The Quality of Medical Records Management in Public Health Facilities inthe Jimma Zone, Oromia Regional state, Southwest Ethiopia

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Abstract

Background: Comprehensive medical records are the cornerstones for the quality and efficiency of patient care, as they can provide a complete and accurate chronology of treatments, patient results, and plans for care. The study aimed to assess the quality of medical records in public health facilities in the Jimma Zone.

Methods: A facility-based cross-sectional study design supplemented by a qualitative method was employed from May 30 - July 29, 2020. A total of 384 medical records were reviewed from 36 facilities using a facility inventory checklist. EPIData 3.1 software was used to enter the quantitative data, which was then analyzed using SPSS 23, and descriptive statistics were used to present the results. A thematic analysis approach was used for qualitative data which was finally triangulated with the quantitative data.

Result: 384 medical records were reviewed from thirty-six public health facilities in the Jimma Zone with a 100% retrieval rate. Among the 36 health facilities, only one had a printer in the record room and three (8%) had tracer cards. On completeness of the medical records, mode of arrival and date of birth were the least recoded data elements (17% and 5%), respectively.

Conclusion: The majority of health facilities had a shortage of trained and qualified recording personnel in the medical record units. The majority of medical records had poor completeness in terms of administrative, clinical, financial, and legal data. The overall quality of medical records in public health facilities in the Jimma Zone was low as per the standard of health facility requirements. It was recommended to have qualified medical record unit personnel and to standardize the unit in order to improve the quality of medical records. [*Ethiop. J. Health Dev.* 2022;36 (SI-1)]

Key Words: Medical Records, Quality, Jimma zone, public health, Southwest Ethiopia

Background

A medical record (MR) is a systematic documentation of a patient's individual medical history and care that is used for physical folders and bodies of information that consist of the patient's health history (1). The main aim of information recording in the MR of patients is to support the delivery of adequate care, clinical decision-making, communication between health care workers, and continuity of care. Comprehensive MR are a cornerstone for the quality and efficiency of patient care, as it can provide a complete and accurate chronology of treatments, patient results, and plans for care (2).

Furthermore, MRs is an important source of data for scientific research, quality assurance, and transparency in the delivery of care. They also help with clinical audits, resource allocation, monitoring and evaluation, epidemiology, and service planning (3). They are kept either as paper-based medical records (PMR) or as electronic medical records (EMR). They are expected to be completed and to be accurate in order to be useful as a reference for patient care, protection of the legal interests of the patient, physician, and facilities, and in terms of meeting regulatory requirements and for research purposes if needed (4). However, poor quality of recording in patient records may result in poor quality of care and is associated with higher rates of errors (5).

Health facilities deal with the lives and health care of their patients. Good medical care relies on good record keeping. Without accurate, comprehensive, up-to-date, and accessible patient medical records, medical personnel may not offer the best treatment or may misdiagnose a condition, which leads to serious consequences (6).

The low quality of medical record management affects the quality of patient care. Poor quality of information in patient MRs may result in poor quality of care and is associated with higher rates of adverse events (7). Furthermore, poor quality MRs can have a negative impact on clinical and administrative decision-making as well as patient safety (8). Incomplete, missing sheets, illegible handwriting, and the use of confusing abbreviations are major drawbacks for paper-based medical records (9).

Paper-based medical records are often unavailable, important information may not be written, or the handwriting of a health professional may not be legible (10). Adverse events are estimated to occur from 2.9 - 3.7% of acute care hospitalizations in developed countries, and medical errors which is defined as the failure to complete a planned action as intended, affects between 44,000 and 98,000 patients in hospitals annually (11).

In Tanzania, over 50% of inpatient MR sections are considered incomplete. With regards to individual sections, attending doctors, procedure and summary of a day were most poorly completed and the follow-up sheet was incomplete. An estimate of 27.2%-33.2% of

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the requests, clinical information and unit record books were poorly managed and consisted of inconsistencies in Nigeria. Knowledge gaps and a shortage of MR formats were cited as root causes for incomplete MR (8,12). A study conducted in hospitals found that in the rural parts of Ethiopia only 45.7% of MRs were complete (13). Though the standard for completeness of MRs is expected to be 100%, inpatient MR completeness was found to be 73% in Menelik II referral hospital. The study also found that knowledge gaps and a shortage of MR formats were the root causes of incomplete inpatient MR (14).

