Utilization of HIS Data and Associated Factors at Public Health Facilities of Sidama Regional State, Southern Ethiopia- Health Information Utilization at Public Health Facilities.

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Abstract

Background: Health information plays a critical role in supporting evidence-based decision-making for all health system pillars. Although there have been marked improvements recently, routine health information utilization remains low in Ethiopia. Therefore, this study is designed to assess health information systems data utilization and the associated factors in Sidama Regional state, South Ethiopia.

Methods: A facility-based cross-sectional study was conducted from December 2019 to December 2020 at public health institutions in the Sidama regional state, Southern Ethiopia. A systematic random sampling technique was used to select the study subjects. Data was collected using a structured, self-administered questionnaire through an interview and an observational checklist. The data were entered into EPIDATA version 3.5.3 and then exported to SPSS version 20 for analysis. Multivariable logistic regression was applied to identify factors associated with the utilization of health information systems.

Results: The overall HMIS data utilization in the Sidama region was 57.8% (95% CI; 52.92, 62.68). HMIS data utilization was higher in hospitals (90%) than in health centers (48%). Receiving training on health management information systems (AOR =3.49; 95% CI, 1.89-6.70), data completeness (AOR, 2.98; 95% CI, 1.64-5.40), presence of eHMIS/computer (AOR, 2.53; 95% CI, 1.32-4.84), and having regular performance review on data use (AOR, 2.57; 95% CI, 1.43-4.63) were significantly associated with the utilization of health information system data.

Conclusion: The overall HMIS data utilization in the Sidama region was low compared to the national figure. On-job HMIS training, the presence of electronic HMIS (eHMIS)/computer, data quality and regular standard performance reviews were key predictors of good data use practice. Therefore, it is recommended to train health staff on data quality and information use and improve information technology support to improve data utilization for HMIS. [*Ethiop. J. Health Dev.* 2022; 36 (SI-2)]

Key words: health, information, system, utilization

Introduction

A health information system (HIS) is the systematic collection, aggregation, analysis, presentation, and utilization of health and health-related data for evidence-based decisions for health workers, managers, policymakers, and others. The health information system provides the underpinnings for decision-making and has four key functions: data generation, compilation, analysis and synthesis, and communication and use. The health information system collects data from the health sector and other relevant sectors, analyses it, ensures its overall quality, relevance, and timeliness, and converts it into information for health-related decision-making (1).

Health management information systems (HMIS) is a process that records, stores, and processes health data for policy-making, planning, implementation, and evaluation of health programs for appropriate resource use at all health system levels (2). HIS utilization means improved data quality and continuous use of information. All health system functions rely on the availability of timely, accurate and dependable information for decision-making (3).

The government of Ethiopia recognizes the role of HMIS in improving the delivery of health services in the country. The federal ministry of health (FMoH) is currently implementing the health sector transformation plan (HSTP). One of the four transformation agendas on HSTP is the information revolution (IR). The IR is driven by the need for increasing amounts and types of the information needed in the health sector and the advancement in the ICT industry. The main objective of information revolution is to bring radical improvement to the methods and practices of data management, analysis and utilization, and digitalization of the HIS structure (4, 5).

The Ethiopian HMIS was formerly known for being cumbersome, with low-skilled personnel, poor information flow, and lack of coordination among the various subsystems. As a result, there were conflicting reports and poor data quality in terms of accuracy and timeliness, hampered evidence-based decision-making in the healthcare system. According to a 2009 analysis of the HMIS system's functioning in SNNPR, HMIS was employed in the annual plans of 58% of health facilities and 33% of health posts. Another study from Addis Ababa in 2011 found that overall data utilization was 47.1% [4], and another from Dire Dawa in eastern Ethiopia found that overall data utilization was 53.1% (6).

Despite FMOH's efforts in the information revolution in relation to the HSTP and health system strengthening, little is known about health information

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data utilization and its associated factors in the study area. Therefore, this study aims to assess the utilization of health information systems data and the associated factors in Sidaama Regional state, South Ethiopia. The study's findings will contribute towards the ongoing efforts of supporting evidence-based decision-making in public health facilities in Sidama Regional state.

Methods and Materials
Study Design and Area
A facility-based cross-sectional study was conducted from December 2018 to December 2019 to assess the magnitude of the utilization of HMIS data and associated factors in the Sidama region. The study was carried out at public health facilities found in the Sidama region of Ethiopia. The capital city of the region is Hawassa, located 275 km south of Addis Ababa.

