

Using HMIS Data and Its Determinants in Health Facilities in East Wollega, Oromia Regional State, Ethiopia: Cross-Sectional Study Based on Medical Facilities

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ABSTRACT

Background: The Health Management Information System "HMIS" is an essential component of a health system designed to provide critical data for continuous quality improvement at all levels of healthcare management. Good quality data is an important aspect of healthcare planning, management, and decision-making. Information on data quality and information use in the study area is limited. Therefore, the aim of this study was to evaluate the use of HMIS data and its determinants in healthcare settings in East Wollega, Ethiopia.

Methods: A cross-sectional study was performed. Data was collected using a structured questionnaire and pre-tested through interviews. Data analysis was performed by SPSS for Windows version 20.0. Bivariate and multivariate logistic regression were performed. The $P < 0.05$ value is used to declare statistically significant variables.

Results: Research shows that the level of use of HMIS data for various decision-making purposes is 57.9%. The level of data quality in terms of timeliness of reporting, completeness, and accuracy of data is 70%, 78.2%, and 48%, respectively. The use of HMIS data showed a significant association with employee motivation (AOR = 2.07, 95% CI = 1.12, 4.29), and decisions based on superior directives (AOR) = 2.46, 95% CI = 1.10, 5.49) and monitor the performance of healthcare professionals (AOR=4.07, 95% CI=1.29, 12.83).

Conclusion: Employee motivation, performance monitoring, and higher-level directive-based decisions are

believed to be the determinants of HMIS data usage. THEREFORE, Policymakers and stakeholders in the region should focus interventions on these identified factors to improve the use of HMIS data to deliver quality healthcare services. for community.

Keywords: HMIS Data; Data Quality; Health Facility; East Wollega; Ethiopia

INTRODUCTION

Globally, there is growing interest in measuring data quality and using information to capture critical insights into challenges and constraints in health service delivery and program implementation. submit. This reliance on data quality and its use requires quality assurance mechanisms that support reliable data collection, storage, and management [1]. The current health system in developing countries has undergone many structural changes over the years in response to common health problems and to acknowledge weaknesses in the care delivery system. current health care [2].

Decentralization and decentralization of budget control have shifted much of this growing burden to the periphery, forcing districts to provide local health statistics as the basis for decision-making [3].

A well-functioning HIS is an integrated effort to collect, process, communicate, and use health information and knowledge to influence policy and decision-making, program action, individual and community health outcomes, and research. All health system functions rely on the availability of timely, accurate, and reliable information for decision-making [4].

In Ethiopia, although there have been changes in initiative and reform of health information and management systems; low quality and use of data/information, especially in district health facilities and primary care facilities, which are primarily responsible for operational management and decision-making. determined. Currently in Ethiopia, the focus is on developing the health system at the district level. The primary health care system is an autonomous part of the national health system and comprises a clearly defined population group within a clearly delimited administrative and geographical area [5,6].

A Health Management Information System "HMIS" is a system for collecting, synthesizing, analyzing, presenting, and using health and health-related data to make evidence-based decisions for healthcare workers, administrators, policymakers, and others. The Community Health Information System "CHIS" is part of HMIS and is a family-centered health information system designed for Health Extension Workers (HEWs) to manage and monitor the education of their children and households and provide an integrated package of promotion, prevention, and treatment of basic health services for the family [7].

Ethiopia's Federal Ministry of Health (FMOH) designed the Family Directory as a comprehensive data collection tool to document the family-centered HEP services provided by HEW. CHIS is a component of the reformed Health Management Information System "HMIS"; designed by FMOH on the principle of standardization, integration, and simplification to provide information to support decision making [8].

Data quality is a key factor in creating reliable health information that helps track progress and make continuous improvement decisions. The need for organized, accessible, up-to-date, and accurate data for health decision-making has become a growing concern at the national and international levels. To address this issue, FMOH undertook a sweeping reform and overhaul of the National HMIS. The reform has taken important steps to address recurring health data shortages that limit the quality of care, planning and management systems and decision-making by administrators in the country. all levels of the health system [9].

