Evaluation of the health management information system status and effectiveness at Jimma University Medical Centre: A descriptive cross-sectional study

Tamene Fufa[1], Rahel Bekele[2], Worku Jimma[3]*

[1]ICT Development unit, Jimma University, Jimma, Ethiopia
[2]School of Information Science, Addis Ababa University, Addis Ababa, Ethiopia
[3]Department of Information Science, Jimma University, Jimma, Ethiopia

ABSTRACT

Background: Health management information system (HMIS) plays a crucial role in enhancing the effectiveness and efficiency of health services by integrating data collection, processing, reporting, and information utilization. However, the effectiveness and status of HMIS implementation at institutions like Jimma University Medical Center (JUMC) remain underexplored. Therefore, this study aimed to assess the status and effectiveness of the HMIS at JUMC.

Methods: A facility-based descriptive cross-sectional study was conducted. A simple random sampling technique was used to select 283 study participants who were enrolled in this study, and a self-administered questionnaire was used to collect data. The collected data was entered and analyzed using the IBM Statistical Package for Social Science (SPSS) software version 20. Descriptive statistics were applied to analyze the data.

Results: A total of 221 participants provided valid responses which made a response rate of 8.1%. A significant proportion of participants (65% for record keeping and 90% for accessibility) indicated that the hospital reliance on manual systems for data storage and retrieval. The effectiveness of the HMIS at the hospital is found to be only 50%, falling short of World Health Organization (WHO) standards due to issues with accuracy, timeliness, relevance, and completeness of information. This deficiency hampers the accessibility and storage of information, thereby limiting its utilization for decision-making.

Conclusion: The HMIS at the JUMC lacks effectiveness for further utilization and quality service provision. The status shows that the paper-based patient record system is still in use. Raising awareness among staff members, providing training, decentralizing the HMIS by appointing information and communication technology experts in each department, and establishing a database management system for seamless information sharing and retrieval are required to enhance effective HMIS utilization in the medical center.

Keywords: Health Management, Information Systems, Patient Record, Healthcare system data

Citation: Fufa T, Bekele R, Jimma W. Evaluation of the health management information system status and effectiveness at Jimma University Medical Centre, 2018: A descriptive cross-sectional study. HAJHBS. 2024, 1(1): 16–23: DOI:
Edited by Derara Girma Tufa
 Address correspondence to Jimma W et al. at worku.jimma@ju.edu.et The authors declare that they have no competing interests. The authors declared that they received fund from Jimma University for this work. The views expressed in this article do not necessarily reflect the views of HAJHBS, and Salale University, College of Health Sciences.
Accepted: April 26, 2024 | Revised: July 14, 2024 | Published: October 31, 2024

BACKGROUND

Health information management (HIM) encompasses the organization, maintenance, and tracking of both traditional and electronic health records for patients within healthcare facilities (1). A critical component of HIM is HMIS. The HMIS is an organized framework for record-keeping, reporting, processing, analysis, and feedback of information from healthcare facilities at all levels (2). This is to serve various stakeholders including clients, community members, service providers, managers, planners, and policymakers. HMIS is defined as a system designed to integrate data collection, processing, reporting, analysis, and utilization to enhance patient healthcare services (3).

The World Health Organization (WHO) emphasizes the importance of strong HMIS and identifies it as a prerequisite to monitor progress toward the health-related Sustainable Development Goals (4). Moreover, another study stresses that a primary objective of HMIS is to optimize individual patient health and population health through efficient and effective methods accessible to various stakeholders (5).

Healthcare system has transitioned from a centralized to a decentralized model in Ethiopia (6). This shift has led to the implementation of HMIS by the Federal Ministry of Health (FMoH), emphasizing the utilization of information at the point of collection. However, the

effectiveness and status of HMIS implementation at institutions like JUMC remain underexplored.

