

# Quality of Medical Records in Public Health Facilities of Jimma Zone, Oromia Regional State, Southwest, Ethiopia 2021

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## Research Article

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# Abstract

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

**Methods:** A facility-based cross-sectional quantitative study design supplemented by a qualitative method was used from May 30 to July 29, 2020. A total of 384 medical records were reviewed by using the facility inventory form for quantitative data. The data was entered by EPI data 3.1 and analyzed by SPSS 23 and descriptive statistics were used to present the findings. Qualitative data were triangulated with the quantitative data.

**Result:** The majority of the health facility has a shortage of trained and qualified recording personnel in the medical record department. Among 36 health facilities, only one facility have printer in the record room and 3(8%) of them have tracer card. The overall quality of medical records in terms of content completeness as per the standard of health facilities requirements for districts, hospitals, and health centers were 30.62%, 39.49%, 25.79% respectively.

**Conclusion:** The majority of medical records had poor completeness of administrative data, clinical, financial, and legal contents. The overall quality of medical records in Jimma Zone was very low for components of the quality of medical records as per the standard of health facilities requirements.

## Background

A medical record is a systematic documentation of a patient's individual medical history and care. Used for physical folder and body of information which comprises the total of each patient's health history (1). The main aim of information recording in medical records of patients is to support the delivery of good care, clinical decision making, communication between health care workers, and continuity of care. It is also a valuable source of data for scientific research, quality assurance, transparency of the delivered care, support clinical audit, resource allocation, monitoring and evaluation, epidemiology, and service planning(2).

Missing components of medical records, poor quality of information could also be a source of bias in document review studies. On the other hand, poor quality of recording information in patient records may result in poor quality of care and associated with higher rates of errors (3). Comprehensive medical records are cornerstones in the quality and efficiency of patient care, as they can provide a complete and accurate chronology of treatments, patient results, and plans for care (4).

Medical Records (MR) are kept either as Paper-based Medical records (PMR) or as Electronic Medical records (EMR). MR is expected to be complete and accurate to be useful as a reference inpatient care, protection of the legal interest of the patient, physician, and the facilities, and meeting regulatory requirements for standard and researches (5).

Health facilities deal with the life 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 misdiagnose a condition, which leads to serious consequences (6).

Low quality of medical record management affects the quality of patient care. Poor quality of the information in patient MRS may result in poor quality of care and associated with higher rates of adverse events (7). Poor quality of health care data in patient MRS can affect clinical and administrative decision-making in health economics and patient safety (8). Incomplete, missing sheets, illegible handwriting, and the use of confusing abbreviations were the

major drawbacks of paper-based medical records. Some of these have been reported as common sources of weakness in a surgeon's defense in medico-legal (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 occur in an estimate of 2.9 % to 3.7 % of acute care hospitalizations in the United States of America and it is estimated that between 44,000 and 98,000 patients die in hospitals each year as a result of medical error explained as the failure of a planned action to be completed as intended (11).

In Tanzania over 50% of the inpatient MRS sections are considered incomplete. With regards to the individual sections, attending doctor, procedures, and summary-of-a day were the most poorly completed, and the Follow-up sheet was not recorded (12). An estimate of 27.2%-33.2% of the requests, clinical information, and unit record books were poorly managed and suffered mutilations in Nigeria(8). Study in the rural part of hospitals in Ethiopia only 45.7% of MRS was complete(13). An improvement in MRS completeness from baseline 0%-73.6% post-intervention assessment shows in inpatient of Dalefade Primary Hospital West Afar, Ethiopia. Around 73% of inpatient MRS complete in baseline assessment in Menelik II referral hospital which is low against the standard expected to be 100% and also there are knowledge gaps and shortage of MR formats were observed as a root cause for the existence of incomplete inpatient MRS(14).

Despite the importance of MRS to high quality and efficient care management of patients MRS; especially in developing countries like Ethiopia does not fulfill the basic purposes of the MR system, generally inadequately supported and poorly managed. The MRS is incomplete, lots of missed, and the handling and the tracking mechanism of medical records are also ineffective when the patient comes for follow up and other medical or surgical services he/she is compelled for incurring additional cost, and besides the physician wastes more time in diagnosing and unnecessary ordering laboratory tests (14, 15).

Several studies were conducted on the documentation of MRS in other countries (16), whereas in Ethiopia few studies were conducted even though it is not directly related to the assessment of the quality of MRS (14). Hence this study aims to assess the quality of medical records in terms of completeness, availability, and usability in public health facilities of selected districts of Jimma Zone Oromia regional state, southwest, Ethiopia.