Despite vigorous efforts in recent years to improve the efficiency of information systems, the use of health data for decision-making remains a major challenge. Therefore, the aim of this study was to identify the determinants of the use of HMIS data in decision-making and thereby examine how health data and

information are generated in health facilities in Thailand. East Wollega, Ethiopia.

METHODS AND MATERIALS

Research Area and Time

The study was conducted in the East Wollega area from 5 to 25 September. It is located 320 km west of Addis Ababa. The total population is estimated to be 1,460,575 (49.9% female, 50.1% male). Nekemte is the capital of the East Wollega region. Currently, in the East Wollega area, there are 3 hospitals, 17 Woreda medical offices, 58 medical centers, and 287 health stations.

Research Design

A medical-based cross-sectional study design was used.

Determine Sample Size

The sample size was calculated using the unique population ratio formula. Results of a study on the use of health information in the Jimma area were considered [10]. Accordingly, the margin of error is five percent (d) with 95% confidence in the confidence of any results used (where N is the desired sample size, and Z is the value of the variable). standard at the 95% confidence interval), and P is the rate of information used in health facilities 32.9%). In addition, the study population is less than 10,000 people; a correction was made (nf). Therefore, with a 5% allowance for non-responders, the final sample size is 316.

Sampling Procedure

A simple random sampling technique was used. Five Woreda Medical Units were randomly selected for the study (i.e. G/Sayo, Diga, G/Gida, Wayu Tuka and Sassiga Woreda). Samples were obtained from all five Woreda medical offices. First, the sample size is allocated proportionally to each medical unit based on the number of its staff (medical professionals and/or HITs). The study participants were then selected from the selected Woreda until the required number of allocated samples was met.

Data Collection Tools and Processes

Data were collected using a pre-tested structured questionnaire. Six public health professionals with Bachelor of Science degrees participated in data collection. Two supervisors from the adjoining Woreda medical office were involved. A half-day orientation session was given to the data collectors and supervisors on the principal investigator's data collection tools and procedures.

Data Quality Control

The questions are translated from English into the local language (Afan-Oromo) and vice versa. A pre-test was performed on 5% of the samples. Data collectors have been trained in how to conduct data collection. Supervisors and field investigators perform daily surveillance at all medical facilities. The data collector is authorized by the supervisor to correct incomplete and inconsistent data at the time of data collection. A random supervisor checks all procedures and completeness of formats. Collected data is thoroughly checked before data entry.

Data Processing and Analysis

Data were edited, coded, and imported into Epi info version 3.5.1, and then exported and analyzed using SPSS Windows version 20. The frequency and percentage of different variables were calculated for a summary. data off. A two-variable logistic regression model was adjusted as the main analytical method.

Based on the results of the two-variable analysis, variables with $p < 0.2$ were included in multivariable logistic regression analysis by direct LR method. Finally, $P < 0.05$ in multivariate analysis was used to identify confounders and determinants of the use of HMIS data. The fit of the logistic regression models was evaluated by Hosmer-Lemeshow statistics. The multicollinearity problem was also checked and the variables with a high multicollinearity problem were excluded from the model.

OPERATION DEFINITION

Data quality is an assessment of its ability to perform its function in each context in terms of timeliness, accuracy, and completeness.

Completeness means that 85% of the required data is present at recording and in the report format. Accuracy refers to the consistency and physical presence of data on the service log and is interpreted in terms of the country's accuracy level (verification factor = 0.9-1.1).

Timeliness means that data is recorded and reported on time according to national standards.

The use of HMIS data refers to the use of health information/data in decision-making, i.e. for planning, monitoring, evaluation, budgeting, or drafting comments and for other purposes.

RESULTS

The total number of study participants was 316 people with a response rate of 100%.

Sociodemographic Characteristics

Of the study participants, 150 (47.5%) were male and 166 (52.5%) were female. The average age of respondents was 29.27 years old (\pm SD7.41). The occupational classification of respondents is described below (Table 1).