Despite the importance of MR for high quality and efficient care management of patients, health facilities in low-income countries do not fulfill the basic purpose of the MRs system. Several studies were conducted on the documentation of MRs elsewhere (15-17) whereas in Ethiopia there were few studies conducted even though it is not directly related with the assessment of quality MRs (14). Although it is imperative to know the quality of medical records, there has been no direct research on the issue of quality of medical records in the study setting. Therefore; this study aimed to assess the quality of medical records in terms of the availability of resources, the processes, and outcome (in terms of completeness), in public health facilities that are located in selected districts of the Jimma Zone, Oromia Regional State, Southwest Ethiopia.

Methods

Study area and period:

The study was conducted in selected districts of the Jimma Zone, namely, Omo Nada, Shebe Sombo, Nadhi Gibe, Seka Chekorsa, Chora Botor, and Mana. The districts were selected using simple random sampling based on a total of 21 districts found in the Jimma zone. The zone has a total population of 2,486,155 of which 1,250,524 are males and 1,235,628 are females (18). There is one medical, three general hospitals, four primary hospitals, 120 health centers, and 504 health posts in the zone. The selected six districts have a total population of 938,286, of which males account for 596,161(19). All hospitals and health centers located in the districts were included in the survey, bringing the total number of facilities to 36 (two primary hospitals, and 34 health centers).

Study design and period

The study employed a facility-based descriptive cross-sectional design supplemented by a qualitative method. Data was collected from May 30 - July 29, 2020.

Study units

Sampled medical records in public health facilities of selected districts that were generated during the study period were the study units for the quantitative part. For the qualitative research, all personnel in charge of medical records, health managers, and selected health professionals were the study population.

Sample size determination and sampling procedure

A single population proportion formula was used by assuming a 95% confidence interval and 50% prevalence (P) of medical record quality (due to a lack of similar studies), at a precision rate of 5%, making a total of 384 MR charts required for the study. The total number of medical records in a month was determined across all facilities, allowing for the proportional allocation to each facility based on their patient flow. A systematic random sampling technique was used to select MRs from each facility by taking the ‘‘K’’ interval. For the qualitative part, a total of 33 key informants were interviewed. Saturation of data was used to limit the number of in-depth interviews.

Data collection instruments and data collectors

Data collection tools for quantitative data were adapted from previously published pieces of literature (20-23) to examine the completeness of the medical records, resource inventory checklists and MR were used. A semi-structured in-depth interview guide was developed to gather information on the attributes of the quality of MRs in the facilities. Data quality was assured by providing two days of training and appropriate supervision for the overall data collection procedure by the principal investigator. The questionnaires were pre-tested on 5% of the sample in the Shenen Gibe Hospital and the Jimma health center to ensure the validity and clarity of the tool. Quantitative data was collected by nine BSc nurses from other facilities and qualitative data was collected by two health education specialists. Six supervisors were recruited to supervise the data collectors, and perform facility inventory at their respective facilities.

Measurement

The quality of medical records was measured using three attributes; availability, process, and outcome. A resource inventory checklist was utilized to determine the availability of resources and the capabilities of health facilities to provide a high-quality MR. The compliance of health workers to conventional MR practices, such as filling out all data items in the individual MRs, collecting, and shelving individual cards on a daily basis, and using the tracer card system, were measured. The outcome attribute of quality was measured through the ease of retrieving medical records and the completeness of MRs at facility and district levels.

Data processing and analysis

All completed questionnaires were coded, and data was entered and cleaned using Epi Data Manager Software version 3.1 before being exported to SPSS version 23 for analysis. Tables and figures were used to present the findings, which included descriptive data such as frequencies and proportions. The lead investigator transcribed the recorded audiotape verbatim. Then, a thematic analysis approach was used to analyze the qualitative data manually.

