ORIGINAL RESEARCH

Barriers and Associated Factors to the Use of Routine Health Information for Decision-Making Among Managers Working at Public Hospitals in North Shewa Zone of Oromia Regional State, Ethiopia: A Mixed-Method Study

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Background: Routine health information (RHI) systems are vital for the acquisition of data for health sector planning, monitoring, and evaluation, patient management, health education, resource allocation, disease prioritization, and decision-making. Use RHI for decision-making is low in Ethiopia. Thus, the study aimed to assess barriers and associated factors to the use of RHI among managers working at public hospitals in North Shewa, Ethiopia.

Methods: A facility-based mixed-method study was conducted from May to June 2020. A total of 102 randomly selected managers were included in the survey and six key informant interviews were done. Data were collected using a structured self-administered questionnaire and interview guide by trained data collectors. Data were entered into Epi-info version 7.1 and transferred into SPSS version 23 for further statistical analysis. Both bivariate and multivariable logistic regression analyses were performed. In the multiple logistic regression analysis, a less than 0.05 P-value was considered statistically significant. The odds ratio along with a 95% confidence interval was estimated to measure the strength of the association. Thematic analysis was done for key informant interview data.

Results: In this study, the level of RHI use for decision-making was 71.6% (95% CI: 61.8%, 79.4%). According to the multivariable logistic regression analysis, training on health information system (AOR = 0.28, 95% CI: 0.08–0.98) and supportive supervision (AOR = 0.27, 95% CI: 0.09–0.78) were found significantly associated with the use of RHI for decision-making. Moreover, the lack of staff motivation and computer and data analysis skills were the major reasons for not using RHI.

Conclusion: Three-fourth of the managers working at public hospitals used RHI for decision-making. Training on health information systems and supportive supervision were factors associated with the use of RHI. Therefore, training of managers and the provision of supportive supervision were highly recommended.

Keywords: associated factors, barriers, managers, mixed-method, routine health information use, Ethiopia

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Background

A health information system (HIS) is a system designed for the collection, processing, use, and dissemination of health-related data to improve health care outcomes.[1] It is essential for health system policy development and implementation,

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governance and regulation, health research, human resources development, service delivery, and financing.[2] Routine Health Information (RHI) system is the backbone for planning and management of the health service activities, the day-to-day patient management, health education, resource allocation, disease prioritization, and decision-making.[3] A properly functioning RHI system enables the policymakers, managers, and service providers to make decisions based on evidence, ultimately leading to sustainable health outcomes in the community they serve.[4]

Globally, significant human and financial resources have been invested to improve RHI systems for planning, reporting, community health mobilization, and observing disease trends.[5] RHI systems in developing countries do not provide the necessary information which supports decision-making. Some of the reasons are poor quality of data, weak data analysis, lack of information culture, lack of trained personnel, and HIS activities seen as a burden due to high workloads especially at the health facility level.[6] The use of information for evidence-based decision-making is also still very weak in most low- and middle-income countries (LMICs). Most of the health workers in developing countries relate information systems with filling endless registers by names and addresses of patients, compiling information on disease every week or month, and sending reports to the next level without adequate use and feedback.[7] As a result, many health systems fail to fully link evidence to decisions and suffer from a reduced ability to respond to priority health needs at all levels of the health care system.[3] Findings from different African countries indicated that the use of RHI among managers remains low; 39.9% in Nigeria,[8] 55.6% in Kenya,[9] 42% in Tanzania,[10] 59% in Uganda,[11] and 65% in South Africa.[12]

Evidence-based decision-making through the use of HIS has become the top priority on the agenda of the government of Ethiopia and its development partners. However, there are minimal efforts by health workers and managers to demand and use the available RHI for service delivery, planning, and decision-making.[13] Data quality and information use remain weak, particularly at the health facilities level. Health workers spend 40% or more of their time filling in Health Management Information System (HMIS) forms but may make little or no use of information for decision-making.[14]

The use of information in Ethiopia ranges from 32.9% to 78.5%. A study conducted in North Gondar on the use of RHI among health workers working at public health institutions was 78.5%.[15,16] Another study done in Jimma Zone revealed that out of 84.3% of data collected daily only 22.5% of them used, only 17.7% changed their data into information at district and facility level, and used it for immediate decision-making.[17] Another study showed that the use of RHI can be affected by the organizational, technical, and behavioral characteristics of the managers.[18] Among the factors reported training,[19] computer skill,[18] data analysis skill,[20] computer access, availability of HMIS guidelines and formats,[21] supportive supervision with effective feedbacks,[6,22,23] data infrastructure in respect to the information and communications technology application,[24] confidence level,[12] and competency of managers[22] are commonly associated with the use of RHI.

