JIMMA UNIVERSITY

INSTITUTE OF HEALTH

DEPARTMENT OF HEALTH POLICY AND MANAGEMENT

QUALITY OF MEDICAL RECORDS IN PUBLIC HEALTH CENTERS OF SORO DISTRICT, HADIYA ZONE, SOUTHERN ETHIOPIA.

A RESEARCH THESIS SUBMITTED TO INSTITUTE OF HEALTH, FACULTY OF PUBLIC HEALTH, DEPARTMENT OF HEALTH POLICY AND MANAGEMENT JIMMA UNIVERSITY; IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR THE MASTERS OF PUBLIC HEALTH IN HEALTH SERVICE MANAGEMENT.

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I, the undersigned, hereby declare that this thesis is my original work. The work has not been presented for degree in any university and source of materials used for the project has been acknowledged.

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Abstract

Background: *Medical record is initial point of patient data production and primary source for all health information related to patient care, health service quality, decision making and resource allocation. However, the quality of medical records (MRs) is rarely evaluated and quality dimensions of medical record are not well assessed particularly in the study area as well as in Ethiopia.*

Objective: *The study was intended to assess the quality of medical record in public health centers of Soro district, Hadiya Zone, Southern Ethiopia.*

Methods: *Facility based cross- sectional study design supplemented with qualitative inquiry was conducted among randomly selected four health centers (HCs) in Soro district, Hadiya zone from March - April ,2019. Data on the quality of medical records were collected by reviewing document using checklist, while qualitative data for triangulation were obtained by interviewing* key *informants from the health center and to describe possible reasons for poor medical record quality. The data were entered in to Epi-data version 3.1, exported, and analyzed by SPSS version 22.0. Descriptive statistics was used for the analysis of data.*

Result: *A total of 384 medical records were reviewed from one-year medical records of four public health centers, with 100% retrieval rate. In the assessment of quality of medical record, Administrative components were lowered (29%) compared to clinical components (88.7%). According to the expected national standard, the study also showed that average quality of medical records of the study area was 40%. Among the dimensions of MRs quality, none of health centers had enough facility for medical record quality and no auditing of medical record document as of the standard.*

Conclusions: *Majority of medical records had incomplete administrative, clinical and legal components as of health centers standard of the country. The studied HCs are not fulfilled the national medical record management requirements to run medical record system of health centers since the Ethiopian HCs standard set the medical record personnel to be a health information technician and a minimum of three in numbers. Thus, medical record service providers should be trained and necessary supplies should be equipped in all health center.*

Key words: *Medical record, Quality, Soro district, formats*

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List of abbreviations

CI   Confidence Interval

HIT   Health Information Technician

HSE   Health Service Executive

HSTP   Health Sector Transformation Plan

IMCI   Integrated management of childhood illness

IT   Information Technology

MOH   Ministry of Health

MPI   Master Patient Index

MR   Medical Record

MRD   Medical Record Department

MRO   Medical Record Officer

MRU   Medical Record Unit

PHO   Public Health Organization

WHO   World Health Organization

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

Medical record (MR) is the chronological, organized and comprehensive documentation of services delivered by service providers to the patient/client. It is a means of communication among health professionals, a legal document, and a tool for medical research and training. It is also the primary means of evaluating the quality and appropriateness of medical care rendered, as well as a source document for statistical use in research, planning budgeting and financial activity involving patient care[1-2].

The MR refers to all information collected, processed and held in both manual and electronic formats pertaining to the service user and their care. It includes demographics, unique identification, clinical data, images, investigations, samples, correspondence and communications relating to the service user and his/her care as well as to facilitating patient safety improvements [3-5]. MR quality is the most serious global health problems in poorer countries. Good information of MR is vital in tackling the problems. Correct and up-to-date information is critical, not only for the provision of high-quality clinical care, but also for continuing and maintaining health care at an optimal level [6].

