

Capacitating Health Sector Leaders to Improve Healthcare Data Quality and Use in Assosa District: Implementation Research

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Abstract

Background: Equipping leaders and creating responsibility for quality healthcare data and utilization is considered the most critical driver in the health sector. However, it is unclear how training of the health workforce improves the generation and use of quality health data in a resource-limited setting of Ethiopia.

Objective: The study was aimed to measure the effect of implementing the training and post-training follow-up of the health sector leaders to improve the generation and use of healthcare data quality in Assosa district, Ethiopia.

Methods: Pre-post quasi-experimental study design was employed to measure the effect of training and post-training follow-up on data quality and use. One health center and one general hospital in the district were included to measure the effect of training and post-training follow-up intervention on the generation and use of quality health data. The intervention involved health system leaders in the district. The consistency of selected indicators and information use was presented using changes in percentage points before and after the intervention.

Results: Of the total departments, 9 (52.9%) were from the health center and 11(47.1%) were from the hospital. The study found that training and post-training follow-up interventions have positively affected data quality and information use. According to the findings, data accuracy and information use were improved by 23, 10.7, and 16.7 percentage points increment at health center, hospital, and district level, respectively. Similarly, information use was improved by 22.3, 34.1, and 28.2 percentage points increment due to the TPF intervention at health centers, hospitals, and districts, respectively.

Conclusions: Training followed by feedback, mentoring, and performance review meetings were effective implementation strategies in improving data quality and information use. The coverage and effectiveness of the implementation were also promising, and further scaling up in a similar setting can improve health system data quality and use. [*Ethiop. J. Health Dev.* 2023;37 (SI-1)]

Key words: training, feedback, implementation research, data use, data quality, Assosa, Ethiopia

Introduction

Production and use of proper healthcare data is one of the tremendously important components of a health information system (HIS) that helps to ensure better health status achievement for both individuals and the community (1). Poor healthcare data handling practice from data collection to reporting makes the HIS leaders not tend to utilize the data generated from the healthcare industries for it is not worth enough to trust and use (2). Complicated problems could occur by using wrongly generated healthcare data that seriously leads to the burden of diseases individually and the health status crisis of the population in general (3). It is believed that evidence-based information use practice could help reduce disease burden and mortality through enhancing evidence-based planning and decision-making (4).

Availing and using healthcare data for clinical practices and administrative decision-making by health system leadership is a vital neglected step to improve health outcomes in a given society (5). Moreover, improving information use practice is one of the priority agendas of the Ethiopian government, as it is pledged in the first

and second national health sector transformation plans (HSTP) (3). Leadership engagement and supporting the healthcare industry in all the processes of healthcare data management could be a remedy to treat anomalies in quality data generation and utilization (6).

Though there are various solutions to facilitate data collection, processing, visualizing, and reporting of data in healthcare industries, utilization of data at administration units remains limited in low and middle-income countries, particularly at lower district and community levels (7). To solve existing problems related to poor data use practice both nationally and globally wider approaches have been practiced (7). Among those practices that are attempted as means of solutions for data quality and information use challenges are establishing dedicated healthcare at district levels (8), performance monitoring teams for health sectors, routine health information system performance evaluation (9), supportive supervision (10), review meetings on monthly, quarterly, and bi-annually on health information system (7,11). Despite gross efforts made to complete, reliable, and timely information use of healthcare data, evidence shows that

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challenges from inside and outside of the health system are constraining quality health data production and use and rigorous problem identification and testable intervention strategies are widely needed to attain improved data use promises of a country (7,12). Equipping leaders and creating responsibility for quality healthcare data and utilization is considered the most critical driver in health sectors, which positively influences and reassures better data, better information, and better health (13). Involving leadership and governance in attaining the maximum desired outcome would have a great role as they have a better understanding of the context conditions in the area such as culture, norms, values, political situations, economic, and societal issues in the area in addition to authority and role in a given organization that collectively would give a better harmony and achievement in quality healthcare data and use (14). Additionally, the engagement of leaders and creating accountability regarding health information utilization for better health is considered to have a substantial role in accelerating the improvement of health outcomes at both local and national levels (15). Therefore, this study aimed to assess the effect of training and post-training follow-up (TPF) on the HIS leadership to

improve healthcare data quality generation and its utilization among HIS leaders of the Assosa district, in the Benishangul Gumuz region.