Owing to the observed gap in the health sector in Ethiopia, information use has been given substantial prominence in the Health Sector Transformation Plan (HSTP) as part of the information revolution which is one of the four transformation agendas. The information revolution is not only about changing the techniques of data and information management; it is also about bringing fundamental cultural and attitudinal change regarding the perceived value and practical use of information.[13] Therefore, this study pursued to assess the barriers and associated factors to the use of routine health information for decision-making among managers working in Public Hospitals in North Shewa of Oromia Regional State, Ethiopia. The finding will help to change policy and improve the programs' effectiveness, to allocate resources for interventions of health information use, and effectively implement different health sector programs and strategies.

Materials and Methods
Study Design and Setting
A facility-based mixed-method study using both quantitative and qualitative data collection methods was conducted at public hospitals of North Shewa Zone from May to June 2020. Fitche, the capital of the zone, is located 112 kilometers far from Addis Ababa (the capital of Ethiopia) to the north-west. According to the population projection of 2020, the current population of the zone was estimated to be 2.14 million. In the North Shewa zone, there are four hospitals providing health care services for the population. The managerial position within each hospital includes Chief Executive Officer, Process Owner Heads, Department Heads, and Case Team (Unit) Heads. There

were 4 Chief Executive Officer, 12 sub-process heads, 16 department heads, and 94-unit heads in the four hospitals.

Study Participants, Sample Size, and Sampling Procedures

All health care workers (HCWs) working in all hospitals of the North Shewa Zone who were managing hospitals, heading sub-process, departments, and units were the source population. Randomly selected HCWs who had been working as managers of the hospitals, sub-process, and department/unit heads were the study population. HCWs who had been working in different managerial positions in the hospitals for at least six months preceding the survey period were included in the study. However, HCWs who were absent from their units/ departments, who did not volunteer to participate, and who were seriously ill during the data collection period were excluded from the study. The sample size for the quantitative method was calculated using the single population proportion formula, assuming 78.5% prevalence of use of health information system (p) in North Gondar, Western Ethiopia,[16] a 95% confidence level, a 5% of margin of error, and a 10% non-response rate. Finally, a minimum sample of 105 was obtained.

The sample was allocated proportionally to each hospital. The simple random sampling (SRS) technique was used to select the samples from each hospital using the lottery method based on the list that was available in the human resource department of each hospital.

For the qualitative method, six participants were selected using the purposive sampling technique [four are Chief Executive Officers (CEO) and two of them are Health Information Technicians (HIT)] for key informant interview (KII).

Study Variables

The outcome variable is routine health information use for decision-making. The independent variables consist of sociodemographic variables including age, sex, monthly income, work experience, professional category, and position in hospital; organizational variables including the availability of HMIS equipment and materials and supportive supervision; technical variables including computer skills, training on RHI use, and data analysis skills; and behavioral variables including competency, confidence level, and motivation.

Operational Definitions
Routine Health Information
Data generated from healthcare facilities at regular intervals.[25]

Routine Health Information Use
Using routine health information for five or more purposes (out of asked ten questions; service improvement, patient treatment, staff performance, planning, department evaluation, monitoring key performance indicator, prediction of outbreaks, resource, allocation, development of policy and advocacy) was defined as the use of health information.[26]

Decision-Making
It is the process of identifying and choosing alternatives based on the values, preferences, and beliefs of the decision-maker.[27]

Managers
In this study, managers are defined as hospital employees who are responsible for the work performance of other hospital staff and have formal authority to use the hospital's resources.

Data Collection Methods, Tools, and Procedures

Data were collected using a pretested and structured self-administered questionnaire which was adapted from the performance of routine information system management (PRISM) framework in which behavior, technical, and organizational factors were the major determinants of the utilization of RHI systems.[25] The questionnaire contained five main components like sociodemographic factors (6 questions), behavioral factors (19 questions), technical factors (10 questions), organizational factors (12 questions), and level of RHI use for the decision-making (11 questions). Two data collectors (BSc nurse) and one supervisor whose background is Master of Public Health (MPH) were recruited for this survey. The trained data collectors provided the questionnaire to managers after debriefing the objective of the study and getting informed consent to gather the data. From the expected 105 managers who were approached for the survey, 102 responded it.

Qualitative data was collected using the KII question guide. The interviews were recorded for an average of 20 minutes using a tape recorder and note was taken by a recorder and moderated by a facilitator. The principal investigator facilitated the interview process.