MR is potentially very important for the development of the health sector particularly in Ethiopia. Ethiopia has also poor health data status similar to other low-income countries, even within Sub-Saharan Africa[7].The country has set out different strategies to improve the quality of records to provide safe, effective, patient-centered, timely, efficient and equitable medical service. Provision of standardized medical record is one of the components to consistently ensure and improve the outcomes of clinical care, patient safety and patient centeredness service for present and future follow up of health for all the Ethiopian population[8].

Currently, the emphasis of health systems development aims at the district level[9] and supporting strong data systems and feedback loops as "backbone" of all improvement actions is one of the four transformation agendas in the Health Sector Transformation Plan (HSTP) [10]. However, different stakeholders feed backs and 2010 EC annual reports of the District health office and Zone health department shows that there were information gaps in Hadiya Zone

especially in Soro district health centers due to poor quality of medical record and factors related to incompleteness of components of medical records. Therefore, the study was intended to assess the quality of medical records in terms of completeness, accessibility, retention and durability, storage, security, supplies and equipment at the public health centers of study area.

1.2 . Statement of the problem

A good medical record is an important element for high quality patient care, for keeping client safety as well as for further assessment of the patients [10]. Medical recording system has faced challenges related with resources and lack of infrastructure in worldwide trend. Studies have indicated that medical record systems are lacking medical record management quality in low-income countries [11].

Medical record studies have showed (14%) of returning patients could locate their medical records and only (6.5%) of medical records contained complete patient information due to problems such as duplication, incompleteness and inaccuracy of clinical information in Ethiopia [9]. Despite significant improvements in health care services in recent years, accessibility, authentication, completeness, timeliness, legibility and storage of medical record is a serious problem in health institutions[12].

One of the four transformation agendas of the HSTP is supporting strong data systems and feedback loops as "backbone" of all improvement actions which is represent key levers to affecting change across our system as indicated in national health transformation strategy [13]. MR keeping is one of the health centers requirements in Ethiopia[10].

Soro district public health centers have faced problem related with quality of patient medical records as indicated in 2010 E.C annual reports of district and Zone. Necessary data of patient care and service were not recorded in time line to the service provided for each patient. The responsible service providers do not authenticate for the care they have given for the clients and patient's identifications were not recorded properly. In addition, customers have complained the quality problem on the medical record and the service the health care provided in the previous years of community meeting and forums of districts.

As it is known patient MR is initial point of patient data production and primary source for all health information related to patient care and have high effect on quality of other health information, health service quality, way of decision making and resource allocation [14]. However, the issue has not been studied yet at Hadiya Zone.

The annual district reports have mentioned that problem related with incompleteness of healthcare medical records and patient information either being incorrectly filled or being recorded improperly. The reports have also indicated that the need to improving the poor medical recording system and the direction in comply with international and Ethiopian medical record standards. To do so, the investigator initiated this research to assess the existence of quality medical record and to indicate the necessary measures to improve the health data management system. Therefore, this study was intended to assess the quality of medical record in terms of completeness, accessibility, retention and durability, storage, security, supplies, equipment and human resources in Soro district health centers, Hadiya Zone.

1.3. Significance of the study

Quality of medical record is one of an important issue that demands improvement and more or less, it varies across the country. Therefore, having this into consideration, it is possible to see the significance of this research from different perspectives.

- It has contribution to supporting strong data systems, feedback loops as backbone of all improvement action.

- It has contributions of knowledge to the existing condition of the problem in health centers because most of the studies relating to quality of record were done in the hospitals level rather than health centers.

- It contributes information to health service managers to do further improvement on quality of medical records.

- Moreover, it is the first of in kind, may increase the national literature and tool on quality and it provides a base line information on quality of medical record.

CHAPTER TWO: LITERATURE REVIEW

2.1. Medical record

The medical record is an important compilation of facts about a patient's life and health. It includes documented data on past and present illnesses and treatment written by health care professionals caring for the patient [11]. It refers to all information collected, processed and held in both manual and electronic formats pertaining to the service user and their care [3]. The efficient management of manual medical record systems remains essential for the collection of complete, accurate and timely data on health [11].