## **Methods**

### **Study design, setting and period**

A facility-based cross-sectional quantitative study design supplemented by a qualitative method was employed from May 30 to July 29, 2020. The study was conducted in Jimma Zone selected districts (Omo Nada, ShebeSombo, TiroAfeta, SekaChekorsa, ChoraBotor, and Mana) of public health facilities. The zone total population is 2,486,155 out of which male 1,250,524 and 1,235,628 female. The zone has one medical center hospital, three general hospitals, four primary hospitals, 120 health centers, and 504 health posts. It has a total of 4432 servants of which 3071 are technical staff (health professional), 1361 are administrative staff. The selected six districts have a total population of 938,286 out of which male 596,161 and 342,125 female. The selected districts have two primary hospitals and thirty-four health centers that are relevant for the study. (Source HR, Plan and program office(17)).

### **Population**

All medical records and sampled medical records in public health facilities of selected districts generated during the study period were considered as a source and study population for quantitative part. For qualitative part all medical record personnel, health managers and health professionals working in the public health facilities of selected districts during the study period.

### **Sample Size Determination and sampling procedure**

Single population formula was used by assuming 95% confidence interval and 50% prevalence (P) due to lack of such study, and a precision of 5% between the sample and the parameter is taken, thus a total of 384 MR charts required for the study. Thirty percent (30%) of the districts were selected using simple random sampling technique by lottery method from each category of districts. Then the total numbers of medical records were identified from each public health facilities and proportionally allocate for each public health facilities. Systematic random sampling technique was used to select MRS charts from each public health facilities by using K interval. For the qualitative part total of 33 key informants were interviewed from medical record personnel, health managers, and health professionals working in the facilities during the study period. Saturation of idea was used to limit number of in-depth interviews to health centers heads, health workers from OPD and medical record personnel from respective health facilities participated to support the reviewed data and to show the attributes for quality of medical record.

### **Study variables**

Educational status, computer skill, training related to medical records personnel, use of MPI and single registration system, availability of resource for medical records keeping and use, availability of adequate space for filing medical records and Completeness of medical records.

### **Data collection instrument**

Data was collected by 9 BSc nurses from other facilities for quantitative and 2 health education specialists for qualitative data collection and six supervisors using Facility inventory form and in-depth interview guide, which contained an open-ended questionnaire. The checklist and questionnaire were adapted from different pieces of literature (7,10,23). Data were collected using facility inventory forms for medical records. Medical records were selected from the medical record unit by observing the medical record number to bring the selected MR from the shelf. Appropriate information of the MR was filled into the form and time was taken to measure the meantime of retrieval of medical records. An in-depth interview guide was developed to gather information from medical record personnel, health manager, and health profession for the qualitative part of the study. Data quality was controlled by giving two days of training and appropriate supervision for data collectors by the principal investigator. The questionnaire was pre-tested using (5%) of the sample size in Shenen Gibe Hospital and Jimma health center to ensure the validity and clarity of the tool.

### **Data processing and analysis**

All collected questionnaires were checked for completeness and coded. Then the data was entered and cleaned using Epi data manager software version 3.1 and exported to SPSS version 23 for analysis. Descriptive statistics like frequencies and cross-tabulation were performed. Tables and graphical presentation pie charts were used to present the findings of the study. The qualitative data analysis was started during the data collection period. The audiotape data recorded during the interview were transcribed word by word by the principal investigator. Then, thematic analysis approaches were used to summarize similar words together and words of some participants put by their own words manually

## **Ethics approval and consent to participate**

Ethical approval was taken from the Institutional Review Board (IRB) of the Institute of Health of Jimma University. Informed consent of the study participants was obtained from each study subject before 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 requiring disclosing personal information. While reviewing records care was taken to make sure that no individual other than the research team members have access to records. Moreover, name and other identifiers was not recorded during the completion of the checklist. "All the protocol was performed in accordance with the relevant guideline and regulation."

## **Result**

### **Description of medical records across districts**

Three hundred eighty-four medical records were reviewed from thirty-six public health facilities in Jimma Zone with a 100% retrieval rate. Of these, 109(28%) medical records were from the Seka Chekorsa district. (Figure 1)

### **Input attribute of quality**

The number of staff in the medical record department in Seka chekorsa district was (19). Educational status of the medical record department 2(40%) certificate holders in the Choraboter district and 5(63%) diploma holders in the Tiro Afeta district, and 7(78%) of medical record staff complete grade ten in the Shebe district. The majority of medical record personnel in the selected districts don't have both computer skills 56(80%) and in service training 52(74%) on medical records-related topics. (Table 1)

Thirty-six facilities were checked for the availability of the necessary equipment and formats for recording, processing, documenting, filing, and retaining medical records. Photocopy machine was not available in all 36 facilities among 36 facilities only one facility have printer in the record room. (Table 2)