While previous assessments of HMIS in Ethiopia have been conducted, they have not fully adhered to WHO standards regarding accuracy, relevance, timeliness, and completeness (4). Consequently, there is a gap in understanding the functioning of HMIS, both nationally and specifically at JUMC. The FMoH employs HMIS as a reporting system to generate reports for decision-making purposes by top management to enhancing healthcare services. Despite the establishment and operationalization of HMIS at JUMC, its status and effectiveness have not been thoroughly investigated. Thus, this study - aimed to assess the status and effectiveness of the HMIS at JUMC based on WHO standards.

METHODS

Study area and design

A facility-based descriptive cross-sectional study was conducted in Jimma University, one of the universities in Ethiopia which hosts a teaching hospital. It serves as a referral hospital for people reside in Jimma Zone and its surrounding zones including regional states such as the Southwest Ethiopia and Gambella Regions. The hospital was established in 1937 by Italians to provide medical services to their soldiers and underwent significant transformations since its establishment.

Sample size determination and sampling technique

Health professionals and administrative staffs of JUMC were the target population of this study. The total population of the hospital members consisted of 1,088 individuals, comprising 124 administrative staff and 964 health professionals (Table 1). The sample size was calculated using a single population proportion formula in Epi Info STAT CALC. version 7.2 based on the assumptions 95% confidence level, 5% margin of error, and a 50% of true population proportion of HMIS status. We considered 50% of true population proportion in sample size calculation because we could not find previous study reported from Ethiopia. A population correction formula was applied since the total population of the health professional and administrative staff is less than 10,000. The final determined sample size was 283. A simple random sampling technique was used to enroll study participants.

Table 1: Proportion allocation of the sample size

Population category	Population size	Sample size
Administrative Staff	124	57
Health Professional	964	226
Total	1088	283

Data quality control

The questionnaire was pre-test before main data collection to test clarity, appropriateness, and comprehensiveness. In addition, the pre-test helped to assess the language, content, length, and approach. This pre-test involved 10% of the total study sample at Shenen Gibe Hospital. During the pre-test, responses from 28 health professionals and administrative staff were analyzed to identify any issues with clarity, redundancy and language clarity. Feedback from the pre-test participants helped identify areas for improvement in the questionnaire. Subsequently, modifications were made to the questionnaire based on the feedback received, including the removal of redundant questions, addition of missing points, and correction of language for clarity.

Sources of data and data collection procedures

Primary data sources were utilized to ensure the accuracy, timeliness, completeness, and reliability of the collected data. The primary data collection involved direct engagement with the sampled population, primarily consisting of the hospital employees involved in the operation and utilization of HMIS. A structured questionnaire was distributed among hospital employees to gather data on various aspects of the HMIS. This approach allowed the researchers to conduct a comprehensive assessment of the HMIS.

Measurements of HMIS status and effectiveness

To evaluate the effectiveness of HMIS, a questionnaire was developed based on the major criteria outlined by the WHO data quality dimensions: accuracy, timeliness, relevance, and completeness. Each criterion was examined separately to comprehensively assess the performance of HMIS, and address the primary objectives of the study. The questionnaire was designed to gather insights from participants regarding their perceptions and experiences related to these critical aspects of the HMIS. The strengths, weaknesses, and effectiveness of the HMIS within the hospital were assessed based on accuracy, timeliness, relevance, and completeness. This structured approach could allow for a thorough examination of key dimensions that are essential for informed decision-making, policy formulation, and quality improvement initiatives within the healthcare institutions. Through the analysis of responses gathered via the questionnaire, this study sought to identify areas of improvement and recommendations for enhancing the HMIS's performance to better meet the needs of patients, healthcare providers, administrators, and decision-makers at JUMC.

Data analysis procedures

The collected data were checked for completeness manually and entered, cleaned, checked, and analyzed using SPSS Version 20. Descriptive statistic such as

frequency, percentages, charts, and cross-tabulations were used for data analysis.

Operational - definitions of terms

Information system: It is a coordinated set of resources, technology, and processes aimed at producing information. It can be organized formally or functionally and is an integral to an institution by providing inputs or contributing to a specific component of an information network, facilitating decision-making (7,8).