The health infrastructure of the Sidama region is composed of a government general hospitasl, thirteen government primary hospital, 127 government health centers, and 552 health posts (38). As of 2017, the total number of healthcare professionals working in public health institutions was 5388, with a potential health service coverage of 85% (7).

Source and Study Population
All randomly selected units/department heads and health professionals who were performance review team (PRT) member in public health facilities were included in the study. However, those who were absent from their units/departments during data collection time were excluded from the study.

Sample Size Determination
The sample size was determined using a single population proportion with the following assumptions: P=32.9% (Considering the proportion of Health Information data use in the Jimma zone [8], marginal error (d) of 5%, confidence interval of 95%, and Z α/2 is the value of the standard normal distribution corresponding to a significant level of alpha (α) of 0.05, which is 1.96. After adding a 5% non-response rate, the final sample size becomes 396.

Sampling procedure
During sampling, a lottery method was used to select four woredas from the nineteen woredas, one town administration from four town administrations, and two hospitals from the fourteen hospitals. Therefore, 23 health centers, two hospitals, and 54 health posts were included in the sample. Then, a sampling frame was developed for all staff members working in different departments (nineteen departments) at the health facilities. Finally, 396 study participants were selected using systematic random sampling techniques until the required sample size was fulfilled from the prepared sampling frame.

Data collection Technique and Procedure
A self-administered, structured, standard questionnaire was employed to collect primary data among all unit/department heads of the health facilities. The questionnaire was adopted from the PRISM tool version 3.1 [18]. The questionnaire was pretested with 5% of the sample size respondents selected from public health facilities in Hawassa town. The results from the pretest were not included in the study.

Observation and document review was used to ascertain data collection, reporting and health information utilization at the health facilities.

Ten health professionals were recruited for data collection, and three MPH holders were recruited to supervise the overall data collection processes. Two days of training were given to all data collectors and supervisors to have a common understanding of the study's objective and overall data collection process.

The data was thoroughly cleaned and carefully entered into the computer before the beginning of the analysis. Missing values were handled not to be excluded in analysis by checking again and again through data exploration.

Variables of the study
The dependent variable is the utilization of HMIS data, while the independent variables are socio-demographic variables: Sex, age, educational status, work experience, working department, and position in the organization; technical Determinants: HMIS training, presence of indicators in the health facility, presence of electronic HMIS, presence data quality check; Organizational Determinants: availability of HMIS materials, presence of designated staff for HMIS office, availability of HMIS office in the health facility, budget allocation for HMIS, presence of HMIS data use policy, presence of action plan for HMIS data use, presence of a culture of data use in the facility, reward staff with better performance, presence of accountability for poor performance, presence of supervision and regular feedback and presence of performance review team (PRT).

In this study, *HMIS data utilization* is defined /measured /refers to the use of health information/data for planning, monitoring, evaluation, budget allocation or writing feedback in health facility. *Data quality* is an assessment of data's fitness to serve its purpose in a given context in terms of *timeliness*, *accuracy* and *completeness*. *Data completeness*: refers to 85% of required data present on registration and reporting format. *Data accuracy*: refers to the consistency and actual presence of data on service registration books, reporting forms and tally sheets and interpreted by a national range of accuracy level. *Timeliness* is defined as data being recorded and reported on time per the specified national standard.

Data Processing and Analysis
The Data were reviewed for accuracy and consistency before being coded and entered into EPIDATA version 3.5. The data were then cleaned and verified before being exported to IBM SPSS version 20 for further analysis. Frequency, proportion, means and median were used to summarize information about dependent and independent variables.

An odds ratio (OR) was used to see the overall association between HMIS data utilization and the independent variables and to ascertain whether there was a significant level of dependence between the variables of interest. Variables with a p-value ≤ 0.2 in the bivariate analysis were transferred into a multivariate logistic regression analysis to control for confounders. Finally, a binary logistic regression analysis was conducted to find which variables (independent variables) had a significant effect on the response variable of interest. Explanatory variables with a p-value of 0.05 and adjusted OR with their 95% confidence intervals were declared to have a significant relationship with the outcome variable.