Data Quality Control

Firstly, the questionnaire and KII question guide were prepared in English and then translated to Afan Oromo (the local language), then back to English by the language experts to look for consistency of the questions. The questionnaire was pretested on 5% of the sample among managers working in Chancho primary Hospital which is found in the Finfinne Surrounding Oromia Special Zone two weeks before the actual data collection. The questionnaires were also reviewed and reformatted based on the pretest results. The two-day training was given for data collectors and a supervisor on the objectives of the study, how to ensure data quality, and the data collection process before they started data collection. Regular supervision was made during the data collection period. Collected data was checked for its completeness.

Data Processing and Analysis

Data were entered into Epi Info version 7.1 and exported to SPSS version 23 for further analysis. Descriptive analyses like frequency distribution were computed for socio-demographic and other important variables. Bivariate analysis was employed to show the relationship between the use of RHI by managers and their associated factors. All variable which has p-value <0.25 was then entered into the multivariable logistic regression model to control possible confounders and identify factors independently associated with RHI use for decision-making. The model fitness was checked by the Hosmer Lemeshow test and it was fit (P-value=0.747). A p-value <0.05 and Adjusted Odds Ratios (AOR) with 95% confidence interval (CI) were used to see the strength of association between factors and the outcome variable. Finally, the results were presented using tables, frequencies, figures, and texts.

The qualitative data collected during field visits were organized, coded, and analyzed as per themes emerged using Open Code software version 4.03. Finally, thematic analysis was performed and descriptive summaries were made based on what participants described.

Ethical Considerations

This study was conducted per the Declaration of Helsinki. Before data collection, we obtained an ethical clearance letter (protocol number: pm 75/517) from the Institutional Review Board (IRB) of St. Paul's Hospital Millennium Medical College (SPHMMC). We also obtained official letters of support which were sent to the North Shewa Health Department

and hospitals, and permission to collect the data from the concerned offices and hospitals. Then, written informed consent was obtained from each study participant and the participant's informed consent included publication of anonymized responses. The respondent's confidentiality was maintained.

Results
Socio-Demographic Characteristics of the Respondents

Out of 105 managers planned to participate, 102 managers of different levels working in four public hospitals participated resulting in a response rate of 97.1%. The mean age of the study participants was 28.5 (± 3.66 SD) years with a minimum of 21 and a maximum of 44 years old. Nearly, two-thirds (65.7%) of the managers were 20–29 age category and nearly two-thirds (63.7%) were men. Besides, the managers had a median salary of 7071.0 Ethiopian Birr (ETB) with an interquartile range of 2131. The managers have a mean work experience of 4.1 years (± 2.62 SD) in their current respective hospitals; which ranges from 1 to 11 years. Seventy-four (72.5%) managers were unit leaders by their managerial position whereas 72 (70.6%) of them were paramedical professionally (Table 1).

Six key informant interviews were performed, of which four were CEO and two of them were HIT. All the participants were male, and their age ranges from 26 to 42 years old. The participants have one to three years' work experience in their current respective hospitals.

The Level and Purpose of Using Routine Health Information (RHI) by Managers

In this study, more than two-thirds (71.6%, 95% CI: 61.8–79.4%) of the managers have used RHI generated at their sub-process, departments, or case teams (Figure 1). Moreover, Figure 2 shows the purpose of using RHI by the managers. In this study, 87 (85.3% %) of the respondents used RHI for service improvement and 83 (81.4%) for treating patients. Only 42 (41.2%) managers were used RHI for resource allocation, 25 (24.5%) for policy development, and 24 (23.5%) for advocacy. This result is supported by the findings from one of a 39 years old KII participant as stated below;

> The main purpose of collecting the health information was for decision-making, we used for human deployment, to know physician per capita, pharmacist per capita or laboratory professional per tests as compared to the standards, for

Table 1 Socio-Demographic Characteristics of Managers Working in Public Hospitals of North Shewa Zone, 2020

Variables	Responses	Frequency (Percent)
Age	20–29 30–39 ≥ 40	67 (65.7) 33 (32.4) 2 (2.0)
Sex	Female Male	37 (36.3) 65 (63.7)
Monthly income (in ETB) [a]	3201–5250 5251–7800 ≥ 7801	6 (5.9) 67 (65.7) 29 (28.4)
Work experience in the service year	1–3 4–6 ≥ 7	58 (56.9) 26 (25.5) 18 (9.8)
Professional category	Medical doctor Paramedical [b] Other [c]	20 (19.6) 72 (70.6) 10 (9.8)
Position in the respective hospital	Subprocess head Department head Unit leader	8 (7.8) 20 (19.6) 74 (72.5)

Notes: [b]Other health care workers including Nurse, Midwifery, Laboratory technologist, Pharmacist, Radiologist, and Environmental Health Professional. [c]Accountant, Management, and Auditor.
Abbreviation: [a]ETB, Ethiopian Birr.