Health information management: This involves organizing, maintaining, and tracking health records, whether traditional paper-based or electronic, in hospitals and other healthcare facilities. It ensures the proper processing of information related to patient care (9).

Health management information system (HMIS): An HMIS integrates data collection, processing, reporting, analysis, maintenance, and usage for healthcare improvement, aiding decision-makers in enhancing healthcare facilities (8).

Accuracy: Accuracy in data handling involves following correct procedures for compiling data, continuously cross-checking to eliminate errors, making necessary corrections, and ensuring data is accessible at any time. This concept is frequently highlighted in discussions about data quality in information systems, emphasizing the need for reliable and error-free data management (8).

Timeliness: Timeliness refers to the concept of data being up-to-date and available within a useful timeframe, determined by the manner and context in which the data are used (8).

Relevancy: Relevancy measures the extent to which healthcare-related data are useful for their intended purposes and is crucial for ensuring that the data collected serves its purpose effectively (9).

Completeness: Completeness ensures that all required data items are included and error-free, covering the entire scope of data collection for healthcare documentation. This principle is integral to maintaining reliable and comprehensive health records (8).

RESULTS

A total of 242 participants were enrolled in this study, resulting in a response rate of 85.5%, as 41 participants (14.5%) did not return the questionnaires. Among the 242 participants, 221 (91.2%) completed the questionnaires correctly and were included in the analysis, while 21 (8.8%) questionnaires were deemed invalid and excluded from the analysis.

Sociodemographic characteristics of the participants

Table 2 presents the professional distribution of the study participants. Among the total participants, the majority (62.9%) were male and 78.7% were health professionals, including medical doctors, nurses, and other allied health professionals. Administrative staff members comprised 21.3% of the sample, highlighting their significant role in the operational and administrative aspects of the healthcare system. Regarding work experience, 74 (33.5%) participants had less than three years of experience, 49 (22.2%) had between 3 and 6 years, 42 (19.1%) had between 6 and 9 years, and 54 (24.4%) had more than twelve years of experience.

HMIS for record-keeping

Of the total participants, 151 (68.4%) affirmed the presence of an HMIS in the hospital, while 70 (31.6%) indicated the absence of HMIS recording system. This significant majority acknowledged the existence of HMIS within the healthcare facility, contrasted with the notable minority who perceive its absence, may be influenced by their respective work divisions. Such insights into the perceived presence or absence of HMIS recording systems among participants lay the groundwork for further exploration into their experiences, perceptions, and utilization of HMIS, as well as potential discrepancies between perception and reality within the healthcare system.

Table 2: Sociodemographic characteristics of the participants

Variable	Category	Participants							Total (%)
		Doctor	Nurse	Midwifery	Pharmacist	HO	Lab. Tech.	Admin. Staff*	
Gender	Male	12	67	2	7	9	14	28	139(62.9%)
	Female	7	40	5	2	2	7	19	82(37.1%)
WE (year)	1-3	9	43	2	6	3	2	9	74(33.5%)
	3-6	1	18	2	2	2	5	19	49(22.2%)
	6-9	7	18	0	0	3	4	10	42(19.1 %)
	9-12	1	0	1	0	0	0	0	2(0.9%)
	>12	1	28	2	1	3	10	9	54(24.4%)

*HO-Health Officer; WE-work experience; *-those who are working on patient record management; Lab. Tech.-Laboratory technologist*

The responses from participants varied across different strata, likely due to differing levels of understanding regarding the HMIS within the healthcare facility's various work divisions. For instance, during the study period, the hospital employed a database management system primarily for recording patient names and card numbers to expedite the retrieval of patient records and facilitate manual searches. However, this system was solely dedicated to patient card number retrieval and did not encompass the comprehensive functionalities typically associated with HMIS. Consequently, some participants may have misunderstood this database system as HMIS and responded affirmatively. Conversely, many health professionals were combined the HMIS with an electronic record management stem, leading to negative responses. This discrepancy highlights lack of uniform understanding regarding HMIS among participants, including both administrative staff and health professionals. Such divergent interpretations underscore the importance of awareness creation and training on HMIS functionalities, distinguishing them from other related systems to foster a more cohesive and informed approach to healthcare information management within the hospital setting.