Methods

Study design and period

The implementation research employed a pre-post quasi-experimental study design. A TPF intervention was conducted on health sector leaders, and data were collected during the pre-intervention and post-intervention periods in November 2020 and August 2021, respectively.

Study setting

The implementation research was conducted in Assosa City Administration, which is the capital of Benishangul Gumuz Regional State (Figure 1). Assosa City is located in the western part of the region and is situated approximately 665 km away from Addis Ababa. Based on the 2019 report of the Ministry of Health Woreda Base Plan, Assosa City has a population of 104,147, with women accounting for 49.1% (16). In terms of healthcare facilities, there are two health centres and one general hospital available in the city.



Figure 1: Map of Benishangul Gumuz Region indicating Assosa zone and Assosa city administration, 2021

Sample size and sampling procedures

The implementation was conducted on health sector leaders who work in health centres and hospitals within the Assosa City Administration. Two health facilities (one health centre and one hospital) in the Assosa City Administration were studied. A total of 17 units/departments were included from both facilities at the baseline and end-line points of the intervention in order to measure the effect of TPF on selected indicators of data quality and information use.

Therefore, the implementation and research process were carried out among the health sector leaders in the district.

Theory of change

The conceptual model representing how the intervention and implementation strategies work to result in intermediate and long-term outcomes given the assumptions and contextual factors is presented below (Figure 2).