Ethics approval and consent to participate

Ethics approval was obtained from the Institutional Review Board (IRB) for the Institute of Health at the Jimma University. Informed consent for the study participants was obtained from each study participant prior to the interviews by explaining the objective of the study. Confidentiality and anonymity were ensured throughout the execution of the study as a participant was not required to disclose any identifiable information his/her personal identity. While reviewing records, care

was taken to make sure that no individual other than the research team members had access to the records. Moreover, names and other identifiers were not recorded during the completion of the checklist.

Results

Input attribute of quality

Structure of medical record units

Some 33(92%) facilities had a stand-alone medical record unit; among these, 22 (61%) of them had adequate space to handle medical records. The Medical record unit (MRU) is operational 24 hours a day, seven days a week in 21 (58%) of the facilities, and only during the day in the remaining facilities. Seven (19%) facilities had isolated passive MRU, while only 5 (14%) of them had lockable shelves for medico legal cards (Figure 1).

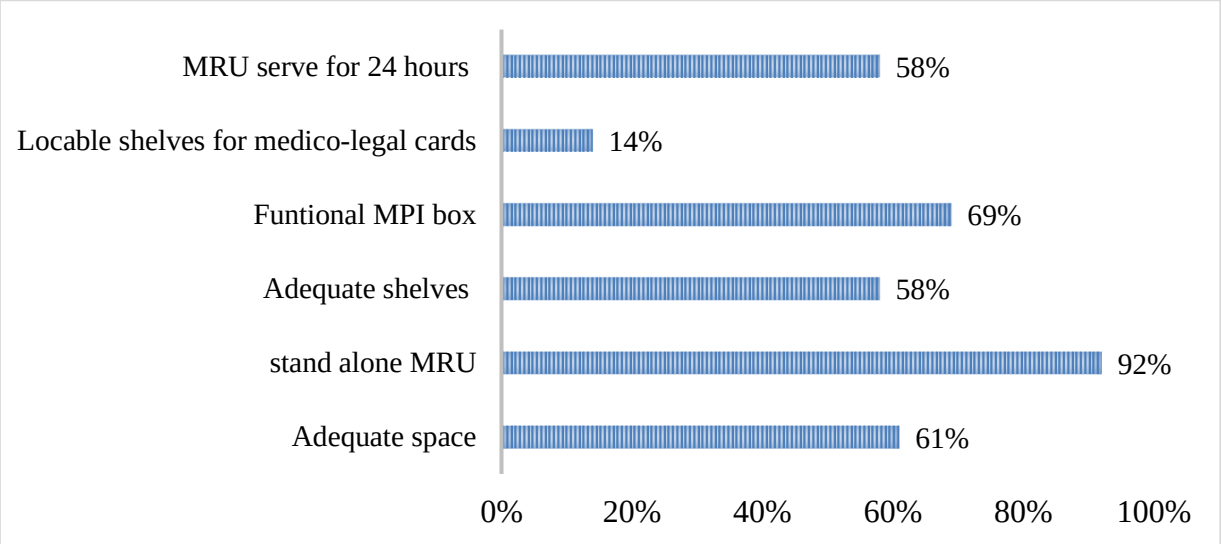

Figure 1: **Structure of medical record units in the study facilities; Jimma zone; Southwest Ethiopia; 2021**

Respondents for the qualitative study also revealed a similar finding on the lack of standard MRU, highlighting the need to refurnish the unit and its materials to meet the standard. Moreover, they mentioned that there were times when patients' medico-legal records were lost because of poor handling as there is a lockable shelf for medico-legal records.

A 36 year's old female record personnel said that "we ask so many times the head of HC in order to purchase the MPI cards but still the cards not printed".

Availability of recoding formats and necessary equipment for MRU

All facilities have the necessary recording formats needed for medical record units. However, the tracer card was available in three (8%) facilities, and only one facility had an inpatient clinical format during the data collection period. In terms of necessary equipment, 29 (81%) of the facilities had a Master patient index (MPI) box, and 32 (89%) had shelves, despite the fact that the bulk of the facilities (75%) lacked photocopy machines and printers (97%).

The majority of in-depth interview respondents explained the shortage of recording formats, and beyond that, the quality of the available cards was poor in terms of thickness when compared with the former ones. Additionally, they stressed the absence of computers because of the lack of a budget, which hinders them from having a computerized system that improves the quality of medical records.

