

Utilization of HMIS Data and Its Determinants at Health Facilities in East Wollega Zone, Oromia Regional State, Ethiopia: A Health Facility Based Cross-Sectional Study

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Research Article

ABSTRACT

Background: Health Management Information System (HMIS) is a core health system building block designed to provide important data for continuous quality improvement at all levels of health care administration. Good quality data is an important aspect of health care planning, management and decision making. There was limited information of data quality and information uses in the study area. Therefore, the aim of this study was to assess the HMIS data utilization and its determinants at health facilities in East Wollega, Ethiopia.

Methods: A cross sectional study was conducted. The data was collected using pre-tested and structured questionnaires through interviews. Data analysis was done by SPSS for Windows Version 20.0. Bivariate and multivariate logistic regressions were conducted. P-value<0.05 was used to declare statistically significant variables.

Results: The study revealed that the level of HMIS data utilization for different decision making purposes was 57.9%. The level of data quality in terms of report timeliness, data completeness and data accuracy were 70%, 78.2 % and 48%, respectively. The utilization of HMIS data showed significant association with staff motivation (AOR=2.07, 95% CI=1.12, 4.29), decisions based on superior directives (AOR=2.46, 95% CI=1.10, 5.49) and performance monitoring by health professionals (AOR=4.07, 95% CI=1.29, 12.83).

Conclusion: Staff motivation, performance monitoring and decisions based on superior directives were found to be determinants of HMIS data utilization. Therefore; policy makers and stakeholders in the area should focus their intervention on these identified factors in order to improve the HMIS data utilization for rendering quality health care services to the community.

Keywords: HMIS data, Data quality, Health facility, East Wollega, Ethiopia

INTRODUCTION

Globally there is increasing interest in the measurement of data quality and information use to capture key information about the challenges and limitations of health service provisions and program implementation. This reliance on data quality and information use necessitates quality assurance mechanisms that promote reliable data collection, storage & management [1].

Today's health care system in developing countries has undergone many structural changes over the years in response to prevailing health problems and in recognition of weakness in the existing health delivery system [2]. Decentralization and delegation of budgetary controls have shifted much of this growing burden to the periphery, requiring districts to provide local health statistics as a basis for decision-making [3].

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

In Ethiopia despite improvement on initiative of Health Management and Information System and reform changes; data/information quality and use remain weak, particularly at district health offices and primary health care facilities, which have primary responsibility for operational management and decision making. Currently, in Ethiopia, the emphasis of health system development aimed at district level. The primary health care system is supposed to be self-contained segment of the national health system and it comprises a well-defined population within a clearly delineated administrative and geographical area^[5,6].

Health Management Information System (HMIS) is the systematic collection, aggregation, analysis, presentation and utilization of health and health related data for evidence based decisions for health workers, managers, policy makers and others. Community Health Information System (CHIS) is a part of HMIS & is a family-centered health information system designed for health extension workers (HEW) to manage and monitor their work in educating households and delivering an integrated package of promotive, preventive & basic curative health services to families^[7].

Federal Ministry of Health (FMOH) of Ethiopia designed Family Folder as a comprehensive data collection tool for documenting family-centered HEP services provided by HEWs. The CHIS is a component of the reformed Health Management Information System (HMIS) designed by the FMOH according to the principles of standardization, integration and simplification to provide information for decision making^[8].

Quality of data is a key factor in generating reliable health information that enables monitoring progress and making decisions for continuous improvement. The need for organized, accessible, timely and accurate data for health decision making has become a growing concern at national and international levels. In response to this, the FMOH has undertaken an extensive reform and redesign of the national HMIS. The reform has taken major steps to respond to the deficiency of routine health data that limited the quality of care, planning and management systems, as well as decision-making by managers at all levels in the health care system^[9].

Despite the intensive efforts to improve the efficiency of information systems in the past few years, the utilization of health data for decision making is still a big challenge. Therefore, the purpose of this study was to identify the determinants of HMIS data utilization in decision making and thereby examine how health data and information are generated at health facilities in East Wollega, Ethiopia.

METHODS AND MATERIALS

Study Area and Period

The study was conducted in East Wollega Zone from September 5-25, 2017. East Wollega is found in the Oromia Regional State, Ethiopia. It is located at 320 km West of Addis Ababa. It has an estimated total population of 1,460,575 (49.9%Males, 50.1%Females). Nekemte is the Capital Town of East Wollega Zone. Currently, in East Wollega Zone, there are 3 Hospitals, 17 Woreda Health Offices, 58 Health Centers and 287 Health Posts.

Study Design

Health Facility based cross-sectional study design was used.

Sample Size Determination

The sample size was calculated using single population proportion formula. Findings from a study on Utilization of Health Information in Jimma Zone were considered^[10]. Accordingly, five percent margin of errors (d) with 95% confidence of certainty of any outcome was used (where N is desired sample size, Z is the value of standard normal variable at 95% confidence interval and P is the proportion of utilization of information at health facilities which was 32.9%). Besides, for the study population was less than 10,000; adjustment was done (nf). Therefore, with the 5% contingency for non-respondents the final sample size became 316.