Figure 1 The level of routine health information use among managers working at public hospitals in North Shewa Zone, 2020.

resource allocation, for quality improvement. Overall, we collect data, not for holding, but decision-making.
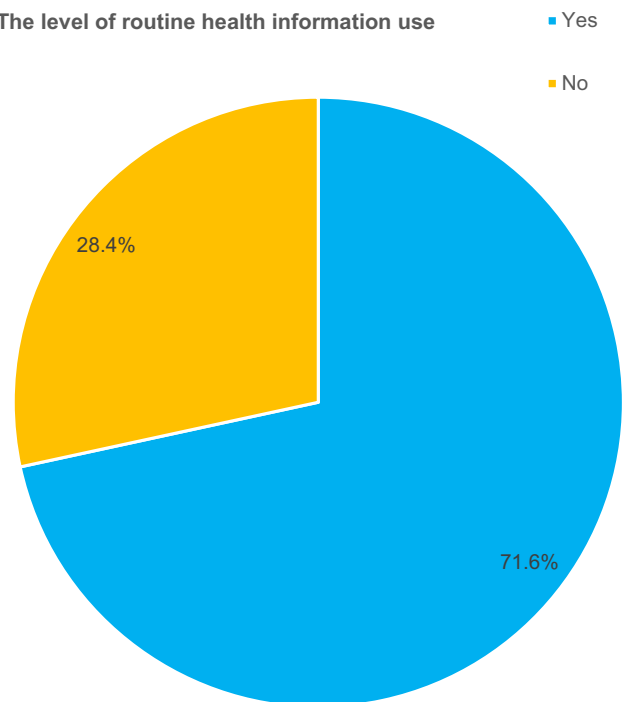
As shown in Figure 3, respondents have also stated the problems faced during using RHI for decision-making including data incompleteness and data unavailability, each accounts 36 (35.3%) followed by inaccurate data (17, 16.7%).

Barriers to RHI Use
Organizational Characteristics
Only twenty-nine (28.4%) of the participants agreed that the management team performed supportive supervision as per scheduled. Only 27 (26.5%) of the managers agreed that supervisory reports were delivered to departments. The respondents reflected the extent they agreed with organizational factors (Table 2). The finding from a KII also supports this result. A 42 years old KII participant stated that the role of senior management in the use of health information in hospitals:

My role as CEO of the hospital was to ensure the delivery of quality health information. … To facilitate the conversion of data to information, reports collected from units or

departments were evaluated by the performance monitoring team. … Then, feedbacks were delivered to the respective units or departments.

Thirty-three (32.3%) of a staff meeting with departments on administrative issues was not scheduled. About 23 (22.5%) managers have a monthly meeting and 18 (17.6%) of them replied there is no meeting at all. It was found out that 20 (19.6%) of the respondents were accessed the internet and only 40 (39.2%) accessed a computer in the workplace or office (Figure 4A).

Finding from a participant having three years of work experienced indicated inadequate equipment and supplies in the hospitals:

Equipment and supplies that promote health workers to use health information are internet access, registration books, and computers. The supply was not adequate; it is limited to health informatics technicians and some department heads.

