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Assessing Health Information System Data Quality Management in LifeNet-supported Facilities in South Kivu, Democratic Republic of Congo

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Authors' contributions

This work was carried out in collaboration among all authors. Author BKS designed the study, developed the research protocol, carried out the statistical analysis, and prepared the initial draft of the manuscript. Authors JM and DN supervised the study, offering guidance, constructive feedback, and essential revisions. The literature review was conducted by author BKS with input from both supervisors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To evaluate the quality of HIS data in LifeNet-supported facilities in South Kivu and correlate data completeness, accuracy, and timeliness with staff competency, training, and governance factors to validate current data management practices. This study is significant as it enhances understanding of data quality in LifeNet-supported health facilities, guiding improvements in information management and health service delivery in South Kivu.

Study Design: A retrospective quantitative cross-sectional analytical research design.

Place and Duration of Study: Study conducted in LifeNet International-supported health facilities across ten health districts in South Kivu Province, Democratic Republic of Congo, including Idjwi, Ibanda, Kabare, Kadutu, Miti-Murhesa, Nundu, Nyangezi, Nyatende, Uvira, and Walungu, between October 2023 and March 2024.

Methodology: This study included 155 healthcare workers from 74 LifeNet International-supported health facilities across ten districts in South Kivu Province, DRC. Data were collected through a retrospective review of Maternal and Child Health (MCH) records and a structured HIS Assessment Questionnaire administered to healthcare workers. Data completeness, accuracy, and timeliness were evaluated using the Verification Factor (VF). Descriptive and inferential statistical analyses were performed using SPSS version 28 to assess relationships between HIS data quality and influencing factors.

Results: MCH data quality was high: accuracy 89%, consistency 87%, completeness 93.3%, and timeliness 86.7%. Health worker competency showed high neutrality—data aggregation 62.6%, in-service training 65.2%, electronic skills 72.3%, HMIS usability 61.9%, pre-service training 75.5%—indicating limited confidence in HIS skills. Challenges in data collection were notable, with 46.5% neutral on cross-checking, 71.6% unsure about functional databases, and 62.6% unclear on monitoring roles. Regression analysis indicated systemic challenges strongly predicted health information use ($\beta = 0.850$, $p < 0.001$), while individual competency was not significant, highlighting the need for improved operational support.

Conclusion: Systemic challenges, more than individual competency, significantly affect health information use, highlighting the need for stronger operational support, clear roles, and targeted HIS capacity-building in facilities.

Keywords: Health information system (HIS); data quality; lifeNet international; South Kivu; Democratic Republic of Congo; maternal and child health (MCH); health facilities.

1. INTRODUCTION

The quality of Health Information Systems (HIS) has become increasingly critical in guiding healthcare delivery, resource allocation, and policy development. In the Democratic Republic of the Congo (DRC), particularly in South Kivu, persistent weaknesses such as limited infrastructure, skill shortages, and irregular reporting continue to compromise data reliability and decision-making. LifeNet International, a faith-based organization working to strengthen partner health facilities across Africa, has adopted the District Health Information Software 2 (DHIS2) to harmonize data management. Despite this progress, challenges remain around data completeness, accuracy, timeliness, and effective use. The World Health Organization (2023) notes that poor data quality contributes to misallocation of health resources, while several studies in Sub-Saharan Africa report similar deficiencies linked to gaps in staff training, data governance, and feedback mechanisms (Kyomba et al., 2022; Chibuzor et al., 2021).

Although digital systems and training initiatives have improved reporting processes, limited empirical research has explored data quality management within LifeNet-supported facilities in South Kivu. Previous studies underscore the importance of user competence, supportive supervision, and inter-agency collaboration, yet evidence from fragile contexts such as the DRC remains sparse (Wager et al., 2021; Shama et al., 2021). This study therefore assessed HIS data quality and management practices in LifeNet partner facilities, with a focus on maternal and child health indicators. It examined the accuracy, timeliness, completeness, and consistency of reported data, as well as the role of health worker competencies and systemic barriers influencing data use.