Availability of human resources in the MRU

Regarding the availability of human resources at the MRU, the highest number of personnel in a district was 19 and the lowest was five. Twenty-eight (40%) of the MRU personnel were diploma holders, followed by grade 10 completion, 27 (38.6%). Among the total number of MRU personnel in the districts, only 14 (20%) had computer skills and 18 (26%) had received in-service training on MRU procedures (Table 1).

In addition to the findings from the quantitative study, respondents of in-depth interviews explained problems regarding medical record keeping, including the assignment of untrained personnel in the MRU; high patient loads, and patients' poor knowledge and awareness of proper handling of service identification cards. Furthermore, respondents highlighted the need for refresher training for MRU staff and the recruitment of additional personnel so that the MRU could function 24 hours a day and during weekends.

Table 1: **Availability of human resources in the MRU of public health facilities; Jimma zone; Southwest Ethiopia; 2021**

Variables	Districts						Total
	Seka	Shebe	Manna	O/Nada	T/Afeta	C/Boter	
MRU staff Number	19	9	11	18	8	5	70
Educational Status							
Certificate	1 (5%)	2 (22%)	4 (36%)	1 (6%)	3 (38%8)	2 (40%)	13 (19%)
Diploma	8 (42%)	0	5 (45%)	10 (56%)	5 (63%)	0	28 (40%)
Degree	0	0	0	2 (11%)	0	0	2 (3%)
Grade 10	10 (52.6%)			5 (27.7%)	0	3 (60%)	27 (38.6)

		7 (77.7%)	2 (18.2%)				
Computer Skill	4 (21%)	0	1 (9%)	6 (33%)	1(13%)	2 (40%)	14 (20%)
In-service Training	4 (21%)	1 (11%)	1 (9%)	7 (39)	2 (25)	3 (69%)	18 (26%)

Process attribute of quality

In twenty-eight (78%) facilities, individual MRs were collected and sent back to the MRU on a daily basis. However, integration of all the patients' records into an individual folder (31%) and the use of summary sheets and tracer card systems (47% and 6% respectively) were observed in less than half of the study facilities. Moreover, not all individual MRs were kept in one central record room (Table 2).

Table 2: **Processes attribute for quality of medical records in public health facilities in the Jimma Zone, Southwest Ethiopia, in 2021.**

Variables	Response
Set folder in appropriate format for a visit	21 (58)
Follow appropriate individual medical recording	25 (69)
Collect and shelve folder back daily to MRU	28 (78)
Use tracer card system	2 (6)
Integration of all patient records in an individual folder	11 (31)
Summary sheets filled for each folder	17 (47)
All individual medical record kept in one central card room	29 (81)

An in-depth interview with respondents revealed that, in addition to inadequate resources in the MRU, a lack of health workers' commitment toward proper handling and recording of individual MRs was a problem. Additionally, respondents also mentioned the absence of tracer cards because of the poor implementation of the standard procedure for MRU.

Quality outcome attributes

Ease of retrieving medical records

The mean time to retrieve the MRs from the shelves was 3.4 ±3.52 minutes, with a minimum time of one minute and a maximum time of 33 minutes. The utilization of record tracking systems is the main factor contributing to the length of time it takes to retrieve specific medical records in facilities. All health centers employed a manual tracking system in this regard, which was frequently handled improperly by medical staff.

Completeness of medical records

Among the reviewed individual MRs, administrative data was filled in for the majority of the MRss, though mode of arrival and date of birth were the least recoded data elements (17% and 5%), respectively. Regarding the completeness of clinical data, the problem/complaint of the patient was recorded in 307 (80%); and medication was recorded in 217 (57%) of the records. On the other hand, the least recorded clinical data elements included the results of the investigation (22%); examination findings (25%); and health information given to the patient (21%). Moreover, investigation fees were recorded in 49 (13%); service fees were recorded in 19 (5%); and medication fees were recorded in only eight (2%) of the reviewed individual medical records.

Discussion

The present study aimed to assess the quality of medical records in public health facilities in the Jimma Zone using a facility-based cross-sectional study design supplemented by qualitative methods. This found that the majority of health-care facilities had an insufficient number of medical-record professionals, which was below the industry norm. The completeness of individual medical records was found to be poor as seen in administrative, clinical, and financial data elements.