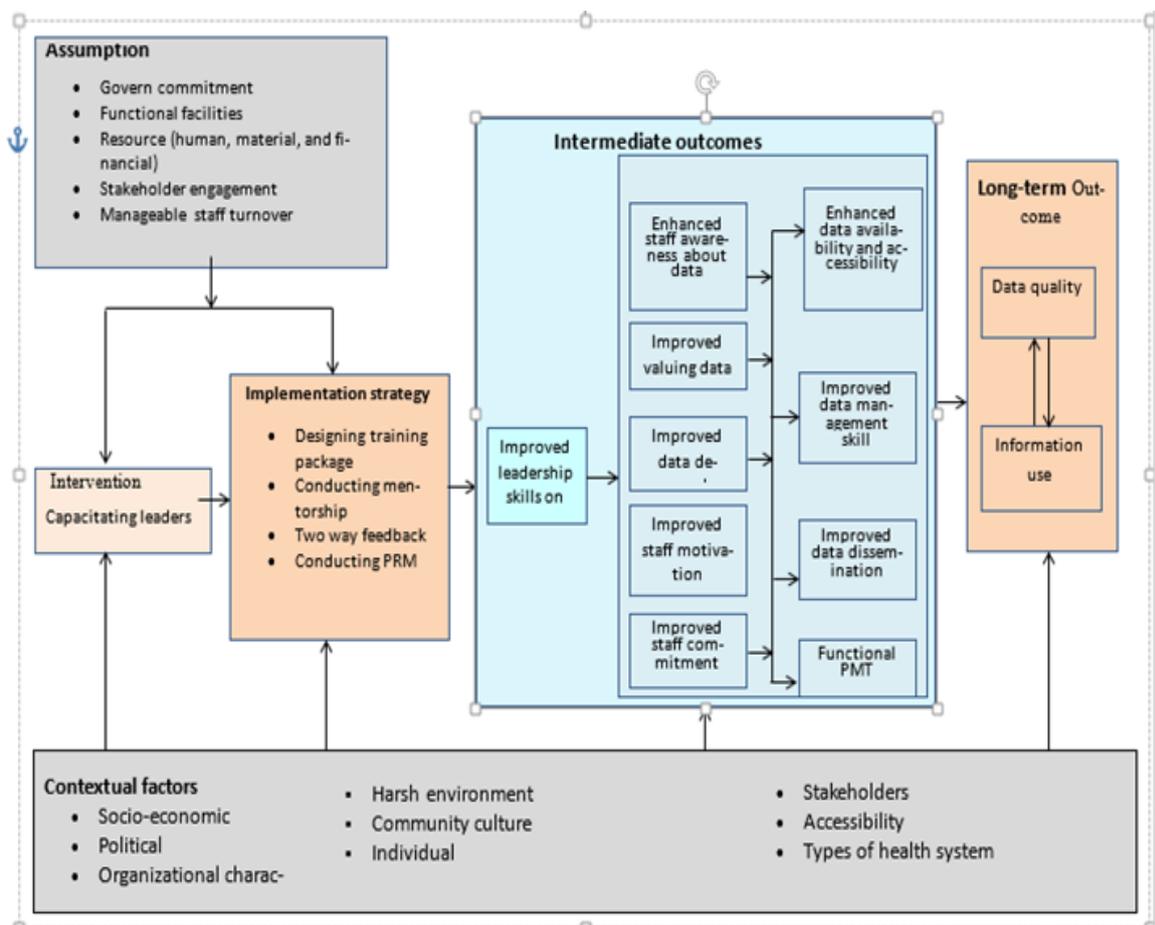


Figure 2: Conceptual Models for Leadership and Governance Implementation Research in Assosa City admiration, 2021

Intervention

Health workers in the facilities who had any position and leaders who had a position in the Woreda health office and who influenced workers in the health facilities were also target groups for the intervention. Thus, the zonal health office and regional health bureau managers were approached to make them aware of the intervention and help them understand its rationale. This is assuming that it would be easy for leaders in the woreda to implement the intervention and improve its outcomes. However, the number of participants and the intensity of intervention would be reduced as we go from lower (woreda) to higher (regional) level offices since supervision and mentoring mainly focus on health staff working in the health system, who produce, use, and report health system data.

Training

The training was provided for health sector leaders who were working at different levels in the districts which were leadership, management, and governance training. The training content covered basic leadership and governance, soft skills, as well as data demand and use. It assumed that leaders in data quality management and utilization have a responsibility to ensure compliance with regulations, standards, and organizational policies. All health facility leaders and district health office managers participated in the training.

Mentorship

Mentorship was another component of the intervention that would help to close the gaps in knowledge and skills of leaders in the healthcare administration. Guidelines for mentorship were developed considering the implementation challenges identified during the formative assessment. Mentors were trained beforehand to help them fully understand the strategies and overall aim of the mentorship. It was done every two months for a total of four sessions. The findings of the mentorship were disseminated to all mentees, which would indicate the strengths and weaknesses of health sector leaders in the role they played.

Feedback

The third component of the intervention was providing written feedback on the weaknesses and strengths based on the facts identified during mentorship and follow-up supervision. This feedback was disseminated not only to healthcare administration but also to district administrators. This helped administrators gain knowledge of the health information system implementation challenges and provide support to them. Hence, district and zone administrators participated in the start-up workshop and consecutive meetings held in the district. Like a mentorship session, written feedback was given to all health facilities four times during implementation.

Performance Review Meeting (PRM)

The performance review meeting was the fourth component of the intervention, designed as a platform for information dissemination and a learning forum.

During the performance review meeting, major achievements and findings were presented. The audience was administrators who were from the health centre, district health office, zone health department, and regional health bureau. The performance review meetings were held in the district twice in the entire project lifespan.

Data collection procedure

Developed data collection tools to accurately capture the helpful information to answer the research questions. The tools consisted of all variables that were in the frameworks developed based on the performance of routine health information system management tools (17). Data were collected from the intervention facilities using a cross-sectional survey based on the selected indicators of data quality and use at the health centre and hospital. The data was collected by trained data collectors, and there was close supervision during data collection on a daily basis.

Data quality control

In this study, various techniques were taken to ensure the study's quality from designing the tool, analysis, and interpretation. The tool was developed used data elements selected based on priority and/or weight given by the region for monitoring and evaluating the performance of the routine information management (PRISM) tool. Data were collected by experts in the HIS system and the supervision was held by experts who had research experiences in health information systems. One day the training was given to the data collectors and supervisors. The training contained an in-depth understanding of each data element in the tool. The data collection procedures were closely supervised. Corrective measures for the errors were taken during the data collection. During data collection, close and supportive supervision was put in place to ensure the quality of the data collected.

Data processing and analysis

Data were entered into Epi-data software and analyzed using Stata software, version 14. Estimates were conducted at the facility level by comparing them before and after the intervention. Descriptive statistics, such as frequency and percentage of departments at both the health center and hospital, were presented. The level of data accuracy and information use was

assessed by comparing the changes in percentage points before and after the intervention, utilizing the binomial test. The proportion of changes in percentage points of the study outcomes (data accuracy and information use) before and after the intervention was calculated and the significance of the intervention's impact on data quality and use was declared if the p-value $< .05$.