MR is the chronological documentation of medical treatment and other health care delivered to a patient by professional members of the health care team. It is an accurate, prompt recording of the team's observations about the patient, the patient's medical progress, and the results of treatment. It is also the primary means of evaluating the quality and appropriateness of medical care rendered, as well as a source document for statistical use in research, planning, and budgeting. Finally, MR is the original-source document for financial activity involving patient care [1].

MR is a multifunctional document that is used to communicate and document critical information about patients' medical care among health care professionals. Comprehensive medical records are a cornerstone in the quality and efficiency of patient care during the hospitalization and in subsequent follow-up visits, as they can provide a complete and accurate chronology of treatments, patient results and plans for care [11, 14].

Information systems are increasingly important for measuring and improving the quality and coverage of health service [15-16]. Quality means, providing the best possible care available to the patient [17]. It is an increasingly becoming an important aspect of health care that is given a priority now a day. Patients have become more aware of quality issues and want health care to become safer and higher quality where the providers have a moral obligation to provide high quality and safe care [18]. There is also evidence that improvements in the quality of data lead to improvements in process of MR and quality increases with good supervisory, directive and feedback role [19-22].

As identified by study conducted in Hadiya Zone completeness of data format and consistency of data were found to be significantly associated with utilization of health information system [23].

2.2. Dimensions of medical record quality

2.2.1. Completeness of medical record

Complete medical record should include medical record number on each page, patient information in the record, physician note, nursing note, medication record if ordered, lab result if ordered and radiology result if ordered [22]. The medical record shall contain sufficient information to identify and assess the patient and furnish evidence on the course of the patient's health/medical care. The record shall include accurate and legible documentation of any local health department activity involving or affecting the patient's health. All medical records must be maintained in a standard format with entries and forms filed in chronological order with the most recent on top [23-24].

All forms that need to be in the medical record for that particular service must be completed and present in the record. The MR provides a safe and effective means of communication to all healthcare providers in a structured agreed format that is easy to access [25].

The medical record must contain enough information at all times, which will enable the attending physician to give effective continuity of care and determine the condition of the patient at any given time. Documentation of the events and all significant consultations, assessments, observations, decisions, interventions and outcomes of the treatments are filed with chronological order. The medical record begins with the patient's first attendance to the health care facility [11]. The medical information of a patient during ambulance service including medication administered shall be documented and attached into the medical record [25].

With regard to completeness of MR, a study conducted in Menelik II hospital showed that medical record completeness is a key performance indicator that is related with delivery of healthcare services. The incompleteness of medical records is a significant problem that affects the quality of health care services and health service information in many health institutions of Ethiopia. As study indicated that improving the completeness of patient's records is an important step towards improving the quality of healthcare as well as health information [26].

Broadly, according to WHO and Ethiopian health centers requirement standard each medical record shall has four major sections or components of contents [11].

Administrative data contents

Administrative data includes demographic and socioeconomic data such as the name of the patient (identification), sex, date of birth, place of birth, patient's permanent address, and medical record number. Effective patient identification is the beginning of an efficient medical record system. Accurate identification of a patient is the backbone of an effective and efficient medical record system. Correct identification is needed to positively identify the patient and ensure that each patient has one medical record number and one medical record. In addition, based on the standards the health center shall establish a master patient index with a unique number for each patient that help to get MR easily from the shelf [11, 27].

Clinical data contents

Admitted or treated outpatient or emergency patient's information include medical history, physical examination, investigation results and diagnosis, medication, procedure, consultation notes. This clinical data needs to contain name and signature of treating physician and medical professionals who are authorized and responsible for providing care to patients. Clinicians are also responsible for verifying and documenting the care given, in the medical record, and authenticating the entry with the date of entry and signature [25].