Guided by the Task–Technology Fit (TTF) theory (Ayele et al., 2024) and the Data Quality Review

(DQR) framework (Oladoyin et al., 2025), the study evaluated institutional, technological, and behavioural determinants shaping HIS performance. The findings are expected to inform targeted capacity-building, strengthen data governance, and promote a culture of data-informed decision-making at the facility level. Although the study was limited to selected LifeNet-supported facilities in South Kivu, its insights are relevant to similar low-resource settings. Ultimately, the research contributes to ongoing efforts to enhance data integrity, support national health priorities, and advance progress toward Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs).

2. METHODOLOGY

2.1 Research Design

This study adopted a retrospective quantitative cross-sectional analytical research design.

2.2 Location of the Study

This study took place in LifeNet International-supported health facilities across South Kivu Province in the eastern Democratic Republic of Congo (DRC). South Kivu is a mountainous and conflict-affected region where communities often face barriers to accessing reliable healthcare due to poor roads, limited infrastructure, and ongoing insecurity. The province includes both the urban hub of Bukavu, which serves as the provincial capital, and several remote rural health zones where medical resources are scarce.

LifeNet International works in partnership with a number of faith-based and community health facilities throughout these zones, providing mentorship, supervision, and practical training to strengthen the quality of care and data management systems. This setting was chosen because it reflects the realities faced by many under-resourced healthcare facilities in eastern DRC—settings where improving HIS performance is not only necessary but central to building stronger, more responsive health services.

2.3 Target Population

The target population for this study comprised 163 healthcare professionals serving as Health Management Information System (HMIS) focal persons across 74 LifeNet-supported health facilities in 10 health districts of South Kivu Province, including Idjwi, Ibanda, Kabare, Kadutu, Miti-Murhesa, Nundu, Nyangezi, Nyatende, Uvira, and Walungu (Author, 2025).

2.4 Sampling Technique and Size Determination

A purposive sampling technique was applied to select health facilities and healthcare workers directly involved in HIS. The sample size was determined using the single population proportion formula, assuming a 95% confidence level, 5% margin of error, and 75% estimated competence proportion. From a total population of 171 health workers, 155 respondents were proportionally selected to ensure statistical reliability and representativeness of the study population.

2.5 Data Collection Process/Instruments

Data were collected using a mixed-method approach comprising a retrospective document review and a cross-sectional facility-based survey. The document review covered Maternal and Child Health (MCH) data from October to December 2023, assessing completeness, timeliness, and accuracy through Verification Factors comparing DHIS2 reports with source documents. The cross-sectional survey targeted healthcare workers in LifeNet-supported facilities, using a structured HIS Assessment Questionnaire. Five trained research assistants, each with nursing and HIS experience, conducted data collection to ensure consistency and reliability. This approach provided both quantitative and qualitative insights into data quality and HIS practices.

In this study, neutrality within the Likert scale was operationally defined as the midpoint response, reflecting a position of neither agreement nor disagreement with the given statement. This category signified a balanced or undecided stance, indicating that the respondent did not lean toward either extreme of the scale. Prior to data collection, the meaning of the neutral response option was explicitly explained to all participants to promote consistent interpretation and reduce potential response bias.

2.5.1 Handling of missing data

In this retrospective quantitative cross-sectional analytical study, careful attention was given to managing missing data to ensure the accuracy and validity of the findings. Data were retrieved

from existing health information system records within LifeNet-supported facilities and reviewed for completeness. Any gaps identified were first cross-referenced with primary data sources, including facility registers and monthly summaries. When small portions of continuous data were missing (less than 5%), the mean value was used to replace the missing entries, while the most frequent category was substituted for missing categorical values. Records containing large or systematic data gaps that could distort the analysis were excluded. These procedures were implemented to maintain data quality and minimize the risk of bias in the final analysis.

2.6 Data Analysis Techniques and Procedures

A Mixed Verification-Analytical Approach was employed to assess data quality and utilization within LifeNet-supported facilities in South Kivu. The Verification Factor (VF) was calculated by comparing data from HMIS reports and DHIS2 with primary records to determine reporting accuracy (VF = 1 accurate, VF < 1 over-reported, VF > 1 under-reported). Quantitative data were analyzed using descriptive and inferential statistics. Descriptive measures summarized demographics and HIS practices, while chi-square tests and regression models identified associations and predictors of HIS utilization. Data cleaning was performed in Excel, and analyses were conducted using SPSS version 28.