Of the 174 healthcare professionals, 157 (84.8%) reported that patient records were kept using a manual system of file cabinets, while 15 (14.3%) indicated that the hospital utilized HMIS for record-keeping. Of the 47 administrative staff, 41 (80%) reported using a manual record-keeping system, while the remaining 6 (20%) stated that the hospital employed a database system for record storage. These responses underscore the predominant reliance on manual record-keeping methods within the hospital setting, particularly among health professionals, with a notable minority reporting the utilization of HMIS or database systems. Such insights shed light on the existing practices and infrastructure for patient record management within the healthcare facility, highlighting potential opportunities for enhancing efficiency and effectiveness through the adoption and integration of advanced information management systems like HMIS (Table 3).

Table 3: Included respondent distribution

Patient medical record storage	Health professional	Administrative staff	Total
Database management system	15 (14.3%)	6 (20%)	21 (34.3%)
Manual system	157 (84.8%)	41 (80%)	198 (64.8%)
Not sure	2 (0.9%)	0 (0%)	2 (0.9%)
Total	174 (100%)	47 (100%)	221 (100%)

Assessment of the storage system

Table 4 depicts the responses from participants regarding whether the current patient history is stored according to HMIS standards. The participants were asked, *"Is the current patient history stored according to the standards of HMIS?"* Of the total participants, 17 (7.8%) strongly disagreed, while 20 (9.1%) disagreed with the statement. A substantial portion 43 (19.1%) of the participants remained neutral on this issue (Table 4).

Conversely, a considerable proportion of participants, 72 (32.5%) agreed that the current storage system meets HMIS standards, and 69 (31.4%) strongly agreed with this statement. Despite this, more than 60% of the participants expressed some level of dissatisfaction with the current HMIS record system. This suggests that the HMIS may not be effectively utilized for storing patient history for reporting or future use within the healthcare facility. These findings raise concerns about the implementation of record-keeping and storage practices in alignment with WHO standards. They imply that there may be deficiencies in current practices, warranting further investigation and potential improvements to ensure compliance with established standards and enhance the effectiveness of healthcare information management systems.

Table 4: Perceived patient's health information storage system and accessibility of patient card

Items	Scale	Percentage
	Strongly Disagree	31.4%
	Disagree	32.5%
The current -' patient's history record is stored with the standard of HMIS	Neutral	19.1
	Agree	9.19%
	Strongly Agree	7.7%
	Strongly Disagree	33.0%
	Disagree	33.9%
The patient card is easily accessible	Average	11.8%
	Agree	15.8%
	Strongly Agree	5.4%

Accessibility of patient history card

The question asked of participants was: "*How is patient history accessed/retrieved?*" This question aimed to assess the methods used for accessing and retrieving patient history cards. The majority (89.6%) of the participants indicated that accessibility to patient history is facilitated through a manual recording system. This finding underscores the prevalent reliance on traditional manual methods for accessing and retrieving patient records within the healthcare facility. In contrast, a minority of participants (9.5%) reported that access to patient history is enabled through a Database Management System (DBMS). This suggests a lower level of utilization of digital information management systems for record retrieval within the healthcare setting. Additionally, a small number of participants (0.9%) expressed uncertainty regarding the existing accessibility system for patient history. This uncertainty reflects a lack of clarity or awareness among some participants about the specific methods used for accessing patient records within the healthcare facility. Overall, the study highlights a predominant reliance on manual recording systems for accessing and retrieving patient history, with limited use of digital database management systems.

Assessment of patient history

The majority of participants expressed varying degrees of agreement regarding the difficulty associated with searching for and accessing patient records within JUMC. A notable portion (5.4%) of participants strongly disagreed with the statement about the easy accessibility of patient records, while 15.8% disagreed. Conversely, 33.9% of participants agreed, and 11.8% strongly agreed with the statement about the ease of accessing patient records. These findings collectively underscore the prevailing perception among participants regarding the existing difficulties, highlighting the need for potential interventions or improvements to enhance the accessibility and usability of patient records within JUMC.

