   v) 40-49 ☐
   vi) 50+ ☐

4. Professional training of the respondent.

   i) Nurse ☐
   ii) Health Records & Information ☐
   iii) Clinical Medicine ☐
   iv)Laboratory ☐
   v) Medical Doctor ☐
   vi) Others (specify).....

5. Highest Level of professional training

   i) Certificate ☐
   ii) Diploma ☐
   iii) Higher Diploma ☐
   iv) Degree ☐
   v) Masters ☐
   vi) PhD ☐

6. The years of working experience in the current management level?

   i) <1 Year
   ii) 1-5 Years ☐
   iii) 6-12 Years ☐
   iv) 13-20 Years ☐
   v) 21+ Years ☐

SECTION II: PROPORTION OF HEALTH WORKERS USING INFORMATION FOR DECISION MAKING

7. Have you ever used the information from your level?
   i) Yes ☐ ii) No ☐ If no, go to Q9

8. If yes, indicate your level of using information generated for decision making?
   i). Rarely ☐ ii). Sometimes ☐ iii). Always s☐

9. If No reasons

   ……
   ……
   ……

10. What kind of decision have you ever made at your level?

    ……

    ……

    ……

11. What specific challenges do you experience when it comes to information use for decision making?

    ……

    ……

    ……

    ……

12. To what extent do you agree that health information is used for:

	Strongly disagree 1	Disagree 2	Agree 3	Strongly agree 4
I. Planning				
II. Programs' monitoring and evaluation				
III. Priority areas/ gaps identification				
IV. Outbreak detection and prediction				
V. Service performance target examination as a review strategy				
VI. Resources shifting/mobilization based on comparison by services				
VII. Ensuring of limited resources' effective and efficient use				
VIII. Drugs management and medical supply				
IX. Staffing decisions				
X. Improvement of service delivery				

13. Describe your motivation level in using information for decision making?
    i) Very high ☐ ii) High ☐ iii) Moderate i☐ow ☐

SECTION III: TECHNICAL FACTORS THAT INFLUENCE INFORMATION USE

14. Have you attended any training on information management?
    i) Yes ☐ ii) No☐

15. If yes what were the main topics on information management?
    ……
    ……
    ……
    ……

16. Is the information collected analyzed?
    i) Yes ☐ ii) No ☐ If No go to Q17

17. If yes how is it being done?
    i) Manually ☐ ii) Electronically ☐

18. The main source of information at this level is from where?

……

19. Who fills the monthly reports/information?

i) Support Staff ☐

ii) Health Information Officer ☐

iii)Clinical Officer ☐

iv) Nurse/ Midwife ☐

v) Medical officer ☐

vi) Other (Specify) ☐

20. Are there forums to share some of this information?

i) Yes ☐ ii) No ☐

21. If yes how often do you have meeting to review performance at your level?

a) Never ☐
b) Annually ☐
c) Bi-Annually ☐
d) Quarterly ☐
e) Monthly ☐
f) Weekly ☐

22. What topics are being discussed during these meetings?

a) Service delivery ☐
b) Leadership and governance ☐
c) Health systems financing ☐
d) Health Product & Technologies ☐
e) Health information system ☐
f) Health infrastructure ☐
g) Health Workforce ☐

23. In your opinion how do you rate the quality of the information from your source?

Area	Very good 1	Good 2	Fair 3	Poor 4	State the reason
I. Credibility					
II. Relevancy					
III. Completeness					
IV. Reliability					
V. Accuracy					
VI. Timeliness					

24. Rate your capability in undertaking the following in connection to information/information management:

	Poor 1	Fair 2	Good 3	Excellent 4
i. I can set targets and identify gaps using information				
ii. I can explain outcomes and their implications				
iii. I can plot information by years or months				
iv. I can calculate rates/ percentage				
v. I can check information accuracy				
vi. I can use information to make various types of decisions and provide feedback				

25. Do you find it easy to access routine information whenever you need it?

i) Yes ☐ ii) No ☐

SECTION III: ORGANIZATION FACTORS THAT INFLUENCE INFORMATION USE

26. In your level health system decisions are based on?

	"1=Strongly Disagree 2=Disagree 3=Neither Agree nor Disagree 4= Agree 5=Strongly Agree"					
		1	2	3	4	5
QA1	Health needs					
QA2	Comparing information with strategic health objectives					
QA3	Political interference					
QA4	Evidence/Facts					
QA5	Superiors' directives					
QA6	Personal liking					
QA7	Considering Cost					
QA8	International NGOs/Donor					