Technical Characteristics
Sixty-one (60.8%) of the respondents have not received training on how to use RHI. Only 49 (48%) of the respondents have computer skills for data analysis, and 23 (51%) were analyzed health data manually (Figure 4B). This
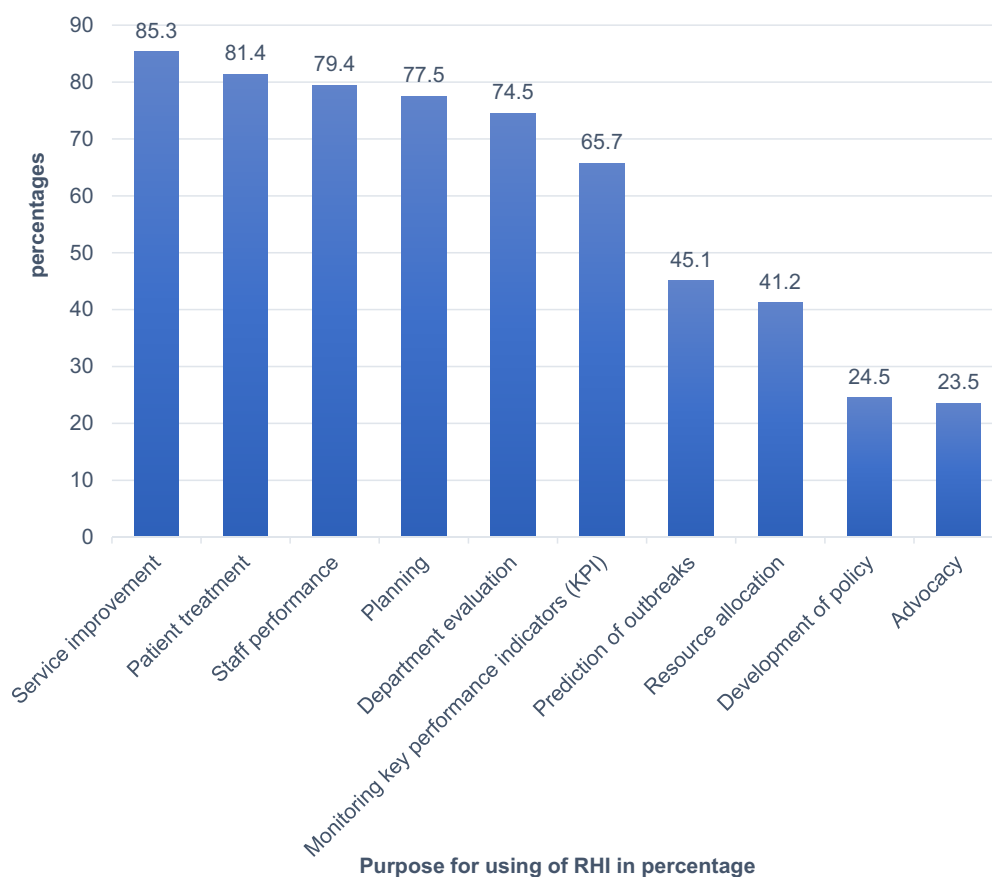
Figure 2 The purpose of using routine health information by managers working at public hospitals in North Shewa Zone, 2020.
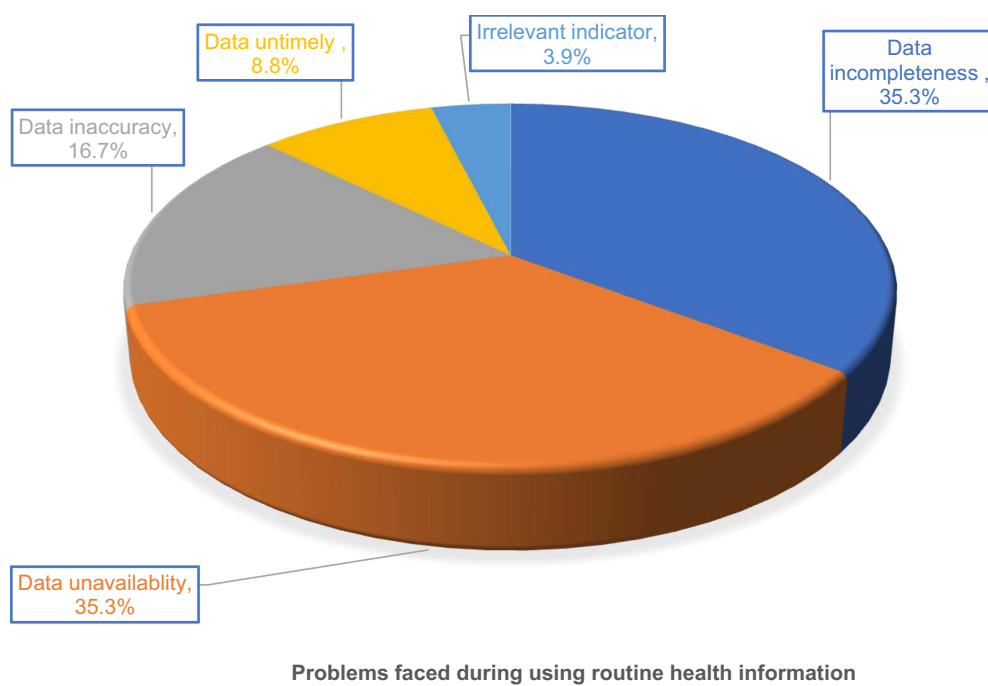

Problems faced during using routine health information

Figure 3 Problems faced during using routine health information at public hospitals in North Shewa Zone, 2020.