Presence of a uniform format

The participants were asked: "*Does JUMC use a uniform format for recording patient history?"* to assess whether a consistent format is used for patient data recording in the hospital. A considerable proportion (61.1%) of participants indicated that JUMC utilizes a uniform set of forms for recording patient history [Fig. 1]. However, 82 (37.1%) participants disagreed with this statement [Fig. 1]. The majority consensus among participants supports the use of a uniform format for record-keeping within JUMC, suggesting that patient records are consistently registered throughout the hospital.

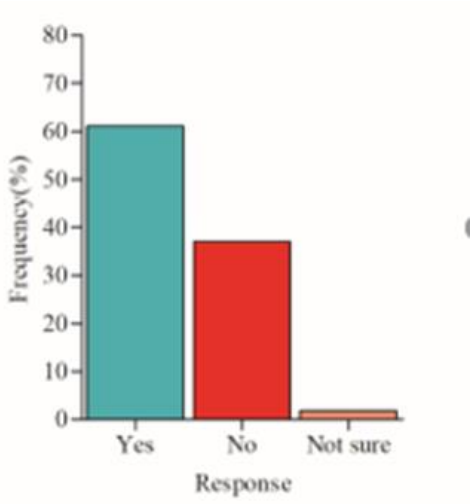

Figure 1: Uniform set of documents or form of patient medical record

Effectiveness of HMIS in terms of accuracy

In assessing the accuracy of the HMIS at JUMC, special focus was placed on the meticulousness of data recording, storage, and retrieval. The procedures for compiling data were thoroughly reviewed, with an emphasis on continuous cross-checking to minimize errors and ensure correctness. Discrepancies were promptly corrected, reflecting a commitment to maintaining data accuracy within the HMIS framework.

To evaluate the accuracy of HMIS utilization by both health professionals and administrative staff for decision-making, participants were asked: *"Is patient information recorded, stored, and retrieved accurately in HMIS?*" Analysis of the responses revealed that 76 (34%) participants affirmed that the accuracy of record-keeping within the HMIS was acceptable. However, the majority (64%) expressed concerns about the accuracy of the record-keeping practices in the hospital. Similarly, 25 (12.9%) participants indicated that the record-keeping practices effectively maintained accuracy within the HMIS, while the majority (87.1%) provided negative responses regarding the accuracy of these practices. These findings suggest that a significant proportion of participants have reservations about the accuracy of record-keeping within the HMIS at JUMC. The disparity between positive and negative responses highlights the need for further investigation and potential improvements to enhance the accuracy of record-keeping processes.

Effectiveness of HMIS in terms of timelines

Participants were asked the question: *"Is patient information recorded, retrieved, and used in a timely manner in HMIS for decision-making?"* to evaluate the

timeliness of HMIS utilization. This question aimed to assess whether patient information was promptly recorded, retrieved, and utilized within the HMIS framework.

A significant proportion of participants (36.1%) felt that patient information was recorded, retrieved, and used in a timely manner for decision-making within the HMIS. However, the majority (63.9%) expressed concerns about the timeliness of patient information handling within the HMIS. Additionally, 50 (24.7%) participants indicated that patient information needs to be stored and accessed more promptly within the HMIS. In contrast, 171 (75.3%) participants lacked confidence in the timeliness of information retrieval and report delivery processes. These findings underscore substantial concerns regarding the timeliness of HMIS utilization for decision-making purposes at JUMC.