Variables and measurement

Information was measured using five criteria: problem identification, target versus coverage achievement, health coverage calculated, decision-making practice based on evidence, and feedback provision. Changes in percentage points were reported before and after the intervention.

Similarly, the level of data quality was measured using verification factors in six selected health system indicators, such as antenatal care (ANC1), family planning, facility delivery, malaria, HIV+, and pneumonia. Values deviated from accuracy were summed and the average value was used to determine the difference before and after the intervention. Finally, the change in percentage points was calculated by subtracting the average values from 1 at baseline and endpoints of the intervention.

Ethics

Ethical approval was obtained from University of Gondar (RN.V/P/RCS/05/1038/2020), and permission to conduct the study was secured from Benishangul Gumuz Regional State Health Bureau. The survey was subsequently conducted at two points, namely baseline and endline. This involved reviewing health facility documents for registers and reports, as well as investigating information use practice using the indicators mentioned in the method section.

Results

In this study one health center and one general hospital was included before and after the intervention. The total number of units/departments in both facilities was 17. Of the total departments, 9 (52.9%) were from the health center, whereas 11(47.1%) were from the hospital (Table 1).

Table 1: Departments assessed, Assosa Town, Benishangul Gumuz Regional State, Ethiopia, 2022

Department type	Health center	Hospital
ART clinic	1	1
MCIT head	1	0
Laboratory	1	1
Pharmacy	1	1
OPD	1	1
Under-5	1	0
Tuberculosis Clinic	1	1
Facility head	1	1
Emergency OPD	1	1
IPD	0	1
Total (N=17)	9	8

Data Accuracy

The data accuracy was assessed through verification factors of the selected indicators including ANC1, family planning, delivery, malaria, HIV+, and pneumonia. The findings indicated an improvement in consistency between registers and reports for these

indicators following the TPF intervention. The study showed a significant increase of 23 percentage points ($p < 0.001$) in data consistency at health center level after TPF intervention. Additionally, the study revealed that 10.7 percentage points ($p < 0.05$) increase in data consistency at hospital level (Figure 3).