Table 2 Organizational Characteristics and Motivation of Managers to Use RHI[a] in Public Hospitals in North Shewa Zone, 2020

	Variables	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
Organizational characteristics	Hospital has standard HIMS[b] guideline	14 (13.7%)	24 (23.5%)	24 23.5%)	27 (26.5%)	13 (12.7%)
	Standard HMIS format available all the time	8 (7.8%)	16 (15.7%)	17 (16.7%)	28 (27.5%)	33 (32.4%)
	There are mechanisms for on job training	15 (14.7%)	32 (31.4%)	23 (22.5%)	25 (24.5%)	7 (6.9%)
	Hospital performed training on information use	20 (19.6%)	35 (34.3%)	16 (15.7%)	21 (20.6%)	10 (9.8%)
	There is a schedule for HMIS supervisory visit	16 (15.7%)	36 (35.3%)	24 (23.5%)	13 (12.7%)	13 (12.7%)
	Management team has performed supportive supervision	21 (20.6%)	37 (36.3%)	21 (20.6%)	14 (13.7%)	9 (8.8%)
	Supervisory report delivered to departments	19 (18.7%)	28 (27.5%)	28 (27.5%)	20 (19.6%)	7 (6.9%)
Motivation of managers to use RHI[a]	Collecting information which is not used for decision-making discourage me	34 (33.4%)	10 (9.8%)	17 (16.7%)	26 (25.5%)	15 (14.7%)
	Collecting information make me feel bored	39 (38.2%)	33 (32.4%)	11 (10.8%)	14 (13.7%)	5 (4.9%)
	Collecting health information is a meaningful work for me	4 (3.9%)	10 (9.8%)	11 (10.8%)	47 (46.1%)	30 (29.4%)
	Collecting information gives me the feeling that data is needed for monitoring	6 (5.9%)	5 (4.9%)	21 (20.6%)	37 (36.3%)	33 (32.4%)
	Collecting information gives me the feeling that it is forced on me	21 (20.6%)	26 (25.5%)	16 (15.7%)	35 (34.3%)	4 (3.9%)
	Collecting information is appreciated by coworkers and superiors	13 (12.7%)	16 (15.7%)	15 (14.7%)	41 (40.2%)	17 (16.7%)

Notes: [a]RHI stands for routine health information. [b]HMIS stands for health management information system.

result was supported by the findings from a 26 years old KII participant as stated below indicating the presence of a skills gap:

> There are gaps in the skills for using health information among our health workers. … There is a problem of understanding indicators among health workers during report preparation which was corrected by the performance monitoring team before reported to the concerned body and the feedback was delivered to the case teams or departments.

Only forty-nine (48%) respondents received on-job training, and more than two-thirds (71.4%) had no professional knowledge of data analysis. This result was also supported by the findings from a 29 years old KII participant as stated below which indicate the availability of managers who lack data analysis skill:

> Concerning skills and competency of our health workers/ managers, there were three groups. The first group was those who have the skill to analyze data. The second group was those who have skill but who did not analyze data and the third group was those who lack the skill and cannot analyze data.

Competency, Confidence in Accomplishing HIMS Activities, and Motivation of Managers

Based on competency assessment questions, the overall average of competence of hospital managers for RHI use tasks was 66.7% (Table 3). Only 44 (43.1%) managers are

said they are confident to accomplish HMIS activities and the overall average confidence level of the respondents was 56%. Confidence in computing trends from bar charts scored 58% whereas confidence in data accuracy scored 60%.

Forty-two (41.2%) managers described themselves as having motivation towards the use of available RHI for decision-making (Table 2). This low motivation was supported by the findings from one of a 26 years old KII participant as stated below:

> The perception of health workers and managers on information use was very poor. Access to internet, registration book, lack of training which are used for updating knowledge is hindered the health workers or managers from using health information for decision-making.