From clinical data, red or fluorescent allergy stickers may be displayed on the front of a medical record to alert the health care provider of a potential emergency that can interfere with a patient's medical care or treatment. Allergies may also be written in red within a medical record [28]. Only standardized abbreviations and symbols, which are approved by medical professionals and the ones for which explanatory legend should be used. Writing by Jargons is not recommended for service providers. Abbreviations must never be used in the final diagnosis, and must be avoided in all entries in the progress sheets [25,29].

Financial data contents

Financial data are data that are relating to the payment of fees for medical services, treatments and investigations (health facility accommodations) [14].

Legal data contents

Also, legal data including a signed consent for treatment by appointed professionals and authorization for the release of information [14]. This help to defend and protect the best interests of the physician and patient in the event of a malpractice action [24]. Consent form where applicable which shall be signed by the patient. In case where someone other than the patient signs the forms, the reason for the patient's not signing it shall be indicated on the face of the form, along with the relationship of the signer to the patient. Any consent form for medical treatment that the patient signs shall be printed in an understandable format and the text written in clear, legible, non-technical language [25, 29].

2.2.2. Access

Medical records should be easily accessible by administrative staffs that have occasion to retrieve them easily [3]. Medical record officers and clerks should have sufficient basic education to enable them to file accurately in both alphabetical and numerical order, and to spell patient names correctly [11].

Medical record shall be maintained in written form for every patient seen at all points of care including emergency, outpatient, labor and delivery, inpatient and minor operation theatre. The health center shall maintain individual medical records in a manner to ensure accuracy and easy retrieval. A patient shall have only one medical record in the health center [25,29]. Medical records are only accessible to:

- Health care personnel currently providing care.
- Staff involved in patient safety, the investigation of complaints, audit activities or research.

- Staff involved in urgent public health investigations for protecting public /consistent with relevant legislation [27].
- Patient / client to whom the record relates, or their authorized agent,
- Other personnel/ organizations/ individuals who are lawful order authorized by legislation.

2.2.3. Timeliness

Human memory tends to fail. Hence, it is imperative that all documentation regarding patient care must be done as soon as the treatment or care is given. Otherwise, the information taken from the patient may be recorded wrongly through time [24, 29].

2.2.4. Legibility

The legibility of the documentation in the medical record determines the usefulness of the record. It is advisable that some of the forms in the record may be typed, if the costs are feasible. All documentation is clear and legible, when prescribing; writing is in legible lower-case text or block capitals. All entries in the patient's medical record shall be written legibly in permanent ink, dated, and signed by the custodian/recording person [25-26, 29].

2.2.5. Storage and security

Medical records are stored in a well-designed, secure area, which is free of obvious hazards, is protected from fire and flooding and has stable levels of temperature and relative humidity. They are usually kept for long periods and may in some cases be selected for extended preservation. Suitable physical facilities safeguard the records from damage and destruction, optimize retrieval of records when required and provide a safe working environment [3]. When a medical record is taken out and returned to the record room, it shall be documented to create a good tracking mechanism [29].

Any medical record shall be kept confidential, available only for use by authorized persons or as otherwise permitted by law [25]. All medical records shall be regarded as confidential. Medical

record information may be released only with the consent of the patient, parent or legal guardian of the patient, or as directed by law [29].

2.2.6. Retention and durability

Health care records must be maintained in a retrievable and readable state for their minimum required retention period [29-30]. Health care records must not be removed from the health institution unless prior arrangements have been made with the personnel. The durability of medical record also varies from country to country depending up on the regulation of the state. In most cases, the life of the document should be recommended to live from 10-15 years after the last visit of the patient/client [24].

The health center shall establish a procedure for removal of inactive medical records from the central medical record room. Medical records shall be destroyed as per the law by using techniques that are effective enough to assure confidentiality of medical records. However, records, which are active for more than ten years, shall not be destroyed [25,29].

Health care records must be disposed of in a manner that will preserve the privacy and confidentiality of any information they contain.   Disposal of data records should be done in such a way as to render them unreadable and leave them in a form from which they cannot be reconstructed in whole or in part [22, 25, 29].