Sampling Procedure

Simple random sampling technique was used. Five woreda health offices were randomly selected for the study (i.e., G/Sayo, Diga, G/Gida, Wayu Tuka and Sassiga Woreda). Samples were taken from all the five woreda health offices. First, the sample size was proportionally allocated to each health office based on the number of their staffs (Health and/or HIT professionals). Then the study participants were drawn from the selected Woredas' until the required allotted number of sample was satisfied.

Data Collection Tool and Procedure

The data was collected using pretested structured questionnaires. Six BSc degree public health professionals were participated in the data collection. Two supervisors were participated from the adjacent woreda health office. Half a day orientation was given to the data collectors and supervisors on the data collection tools and procedures by the principal investigators.

Data Quality Control

The questionnaires were translated from English into the local language (Afan-Oromo) & vice versa. A pre-test was conducted on 5% of the sample. Data collectors were trained on how to conduct the data collection. Daily supervision was held at all health facilities by field supervisors and the investigators. Data collectors were enabled to rectify incomplete and inconsistent data by supervisors at the time of data collection. Supervisors used to check all procedures and completeness of formats randomly. The collected data were rechecked before data entry.

Data Processing and Analysis

Data were edited, coded and entered in to Epi info version 3.5.1 and then exported to and analyzed by SPSS windows version 20. Frequencies and percentages of different variables were computed to summarize the data. Bivariate logistic regression model was fitted as a primary method of analysis. Based on the findings of bivariate analysis, variables having $p < 0.2$ were entered into multivariate logistic regression analysis using the forward LR method. Finally, $P < 0.05$ in multivariate analysis was used to identify confounding factors and determinants of HMIS data utilization. The fitness of logistic regression models was assessed using the Hosmer-Lemeshow statistic and multicollinearity problem was also checked and the variables which had high multicollinearity problems were eliminated from the model.

OPERATIONAL DEFINITIONS

Data quality is an assessment of data's fitness to serve its purpose in a given context in terms of timeliness, accuracy and completeness.

Completeness refers 85% of required data are present on registration and reported format.

Accuracy refers the consistency and actual presence of data on service registration books and interpreted by national range of accuracy level (Verification Factor=0.9-1.1).

Timeliness refers data are recorded and reported on time as per the national standard.

HMIS data utilization refers to use of health information/data in decision making, i.e., for planning, monitoring, evaluation, budget allocation or writing feedback and other purposes.

RESULTS

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

Socio-Demographic Characteristics

Table 1. Distribution of respondents with their professional category in East Wollega, Oromia Region, Ethiopia, 2017.

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)

Among the study participants 150 (47.5 %) were men while 166 (52.5%) were women. The mean age of respondents was 29.27 (\pm SD7.41). The professional category of respondents is depicted below (**Table 1**).

Health Facility Infrastructure

Among the 15 health centers only 6 (40%) had HMIS unit. Twenty three (77%) of the health posts had no electric power access. Similarly, five health centers (33%) had no electric power access. Above half of the health centers were not budgeted for HMIS activities (Table 2).

Table 2. The infrastructure of health facilities in East Wollega, Oromia Region, Ethiopia, 2017.

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%)

HMIS Training Status of Health Professionals

About 201 (63.6%) of the study participants did not attend any HMIS/CHIS refresher training in the past six months. Only 5 (9.1%) of HEWs and 77 (43.3%) of health center and 33 (40.7%) of woreda health office health professionals received training on HMIS in the past six months. In general, 115 (36.4%) of the respondents were trained on HMIS in the past six months (Figure 1).

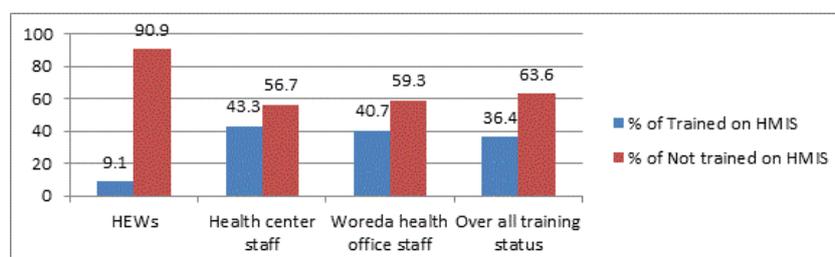


Figure 1. Proportion of respondents received training on basic HMIS in the past six months in East Wollega, Oromia Region, Ethiopia, 2017.

Data Quality

The study revealed that all the data collection tools (registration books) were filled manually. Accordingly, out of 225 service registration books examined about 176 (78.2%) of service registration data were complete. Besides, the study showed that the timeliness of health facility report to next respective level of health system were 21 (70%), 10 (66.7%) and 4 (80%) at Health posts, Health Centers and woreda Health offices respectively. The overall timeliness of health facility data reporting was found to be 35 (70%). The status of data quality in terms of report timeliness, data completeness and data accuracy were 70%, 78.2% and 48%, respectively (Figure 2).