Results
Socio-demographic Characteristics of the Respondents
A total of 393 respondents were included in the study, making the overall response rate 99%. Two hundred and six (52.4%) of the study participants were males. The mean age of the respondents was 27.5 years (with a standard deviation of ± 2.8). The majority of the respondents, 2248 (63%), were in the age range of 25-29 years. Nearly half, 193 (49%) of the respondents, had work experience of 1 to 4 years.

Regarding the educational level of respondents, the majority, 290 (73.8%), were diploma holders. Regarding occupation, nurses made up above two in every five or 168 (42.8%) of the study participants, while health extension workers made up 53 (13.5%). Department/facility heads accounted for 249 (63.4%) of study participants in their facility, whereas the focal persons accounted for 67 (17%). One hundred and fifty-three respondents (38.9%) received a salary of less than 3,575.00 birr, while 133 (33.8%) received a salary of more than 4,085.00 birrs (Table 1).

Table 1. Socio-demographic characteristic of the study participants in Sidama Regional State, 2019.

Variable	Frequency (n)	Percentage (%)
Sex		
Male	206	52.4
Female	187	47.6
Age category		
20-24	36	9.2
25-29	248	63.1
30-34	91	23.2
35-39	13	3.3
40-44	5	1.3
Educational status		
Diploma	290	73.8
Degree	101	25.7
Master's degree	2	0.5
Profession		
Doctor	8	2
Health officer	50	12.7
Nurse	168	42.7
Midwife	46	11.7
Pharmacy	23	5.9
Laboratory	25	6.4
HEW	53	13.5
Others *	20	5
Work institution		
Hospital/departments	50	12.7
Health center/departments	289	73.5
Health post	54	13.7
Work Experience		
1-4 years	193	49.1
5-9 years	169	43
>= 10 years	31	7.9
Position of Health professionals		
Head	23	5.9
OPD	32	8.1
MCH	23	5.9
EOPD	23	5.9
Pharmacy	23	5.9
EPI	21	5.3
TB focal	23	5.9
HMIS focal	23	5.9
HEW	54	13.7
Laboratory	23	5.9
ANC	23	5.9

FP	23	5.9
Delivery	23	5.9
Under 5 OPD	23	5.9
IPD	8	2
Statistics unit	6	1.3
Others **	20	100
Salary of workers		
< 3575 Birr	153	38.9
3575-4085 Birr	107	27.2
> 4085 Birr	133	33.8

Utilization of HMIS Data in Sidama Regional State

The overall utilization of HMIS data in Sidama Regional State was 57.8% [95% CI; 52.92, 62.68], 48% for health centers, 75% for health posts and 90% for hospitals (Figure1).
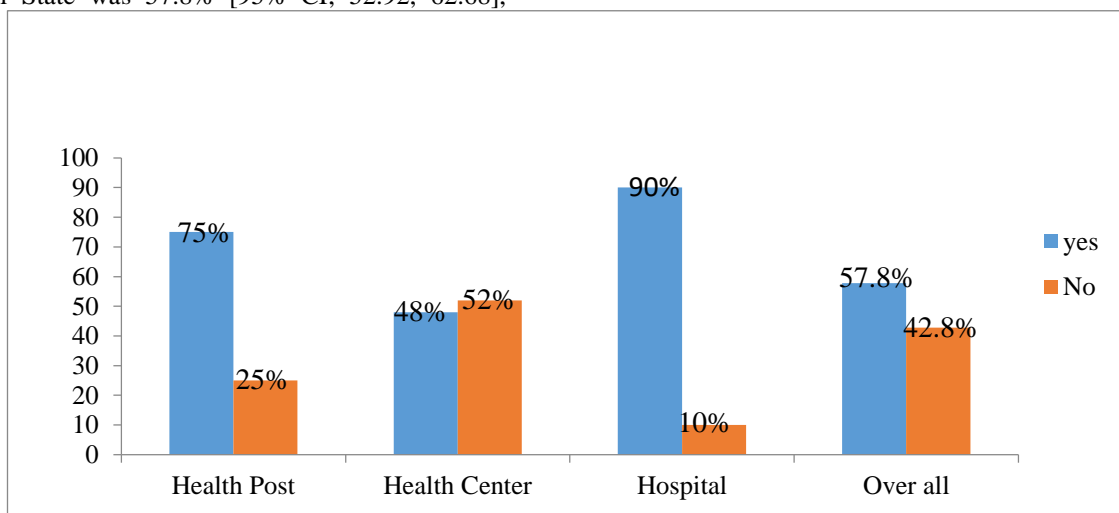

