Health Facilities Performance Monitoring Team focused motivation interventions to improve the use of health information for better decision making: *An implementation research study protocol*.

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Abstract

Background: In many resource-limited settings, including Ethiopia data use is a major challenge in the health sector. The transformation of health data use requires a concerted effort as it entails addressing barriers that are linked to technical, behavioral, and organizational factors. Although the importance of data-driven decision-making is recognized, there is paucity of evidence on how to effectively achieve this goal. This implementation research therefore aims at implementing interventions that can enhance the competence and motivation of the Performance Monitoring Team (PMT) in order to improve the culture of information use among health facilities in the Dire Dawa Administration and Harari regions.

Methods: Between January 2021 and February 2022, a quasi-experimental study including a pre- and post-assessment of data utilization was conducted at two hospitals and two health facilities in the Dire Dawa and Harari regions of Ethiopia. All PMT members at the health facilities were part of the study populations. The research was carried out in four phases, with the following approaches: (i) baseline situational analysis and prioritization of HIS issues; (ii) data collection and identification of implementation barriers and facilitators influenced by the Consolidated Framework for Implementation Research (CFIR); (iii) developing and implementing PMT-focused interventions; and (iv) monitoring and evaluating interventions using the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) model. Focused capacity building, best-performer recognition, data-day celebration forums, and PMT motivating interventions were to be improved based on the formative evaluations and the formative assessments. These will be the implementation strategies. Descriptive and regression analyses, as well as thematic analysis was used for the quantitative and qualitative studies, respectively. Ethical clearance has been obtained from the Haramaya University College of Health and Medical Sciences, Institutional Health Research Ethics Review Committee (IHRERC).

Expected Outcomes: This implementation research is expected to inform the barriers and facilitators of data use among health facilities and its implementation. The interventions proposed are expected to enhance the use of data for informed decision making. Furthermore, the feasibility, adoption, and maintenance of the intervention strategies are the alternate outcomes of this study. [*Ethiop. J. Health Dev.* 2022; 36 (SI-1)]

Key words: Data Use, PMT, Implementation Research, CFIR, Ethiopia.

Teaser Key Message:

- A quasi-experimental study with a pre -post assessment approach was conducted at two hospitals and two health facilities to analyze the effect of PMT on data utilization.

Detailed Key Messages:

- The study was carried out in four phases, beginning with a baseline situational analysis and prioritization of HIS issues and ending with the development of a monitoring and evaluation intervention plan based on the RE-AIM paradigm.
- The results of the study were used to explore the barriers to and facilitators of data use in health facilities, as well as the implementation process.
- The recommended changes are expected to improve the use of data for making informed decisions.

Introduction

Health information is one of the main core functions of a strong health system (1). Furthermore, significant human and financial resources have been invested in strengthening health information systems (HIS) for optimal quality data collection and interpretation which can be used for decision making that can enhance the quality of service delivery, ensures the appropriate supply of medical equipment and drugs, improves health programs, and promotes health equity (1,2).

Strong Health Management Information Systems (HMIS) have been most frequently identified as critical for improving the quality of health service delivery in Ethiopia (3). One of the four primary agendas of both Health Sector Transformation Plans (HSTP-HSTP-II and I) of the country is the information revolution (IR) agenda, which focuses on ensuring quality and equitable distribution of health service delivery for all. Owing to the observed gap in the health sector, information use has been given substantial prominence in both HSTPs (3,4).

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Performance Monitoring Team (PMT) - a multi-disciplinary team which is primarily responsible for improving data quality and using information on a regular basis to evaluate the progress and to enhance health care delivery, is the main platform for routine data use in the health sector (5). In Ethiopia, the PMT is chaired by the head of the facility and each department and/or case team leaders are members of the HMIS office, acting as a secretary.

Studies on health information systems suggest that quality data is essential for improved health service provision (6). Without quality data, providing the right information to the right person at the right time, designing, monitoring, and evaluating effective policies becomes almost impossible (1,7,8).

In many resource-limited settings, including Ethiopia, data use – defined as the process through which decision-makers or managers explicitly consider data in one or more steps of policymaking, program planning, or service provision – is a major challenge in the health sector (3,11,12). Cultural transformation of health data use requires a concerted effort as it entails addressing barriers that are linked to technical, behavioral, and organizational factors.
The improved availability and quality of data do not necessarily lead to an increased use of data for decision making. Often, health managers do not effectively use data for planning and resource allocation, and hence health systems fail to link evidence that could ultimately improve health service delivery (8,12).

Currently, health data utilization for local action-oriented performance monitoring is far behind what is expected to be within the health sector in Ethiopia, particularly at district and facility levels, which are primarily responsible for operational management (9,10). Thus, the effectiveness of the PMT at all levels of the health facilities is essential for ensuring optimal data use. Improving the availability of various data for planning, monitoring, and informed decisions is the main role of PMT (5). With this firm interest and ambitious plan, it is evident that the health facilities need a well-functioning and motivated PMT.