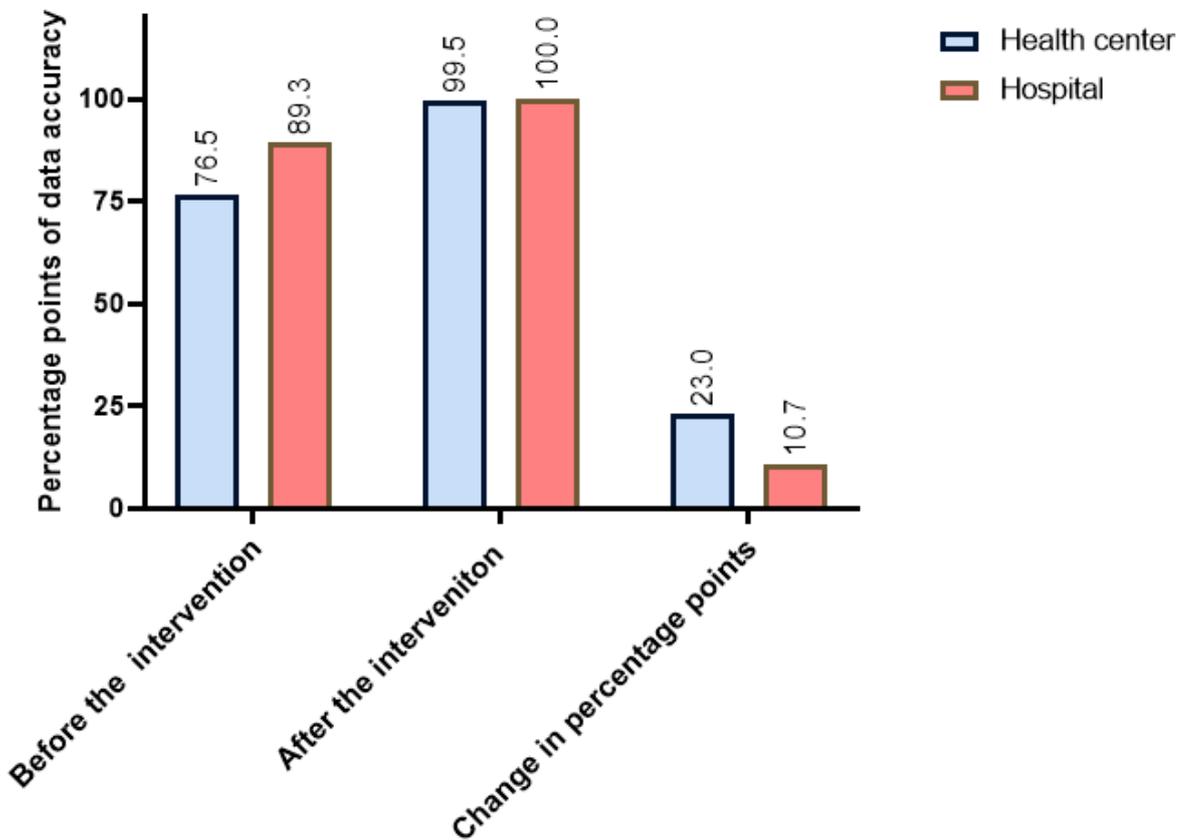


Figure 3: Effect of TPF intervention on data accuracy at Benishangul Gumz at health center and hospital level, 2022

Information use

The current study revealed that there was a significant improvement in the overall variation (change) in data use practice at health center level. The intervention implemented result in a 22.3 percentage point increase

($p < 0.001$) in the utilization of information at the health center. Likewise, the TPF intervention Led to a notable 34.1 percentage point increment ($p < 0.001$) in the adoption of information use practice at hospital (Figure 4).

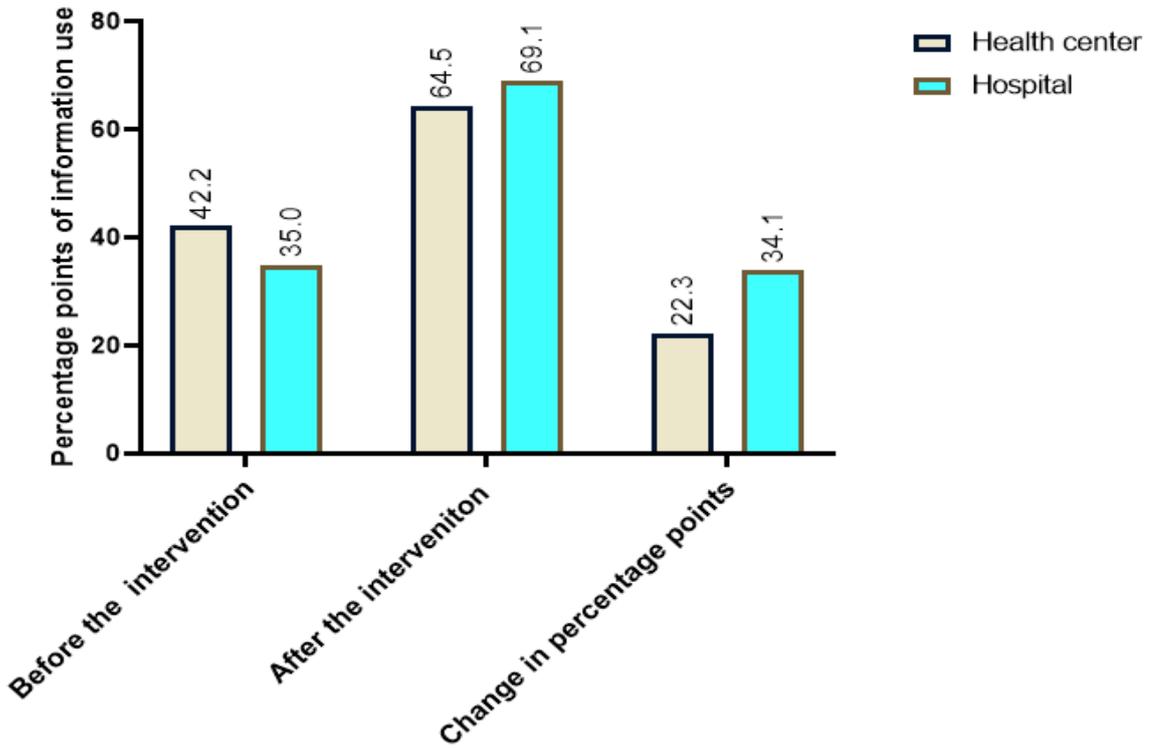


Figure 4: Effect of TPF intervention on information use practice at Benishangul Gumz health center and hospital level, 2022