Figure1.Utilization of HMIS data in Sidama Regional State, 2019

Purposes for data utilization in Sidama Regional State

The majority of department heads, two hundred and nineteen (55.7%), used the HMIS data for planning, while 142(36%) used the HMIS data for drug procurement and 135 (35%) of the departments used the HMIS data for resource allocation (Figure 2).
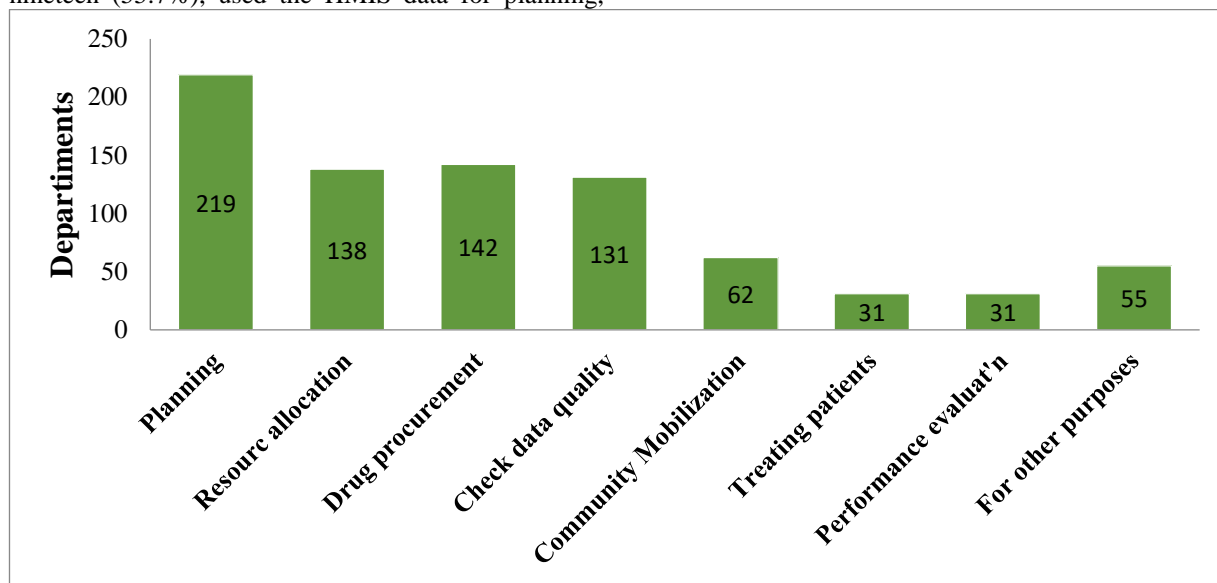

Figure 2. Purposes of HMIS data utilization in Sidama Zone in, 2020

Technical attributes of HMIS data utilization

According to the majority of respondents, 341 (86.8%), forms and registers were not complicated. On the other hand, nearly half of the participants, 202 (51.4%), said they had had at least one HMIS training, but only 158 (40.2%) said they had received it in the preceding year.

In terms of HMIS training, nearly four out of ten (38.9%) were trained to utilize health data, with 173 (44%) receiving on-the-job training and 285 (72.5%) receiving data usage training. Nearly half of the department heads, 183 (46%), reported their facility used eHMIS. The eHMIS was used by 135 (34.4%) of

the departments for data analysis and report preparation. Almost all of the departments, 381 (96.9%), kept daily HMIS records, and the majority of the departments, 336 (85.5%), used the information daily.

The data were completed in 251 (64%) of the departments, and over two-thirds (65.9%) of the time, data were recorded by department workers. The majority of departments, 358 (91.1%), have departmental indicators in general and had indicators in their offices, respectively. Some 256 (65.6%) of the departments claimed to utilize tables to illustrate statistics, while 320 (81.4%) claimed to use indicators to discuss monthly performance [Table 2]. Electronic Health Management Information System infrastructure is present in less than half of the sample facilities (46%). In practically every department, 390 (99%) of reports are completed on paper, with the remaining departments relying on e-mail communication for reporting.

Table 2 Technical Determinants affecting utilization of HMIS data in Sidama Regional State, 2019.