Despite the presence of the PMT platform, research indicates that data use at lower levels of the health system remains low in Ethiopia. In Low- and Middle-Income Countries (LMICs), the lack of adequate knowledge and skills (9,13), poor commitment and motivation from health managers and workers (14,15), data use culture of the organization (16), and poor leadership (17) have been sighted as reasons for poor quality data.

Inefficient use of data leads to poor data quality, poor resource allocation and loss of confidence in the health system (18,19). Substantial investments have been made to improve data use since the inception of the HMIS in Ethiopia in 2008. However, the improvement observed in data use was far behind what is expected which in-turn indicates that considerable work is still needed to bring about cultural transformation of data use at health facility levels (4).

Although the importance of data-driven decision-making is acknowledged, there is a scarcity of evidence on how to effectively achieve this goal. Hence, this implementation research is aimed at implementing interventions that can enhance the competence and motivation of PMT in order to improve the culture of information use among health facilities in the Dire Dawa and Harari regions.

Methods

Study settings:

This implementation research will be conducted in the Dire Dawa administration and the Harari region, Ethiopia. Dire Dawa is located 515 kilometers east of Addis Ababa and has a population of 341,834 people, of which 68.23% live in the city. According to the 2015 Ethiopian health and health-related indicators, there are about 15 health centers (8 urban and 7 rural), 2 hospitals, and 32 health posts under the city administration. There are a total of 622 health professionals and 209 health extension workers, and these facilities overall serve a total of 480,000 people. The Harari region is one of the eleven Ethiopian states, and is located about 500 km east of the capital and 48 km south of Dire Dawa. The region has a total population of 183,415 people, of whom 92,316 are men and 91,099 are women. More than half of its population live in urban areas, which accounts for 54.18% (24). There are three government hospitals, one university teaching hospital, two private hospitals, eight health centers, and 24 health posts.

Source and Study Population

The source population for this implementation research are all PMT members in health facilities in eastern Ethiopia while the study population constitutes of selected PMT members in the four health facilities.

Study design and period

This study will use a quasi-experimental study design with a pre- and post-assessment from November 2020 to February 2022. This implementation research was conducted in four phases, each described in detail below. The problems identified at each phase of the research will inform the consecutive phases.

Phase-I

Baseline situational analysis and research problem identification

This phase includes the identification of priority HIS problems in the study areas and a baseline assessment which was used to assess the level of data use, which was conducted through successive discussions and workshops with the Ministry of Health, regional health bureau, and health facility leadership. It included the following major activities:

a) **Established research team:** a research team comprising of MOH, RHBs, and university researchers was established. The inclusion of implementing stakeholders in the research team enhanced ownership and use of the research findings.

b) **Identify the research problem:** the research problem was identified through a series of discussions and workshops which were used to identify the regions' priority HIS problems. **Level of data use and PMT members HIS competency** was assessed using a structured questionnaire adapted from PRISM and other literature and included the following main objectives:
   i. **Facility level data use assessment** the availability of HIS documents and data visuals, planning and documentation practices, supervision and feedback, decision making processes, and information dissemination practices were assessed through observation, desk review, and interviews using a standard questionnaire adapted from PRISM and other relevant literature. The level of data use at the health facilities was measured through a quantitative study.
   ii. **Individual level assessment** consisting of knowledge, attitude and perception towards data use and HIS related training was also assessed. Furthermore, a comparison was made between perception towards self-competency which was measured using projected and actual competency towards HIS tasks (Appendix-I).

Data collection and analysis of phase one

Data was collected using a semi-structured interviewer-guided questionnaire in order to assess the level of competency, knowledge, and attitude of health workers towards data use. Observation and desk reviews were employed to collect data at the facility level. Descriptive analysis was conducted using frequency measures including proportions, means, and/or medians.

Phase-II

Identifying barriers and facilitators of implementation and data use

After the initial situational analysis of research problems, a qualitative study using a phenomenological design was used to identify the most important barriers and facilitators of data use and its implementation. The consolidated framework for implementation research (CFIR) (20) was chosen to drive these barriers and facilitators, and map them to the individuals involved, external context, organizational characteristics, and contextual factors. The CFIR is a meta-theoretical framework that provides standardized constructs influencing implementations and has been effectively used in health service research (21,22). The CFIR, consisting of five constructs and were adapted through a qualitative theme reduction process involving discussions with key informants from the ministry of health, regional health bureau, and health facilities (23). An in-depth interview was conducted with purposely selected key informants (health facility heads, medical directors, HMIS officers, and department heads).