Among the thirty-six observed facilities, 33(92%) of them had medical record units, 22(61%) of them had adequate space to handle medical records, 7(19%) of them had isolated passive medical record units, 21(58%) of them had medical recording unit that serves for 24hrs and only 5(14%) of the facility had lockable shelves for medico-legal cards. (Table 3)

### **Process attribute of quality**

Out of thirty-six facilities 28(78%) of them collect and shelves folder back daily to the medical recording unit, only 2(6%) of the facilities use tracer card system, 11(31%) of the facilities integrate all patient records in an individual folder, 17(47%) of the facilities complete summary sheet correctly and 36(100%) of them provide medical record number to each patient. (Table 4)

### **Outcome attributes of quality**

#### **Ease of retrieving medical records**

The mean time to retrieve the medical records from the shelves was  $3.4 \pm 3.52$  minutes with a minimum time of 1 minute and a maximum time of 33 minutes.

#### **Completeness of medical records**

Three hundred eighty-four medical records were reviewed for completeness of administrative data. Of these, 381(99%) of the title and name of the health center were recorded, 18(5%) date of birth recorded and 12(17%) of the mode of arrival were recorded in their medical record. (Table 5)

Three hundred eighty-four medical records were reviewed for the completeness of clinical data. Of these, 307(80%) of the records were presenting problem/complaint recorded, and in 217(57%) of the records medication and diet were recorded. (Table 6)

Regarding the component of legal and financial data out of three hundred eight-four reviewed medical records document 49(13%) of them were investigation fees recorded, in 19(5%) of the service fee and 8(2%) of them were medication fees recorded. (Table 7)

### **District Level completeness of medical records**

Accordingly, to assess the completeness of medical records to each major section of components, the identified necessary contents of the section was calculated as follows: Total contents completed in each section of the study (Yes's) divided by total revised medical records multiplied by the number of variables in each section (the number of contents/variables in each of the section). It is reported as % completeness of the medical record. The overall completeness of the medical records was assessed for all reviewed documents in the studied districts:

Administrative data completeness = total contents / total reviewed medical records × by number of factors in each section

$$1921/384 \times 7 = 35\%$$

Clinical data completeness = total contents / total reviewed medical records × by the number of factors in each section

$$1643/384 \times 13 = 55.62\%$$

Legal and financial data completeness = total contents / total reviewed medical records × by the number of factors in each section

$$80/384 \times 6 = 1.25\%$$

Average mean of all components completeness of medical records in percentage =

$$\underline{\underline{\text{Admin (35) + Clinical data (55.62) + Legal and financial data (1.25\%) = 30.62\%}}}$$

**3**

The overall completeness of the medical records in the studied districts = **30.62%**

### **Qualitative result**

For the qualitative part, 33 participants were interviewed by using face-to-face in-depth interviews. During an interview, the responses were recorded and the interviewers have taken notes. The responses are summarized in 3 sections.

### **Input attribute of quality**

Most of the interviewees expressed that the presence of many problems regarding medical record-keeping such as lack of trained recording personnel, assigning other or untrained record personnel in the medical record unit, lack of training on the medical records, patient load, and the patient not had enough awareness on proper handling of service identification card. The shortage of different recording formats like MPI cards, ANC charts, tracer cards, and currently available folder has poor quality in terms of thickness as that of the previously used one. Shortage of shelves, Lack of functional computer and the recording system is not an online computer-based system due to the shortage of budgets. *A34 year's old male said that "we face repeatedly similar problems such as lose recorded history, their individual medical folder, and service identification cards".*

All study participants elaborated that lack of standard card room, a need to refurnish shelves, a need to reconstruct the card room, lack of an isolated passive medical record room. None of the card rooms have a lock. Sometimes there is a loss of medical records of the patient's medico-legal records, because of not handled properly and the room is not locked.

*A36 and 29 years old male and 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".*

### **Process attribute of quality**

All of the study participants describe done patient comes to their facility, it should be identified whether he/she visits the facility previously after that they provide medical record number accordingly. As much as possible all the available formats are used, the necessary information is registered in a single unified central registration book and patient forms are attached to the individual medical folder then transferred to OPD and again in the next day they check the presence of the history sheet and another necessary format before returning back to record room after that they place properly based on its unique MRN in the shelves. A folder is assigned to each individual medical record of the clients.