Data accuracy and information use at district level
 Overall, at both health center and hospital level, the TPF intervention has resulted in a significant improvement in data accuracy, with a 16.7 percentage

point change ($p < 0.05$). Additionally, there has been a notable increase of 28.2 percentage points ($p < 0.001$) in the utilization of information for healthcare planning and decision-making (Figure 5).

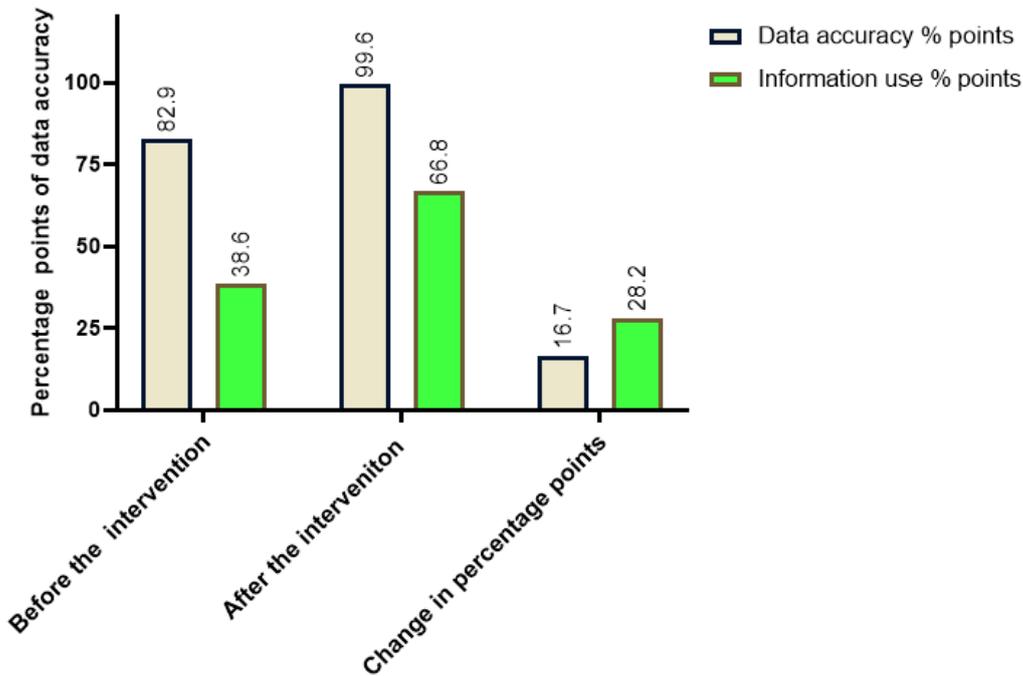


Figure 5: Effect of TPF intervention on data accuracy and information use at Benishangul Gumz, Assosa district, 2022

Discussion

Evidence shows that training workers on HIS improves health data quality and information use (18). However, because of context differences, it was not clear how training and post-training follow-up could effectively improve data quality and information use in Benishangul Gumuz Regional State. To contribute to the field, we conducted current implementation research was conducted, thereby alleviating the problem of a loose connection between health data producers and HIS leaders and suggesting implementation strategies that will be used for future scale-up in similar settings.

The TPF intervention was found to be an effective intervention in improving data quality and information use. The current study revealed that data accuracy was improved by 23 percentage points at the health center level and 10.7 percentage points at the hospital level. Likewise, information use was improved at the health center and the hospital level by 22.3 percentage points and 34.1 percentage points, respectively.

The TPF intervention has impacted the improvement of data quality by 28.2 and information used by 16.7 percentage point's increase at the district level. The current study is in line with previous literature that applying a certain theoretical knowledge, training is useful, and its application would be revealed when it is followed by post-training follow-up activities such as mentorship and feedback (19-22).

The improvement in the current study could be the fact that the discussion about data quality and information use in platforms such as performance review meetings would emphasis them so that leaders and the staff who potentially generate data and use will be committed.