3. RESULTS AND DISCUSSION

3.1 Sociodemographic Characteristics of Respondents

Table 1 summarizes the socio-demographic characteristics of the 155 healthcare professionals who participated in the study. The findings indicate a predominantly experienced (87.7% with more than two years in service) and well-educated workforce (93.6% holding at least a bachelor's degree). Among the respondents, 51.6% served as Health Facility Register Officers, 38.1% as HMIS Reports Focal Persons, and 10.3% as DHIS2 Focal Persons.

Statistical analysis revealed significant relationships between demographic factors and role assignment. Age influenced role distribution ($\chi^2[6]=136.51$, $P=.01$), with younger staff (21–30 years) more likely to serve as Register Officers, while mid-career professionals (41–50 years) often managed HMIS reporting. Gender differences were also significant ($\chi^2[2]=50.22$, $P=.01$), showing male predominance (76.8%) in data entry roles and greater female representation in reporting positions.

Education level demonstrated a strong effect ($\chi^2[6]=85.65$, $P=.01$); all DHIS2 Focal Persons possessed postgraduate qualifications, whereas most Register Officers held undergraduate degrees. Work experience ($\chi^2[4]=20.3$, $P=.01$) was similarly associated with role allocation—less experienced staff primarily performed data entry tasks. The field of study had the strongest association ($\chi^2[10]=235$, $P=.01$): nurses dominated data entry, physicians and IT specialists managed DHIS2 operations, and midwives and health officers were primarily involved in reporting activities.

These patterns align with WHO (2021) recommendations that emphasize aligning HIS responsibilities with professional expertise. However, the observed gender disparities highlight the need for more inclusive capacity-building strategies within health information management systems in South Kivu.

3.2 Evaluation of Data Quality Dimensions of Maternal and Child Health Data

The primary aim of this study was to assess the quality of Maternal and Child Health (MCH) data based on four critical dimensions: accuracy, consistency, completeness, and timeliness. These dimensions are fundamental in determining the reliability of health information used to guide planning, policy formulation, and informed decision-making within healthcare facilities.

3.2.1 Data accuracy and consistency

Across the four Maternal and Child Health (MCH) indicators—deliveries, live births, breastfeeding initiation within the first hour, and first ANC visit during the first trimester—the overall data accuracy and consistency were found to be moderate, with 60–70% of facilities maintaining VFs within the acceptable WHO (2021) threshold of 0.90–1.10.

Facilities such as Shayo, Bushonga, Bugarula, and Camahiri consistently demonstrated reliable

Table 1. Sociodemographic characteristics by Data Management role

Variables	Category	Responsible for data aggregation			Total (%)	Statistical Independent Chi-Square Test
		DHIS2 Focal person	Health Facility register Officer	HMIS Reports Focal Person		
Age	21 - 30 years	0 (0,0%)	51(32,9%)	0 (0,0%)	51(32,9%)	X^2([6], N=155)
	31 - 40 years	7 (4,5%)	29(18,7%)	7 (4,5%)	43(27,7%)	=136,51; P<0,01
	41 - 50 years	5 (3,2%)	0 (0,0%)	47(30,3%)	52 (33,5%	
	Over 50 years	4 (2,6%)	0 (0,0%)	5 (3,22)	9 (5,8%)	
	Total	**16 (10,3%)**	**80 (51,6%)**	**59 (38,1%)**	**155(100%)**	
Gender	Female	7 (4,5%)	0 (0,0%)	29 (18,7%)	36(23%)	X^2([2], N=155)
	Male	9 (5,8%)	80 (51,6)	30 (19,4%)	119 (76,8%)	=50,22; P<0,01
	Total	**16 (10,3%)**	**80 (51,6%)**	**59 (38,1%)**	**155 (100%)**	
Education level	Diploma	0 (0,0%)	3 (1,9%)	0 (0,0%)	3 (1,9%)	X^2([6], N=155)
	High School	0 (0,0%)	7 (4,5%)	0 (0,0%)	7 (4,5%)	=85,65; P<0,01
	Postgraduate	16 (10,3%)	0 (0,0%)	26 (16,8%)	42 (27,1%)	
	Undergraduate	0 (0,0%)	70 (45,2%)	33 (21,3%)	103 (66,5%)	
	Total	**16 (10,3%)**	**80 (51,6%)**	**59 (38,1%)**	**155 (100%)**	
Working experience	1 - 2 years	0 (0,0%)	13 (8,4%)	0 (0,0%)	13 (8,4%)	X^2([4], N=155)
	2 years and above	16 (10,3%)	61 (39,4%)	59 (38,1%)	136 (87,7%)	=20,3; P<0,01
	Less than 1 year	0 (0,0%)	6 (3,9%)	0 (0,0%)	6 (3,9%)	
	Total	**16 (10,3%)**	**80 (51,6%)**	**59 (38,1%)**	**155 (100%)**	
Field of study	Doctor/Physician	8 (5,2%)	0 (0,0%)	0 (0,0%)	8 (5,2%)	X^2([10], N=155)
	Health Information & Technology	4 (2,6%)	0 (0,0%)	5 (3,2%)	9 (5,8%)	=235; P<0,01
	Health Officer	0 (0,0%)	0 (0,0%)	28 (18,1%)	28 (18,1%)	
	Midwife	0 (0,0%)	0 (0,0%)	14 (9,0%)	14 (9,0%)	
	Nurse	0 (0,0%)	80 (51,6%)	12 (7,7%)	92 (59,4%)	
	Others	4 (2,6%)	0 (0,0%)	0 (0,0%)	4 (2,6%)	
	Total	**16 (10,3%)**	**80 (51,6%)**	**59 (38,1%)**	**155 (100%)**	