Effectiveness of HMIS in terms of relevance

In evaluating the relevance of the reports produced by the HMIS at JUMC, the focus was on how effectively data and information were utilized to generate reports that inform decision-making processes. Participants were asked: "*Are the reports produced by the HMIS relevant and useful for decision-makers?"* The results showed that 81 (33.7%) participants believed the reports generated by the HMIS were relevant and suitable for use. Additionally, 100 (45.7%) participants felt that the reports were relevant and useful for decision-making. However, a significant portion of participants (66.3%) reported that the reports were not relevant or suitable for decision-making. Similarly, 121 (54.3%) participants expressed doubts about the relevance of the reports generated by the HMIS. These findings indicate a notable concern about the relevance of the reports produced by the HMIS, suggesting that improvements are needed to ensure the reports meet the needs of decision-makers effectively.

Effectiveness of HMIS in terms of completeness

Participants were asked: *"Does the HMIS produce complete reports that are suitable for decision-makers?"* to assess the completeness of data within the HMIS at JUMC. The results showed that 146 (69.3%) participants perceived the reports generated by the HMIS as complete and suitable for use. Additionally, 100 (45.7%) participants indicated that the reports were complete and useful for decision-making in terms of accessibility. However, a significant proportion of participants (31.7%) reported that the HMIS-generated reports were incomplete. Similarly, 121 (54.3%) participants expressed doubts about the completeness of the reports produced by the HMIS with respect to accessibility. These findings highlight concerns about the completeness of the reports produced by the HMIS, suggesting that there are areas needing improvement to ensure that the reports are fully comprehensive and meet the needs of decision-makers.

DISCUSSION

This research aimed to assess the status and effectiveness of the HMIS at JUMC in providing healthcare services and improving health delivery. The HMIS primarily generates reports for decision-making bodies, making its efficiency crucial for informed decisions. A study conducted in Addis Ababa (10) evaluated how health information is generated and utilized in decision-making processes across healthcare facilities in the city. The findings of this previous study highlighted the need for increased awareness and steps to enhance HMIS capacity at sub-city and health facility levels (10). Critical constraints, such as a lack of trained personnel were identified and underscored the importance of improved technology acquisition and understanding among healthcare managers and professionals. This finding aligns with the results of the current study which evaluated how healthcare information is generated and utilized in decision-making processes across healthcare facilities in Addis Ababa. The findings highlighted the need for increased awareness and steps to enhance HMIS capacity at sub-city and health facility levels. Critical constraints, such as a lack of trained personnel, were identified, underscoring the importance of improved technology acquisition and understanding among health managers and professionals. These findings align with the results of the current study.

The accessibility and storage of information within the HMIS were evaluated, revealing that approximately 70% of participants perceived the accessibility and storage was adequate. However, this percentage falls below the standard set by WHO for HMIS effectiveness, which emphasizes a threshold of over 80%. The researchers attribute this discrepancy to the predominant use of manual systems within JUMC. Confusion among participants regarding the definition of HMIS, often conflating it with Electronic Record Management (ERM), contributed to varied responses about the availability of HMIS at JUMC. This lack of uniform understanding underscores the need for comprehensive HMIS training among healthcare professionals, a sentiment supported by similar findings in existing literature. A previous study (11) indicated that 65% of the participants could not define what HMIS is, which means that the majority of health professionals do not know the use of HMIS. This might be due to lack of training on HMIS. This agrees with the findings of this study that reported 65% of participants could not define what HMIS is, indicating that the majority of health professionals are unaware of its use. This may be due to a lack of training on HMIS, which is consistent with the findings of the current study result.

The study revealed significant dissatisfaction among participants regarding the current record-keeping practices within JUMC, with over 60% expressing dissatisfaction. A similar study reported low levels of data accuracy and report completeness, indicating systemic challenges in HMIS implementation. A study conducted at Ayder Referral Hospital (12) evaluated HMIS implementation in terms of data accuracy, report completeness, staff attitudes towards HMIS, and data consistency. The findings indicated low utilization of generated information, low data accuracy, and inadequate staff training, which are also confirmed in the present study.

Another study conducted in Malawi (13), which focused on assessing the quality of HMIS data in selected health facilities using both qualitative and quantitative research methods, revealed low data quality, low reporting rates, and inadequate feedback and supervision mechanisms. The timeliness of reports to district health officers was also low, with only 33% of facilities sending reports promptly. The same scenario holds true for JUMC.