*A 26 years old female with three years of experience said that "most of the time we face the difficulty of getting individual medical records from the shelves, the clients lost their service identification card while coming for another visit due to this they may stay a long time and they complain".*

In this regard, respondents of the qualitative part elaborated that they check-in and checkout medical records that exist from the medical record unit by using an isolated registration book to check whether the medical records returned back or not to MRU. In addition, they use the date of registration on a summary sheet. Some of the respondents expressed that as they are using the tracer card system but not continuously. There is no established medical record auditing system as per facilities standards. But some of the facilities conduct auditing with the insurance scheme team while they work on clinical auditing for payment on a quarterly basis but as such not continuous.

*A 27 years old female record personnel with three years' experience said that "as standard all facilities needed to use tracer cards. But, we are not using tracer cards due to lack of the card instead of that we are using the information on summary sheet".*

*A 37 years old male with fifteen years' experience said that "we have tried to audit those records stay more than five years in the medical record unit, But all records not audited because of many medical records stored in the medical record unit for the long period that are not audited in regular basis".*

### **Outcome attributes of quality**

**Ease of retrieving medical records:** All participants of the in-depth interview mentioned that most of the time they face difficulty to find the folder in a short time easily due to different reasons like the patient lost (forgot) the service cards, wash the service card with their clothes when the patient cannot place service card safely, and the medical records not returned back daily to the medical record unit from service area. *A 36 years old male record personnel who has six years of work experience said that "I remember that many days individual medical record of chronic patient lost from shelf then replaced by other medical records".*

Most study participants were elaborated, difficult to get easily the information lost from the folder most of the time the problem arises from the client's side they always lose their service card due to this they obligated to give them new MRN.

*A 32 years old male who has six years of work experience said that "everybody's is responsible in the proper handling of an individual medical record, for example, those card room workers need to have handled and placed properly, the health worker must record the necessary information completely and accurately, and also the administrative body of the health center must fulfill the different formats and materials timely".*

Participants of the in-depth interview elaborated that on a quarterly basis they conduct surveys by using the checklist that is prepared to review a sample of records to see the proper generation, completion, and filing of patient records. But, as such not continuous or not in an organized manner for example somebody may enter both in the medical record room and OPD to check the generation of the MRS, completion of different formats and filled appropriately or not and in monthly basis while taking monthly report they check the sample of records with the quality team and with partners.

All participants of the qualitative part responded that to improve the quality of medical records trained recording personnel must be assigned in the record room, necessary materials need to be fulfilled as per the standard, need to construct standard medical record unit, the patient record need to be placed in a safe place and necessary information should be completed in every patient's records.

## Discussion

Majority of (30) health facilities have number of staff and qualification of medical record personnel which is below the standard requirement in the facilities. Relatively the studied hospitals and town health centers met standard requirement of number of staffs. This finding was different with the Ethiopian standard for health center and hospital requirements which set as the staffs in medical record unit 3+ for health center and 5+ for hospital. This means that for every additional 100 clients per day one more MRU clerk is needed(18). This might be due to lack of trained recording personnel, assigning other or untrained record personnel in the medical record unit and there is no enough number record personnel.

Majority of the medical record personnel in the studied districts don't have computer skill (20%) and in service training (26%) on medical record related topics. This is different from Ethiopian standard for health center and hospital requirements which set the medical record personnel need to have basic computer skill and ability to organize medical records responsible for medical records management and the facility should be provide basic training on medical record keeping to the staffs(18). This is might be due to lack of training for new employees and continuous refreshment training on revised tools.

In this study majority of the studied facilities had shortage of supplies and equipment for medical record keeping. This is different with the Ethiopian standard for health center and hospital requirements indicates that the medical

record unit should have adequate supplies and equipment(18). The variation might be due to shortage of budget of the facilities and lack of supporting collaborators (partners).

The majority of the observed facilities (61%) of them had adequate space to handle medical records and only (19%) of the observed facilities had isolated passive medical record unit. From the observed facilities only (14%) of them had lockable shelf for medico-legal cards, (69%) of them had functional MPI box, (58%) of them had adequate shelf and (58%) of the facilities medical record unit serve for 24hrs. This is different with the Ethiopian standard for health center and hospital requirements indicated that the medical record room shall have adequate space to accommodate central filing space, work space, archive space and supply/storage room, there should be a separate medical record room for both active and passive medical records for archiving dead files until permanently destroyed and the medical record unit should always be locked when the staff is not in attendance and need to have lockable shelf for medico-legal cards. The facilities should have adequate shelves, adequate recording formats, functional MPI box and also the medical record unit serve for 24hrs (18). This might be due to poor attention and shortage of financing to build the medical record unit as per standard.