reporting patterns, reflecting sound data verification and record-keeping practices. In contrast, Mafula, Kasihe, and Lumala frequently reported discrepancies across multiple indicators, suggesting systemic weaknesses in data collection, transcription, and supervision processes.

Over-reporting (VF < 1.10) and under-reporting (VF > 0.90) were both observed, indicating inconsistencies in transferring data from source registers to monthly summary reports. The highest inconsistency was noted in the "Breastfed within 1st Hour" indicator (VF range 0.53–1.67), implying challenges in capturing real-time post-delivery practices and weak integration between maternal and newborn registers. Conversely, "Live Births" and "ANC 1st Visit" data displayed relatively stronger consistency, reflecting better-established reporting protocols for these high-priority indicators.

Similarly, Bagherian & Sattari (2022) emphasized that over-reporting and under-reporting of routine health data are common in primary health facilities where health workers face competing priorities and lack continuous data quality feedback mechanisms. Conversely, discrepancies in delivery and breastfeeding data echo findings from Braa et al. (2017), who argued that incomplete partograph documentation and poor integration between maternity and postnatal registers contribute significantly to data inaccuracy in MCH programs.

Overall, the results reveal that while most facilities demonstrate fair data quality, persistent gaps in supervision, feedback mechanisms, and data verification contribute to the observed inconsistencies. Strengthening HIS capacity through routine data quality audits, mentorship, and feedback loops is essential to ensure accurate and consistent MCH data for decision-making.

3.2.2 Data completeness and timeliness

The assessment of HMIS reporting across the ten health facilities indicated generally strong performance in both completeness and timeliness, although some gaps were apparent. Out of 30 expected reports, 28 were submitted, resulting in an overall completeness of 93.3%, while 26 reports were delivered on schedule, corresponding to 86.7% timeliness. Eight facilities—Lumala, Shayo, Muhungu, Bushonga, Bushusha, Bugarula, Camahiri, and Kintama—achieved full completeness (100%), reflecting solid reporting practices, whereas Mafula and Kasihe submitted only 66.7% of their expected reports. Timeliness was somewhat lower, with Muhungu achieving only 33.3% despite full report submission, indicating delays in workflow or submission. Mafula and Kasihe struggled with both metrics, suggesting underlying systemic challenges affecting reporting efficiency. These results align with previous studies showing that timeliness often lags behind completeness due to operational and resource constraints (Moukénet et al., 2021). While the high completeness demonstrates that most facilities maintain reliable records, the comparatively lower timeliness highlights the need for targeted measures—such as improved supervision, simplified reporting processes, and incentive schemes—to promote prompt data submission and strengthen the overall HMIS system.