Factors Associated with Routine Health Information Use

In bi-variable logistic regression analysis, only three variables namely manager's computer skills, supportive supervision by senior managers, and training on the usage of health information system (HIS) were factors associated with RHIU at a p-value of ≤0.25. Consequently, these variables were subjected to multivariable logistic regression analysis, and it was noted that only training on HIS and supportive supervision by senior managers was remaining significantly associated with RHI use at a p-value of ≤0.05. In this study, the odds of using RHI were 27% times more among managers who received
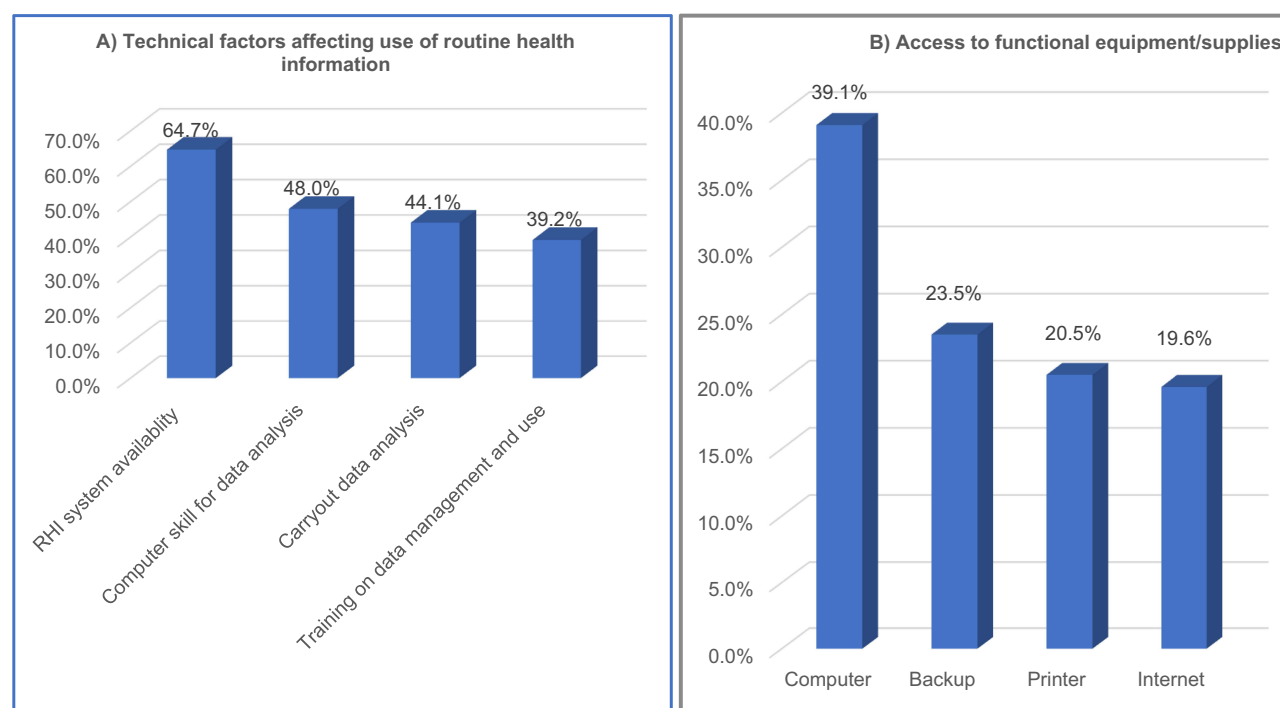
Figure 4 Technical factors affecting of routine health information use (**A**) and access to functional equipment/supplies (**B**) at public hospitals of North Shewa, 2020.

supportive supervision on routine health information when compared with individuals who have not received supportive supervision (AOR = 0.27, 95% CI: 0.09–0.78). Similarly, the odds of using RHI were about 28% times higher among managers who have taken training on health information system use when compared with managers who are not trained on routine health information (AOR = 0.28, 95% CI: 0.08–0.98). Socio-demographic variables, competency, motivation, computer skills, access to a computer, availability of printers, and data analysis skills were not significantly associated with the use of routine health information ([Table 4](#)).

Discussion

This study aimed to assess the routine health information useful for decision-making and its associated factors

among managers working in public hospitals. From this finding, the magnitude of the use of routine health information for decision-making by managers was 71.6% and training and supportive supervision were the factors associated with the use of routine health information.

The magnitude of the use of routine health information in this study was slightly comparable with study findings from Gondar,[16] Hadiya Zone of South Nation Nationalities and Peoples.[21] It is also slightly similar to the finding outside Ethiopia from South Africa.[12] On the other hand, the finding was higher than those of studies reported from Addis Ababa,[20] East Wollega Zone,[28] East Gojjam,[15] and East Ethiopia.[23] The findings of this study also higher than the findings outside Ethiopia, from Nigeria,[8] and Kenya.[29] This might be due to the variation in study periods and the differences in study participants. Moreover, recently

Table 3 Competency of Managers to Use RHI[a] at Public Hospitals of North Shewa Zone, 2020

Competency of Managers	Poor	Fair	Good	Very Good
I can check data accuracy	8 (7.8%)	35 (34.3%)	46 (45.1%)	13 (12.7%)
I can calculate percentage and rates	6 (5.8%)	24 (23.5%)	49 (48.0%)	23(22.5%)
I can plot information by months or years	9 (8.8%)	30 (29.4%)	46 (45.1%)	17 (16.7%)
I can explain findings and their implications	5 (4.9%)	40 (39.2%)	44 (43.1%)	13 (12.7%)
I can use the information to identify gaps and set targets	4 (3.9%)	30 (29.4)	50 (49.0%)	18 (17.6%)

Abbreviation: [a]RHI, routine health information.