Out of thirty six facilities (58%) of them set folder with appropriate format for a visit, (69%) of them follow appropriate individual medical recording procedure for each patient, (47%) of the facilities complete summary sheet correctly and (78%) of them collect and shelves folder back daily to the medical recording unit. This findings is different in studied facilities with Ethiopian standard for health center and hospital requirements which indicate that there should be a mechanism to make medical records with appointment ready for use and return seen cards back to the central medical record room within 24hrs (18). This probably due to shortage of human power in medical recording unit, negligence of workers and high patient load as well as absence of good monitoring and supportive supervision by concerned bodies.

Only (6%) of the facilities use tracer card system, (31%) of the facilities integrate all patient records in an individual folder, (81%) of the facilities integrate individual medical records in one central card room and (53%) of the facilities had standard on medical records in the medical record unit. This is different from Ethiopian standard for health center and hospital requirements that indicate there should be a mechanism for medical record controlling and tracing, whenever patients medical records are taken out and returned to the central medical record room. It should be documented to create a good tracking mechanism. The health facility should have a written policy and procedure that are reviewed at least once every three years. Integrate all patients/client's medical record in one folder and in one room(18). The reason might be lack of tracer card and weak integration of the services such as HIV/AIDS, TB and chronic illness clinic was working alone.

All of the studied 36(100%) facilities provide unique medical record number to each patient. This was consistent with the Ethiopian standard for health center and hospital requirements which indicates that the facilities provide unique MRN to all clients. They are working as per the standard so, it is appreciable area(18).

The completeness of medical records in terms of date of birth and mode of arrival was 5%, 17% respectively. This finding was lower as compared with study done in Emam Reza hospital and Valiasr hospital of Iran which is 61.7 % (6). This might be due to weak monitoring and follow up of the medical record department as evidenced from observation checklist and list of registration book.

The completeness of medical record for presenting complaint recorded was 80% which is higher than the study conducted in South Africa history of present complaint was 65% (19). This might be due to sample size difference, the sample was high in case of current study than that of South Africa and also the area of study was only in surgical ward in case of South Africa.

Completeness of the medical records for medication and diet were recorded (57%), in (20%) of the records past medical history were recorded, in (17%) of the records service user allergies were recorded, in (12%) of the records were follow up entry recorded and in 8% of the records family history were recorded in the patient medical records. This is not consistent with study conducted in Nigeria indicate that medications and diets was recorded in (82.6%), (87.7%) of records contained information on past medical history, past family history illnesses was recorded in (31.8%), and follow-up entry was 93.62% (9). Whereas the study conducted in South Africa also vary with the present study; previous medical history (76%), service user allergies (59%) (19). The variation might be due to lack of training, poor follow up of the completion process, lack of commitment and poor understanding of the standard.

This study reveals that 77% of the medical records current diagnosis were recorded, 48% of the records management plan were recorded, 28% of records procedure and investigation were recorded, 26% of the records overall assessment were recorded, 25% of the records examination findings were recorded, around 22% of the records were result of investigation recorded and 21% of the records information given to service user were recorded. This is inconsistent with study conducted in Iran that indicate the medical history and physical examination completed was 71%, 100% laboratory report attachment and radio logical exam 53%(6). This might be due to difference in the study area and sample size.

Finding from the component of legal and financial data revealed that 13% were investigation fees recorded, 5% were service fee recorded and 2% were medication fees recorded in the medical records. All most all reviewed medical records consent for treatment, consent for information retrieval and authentication were the least recorded content in studied facilities. This was different as per the standard stated "entries in the patient's medical record should be dated and signed by the custodian/recording person" (18). This is probably due to weak control of financing system and negligence of the workers.

The overall completeness of the reviewed medical records of the districts are 30.62% for components of the quality of medical records completed based on the standard of health facilities requirements. Similarly, a study conducted in rural hospital of Ethiopia indicated that 45.7% of medical records were completed(4). Inconsistence with a study of Minilik II Referral hospital, the completeness of medical record was 73%(14). This might be due to difference in the study area and methodology.

## Conclusion

The available human powers in the medical record department are unqualified, untrained, lack computer skills, and not enough in number to run medical records of the patient in the majority of studied health facilities. Hospitals and town health centers had better human power. The shortage of different supplies and equipment that supports the recording process was a common problem in all studied health facilities.

Most of the health facilities didn't have adequate space to handle medical records, isolated passive medical record unit, functional MPI box, and lockable shelf for medico-legal records. The medical record unit does not serve for 24hrs.

Some of the facilities not set recording formats with the appropriate format for a visit, not follows appropriate individual medical recording procedure, not complete summary sheet correctly and not collect and shelves folder back daily to the medical recording unit. The majority of the facilities are not using a tracer card system, do not integrate all patient records in an individual folder and in one central card room, and also not had standards on medical records in the medical record unit.