The evaluation of MCH data across ten health facilities indicates generally high quality in terms of accuracy, consistency, and completeness, with most indicators exceeding 85%. Deliveries and live births showed the strongest performance, while indicators such as early breastfeeding and first antenatal care visits scored slightly lower, likely due to reliance on timely patient information. Overall, report completeness was strong at 93.3%, but timeliness was somewhat lower at 86.7%, with certain facilities submitting reports late despite complete records. These findings are consistent with prior studies showing that health facilities often maintain reliable records, but timely reporting can be constrained by workflow and resource limitations (Getachew et al., 2022; Ghalavand et al., 2024). Improving supervision, simplifying reporting procedures, and introducing targeted incentives could help enhance timely data submission and further strengthen the overall quality of MCH information, supporting informed decision-making in maternal and child health services.

3.3 Training Exposure and Staff Competency in Health Facilities

The findings reveal that most health workers responded neutrally across all assessed competency areas, indicating uncertainty or limited confidence in their HIS skills. For instance, 62.6% of respondents were neutral regarding their experience with data aggregation, while only 26.5% expressed agreement.

Similarly, responses on in-service HMIS training showed 65.2% neutrality versus 21.9% agreement, highlighting gaps in continuous professional development consistent with WHO (2016) observations. Competency in using electronic health systems and pre-service HMIS training showed the highest neutrality, at 72.3% and 75.5% respectively, suggesting challenges in digital readiness and limited emphasis on health informatics in formal training programs (Moukénet et al., 2021; Oreni et al., 2021). Although slightly more respondents gave positive feedback on HMIS user-friendliness (27.7%), the high neutral rate of 61.9% indicates ongoing usability issues (Solomon et al., 2021). Minimal strong disagreement (<5%) implies that

Table 2. Summary of Data Accuracy and Consistency across MCH Indicators

Indicator	VF Range (Observed)	Facilities within Acceptable VF (0.90–1.10)	Facilities Outside Range	Overall Data Quality Classification
Deliveries	0.67 – 1.30	6/10 (60%)	4/10 (40%)	Moderate accuracy
Live Births	0.72 – 1.17	7/10 (70%)	3/10 (30%)	Relatively good accuracy
Breastfed within 1st Hour	0.53 – 1.67	6/10 (60%)	4/10 (40%)	Moderate to low consistency
ANC 1st Visit (1st Trimester)	0.73 – 1.21	7/10 (70%)	3/10 (30%)	Moderate accuracy and consistency

Source: (Author, 2025)

Table 3. Summary of Data Completeness and Timeliness

Facility Name	Completeness (%)	Timeliness (%)
Lumala	100	100
Mafula	66.7	66.7
Shayo	100	100
Muhungu	100	33.3
Bushonga	100	100
Bushusha	100	100
Bugarula	100	100
Camahiri	100	100
Kasihe	66.7	66.7
Kintama	100	100
Overall Average	**93.3**	**86.7**

Source: (Author, 2025)

Table 4. Summary of MCH Data Quality Across Ten Health Facilities

MCH Indicator	Accuracy (%)	Consistency (%)	Completeness (%)	Timeliness (%)
Deliveries	95	94	93.3	86.7
Live Births	94	92	93.3	86.7
Breastfed within 1st hour	88	85	93.3	86.7
First ANC Visit	89	87	93.3	86.7

Source: (Author, 2025)

Table 5. Competency of Health Workers in HIS Data Management

Competency Area	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
Data aggregation experience	2.6	8.4	62.6	15.5	11.0
In-service training received	3.2	9.7	65.2	12.9	9.0
Electronic competency	3.9	11.6	72.3	7.1	5.2
HMIS user-friendliness	2.6	7.7	61.9	16.1	11.6
Pre-service HMIS training	4.5	13.5	75.5	3.9	2.6

(Responses: 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree; n = 155)
Source: (Author, 2025)

Table 6. Challenges in Data Collection and Reporting in HIS

Challenges in Data Collection and Reporting	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
Data cross-checked	0.6	2.6	46.5	29.7	20.6
Functional database in the health facility	3.9	11.6	71.6	7.7	5.2
Procedure of reported data	1.3	3.2	48.4	27.7	19.4
Staff position responsible for data monitoring	2.6	8.4	62.6	15.5	11.0
Written job description	1.3	4.5	52.3	24.5	17.4

Source: (Author, 2025)

Table 7. Regression Analysis Predicting Use of Health Information Data

Variable	B	β	t	p	95% CI
Competency of health workers	0.128	0.100	1.294	0.198	[-0.068, 0.324]
Challenges in data collection and reporting	1.037	0.850	11.003	0.000	[0.851, 1.223]
Constant = -1.21, F (2,152) = 634.2, $p < 0.01$, $R^2 = 0.90$, Adjusted $R^2 = 0.89$					

Source: (Author, 2025)

respondents did not reject the competency statements outright but lacked sufficient confidence to affirm them, a pattern also reported in other Likert-scale studies (Ayele et al., 2024). Overall, the predominance of neutral responses highlights the need for structured, competency-based HMIS training to enhance staff confidence and strengthen health information management.