The availability of regular meetings to evaluate the activities about data quality and use improves valuing of the data and could help the leaders and health staff to be role models in producing quality health data and use (23).

The other justification could be that in settings such as the Benishangul Gumuz Region where the infrastructure is poor and healthcare personnel is less experienced with high turnover, training and post-training follow-up are undoubtedly important for such settings (24).

Previous literature confirms the fact that data quality and information use can be improved with training and post-training follow-up intervention (18,24). The available evidence showed that capacitating leaders could create a sense of responsibility for health system data quality and use (13) as they use it for healthcare planning and decision-making (25).

The increment in data quality and use at the intervention district could be since the soft skills training was provided to health system leaders. The interpersonal communication and attitude among leaders and health staff towards data demand and use could be changed due to the intervention. The literature

showed that soft skill training such as professionalism, communication skills, strong work ethics, adaptability, and time management have a role to improve data demand and use among leaders (26,27). Moreover, it could enable them to monitor performances and identify barriers to health data quality and use for better achievements.

Furthermore, the training package such as supervision, mentoring, and feedback could reinforce the process, improve providers' and health leaders' motivation, and enhance practical HIS performances. The evidence in this regard showed that the HIS leaders mentoring, and feedback are considered to be effective strategies in health information systems (28). Moreover, it develops a sustained relationship and broad skills transfer from mentors to mentees and focuses more on improving performance to bridge the know-do gap. The positive findings from this study encourage replication of the same intervention in various districts in the regions where similar contexts and settings are common.

Limitations of the implementation research

One of the limitations of this implementation research was the use of a quasi-experimental study design: pre-post intervention. This design could challenge the findings due to the lack of counterfactual comparator group. However, efforts were made to control for other potential confounders by collecting the pre-post intervention data. The implementation strategies primarily consisted of feedback, mentoring and performance review meetings. It is difficult to determine which of these strategies specifically contributed to the observed results.

Conclusions

The study suggests that TPF (Training and Post-training Follow-up) has the ability to influence the improvement and utilization of health data quality. Empowering leaders, providing mentorship, and closely supervising the process to enhance healthcare data quality and usage is crucial. Strengthening PMT meetings at the facility level shows promise as a facilitator of the intervention and requires attention to improve health system data quality and usage. The regional and federal governments need to prioritize staff retention. Incentive mechanisms and motivational components should be considered in health system programs to reduce the turnover of healthcare workers. Additionally, it is important to emphasize the capacity building of health system leaders in relation to data quality and usage through soft skill trainings. Feedback, mentoring, and conducting PRM were found to be effective implementation strategies for improving data quality and information usage. The coverage and effectiveness of the implementation were also promising, indicating that similar interventions and implementation strategies can be scaled-up in other districts of the Benishangul Gumuz Regional State where similar contexts and settings are common.

Abbreviations

HIS: Health Information System
 HSTP: Health Sector Transformation Plan
 TPF: Training and Post-training Follow-up
 PRISM: Performance of Routine Information System Management
 ANC: Antenatal Care

Conflict of interest

The authors declared no financial and non-financial conflict of interest.

Availability of data and materials

Data will be available upon request from the corresponding author.

Consent for publication

Not applicable

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Authors' contribution

LD: Conceptualized the study, analyzed the data, wrote the manuscript, drafted the manuscript, edited the manuscript, approved the manuscript, and guided throughout the study;

TH: Conceptualized the study, analyzed the data, wrote the manuscript, drafted the manuscript, and edited the manuscript, approved the manuscript, and guided throughout the study;

AA: Conceptualized the study, analyzed the data, wrote the manuscript, drafted the manuscript, and edited the manuscript, approved the manuscript, and guided throughout the study;

AM: Wrote the introduction section and edited the manuscript; approved the manuscript and guided throughout the study;

DW: Analyzed the data, edited manuscript; approved the manuscript, and guided throughout the study;

MM: Edited manuscript; approved the manuscript, and guided throughout the study;

NA: Edited manuscript; approved the manuscript, and guided throughout the study;

BF: Conceptualized the study, analyzed the data, drafted the manuscript, and edited the manuscript, approved the manuscript, and guided throughout the study;

BT: Conceptualized the study, analyzed the data, drafted the manuscript, and edited the manuscript, approved the manuscript, and guided throughout the study.

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