The overall completeness of the medical records was very low for components of the quality of medical records as per the standard of health facilities requirements.

## **Abbreviations**

DX Diagnosis

EPI Expanded Program of Immunization

IV Intravenous

MCH Maternal and Child Health

MPI Master Patient Inde

MR Medical Record

MRN Medical Record Number

MRU Medical Record Unit

OPD Outpatient Department

RHB Regional Health Bureau

Rx Treatment

VS Vital Sign

## **Declarations**

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### **Authors Contribution**

N.G and M.T were involved in designing the study, drafting the proposal, data collection, analysis, and writing up the first draft of the manuscript. G.A and B.B, reviewed and reanalyzed the data set and reviewed the manuscript and references to get the final version. All authors read and approved the manuscript.

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### **Data availability**

Data will be available upon request from the corresponding author

### **Ethics approval and consent to participate**

Ethical approval was taken from the Institutional Review Board (IRB) of the Institute of Health of Jimma University. Informed consent of the study participants was obtained from each study subject before 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 requiring disclosing personal information. While reviewing records care was taken to make sure that no individual other than the research team members have access to records. Moreover, name and other identifiers was not recorded during the completion of the checklist. "All the protocol was performed in accordance with the relevant guideline and regulation."

### Consent for publication

Not applicable

### Competing interests

The authors declare that they have no competing interests

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## Tables

Table 1

Input attributes of quality of medical record in the selected districts of Jimma Zone oromia regional state, Southwest Ethiopia, 2021.

Input Attribute	Districts							
	Seka	Shebe	Manna	O/Nada	T/Afeta	C/Boter	Total	
<b>Number of staff in the record room</b>	19	9	11	18	8	5	70	
<b>Educational Status</b>	Certificate	1(5%)	2(22%)	4(36%)	1(6%)	3(38%)	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	7	2	5	0	3	27
<b>Computer Skill</b>	4(21%)	0	1(9%)	6(33%)	1(13%)	2(40%)	14(20%)	
<b>Training</b>	4(21%)	1(11%)	1(9%)	7(39)	2(25)	3(69%)	18(26%)	

Table 2  
Input attributes of availability of equipment and supply of quality of  
medical records in Jimma Zone, Oromia regional state, Southwest  
Ethiopia, 2021.

S.N.	Items	Response	Frequency	%
1	Photocopier	Yes	0	0
		No	36	100
2	Printer	Yes	1	3
		No	35	97
3	Computer	Yes	9	25
		No	27	75
4	MPI Box	Yes	29	81
		No	7	19
5	Shelves	Yes	32	89
		No	4	11
6	MPI Files	Yes	26	72
		No	10	28
7	Binder For Statistical Report	Yes	9	25
		No	27	75
8	Stationeries	Yes	15	42
		No	21	58
9	Clip Board For Inpatient	Yes	1	3
		No	35	97
10	Integrated IMF	Yes	36	100
		No	0	0
11	Patient Form	Yes	32	89
		No	4	11
12	Integrated ANC Chart	Yes	30	83
		No	6	17
13	Woman Card	Yes	26	72
		No	10	28
14	MPI Card	Yes	28	78
		No	8	22
15	Service Cards	Yes	35	97

S.N.	Items	Response	Frequency	%
		No	1	3
16	Appointment Card	Yes	27	75
		No	9	25
17	Tracer Card	Yes	3	8
		No	33	92
18	Admission Card	Yes	2	6
		No	34	94
19	Progress Note Forms	Yes	2	6
		No	34	94
20	Inpatient Clinical Forms	Yes	2	6
		No	34	94
21	Consultation Request	Yes	1	3
		No	35	97
22	Discharge Summary	Yes	2	6
		No	34	94
23	Death Summary	Yes	2	6
		No	34	94
24	Order Sheet	Yes	2	6
		No	34	94
25	Vital Sign Sheet	Yes	2	6
		No	34	94

Table 3

Characteristics of medical record unit and other structural inputs to handle medical records in selected districts of Jimma Zone, Oromia regional state, Southwest, Ethiopia, 2021.

S. N.	Variables	Response	Frequency	%
1	Adequate space to handle MR	Yes	22	61
		No	14	39
2	Does the facility have isolated active MRU	Yes	33	92
		No	3	8
3	Does the facility have isolated passive MRU	Yes	7	19
		No	29	81
4	Adequate shelves(are free shelves available for new folder)	Yes	21	58
		No	15	42
5	Functional MPI box	Yes	25	69
		No	11	31
6	Does the facility have lockable shelve for medico-legal cards	Yes	5	14
		No	31	86
7	Does the MRU serve for 24 hrs	Yes	21	58
		No	15	42
8	Does the facility have adequate amount of each recording format (at least for the next 2 month)	Yes	28	78
		No	8	22

Table 4

Processes attribute of working procedure for quality of medical records in the selected districts of Jimma Zone, Oromia regional state, Southwest Ethiopia, 2021.