Despite these challenges, the research identified a positive aspect of the uniformity of record-keeping documents used within JUMC, with over 60% of participants affirmed the use of standardized forms. This adherence to uniformity aligns with WHO standards and serves as a prerequisite for effective HMIS application.

Further analysis delved into the effectiveness of record-keeping for decision-making purposes, focusing on the accuracy, timeliness, completeness, and relevance of stored information. Results indicated that less than 30% of participants perceived the HMIS to meet WHO standards in these aspects, emphasizing the need for improvement and adherence to established guidelines. Participants suggested decentralizing the information management center within each department of JUMC to enhance efficiency and ease of access. In addition, over 90% of participants recognized the importance of HMIS for facilitating healthcare services and decision-making processes.

Overall, this study highlighted the challenges and opportunities associated with HMIS implementation at JUMC. While there are areas for improvement, such as data accuracy and system effectiveness. There was also a recognition of the importance and potential benefits of a well-functioning HMIS in healthcare delivery.

This study was conducted in a single hospital, which may limit the generalizability of the findings to other settings. Although there were no significant differences between respondents and non-respondents in terms of sociodemographic characteristics and work experience, the high non-response rate could still affect the generalizability of the results of the present study. Despite these limitations, the findings of the current study could be used for planning necessary interventions to improve HMIS status in healthcare facilities.

CONCLUSION

The HMIS serves as a standardized approach for storing, accessing, and utilizing patient history throughout their healthcare journey. However, the assessment of JUMC has identified deficiencies in information storage, retrieval, and completeness, which fall below WHO standards. Consequently, the HMIS at JUMC lacks effectiveness in supporting further utilization and quality service provision, resulting in low performance. Despite recognizing the importance and benefits of HMIS, challenges remain in the proper handling and accessibility of stored patient record. Inadequate information recording and storage hinder the retrieval of complete and relevant data, ultimately affecting the quality of decision-making processes. Addressing these obstacles is crucial for implementing quality healthcare delivery at JUMC and ensuring informed decision-making for improved patient outcomes. It is also important to fully implement and organize the HMIS to ensure the efficient delivery of health services, leading to positive health outcomes. This process involves maintaining, analyzing, and securely storing patient histories and records for future data utilization. Moreover, conducting awareness creation campaigns among hospital staff about the uses and benefits of HMIS is vital. Such initiatives could help to facilitate the easy management of patient records and empower staff to utilize the system effectively. In addition, providing comprehensive training for both hospital staff and the HMIS department is essential. This training should focus on improving overall HMIS service facilitation and ensuring that the staff are competent in using the system effectively. It is also important to improve easy access to information and promote knowledge sharing among staff, thereby facilitating informed decision-making at any time.

List of abbreviation

Abbreviations

DBMS-database management system; FMoH-federal ministry of health; HIM-health information management; HMIS-health Mmnagement information systems; JUMC-Jimma University Medical Center; SPSS-statistical package for social sciences; WHO-World Health Organization

Declaration

Ethical considerations

The study adhered to ethics principles to ensure the protection of participants from harm, privacy, confidentiality of research data, and honesty with professional colleagues. Throughout the study, the integrity and honesty in the interactions with study participants were maintained. Official letter was obtained from the Department of Information Science, Jimma University to obtain permission to collect data. This letter was submitted to the office of the Medical Director of JUMC. The permission letter was forwarded to ethical board of the hospital from Medical Director, and upon ethical approval, the permission was obtained to collect the data.

Consent for publication: Not applicable

Data availability statements

Data can be available upon request from the corresponding author

Author contributions statements

TF designed the study, facilitated data collection, analysed data, and drafted the manuscript; RB modified the research methodology, and revised the manuscript; WJ came up with the research idea, contributed to drafting the manuscript, edited and came up with the final version. All authors contributed significantly to the work reported, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

Acknowledgment

The authors acknowledge the Department of Information Science at Jimma University for providing support letter for data collection, Jimma University for giving us a research fund, and JUMC staff for participating in this study.

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