Variable	Number	Percentage
Form and registers complicated		
Yes	52	13.2
No	341	86.8
HMIS training		
Yes	202	51.4
No	191	48.6
HMIS training in past 12 months		
Yes	158	40.2
No	235	59.8
Topic of training		
Health information collection	144	36.6
Health information analysis	124	31.6
Health information use	153	38.9
On job HMIS training		
Yes	173	44
No	219	56
Ever received orientation on data use		
Yes	285	72.5
No	108	27.5
Completeness of data collection forms filled		
Yes	294	74.8
No	99	25.2
Presence of indicators		
Yes	367	93.4
No	26	6.6
Data presentation technique		
By using graphs	238	60.6
By using table	256	65.1
By using chart	76	19.3
By other technique	23	5.9
Monthly performance progress by indicators		
Yes	320	81.4
No	73	18.6
Department reporting data		
Yes	389	99
No	4	1
Reporting method		
Paper	391	99.5
E-mail	2	0.5
Presence of eHMIS in your facility		
Yes	183	46
No	210	54
Purpose of eHMIS in your facility		
eHMIS for data collection	183	46
eHMIS for data analysis	134	34.1
eHMIS for data reporting	183	46
eHMIS for data presentation	51	13
Presence of a data quality check system		
Yes	255	64.9
No	138	35.1

Presence of eHMIS infrastructure		
Yes	181	46
No	212	54

Organizational Factors

Regarding the organizational factors, 335 (85%) of the respondents reiterated the user-friendliness of the HMIS. But, only 141 (41%) of the study participants said there is staff designated for HMIS tasks only in their facilities, while 145 (37%) said there is a separate office for HMIS activity. 144 (37%) respondents said there is separate budget for HMIS tasks in their facility. 271 (69%) of the participants said there is a mechanism for data dissemination in their organization. Nearly half, 195 (49.6%) of the respondents, said their organization rewards staff with better performance, while the vast majority of them, 354 (90%), said their organization holds staff accountable for poor performance. Most of the respondents, 384 (97.7%), reported information in the last three months.

Most of the respondents, 272 (64%), said they received regular feedback for their report. Most of the respondents, 381 (97%), said there was supervision of HMIS activity in their organization. Seven out of ten respondents, 275 (70%) said financial limitations affected HMIS data quality and information use in their organization, while 250 (63.6%) said human resource limitations affected information to use in their organizations. Most of the participants 369 (94%), said they have Performance Review Teams (PRT) in their organization, but only 36 (9%) said PRT teams met three times in the last three months, 210 (53%) of PRT teams discussed data use and quality in their meetings. Only 41% of the facilities in Sidama Zone have staff dedicated to HMIS tasks (Table 3).

Table 3 organizational Determinants affecting HMIS data use in Sidama Regional State, 2019.

Variable	Frequency (N)	Percentage (%)
HMIS materials are adequately available		
Yes	356	90.6
No	37	9.4
Staff for HMIS tasks only in your facility		
Yes	161	41.0
No	232	59.0
HMIS office in your facility		
Yes	145	36.9
No	248	63.1
Separate budget for HMIS in your facility		
Yes	144	36.6
No	249	63.4
Clear policy on HMIS data use in your organization		
Yes	223	56.7
No	170	43.3
Action plan for HMIS data use in your organization		
Yes	218	55.5
No	175	44.5
Facility encourage culture of data use		
Yes	209	53.2
No	184	46.8
Facility reward staff with better performance		
Yes	195	49.6
No		
Accountability for poor performance in your org	198	49.4
Yes	354	90.1
No	39	9.9
Reported information in the last three months		
Yes	384	97.7
No	9	2.3
Supervision of HMIS activity in your org		
Yes	381	96.9
No	12	3.1
Frequency of supervisions		
Quarterly	222	56.5
Every three month	128	32.6
Every six month	31	7.9
What affects information use in your organization		
Financial limitation	275	70
Human resource limitations	250	63.6
Poor leadership	154	39.2
Organizational rule	69	17.6

PMT team in your org		
Yes	369	93.9
No	24	6.1
PMT team meetings in the last three months		
One	239	60.8
Two	94	23.9
Three	36	9.2
Discuss data use and quality in PRT meetings		
Yes	210	53.4
No	183	46.6
Presence of dedicated HMIS staff		
Yes	161	41
No	232	59