The interview guide was prepared in English, and then translated into Amharic and Afan Oromo, before being re-translated back into English to ensure consistency. Four experienced interviewers serving as university lecturers conducted the in-depth interviews. The key informants included facility heads, medical directors, department/case team leaders, and HMIS officers, and they were interviewed with regards to the practice of data use and the barriers and facilitators for effective decision making at their respective facilities. Furthermore, barriers and facilitators of major data use platforms at health facilities, the DHIS-2, was also studied. Based on saturation of responses, 20-30 key informant interviews were conducted.

Data Analysis

All interviews were tape-recorded, transcribed verbatim in the original language and were translated into English. Transcripts were analyzed by two researchers who developed a codebook which was validated by the whole research team. ATLAS.ti software was used to analyze the data thematically. Thematic coding was applied by using a partially deductive approach, informed by findings from previous studies, and an inductive coding technique which was used in the creation of themes as they emerged from the transcripts.

Table 1: **Description of the CFIR domains and constructs, 2021**

S.No.	**Domains**	**Constructs**	**Description**
1	**Intervention Characteristics**	Simplicity	*The degree to which the planned data use improvement strategies are perceived as easy to implement*
		Planning	*The degree to which the data use improvement strategies are developed in advance*
		Quality of the intervention	*Stakeholders' perceptions towards the strategies that will result in the desired outcomes*
		Cost	*The cost incurred by the data use improvement strategies*
		Scalability	*The degree to which the data use improvement interventions can be scaled up to wider health facilities*
		Adaptability	*The degree to which the data use improvement strategies can be adapted, tailored, or refined to meet local needs*
2	**Inner setting**	HIS input and infrastructure	*The availability of HIS inputs necessary for data use at health facility level including registers, tally sheets, PMT logbooks, computers, electricity*
		Communication	*The presence of regular communication such as feedback provision between the PMTs and other health workers*
		Competing priorities	*PMTs additional priorities/activities that may affect their activities*
		Ownership/engagement	*The degree to which the health managers will engage in the implementation of the strategies*
		Staff turnover	*The resence of PMT members that may be leaving their position and that may affect the outcome*
		PMT structure	*The Availability of appropriate PMT structures at the health facilities as per the ministry of health standards and whether it is functional*
3	**Outer setting**	Policy and guidelines	*The availability of policy and guidelines on data use that are designed by either RHBs or MOH*
		Accountability mechanism	*The availability of accountability mechanism for issues related to health data*
		Supervision and mentorship	*The presence of supportive supervision and mentorship on data use for informed decision making*
		Performance based recognition	*Whether facilities or case teams are regularly recognized by upper bodies based on their performance*
4	**Individuals involved**	Workload	*The degree to which PMT members experience work burdens in implementing data use improvement activities*
		Compliance	*The degree to which PMT members comply with the data use improvement strategies*
		Value for data	*The degree to which PMT members give value for the data they generate and analyze*
		Misperception	*Health workers perception regarding the importance of data use improvement strategies*
		Readiness	*The degree to which PMT members are ready to implement the improvement strategies*
5	**Implementation process**	Implementation Context	*Understanding of the contextual factors that can affect data use and the implementation*
		Planning	*The degree to which the data use improvement strategies are developed in advance*
		Engagement (health managers, RHBs and other key stakeholders)	*Involvement of key stakeholders in the implementation of the data use improvement interventions*
		Implementation executing	*Accomplishing the implementation of data use improvement interventions according to plan*
		Monitoring and Evaluation	*Quantitative and qualitative feedback on the progress and quality of the implementation strategies accompanied by continuous team discussions*

Phase 3

Design and implement interventions

The design of the intervention in this phase is informed by phase I and II. The interventions aimed to improve data use and was developed and refined based on the data use barriers and facilitators assessment. The intervention included the following implementation strategies, were refined after the formative assessment and were implemented from August 2021 to February 2022.

1. **PMT-focused capacity building**: Specific capacity building activities focusing on the PMT were provided based on the gaps that will be identified through the formative assessment. Knowledge management & documentation, HIS M & E, and leadership in HIS, data analytics, and information use training are the trainings included and were refined based on the baseline assessment.
2. **Recognition of best performing PMT members and case teams**: this was accomplished by nominating data use champion of the month following the development of clear competition criteria. This non-monetary reward in the form of certificates and other reward mechanisms were provided for both the best-performing case teams and PMT members.
3. **Organize PMT data day and motivating PMT:** this activity aimed to improve attitudes toward data and data use by celebrating data day, which raises awareness of PMT. **PMT experience sharing:** the PMT shared experiences with other facilities with the aim of transferring experiences which could be used to inform decision-making.
4. **Monthly follow-up and feedback** were conducted by attending the PMT meetings and assigning one expert who could provide technical assistance and follow the intervention strategies.