2.2.7. Space

As Ethiopian standard for Health Center – Requirements**,** there shall be a separate medical record room. The premises shall have one-meter-wide space in between and around shelves. The medical records shall be shelved 20-30 cm above from the floor and the medical record room shall have adequate space to accommodate the following:

- Central filing space
- Work space
- Archive space
- Supply/Storage room

The room shall have adequate light and ventilation, shall be built far from fire sources and there shall be a room for archiving dead files until they are permanently destroyed [29].

2.2.8. Professionals

There shall be full-time custodian/medical record personnel (Health Information Technician) with basic computer skill and ability to organize medical records responsible for medical records management. Additional staffs like card sorter and runner may be available to perform patient registration, retrieving, filing and recording chart. The actual number of staffs shall be determined based upon the total number of active charts in a day (Workload analysis). The Health Center shall provide basic training on medical record keeping to the staffs [29].

2.2.9. Supplies and equipment

The medical record room shall have shelves, Master patient index boxes, Master Patient Index (MPI) Cards, Computer, Cart, Ladder, Patient folder, Logbook and Fire extinguisher [29]. Since countries face the problem of scarce resources for health, increasing attention is being given to how to achieve maximum results with such limited resources are the obstacle that hinders quality of medical record as other services [13].

2.4. **Conceptual framework**
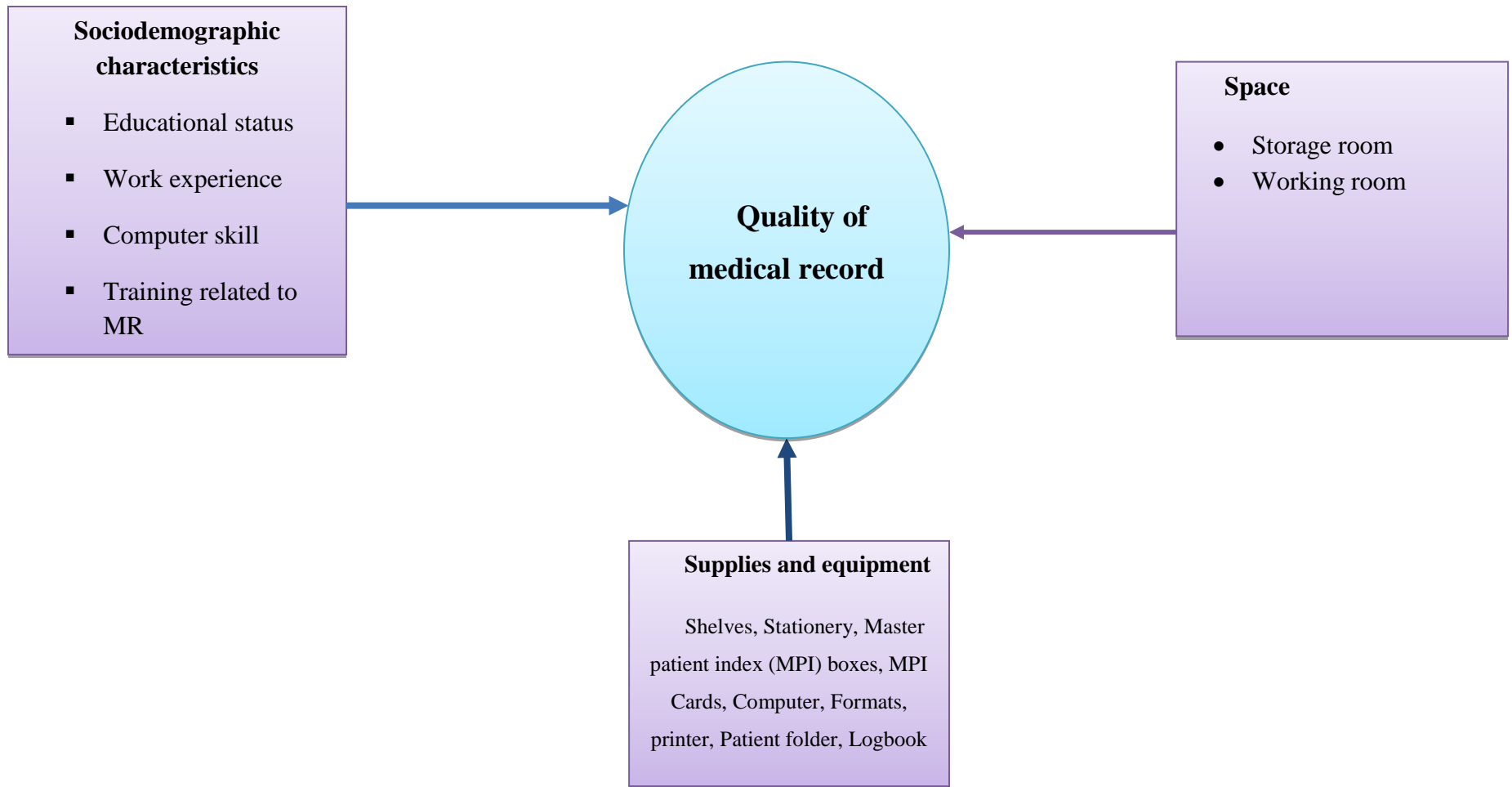
Figure 1 Conceptual framework (*Developed based on literature review [3, 28,29, & 30]*)