Study participants identified organizational factors affecting the HMIS system in their facilities as financial, human resources, and poor leadership in the organization, as indicated in the figure below (Figure 3).
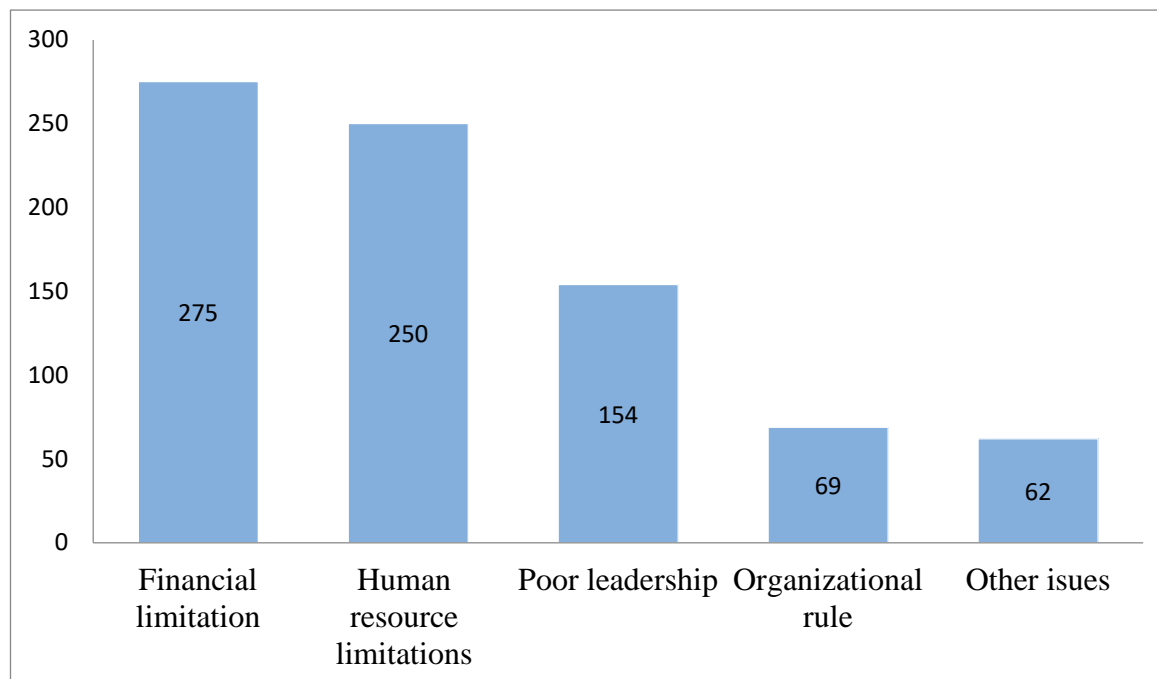
Figure 3. Figure showing organizational factors affecting the HMIS system in their facilities, Sidama Regional State, 2019.

Behavioral factors
Two hundred fifty (76%) participants said their staff did register and store HMIS data properly. Seven in ten, 268 (70%) respondents disagreed that the staff had a poor attitude towards data collection. Most of the respondents, 210 (80%), said staff valued data collection, 323 (82%) responded that staff in their department analyzed and understood data. The majority of the respondents, 327 (83%), agreed that staff in their department had confidence in HMIS tasks. The majority of the respondents, 318 (80%), agree that staff in their department are motivated for HMIS tasks (Table 4).

Table 4. Behavioral Determinants affecting HMIS data use in Sidama Regional State, 2019

Variable	Frequency	Percentage
Staff collect and store data properly		
Favorable	250	76.3
Unfavorable	143	24.7
Staff have a poor attitude towards data collection		
Favorable	125	29.7
Unfavorable	268	70.3
Staff do not value data collection		
Favorable	83	21.1
Unfavorable	210	79.9
Staff analyze and understand data		

Favorable	323	82.2
Unfavorable	70	17.8
Staff believe data from HMIS helps patients		
Positive	288	74.2
Negative	105	25.8
Staff have confidence in HMIS tasks		
Yes	66	16.8
No	327	83.2
Staff have motivation on HMIS tasks		
Positive	78	19.8
Negative	318	80.2
Staff believe data from HMIS helps patients		
Positive	369	93.4
Negative	24	5.8

Factors associated with the utilization of HMIS data in Sidama regional state

In the multivariable logistic regression analysis, on-job HMIS training, presence of eHMIS/computer, data completeness, designated staff for HMIS, regular discussions, regular feedback, and having confidence in HMIS tasks were identified as independent factors for utilization of data at health facilities of Sidama Regional state.