Table 4 Multivariable Logistic Regression Analysis Showing Association of Variables with RHI[a] Use Among Managers, 2020

Variable and Response	Use of RHI[a] Use for Decision-Making (n = 102)		COR (95% CI) [b]	AOR (95% CI) [c]
	Yes	No		
Computer skills				
No	33 (32.3%)	20 (19.6%)	1	
Yes	40 (39.2%)	9 (8.8%)	0.37 (0.15–0.92) *	
Supportive supervision				
No	48 (47.1%)	25 (24.5%)	1	1
Yes	25 (24.5%)	4 (3.9%)	0.31 (0.10–0.98) *	0.28 (0.08–0.98) **
Training on HIS [d]				
No	39 (38.2%)	23 (22.5%)	1	1
Yes	34 (33.3%)	6 (5.8%)	0.30 (0.11–0.82) *	0.27 (0.09–0.78) **

Notes: *Variables that are significant at p-value ≤ 0.25; **Variables that are significant at p-value ≤ 0.05.
Abbreviations: [a]RHI, routine health information; [b]COR, crude odds ratio; CI, confidence interval; [c]AOR, adjusted odds ratio; [d]HIS, health information system.

federal ministry of Ethiopia has given a special emphasis on the use of health information for evidence-based decision-making.

In this study, the odds of the use of routine health information among managers who got supportive supervision were four times more likely as compared to the managers who did not get supportive supervision from the senior management team. This finding is supported by the study conducted in the East Gojjam zone.[16] When organizational systems are in place to support a culture of data-informed decision making, data producers and users are better able to understand the value of data to the health system, data tends to be of higher quality, data is communicated and shared through the health system and, as a result, it is used in decision making.[3]

The finding of this study indicated that managers who trained in health information systems were 3.7 times more likely to utilized health information than those who did not train. This finding is supported by study findings from Eastern Ethiopia[23] and the World Health Organization recommendation.[30] This could be because users with adequate knowledge on how to manage, process, communicate, and use health information, can incorporate the skills more easily into their daily activities. Besides, training was often used to close the gap between current performances and expected future performance, and through training, employees were acquired and improved knowledge, skills, and attitudes towards work-related tasks.

Findings from qualitative analysis also indicated competency of managers has an impact on the use of health information as it is related to computer and data analysis skills. Another finding from the qualitative analysis indicated managers have low motivation on use of health information due to lack of training, data quality problem, internet problem, health worker workload, lack of computer and staff turnover.

The strength of this study was that it used a mixed-method to assess the factors associated with the use of a routine health information system. Moreover, the researcher used the questionnaires which are adapted from the Performance of Routine Information System Management (PRISM) assessment tool, which were validated tools. This study could have the following limitation; the sample size used in this study was small and the cause-effect relationship cannot be established as this is a cross-sectional study. Besides, the KII was performed for short time due to the challenges of COVID-19 pandemics which may result in inadequate responses from participants.

Conclusions

Nearly three-fourths of the managers working in public hospitals of North Shewa Zone uses routine health information for decision-making. Training and supportive supervision are the determinants of routine health information use. Findings from the qualitative study showed that managers had a lack of computer and data analysis skills. The results also highlighted low motivation as an obstacle to using the health information that was attributed to poor data quality and internet problems. Therefore, supportive supervision, training, and staff motivation are highly recommended.

Abbreviations

AOR, adjusted odd ratio; CEOs, Chief Executive Officers; CI, confidence interval; COR, crude odd ratio; CSA, Central Statistics Agency; ETB, Ethiopian Birr; HCWs, health care workers; HIT, Health Information Officers; HIS, health information system; IRB, Institutional Review Board; KII, key informant interview; MAPH, Masters of Applied Public Health; MPH, Masters of Public Health; MSc, Masters of Science; RHI, routine health information; SPSS, Statistical Packages for Social Science; SPHMMC, St. Paul's Hospital Millennium Medical College.

Data Sharing Statement

All data generated or analyzed during this study are included in this published article. No further data will be shared.

Ethics Approval and Informed Consent

St. Paul's Hospital Millennium Medical College (SPHMMC), Institutional Review Board (IRB) approved this study (protocol number: pm 75/517). A letter of permission was obtained from the North Shewa Zonal health department. After the objective of the study was explained, written informed consent was obtained from each participant. Moreover, privacy and confidentiality of information were strictly guaranteed by all data collectors and investigators. The data was anonymized or maintained with confidentiality. The information retrieved was used only for the study. The participants' informed consent included publication of anonymized responses, and this study was conducted per the Declaration of Helsinki.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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