CHAPTER THREE: OBJECTIVES OF THE STUDY

3.1. General Objective

− To assess the quality of medical records in public health centers of Soro district in Hadiya Zone, Southern Ethiopia.

3.2. Specific Objectives

− To assess the completeness of medical record in public health centers
− To assess other dimensions of medical record quality such as accessibility, retention, durability, storage, supplies, equipment and human resources in public health centers.

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and period

The study was conducted in Soro district, which is located in Hadiya Zone of Southern Ethiopia. Geographically, it is situated at a distance of 206 Km from Hawassa- regional capital, 264 Km away from Addis Ababa and at 32 Km south-east from Hosanna-Hadiya Zone town. According to CSA (Central Statistical Agency) projection for the year 2018, the total population of the district is about 209,158, Male are 104,459 and Female 104709 [31]. It has 46 rural kebeles and 3 municipalities in which Gimbichu municipality is the seat of district administration. It has 8public health centers 1 NGO health center,1 district hospital and 46 health posts. The study was conducted from March 10- April 25/2019.
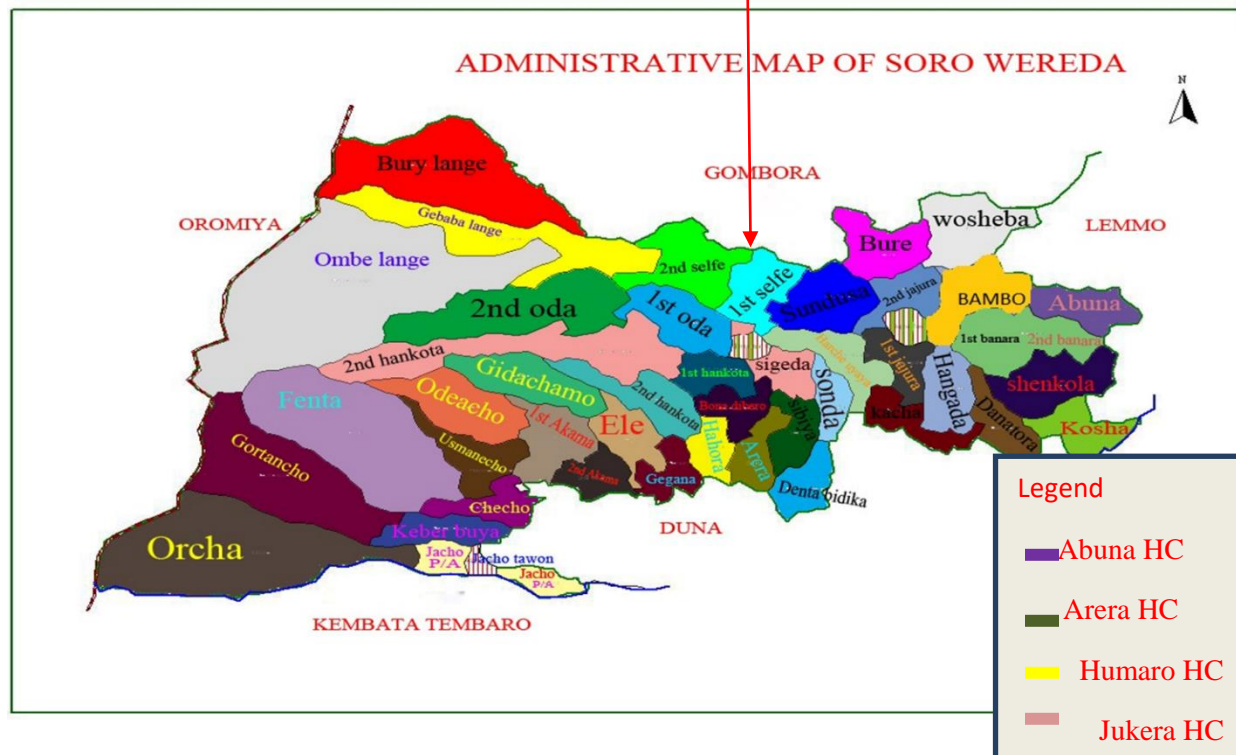
Figure 2. Administrative map of Soro district in Hadiya zone, Southern Ethiopia, 2019 (Source: Soro district Health office, 2018).