The study showed that health facilities that had got training on HMIS were 3.5 times ((AOR=3.49, 95% CI; 1.89, 6.70) more likely to utilize HMIS data compared to those facility department heads who had not had HMIS training.

In the present study, it was revealed that health facilities that had an eHMIS/computer were about 2.5 times (AOR=2.53, 95% CI; 1.32, 4.84) more likely to utilize HMIS data than those that did not have an eHMIS/computer.

It was also pointed out that health facilities having completed data were 3 times (AOR=2.98, 95% CI; 1.64, 5.40) more likely to utilize HMIS data utilization than those with incomplete data.

The other important factors were having designated staff for HMIS tasks, conducting regular discussions on data quality and information use in performance review meetings, and having feedback. It was found that HMIS data utilization was 2.2 times (AOR=2.23, 95% CI; 1.03, 4.65) more likely among health facilities that had designated staff for HMIS-only tasks than its counterparts. Participants who claimed that they had regular discussions on data quality and information use during performance review meetings were about 2.5 times (AOR = 2.57, 95% CI; 1.43, 4.63) more likely than those who said they had no regular discussion.

Participants who said that there are regular feedback from the supervision were about 2 times (AOR = 1.91, 95% CI; 1.01, 3.60) more likely to utilize HMIS data than their counterparts who claimed that there is no regular feedback. Participants who had confidence in HMIS tasks 12% (AOR=1.12, 95% CI=1.01-1.23) were more likely to utilize data utilization than their counterparts (Table 5).

Table 5. Factors associated with HMIS data utilization in Sidama Regional state, 2019.

Variables	Category	HMIS data use		COR	AOR	P-value
		Yes	No			
HMIS training	Yes	153	74	4.94(3.19-7.62)	1.81(0.94-3.50)	0.077
	No	74	49	1		
On-job HMIS training	Yes	140	33	7.42(4.55-12.10)	3.49(1.89-6.70)	0.000**
	No	87	133	1		
Presence of eHMIS/computer	Yes	147	36	7.40(4.30-12.76)	2.53(1.32-4.84)	0.005*
	No	80	130	1		
Departmental indicators	Yes	187	127	1.18(0.73-1.90)	0.54(0.26-1.16	0.116
	No	47	39			
Data completeness	Yes	182	70	7.28(4.42-11.99)	2.98(1.64-5.40)	0.00**
	No	45	96	1		
Staff for HMIS-only tasks	Yes	132	29	5.60(3.53-8.91)	2.23(1.03-4.65)	0.02*
	No	95	137			
Separate budget for HMIS	Yes	113	29	4.68(2.90-7.55)	0.56(0.26-1.08)	0.85
	No	114	137	1		
Facility	Yes	114	47	4.39	1.86(0.82-4.34)	0.72

encourages data use	No	83	149			
Reward staff with better performance	Yes	135	44	2.57(1.43-4.63)	1.56(0.81-3.17)	0.18
	No	92	122	1		
Data quality check system	Yes	173	70	4.39(2.85-6.78)	1.49(0.77-2.86)	0.24
	No	54	96			
Discussion on data quality and data use in PRT meetings/evaluation	Yes	153	57	4.67(2.98-7.33)	2.57(1.43-4.63)	0.02*
	No	63	99	1		
Supervision of HMIS activity	Yes	213	143	2.45(1.22-4.92)	0.97(0.47-1.99)	0.67
	No	14	23	1		
Regular feedback	Yes	174	98	3.25(1.79-5.88)	1.91(1.01-3.60)	0.047
	No	53	68	1		
Confidence on HMIS tasks	Yes	118	57	0.18(0.05-0.35)	1.12(1.01- 1.23	0.01*
	No	209	20	1		

Note: 1= Reference category; *P-Value <.05= significant, **P-Value ≤.001=highly significant

Discussion

In the present study, the overall utilization of HMIS data in Sidama Regional State was 57.8%. This finding of this study is nearly adjacent to a study done in Oromia Special Zone, Ethiopia (53.8%) [8], Eastern Wollega, Ethiopia (57.9% [9], and Dire Dawa (53.1%) (6).