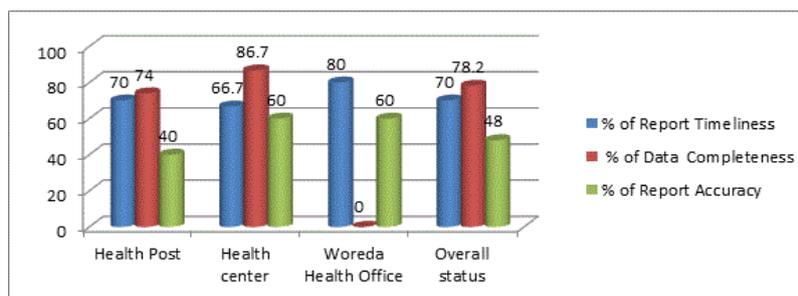


Figure 2. Data quality of health facilities in East Wollega, Oromia region, Ethiopia.

Utilization of HMIS Information

The overall HMIS information utilization for decision making purpose by health professionals was 184 (57.9%) (Figure 3).

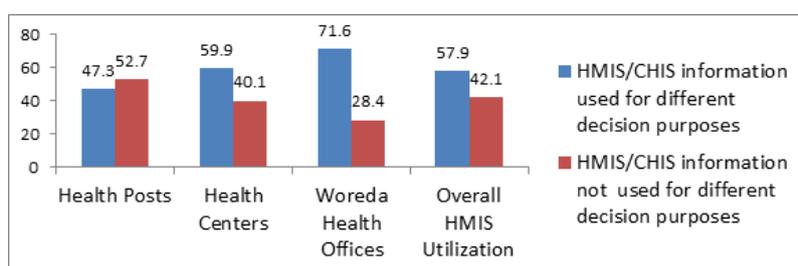


Figure 3. HMIS data utilization in East Wollega, Oromia region, Ethiopia, 2017.

Determinants of HMIS Information Utilization

The multivariate logistic regression analysis revealed that staff motivation, decisions based on superior directives and performance monitoring by health professionals were significantly associated with HMIS data utilization.

The odds of HMIS data utilization was two times more likely (AOR= 2.07, 95% CI=1.12, 4.29) among motivated staffs as compared to among those not motivated. Similarly, the odds of HMIS data utilization was two & half times (AOR=2.46, 95% CI=1.10, 5.49) more likely among health professionals who made decisions based on superiors directives than among those who did not use superiors directives for decision making. Besides, the odds of HMIS data utilization was four times (AOR=4.07, 95% CI=1.29, 12.83) more likely among health professionals who regularly monitor their performance as compared to those who did monitor their performance (Table 3).

Table 3. Determinants of HMIS data utilization in East Wollega, Oromia region, Ethiopia, 2017.

Variables	HMIS Utilization	AOR	95% CI (AOR)
Decision based on superior's directives	Yes	2.46	(1.101, 5.493)
	No	1R	
Performance monitoring	Yes	4.07	(1.290, 12.838)
	No	1R	
Staff motivation	Yes	2.07	(1.120, 4.294)
	No	1R	

DISCUSSION

This study had focused on the determinants of HMIS data utilization. Among the study participants 47.5% were men while 52.5% were women. The status of data quality in terms of report timeliness, data completeness and data accuracy were 70%, 78.2% and 48%, respectively.

About 38.3% of the respondents reported that they were trained on HMIS data quality and information use tasks in the past six months. This finding is lower than the study findings in Jimma, Ethiopia. This may be due to the fact that health facilities in Jimma had better access to training opportunities.

The study showed 57.9% of health professionals utilized HMIS for decision purpose. This is higher than the findings of a study conducted in Jimma [10], where the use of HMIS for decision purpose was 32.9%. In the current study, the proportion of health professionals trained on the HMIS data quality was lower as compared to the above mentioned study in Jimma. Contrary to this, the HMIS data utilization is better in the current study; irrespective of the training status. The reason may be existence of motivated staffs & better commitment of the health facility leaders in the current study settings.

Besides, the study revealed that the HMIS data accuracy was 48%. This is lower than the study finding in Guanajuato where data accuracy was 95% [11]. This might be due to the differences in training opportunities, health facility setups and staff motivation issues or leaders commitment. But it needs further investigation.

Staff motivation was significantly associated with HMIS data utilization. This is similar to the finding of a study conducted in Bahir Dar, Ethiopia [11]. In addition, health professionals' decisions based on superiors' directives and regular performance monitoring were positive predictors of HMIS data utilization.

CONCLUSION

The status of data quality in terms of report timeliness, data completeness and data accuracy were 70%, 78.2% and 48%, respectively. The overall HMIS data utilization was 57.9%. Staff motivation was significantly associated with HMIS data utilization. In addition, health professionals' decisions based on superiors' directives and regular performance monitoring were positive predictors of HMIS data utilization.

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