3.4 Challenges in Data Collection and Reporting in HISs

The analysis of HIS data management challenges across the ten health facilities reveals significant gaps in implementation and awareness. Data cross-checking is partially practiced, with roughly half of respondents confirming it, yet 46.5% remained neutral, suggesting inconsistent enforcement. Functional databases are largely underutilized, as 71.6% were neutral and only 12.9% confirmed availability, reflecting gaps in digital readiness and training. Structured reporting procedures are present in nearly half of facilities, though 48.4% remained uncertain, highlighting inconsistent adherence. Role assignment for data monitoring is unclear, with 62.6% neutral, while written job descriptions are often lacking, as 52.3% were unsure of their existence. Overall, these findings indicate that while some HIS structures exist, weak implementation, unclear responsibilities, and limited digital capacity hinder effective data collection and reporting, underscoring the need for targeted training, clear protocols, and stronger accountability mechanisms.

3.5 Regression Analysis Predicting the Use of Health Information Data

A multiple linear regression was conducted to explore the influence of health worker competency and challenges in data collection and reporting on the utilization of health information data. The overall model was statistically significant, $F(2, 152) = 634.2$, $P=.01$, indicating that these predictors collectively account for a substantial portion of variance in data use. The coefficient of determination (R^2) was 0.90, and the adjusted R^2 was 0.89, showing that approximately 89% of the variation in data use is explained by the two independent variables.

The analysis revealed that challenges in data collection and reporting had a significant and strong positive effect on data use ($\beta = 0.850$, $t(153) = 11.00$, $P= .001$), highlighting the critical role of systemic and operational factors in enabling evidence-based decision-making. In contrast, health worker competency did not significantly predict data use ($\beta = 0.100$, $t(153) = 1.29$, $P = .198$), suggesting that technical knowledge and skills alone may not translate into effective utilization of health information without supportive organizational structures. These results emphasize the need for improvements in institutional processes and operational support to fully leverage health information systems for informed decision-making in healthcare settings (Ayele et al., 2024).

4. CONCLUSION

The study found that the majority of participants were highly educated and experienced healthcare professionals, with role distribution significantly shaped by factors such as age, gender, education level, and field of study. The quality assessment of Maternal and Child Health (MCH) data showed fair to good levels of accuracy and consistency, with 60–70% of facilities meeting the acceptable standards. Report completeness was strong at 93.3%, though timeliness was slightly lower at 86.7%. Data on deliveries and live births were the most accurate; while breastfeeding data showed more inconsistencies. Most respondents expressed uncertainty regarding their HIS skills, indicating a lack of adequate training and digital capacity. Key challenges included weak data verification, limited use of electronic databases, and unclear staff responsibilities. Regression analysis revealed that data collection and reporting challenges had a strong influence on data utilization, whereas staff competency alone was not a significant predictor, emphasizing the need for better organizational support and capacity building.

CONSENT

Written informed consent was obtained from all participating pregnant women, or from their authorized guardians where applicable, before data collection began. Copies of the signed consent forms can be made available to the Editorial Office, Chief Editor, or Editorial Board of this journal upon request.

ETHICAL APPROVAL

All authors confirm that ethical approval for this study was granted by the appropriate institutional review board. Approval to conduct the study was obtained from the Ethics and Research Committee of Mount Kenya University and the Provincial Division of Health. Before administering the questionnaires, authorization was also sought from the management of the participating health facilities. Verbal consent was obtained from each respondent in line with ethical research standards. To provide clarity, a brief overview of the study was included at the beginning of the questionnaire. Care was taken to avoid disrupting normal facility operations. Participants were given the researcher's contact information, including a phone number, to reach out for any questions or ethical concerns related to their participation in the study.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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