27. How often do your office /department display information on key performance indicators?

    i) Never ☐ ii) Occasionally ☐ iii) Sometimes ☐ iv) Always ☐

28. What level of support from your in-charge on matters pertaining to information management do you receive?

    i) Very low ☐ ii) Low ☐ iii) High ☐ iv) Very high ☐

29. How frequent do you hold departmental or staff meetings to discussing or review managerial/ administrative matters?

    i) No meetings ☐ ii) Weekly ☐ iii) After 2 weeks ☐

    iv) Monthly ☐ v) Quarterly ☐ vi) No schedule ☐

30. If you do hold meetings, do you maintain official record of schedule meetings?

    i) Yes ☐ ii) No ☐

Thank you

APPENDIX IV: Focus Group Discussion Guide

1. Opening remarks
2. Introduction

Ground Rules

- Time for Discussion: 30 Minutes
- Encourage participation by all
- Assure participants confidentiality
- Consent for tape recording

Guiding Questions

1. What are some of your role in health information management?
2. How are currently using the information collected?
3. In your opinion, in which other ways can information be used?
4. What are some of the factors influencing health information utilization in decision making?
5. Do health care providers have access to health information for use at their level?
6. How is feedback given to the health care providers on information generation and information use?
7. State the health information sources for use at your level
8. What challenges are encountered in information collection, processing, analysis and use?
9. What are some of the causes of the above challenges?
10. What suggestions do you have to minimize these challenges?

Thank you

APPENDIX V: Key Informant Interview

1. State the last major decision relating to programs or policies that you made?
2. What information did you use to make this decision? Thinking about the two most recent decisions in which you were involved, please describe how you used information to make the decisions
3. Was there any information you needed but did not have in order to make this decision?
4. In the use of information, who are the key stakeholders?
5. Whose interests are most served by health information systems?
6. How do health information systems meet your needs for information?
7. What are the current Perceptions of information use in health facilities among health care providers?
8. In general, are there challenges faced when trying to use information for decision making? Explain please.
9. Identify the Process for addressing the issues emerging as the challenges and obstacles of using information for decision making among the health care providers.
10. Do you have any suggestions about how to improve information use at your level?

Thank you for your cooperation

APPENDIX VI: Ethical Clearance Letter from KUERC

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844,
Nairobi, 00100
Tel: 8710901/12

Our Ref: **KU/ERC/ CONDITIONAL APPROVAL/VOL.1** Date: 16th August, 2018

Leonidah C. Bayas
P.O Box 43844, 00100
Nairobi.

Dear Leonidah,

APPLICATION NUMBER: PKU/865/1930 "HEALTH INFORMATION USE FOR DECISION MAKING AMONG HEALTH PERSONNEL IN ELGEYO MARAKWET COUNTY, KENYA"

1. **IDENTIFICATION OF PROTOCOL**

The application before the committee is with a research topic "**Health Information Use for Decision Making among Health Personnel in Elgeyo Marakwet County, Kenya"** received on 18th May, 2018 and discussed on 2nd July, 2018

2. **APPLICANT**

Leonidah C. Bayas

3. **SITE**

Elgeyo Marakwet County, Kenya

4. **DECISION**

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines and **APPROVED that the research may proceed ON CONDITION that you incorporate its advice as below.**

5. **ADVICE/CONDITIONS**

Scientific design and conduct of study:
Ok

Recruitment of research participants:
Ok

Care and protection of research participants:
OK

Protection of confidentiality:
Ok

Informed consent process:
Inadequate in content. Include contact of Kuerc and the Chairman of Kuerc.

The above specific conditions must be fulfilled in writing before an approval can be granted. The manner of fulfilling these conditions should be outlined and submitted to Kenyatta University Ethical Review Committee.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

PROF.JUDITH KIMIYWE
CHAIRPERSON. ETHICS REVIEW COMMITTEE

I LEONIDAH.C. BAYAS accept the advice given and will fulfill the conditions therein.

Signature. ..... Dated this day of 5/9 2018.

cc. DVC-Research Innovation and Outreach

APPENDIX VII: Research Authorization

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57330

Our Ref: Q141/CE/28562/2013

DATE: 4th April, 2017

Director General,
National Commission for Science, Technology
& Innovation
P.O. Box 30623-00100,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR LEONIDAH C. BAYAS – REG. NO. Q141/CE/28562/2013

I write to introduce Mr. Leonidah C. Bayas who is a Postgraduate Student of this University. He is registered for M.P.H. degree programme in the Department of Health Management and Information.

Mr. Bayas intends to conduct research for an M.P.H. Proposal entitled, "Health Information Use for Decision Making among Health Personnel in Elgeyo Marakwet County, Kenya".

Any assistance given will be highly appreciated.

Yours faithfully,

for

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL

Appendix VIII: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **148168**

Date of Issue: **17/October/2019**

RESEARCH LICENSE

This is to Certify that Ms.. LEONIDAH BAYAS of Kenyatta University, has been licensed to conduct research in Elgeyo-Marakwet on the topic: HEALTH INFORMATION USE FOR DECISION MAKING AMONG HEALTH PERSONNEL IN ELGEYO MARAKWET COUNTY , KENYA for the period ending : 17/October/2020.

License No: **NACOSTI/P/19/1352**

148168

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.