On the contrary, the results of this study are lower than the study done in Hadiya (69.3%) North Gondar (78.5%), and Addis Ababa, Ethiopia (78%) [41, 23, 24], respectively. This could be due to the difference in criteria set to establish information used in the current study and its study setting.

On the other hand, the result of this study is higher compared to studies done in Western Amhara (38.4%) (10), Jimma (32.9%) (11), and Gondar in 2006 (22.9%) (12). This difference might be due to the difference in a time period in which the studies were conducted and different training opportunities were prepared for health professionals that may have contributed to the better utilization of HMIS data in the current study.

The study demonstrated that a significant association was observed between data use and job HMIS training. It was figured out that data utilization was more likely to increase among participants who got on-job HMIS training. This finding is congruent with studies in West Amhara (10) Jimma (11) and South Africa (13). This could be due to that health professional who took training on HMIS had the skill to compile and analyze data, and utilize information generated in routine day-to-day activities.

Health facilities that had access to eHMIS/computer were more likely to utilize HMIS data. This study was congruent with previous studies in Kenya (14), Ethiopia (15), and Uganda (16). The Possible explanation could be due to the importance of eHMIS/computer to collect, process, communicate and use patient data through the application of computer skills.

On the other hand, discussion on data quality and data use in performance review team (PRT) meetings/evaluation, presence of regular feedback, having confidence in HMIS tasks, and designated staff for HMIS and data completeness played a significant role in HMIS data utilization. HMIS data utilization was more likely among health facility staff who conducted a discussion on data quality and data use in PRT meetings/evaluations. This finding is in line with the study conducted in Oromia Special Zone, Ethiopia (8). The finding also pointed out that health facilities having regular feedback for the supervision findings were more likely to utilize routine HMIS data likened to their counterparts. This result is adjacent to the study done in East Gojam (17), West Amhara (10), and Dire Dawa (6). The possible explanation could be that providing feedback on both the strength and weaknesses to health professionals may add value to the utilization of the HMIS data.

In this study, having confidence in HMIS tasks was significantly associated with HMIS data utilization, which is in line with the study done in Uganda and Addis Ababa, Ethiopia (18,19), respectively. It was found that health facilities having designated staff that exclusively work on HMIS were more likely to practice utilization of HMIS data, which is in line with the study conducted in South West Ethiopia (11).

The possible limitation of this study could be design limitation in establishing the cause-and-effect relationship between the independent and outcome variables. The other limitation could be due to the study relying on an interview to assess behavioral factors such as attitude, motivation, and confidence which would have been better assessed through other techniques such as observation.

Conclusion

The overall rate of data utilization for HMIS in the Sidama region was lower compared to studies conducted in different parts of Ethiopia (Hadiya (69.3%) North Gondar (78.5%) and Addis Ababa, Ethiopia (78%). On-job HMIS training, presence of

eHMIS/computer, presence of completed data, having designated staff for HMIS tasks, regular discussions, regular feedback, and having confidence in HMIS tasks were key predictors of HMIS data utilization.

On-the-job HMIS training for health facility staff at the department level, computerizing the HMIS process through eHMIS, improving data quality and use through supervision and feedback, and having a continual performance review process need to be given emphasis.

Declarations
Ethical Considerations
Ethical clearance was obtained from the Institutional Review Board of Hawassa University College of Medicine and Health Sciences with the reference number IRB068/11. A permission letter was secured from Sidama Regional Health Bureau. Participation in the study was voluntary. The interviewer ensured that all participants provided their informed verbal consent.

Authors' contributions
All authors participated in planning the study, monitoring the data collection process and analyzing the data, writing the result and the manuscript. All authors read and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

List of Abbreviations

AOR	Adjusted Odds Ratio,
COR	Crude Odds Ratio
eHMIS	Electronic Health Management Information System
EPI	Expanded Program for Immunization
FMOH	Federal Ministry of Health
HEW	Health Extension Worker
HIS	Health Information System
HMIS	Health Management Information System
HSTP	Health Sector Transformation Plan
ICT	Information Communication Technology
MEASURE	Monitoring and Evaluation to Asses and Use Results
PRISM	Performance of Routine Information System Management
PRT	Performance Review team
SNNPR	Southern Nation's Nationalities and Peoples Region
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

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