Phase 4

Monitoring and Evaluation

The final phase of the implementation research was monitoring and evaluation of the implementation strategies. The primary outcome of this implementation research was improved data use levels. Data use was measured at the health facility level based on the assessment tool adapted from PRISM and other literature, which included data processing and analysis, data visualization, feedback provision, routine decision-making processes, data dissemination, and annual planning. Data use was measured at three intervals in the implementation period; at the beginning, after three months of implementation and at the end of the implementation. The secondary/intermediate outcomes included improved knowledge and competency of PMT members, regular conduct of root cause analysis for prioritized problem at the health facility, improved motivation and commitment of health managers to use data, and enhanced monitoring and follow up of data use by the PMT. The indicators, data sources and frequency used to measure these outcomes can be found in the RE-AIM model presented in Table-2.

Ethical considerations

The ethical approval and clearance for this research project was be obtained from Haramaya University College of Health and Medical Sciences, Institutional Health Research Ethics Review Committee (IHRERC). Permission was sought from all concerned offices, including Dire Dawa and Harari Health Bureaus and the health facilities. Prior to data collection, informed written consent was obtained from the heads of the study participants. The data was kept confidential during and after data collection.

Dissemination plan

After completion of the study, the findings will be presented to the Ministry of Health, Dire Dawa and Harari regions, participating health facilities, and other stakeholders working on the HIS. Furthermore, the results will be presented at the national and international research symposiums.

RE-AIM MODEL

Table 2: **RE-AIM model to evaluate the implementation strategies at Dire Dawa and Harari, 2021.**

	Indicators	Data Source	Frequency	Indicator definition/clarification
Reach	• Number of PMT members trained (by type) • Percentage of PMT members that are supported onsite • Number of recognitions given to individuals	Routine implementation research report	Every Month	• The proportion of PMT members attending regular meetings • proportion of PMT members that are mentored as per the standard • Proportions of PMTs recognized based on their performance
Effectiveness	• Proportion of Root cause analysis performed based on the problems identified • Proportion of action plans implemented from the problems identified • Proportions of evidence-based decisions taken based on routine data • Percentage of individuals who translated training into practice • Proportions of motivated PMT members	Routine implementation research report Qualitative and quantitative surveys	Every month	Action plans implemented based on the priority problems identified during regular meetings for PMT • Evidence based decisions taken at departments was measured using the actual decisions taken by the team • Motivation will be measured using PMT members with enhanced technical competence (knowledge, attitude and competency on data management) to use data for decisions
Adoption	• Regular PMT meetings were conducted as per the standard • Proportion of PMT members attending trainings • Proportion of PMT members who accepted recognition mechanism • Improved commitment of PMT	Routine programmatic report, key informant interviews	At the initial stages of implementation	Willingness of PMT team to implement changes Proportion of PMT team attending capacity building initiatives. Commitment of PMT was measured by looking at • Budget allocated for required HIS activities (data dissemination preparation, HIS tools, incentives, personal expenses) • Full and active participation of PMT members during meetings • Close follow-up of implementation
Implementation	• Quality of the intervention strategies	Document review, Observation, key informant interviews	Throughout the implementation	The strategies that are being conducted according to the intervention protocol
Maintenance	• Regular PMT functionality as per the intervention strategies	Desk review, Site observation	Throughout the implementation	Presence and Culture of information use

Discussion

This implementation research aimed to enhance the routine health information utilization at public health facilities for informed decision making and ultimately improve health service performance. This implementation research is expected to inform the barriers and facilitators of data use based on CFIR among health facilities and is intended to help design appropriate context-based implementation strategies. The interventions proposed are expected to enhance the use of data for informed decision-making. Furthermore, the feasibility, adoption, and maintenance of the intervention strategies were the other expected findings from this study. The key phases involved in the research, the implementation strategies, and the monitoring and evaluation have been discussed in this protocol.

The research was conducted at four health facilities in Dire Dawa and Harar (Dilchora general hospital and Dire Dawa health center from Dire Dawa, and Jugol general hospital and Amirnur health center from the Harari region) from September 2021 to February 2022. This implementation research targeted all PMT members found in these health facilities.

Given the large volumes of data generated at hospitals, the HIS professionals need to have higher levels of education and an increased number of professionals. This may be a challenge to the anticipated outcome of the implementation research. The pre-implementation differences in the status of data use were accounted for statistically, due to the baseline level of data that will be used as a reference point. Furthermore, the PMT

members competing priorities might have been a challenge for this implementation research. However, the ownership was enhanced by engaging with the regional health bureaus and the facility managers from the inception to the implementation phase of the research.

This research intended to inform policy on how to effectively utilize the only data use platform at health facility levels in Ethiopia, the Performance Monitoring Team. The interventions designed will guide the Ministry of Health and other stakeholders working in the area of health information systems in order to increase the data use practices at point of care in the health system.

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Competing interest
The authors declare that they have no competing or potential conflicts of interest.

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