On the whole, the hospitals and town health facilities fulfilled the minimum requirements for staffing. This finding was different from the Ethiopian standard for health center and hospital requirements, which stated that the staff in the medical record unit should be at least three for health centers and five for hospitals. This means that for every additional 100 clients per day, one more MRU clerk is needed (24). This might be linked to a shortage of trained recording personnel in the MRU.

According to this study MRU workers lack computer skills based on the Ethiopian criteria for health center and hospital requirements, which stipulate that medical record personnel must have basic computer skills (24). This could also be linked to a lack of training for new employees and continuous refreshment training on computers and revised MRU tools.

In the process of medical record keeping, the findings of the study revealed poor accommodation of facilities to run the medical record system in a standard way. This was indicated in the Ethiopian standard for health facilities, which requires that the MRUs shall have adequate space to accommodate central filling space, work space, archive space, and supply/storage room. Furthermore, the MRU should always be locked when no staff is present, have a lockable shelf for medico-legal cards, and be able to serve for 24 hours (24). This discrepancy might be due to a shortage of financing to re-establish and furnish the MRU.

Furthermore, the national standard stipulated that there should be a mechanism to make medical records with appointments ready for use and return them back to the central medical record room within 24 hrs. However, in the studied facilities, less than half of individual medical records were set up in an appropriate way for a visit, though more than three-fourths of records were collected and sent back to the MRU on a daily basis. This could imply a shortage of human power in the MRU and a lack of good monitoring/tracking systems at the facilities.

On the completeness of medical records, though most of the administrative data were recorded, the date of birth and the mode of arrival were the least recorded elements, with 5% and 17%, respectively. This finding was lower as compared with the studies done in Emam Reza hospital and Valiasr hospital in Iran, which indicated a 61.7% recording of date of birth and mode of arrival (6). This might be due to weak monitoring and follow-up by the medical record department, as evidenced from the qualitative data. On the other hand, the completeness of the medical records for the presenting complaint was recorded at 80%, which is higher than a study conducted in South Africa, in which the history of the present complaint was recorded at 65% (25). This might be due to the difference in study units, in which the latter one focused only on a single ward, while this study was conducted in all service departments associated with the facilities.

This study reveals that in less than half of the reviewed individual medical records, most of the data elements were recorded, which is not consistent with the standard and a study conducted in Iran, which indicated medical history, physical examination, and examination results were recorded in the majority of the reviewed individual medical records (6). This inconsistency could be explained by the difference in the study area and sample sizes.

Conclusion and Recommendations

The findings of the study concluded that the quality of medical records in public health facilities in the Jimma zone is poor. The available human resources in the MRU are unqualified, untrained, and not enough in number to run medical records of the patients in the majority of studied health facilities. The MRUs are not standardized, and there is a shortage of recording formats and equipment. Medical records were incomplete in terms of the content they contained, which was the outcome attribute for the overall quality of medical records. It was recommended to train MRU personnel, update materials and to have a standardized MRU in order to have quality medical records for patients. Regular monitoring and supportive supervision are also recommended in order to have committed health workers who can perform their duties as expected and proper implementation of standards should be improved from the higher to the lower level of the health systems to ensure the quality of medical records.

Authors' contribution

NG and MT were involved in designing the study, drafting the proposal, data collection, analysis, and writing up the first draft of the manuscript. GA and BB reviewed the manuscript to get the final version. All authors read and approved the manuscript.

Acknowledgement

We would like to thank Ministry of health of Ethiopia, and Oromia regional health bureau for their full support in the realization of this finding. This work would not be possible without the financial support of Doris Duke Charitable Foundation under grant number 2017187. The mission of the Doris Duke Charitable Foundation is to improve the quality of people's lives through grants supporting the performing arts, environmental conservation, medical research and child well-being, and through preservation of the cultural and environmental legacy of Doris Duke's properties. Special thanks and appreciation to all who agreed to participate in this study, mainly respondents.

Funding statement

This research was funded by Doris Duke Charitable Foundation (DDCF). The funder has no role in the designing of the study, data collection, analysis and interpretation of data and in writing the manuscript.

Competing interest

The authors declare that they have no conflicts of interest in this work.

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