S.N.	Variables	Response	Frequency	%
1	Do they set folder with appropriate format for a visit	Yes	21	58
		No	15	42
2	Do they follow appropriate individual medical recording procedure for each patient	Yes	25	69
		No	11	31
3	Do they collect and shelves folder back daily to MRU	Yes	28	78
		No	8	22
4	Do they use tracer card system	Yes	2	6
		No	34	94
5	Are all patient records integrated in an individual folder	Yes	11	31
		No	25	69
6	Is MRN is provided to each patient	Yes	36	100
		No	0	0
7	Are summary sheets filled correctly for each folder	Yes	17	47
		No	19	53
8	Are all IMR in one central card room	Yes	29	81
		No	7	19
9	Does the facility have standard on medical records in MRU	Yes	19	53
		No	17	47

Table 5

Recorded administrative data of medical records of the patient in the selected districts of Jimma Zone, Oromia regional state, Southwest Ethiopia, 2021.

S.n	Variables	Selected Districts												Total (n = 384)	
		Seka (n = 109)		Shebe (n = 78)		Manna (n = 60)		O/Nada (n = 70)		T/Afeta (n = 44)		C/Boter (n = 23)			
		Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
1	Title of and name of health center recorded	109	100	58	99	58	97	70	100	44	100	23	100	381	99
2	Full name recorded	109	100	75	96	59	98	70	100	44	100	22	96	379	99
3	Date of birth recorded	1	0.9	0	0	1	2	4	6	3	7	9	39	18	5
4	Home address recorded	10	97	75	96	60	100	68	97	41	93	21	91	371	96
5	Sex of the patient recorded	107	98	78	100	60	100	66	94	42	95	23	100	376	98
6	MRN assigned at registration	109	100	78	100	60	100	70	100	44	100	23	100	384	100
7	Mode of arrival	2	2	0	0	3	5	6	9	0	0	1	4	12	17

Table 6

Recorded component of clinical data of medical records in public health facilities of selected districts of Jimma Zone, Oromia regional state, Southwest Ethiopia, 2021.

S.N.	Variables	Selected Districts												Total (n = 384)	
		Seka (n = 109)		Shebe (n = 78)		Manna (n = 60)		O/nada (n = 70)		T/Afeta (n = 44)		C/Boter (n = 23)			
		Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
1	Face sheet or registration form	107	98	77	99	58	97	63	90	41	93	21	91	367	96
2	History and physical examination chart	101	93	64	82	53	88	60	86	26	59	18	78	322	84
3	Investigation chart	25	23	23	30	51	85	34	49	9	21	12	52	154	40
4	Treatment chart	18	17	8	10	56	93	32	40	29	66	20	87	163	42
5	Presenting complaint	98	90	61	78	57	95	38	54	33	75	20	87	307	80
6	Past illness	4	4	4	5	32	53	25	36	9	21	3	13	77	20
7	Current diagnosis	93	85	57	73	58	97	35	50	31	71	20	87	294	77
8	Service user allergies	2	2	3	4	40	67	17	24	0	0	2	9	64	17
9	Procedure and investigation	21	19	1	1	50	83	14	20	7	16	14	61	107	28
10	Medications and diets	83	76	39	50	54	90	20	29	2	5	19	83	217	57
11	Family history	1	1	1	1	14	23	10	14	2	5	1	4	29	8
12	Examination findings	28	26	4	5	21	35	19	27	9	21	15	65	96	25
13	Results of investigation	23	21	3	4	20	33	19	27	6	14	15	65	86	22
14	Overall assessment	11	10	3	4	38	63	19	27	12	27	18	78	101	26
15	Management plan	69	63	27	35	36	60	26	37	5	11	21	91	184	48
16	Information given to service user	9	8	2	3	9	15	19	27	3	7	5	22	47	21
17	Follow up entry	6	6	2	3	5	8	11	16	3	7	7	30	34	12