Health professional Category	Number (Percent)
Case team coordinators	40 (12.7)
HMIS Staff, M&E Team	29 (9.2)
Technical staffs	181 (57.3)
HEWs (Level III & IV)	55 (17.4)
Head WoHO	11 (3.5)
Total	316 (100)

Table 1: Distribution of respondents with their professional category in East Wollega, Oromia Region, Ethiopia.

Healthcare Infrastructure

Out of 15 medical centers, only 6 (40%) have HMIS units. Twenty-three (77%) health stations do not have electricity. Similarly, five medical centers (33%) do not have electricity. More than half of the health centers are not funded for HMIS activities (Table 2).

Facility Infrastructure	Health Post		Health Center		Woreda Health Office (N=5)	
	N=30		N=15			
	Yes	No	Yes	No	Yes	No
HMIS Unit	NA	NA	6 (40%)	9 (60%)	3 (60%)	2 (40%)
e-HMIS Computer	NA	NA	12 (80%)	3 (20%)	5 (100%)	0
MPI/Tickler box	24 (80%)	6 (20%)	11 (73%)	4 (27%)	NA	NA
Standard shelves	24 (80%)	6 (20%)	6 (40%)	9 (60%)	NA	NA
Trained focal person	NA	NA	13 (87%)	2 (13%)	5 (100%)	0
HIT professionals	NA	NA	12 (80%)	3 (15%)	5 (100%)	0
Electric power	7 (23%)	23 (77%)	10 (67%)	5 (33%)	5 (100%)	0
Budget for HMIS	NA	NA	7 (47%)	8 (53%)	3 (60%)	1 (40%)

Table 2: The infrastructure of health facilities in East Wollega, Oromia Region, Ethiopia.

HMIS Training Status of Healthcare Professionals

Approximately 201 (63.6%) study participants had not received any HMIS/CHIS refresher training in the past six months. Only 5 (9.1%) HEW 77 (43.3%) medical centers and 33 (40.7%) medical staff at Woreda medical offices received HMIS training in the past six months. Overall, 115 (36.4%) of respondents had received training in HMIS in the past six months (Figure 1).

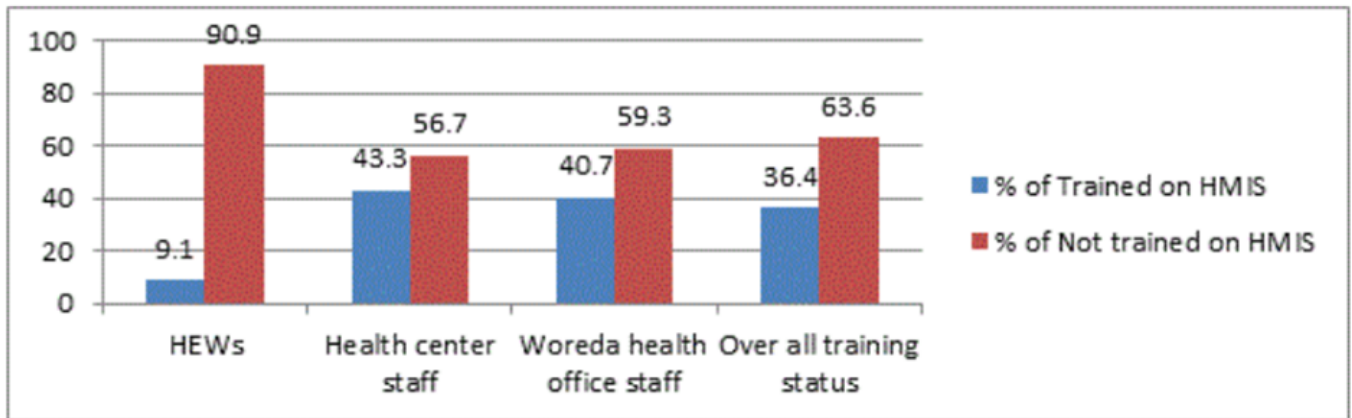


Figure 1: Proportion of respondents received training on basic HMIS in the past six months in East Wollega, Oromia Region, Ethiopia.