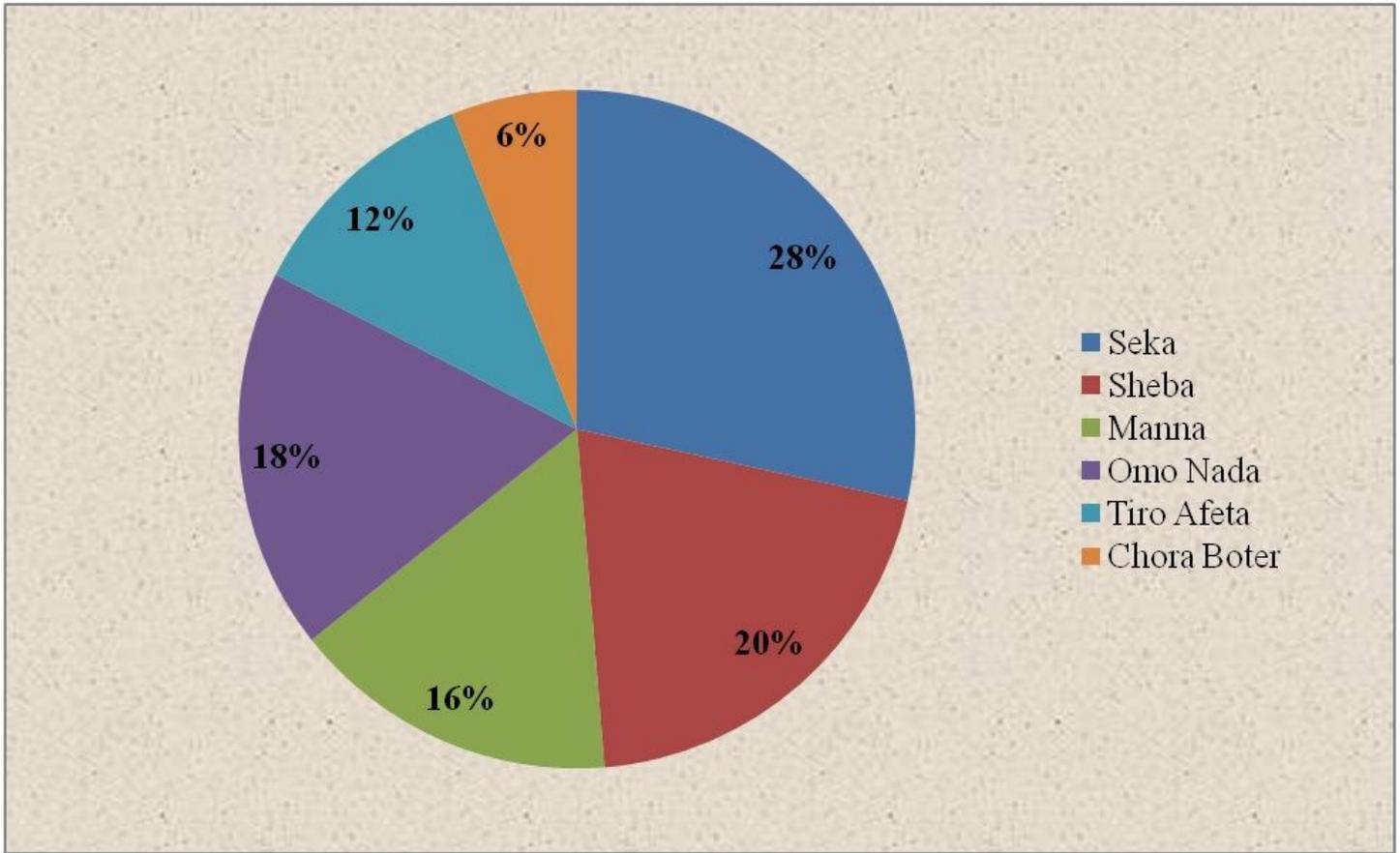
Table 7

Recorded content of legal and financial data of medical records in public health facilities in the selected districts of Jimma Zone, Oromia regional state, Southwest Ethiopia, 2021.

S.N	Variables	Selected Districts												Total	
		Seka		Shebe		Manna		O/Nada		T/Afeta		C/Boter		(n = 384)	
		(n = 109)		(n = 78)		(n = 60)		(n = 70)		(n = 44)		(n = 23)			
Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%

1	Consent for treatment	0	0	0	0	1	2	1	1	0	0	0	0	2	0.5
2	Consent for information retrieval	0	0	0	0	1	2	0	0	0	0	0	0	1	0.3
3	Authentication	0	0	0	0	1	2	0	0	0	0	0	0	1	0.3
4	Service fee	8	7	1	1	6	10	1	1	2	5	1	4	19	5
5	Medication fee	2	2	0	0	3	5	1	1	1	2	1	4	8	2
6	Investigation fee	20	18	0	0	15	25	2	3	2	5	10	44	49	13

## Figures



**Figure 1**

Proportion of medical records across selected districts of Jimma Zone, Oromia regional state, Southwest Ethiopia, 2021.

## Supplementary Files

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- [SupplementaryMaterial.docx](#)