Data Quality

Research shows that all data collection tools (subscription booklets) are completed manually. As a result, of the 225 service subscriptions reviewed, about 176 (78.2%) of the service registration data were complete. In addition, the study showed that the level of timeliness in reporting health facilities to the next level of the health system was 21 (70%), 10 (66.7%) and 4, respectively. 80%) at the following Health Centers and Woreda Medical Offices. The overall timeliness of reporting health facility data is 35 (70%). The data quality status for timeliness, completeness, and accuracy of reported data is 70%, 78.2%, and 48%, respectively (Figure 2).

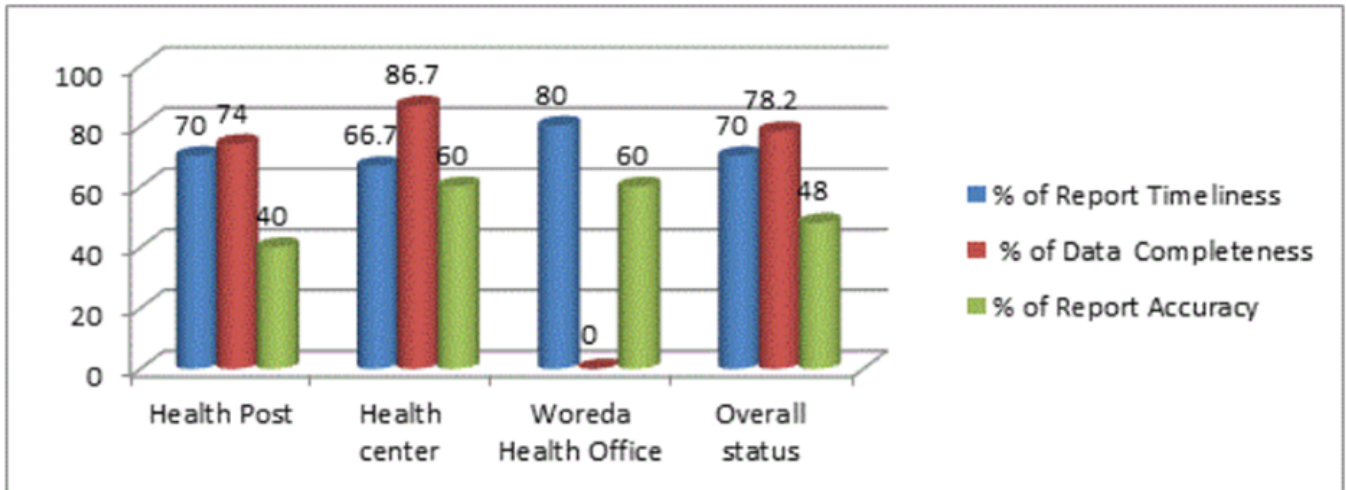


Figure 2: Data quality of health facilities in East Wollega, Oromia region, Ethiopia.

Use of HMIS Information

The overall use of HMIS information for decision-making purposes by healthcare professionals was 184 (57.9%) (Figure 3).

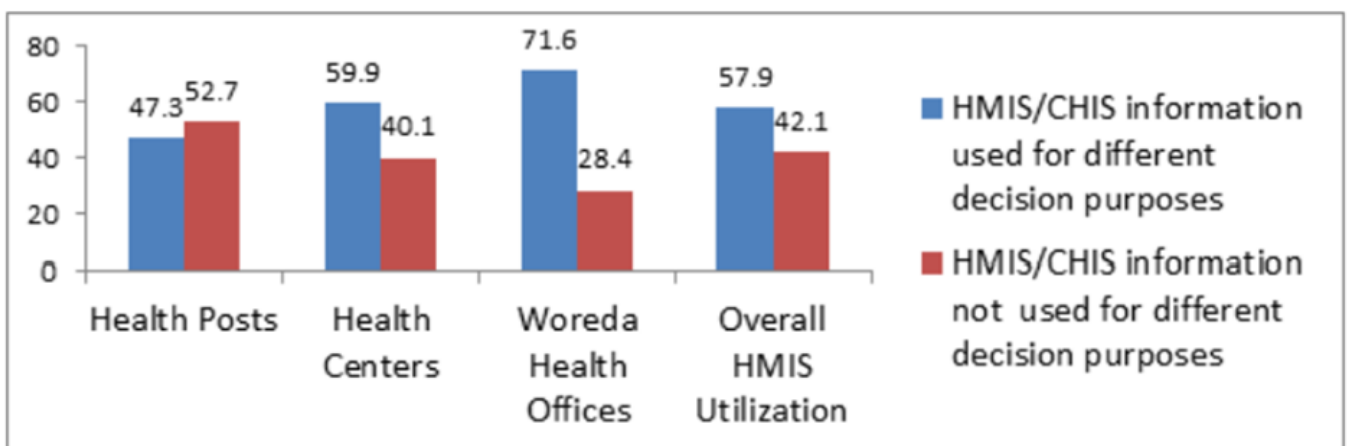


Figure 3: HMIS data utilization in East Wollega, Oromia region, Ethiopia.

Factors Determining the Use of HMIS Information

Multivariable logistic regression analysis showed that employee motivation, superior directive-based decisions, and performance monitoring by healthcare professionals were significantly associated with data usage. HMIS.

The rate of HMIS data usage was twice as high (AOR = 2.07, 95% CI = 1.12, 4.29) in motivated employees as well as in unmotivated employees. Similarly, the likelihood of using HMIS data is two and a half times (AOR = 2.46, 95% CI = 1.10, 5.49) among healthcare professionals making decisions based on their directives. superiors than those who do not use instructions from superiors. their superiors make decisions. In addition, the prevalence of HMIS data usage was 4 times higher (AOR=4.07, 95% CI=1.29, 12.83) among healthcare professionals who regularly monitored their performance compared with those who tracked their performance.

DISCUSSION

This study focuses on the factors that determine the use of HMIS data. Of the study participants, 47.5% were male and 52.5% were female. The data quality status for report timeliness, completeness, and accuracy of data is 70%, 78.2%, and 48% respectively.

Approximately 38.3% of respondents said they had received training in HMIS data quality and information use tasks in the past six months. This result is lower than the study conducted in Jimma, Ethiopia. This may be because medical facilities in Jimma have better access to training.

Research shows that 57.9% of healthcare professionals have used HMIS for decision-making purposes. This number is higher than the results of a study conducted at Jimma [10], in which the rate of using HMIS for decision-making purposes was 32.9%. In the present study, the proportion of health professionals trained in HMIS data quality was lower than in the Jimma study mentioned above. In contrast, the use of HMIS data in the present study is better, regardless of training status. This may be due to the medical institution leadership's better-motivated staff and commitment in the current research context.

In addition, the study showed that the accuracy of the HMIS data was 48%. This number is lower than the results of the study conducted in Guanajuato, where the data accuracy was 95% [11]. This may be due to differences in training opportunities, medical facility structures, and employee motivation or leadership commitment issues. But this requires further investigation. Employee motivation was significantly related to the use of HMIS data. This is like the results of a study conducted in Bahir Dar, Ethiopia [11]. In addition, decisions by healthcare professionals based on directives from superiors and regular performance monitoring are positive predictors of HMIS data usage.

CONCLUSION

The data quality status for report timeliness, completeness, and accuracy of data is 70%, 78.2%, and 48% respectively. The overall usage rate of HMIS data is 57.9%. Employee motivation was significantly related to the use of HMIS data. In addition, decisions by healthcare professionals based on directives from superiors and regular performance monitoring are positive predictors of HMIS data usage.

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