4.2. Study design

Institution based cross-sectional study design supplemented with qualitative inquiry was conducted.

4.3. Population

4.3.1. Source population

4.3.1.1. Quantitative data

All Medical records of patients in public health centers of the Soro district.

4.3.1.2. Qualitative data

All health centers heads, case team coordinators and medical record personnel in public health centers of the Soro district.

4.3.2. Study population

4.3.2.1. Quantitative data

All medical records from those produced during the last one year in the selected health centers in last one year (March 2018 – March 2019).

4.3.2.2. Qualitative data

All health centers heads, case team coordinators and medical record personnel of the selected public health centers of the Soro district.

4.3.3. Inclusion and exclusion criteria

4.3.3.1. Inclusion criteria

- Medical records of those patients attending the selected health centers in the last one year were included.

4.3.3.2. Exclusion criteria

- MRs of <5 years' childcare records were excluded because services for <5 patients were provided on nationally prepared Integrated Management of Childhood Illness (IMCI) registration books.
- Also, professionals who were not in health centers before one year had not included as key informants.

4.4. Sample size and sampling technique

4.4.1. Sample size determination

The sample size for quantitative study was calculated by using a single population proportion formula based on the following assumptions. The proportion of medical records having good quality was estimated to be 50% as there was no previous study in the study area.

$$n= (z\ \alpha/2)^2\ p\ (1-p)/d^2$$

Where;
- n = sample size.
- d^2 = marginal error.
- Z (α/2) at CI of 95% i.e.1.96.

By considering 95% level of confidence and 5% margin of error, the minimum required sample size was found to be 384 medical records. The sample size for qualitative study was determined purposively considering head of health centers, case team coordinators and medical record personnel from each selected health centers. A total of 20 key informants, 4 health centers heads

and 16 case team coordinators from respective health centers participated to support the reviewed data and to show the attributes for quality medical record production.

4.4.2. Sampling technique

Four health centers from eight Soro district health centers and samples of MR were selected by simple random sampling. In addition, key informants (Health centers heads, Case team coordinators and MR personnel) were selected considering their experiences in the selected health centers, and year of delegation for responsibility at health center for supporting the reviewed data and to assess the dimensions of medical records quality (Figure 3).
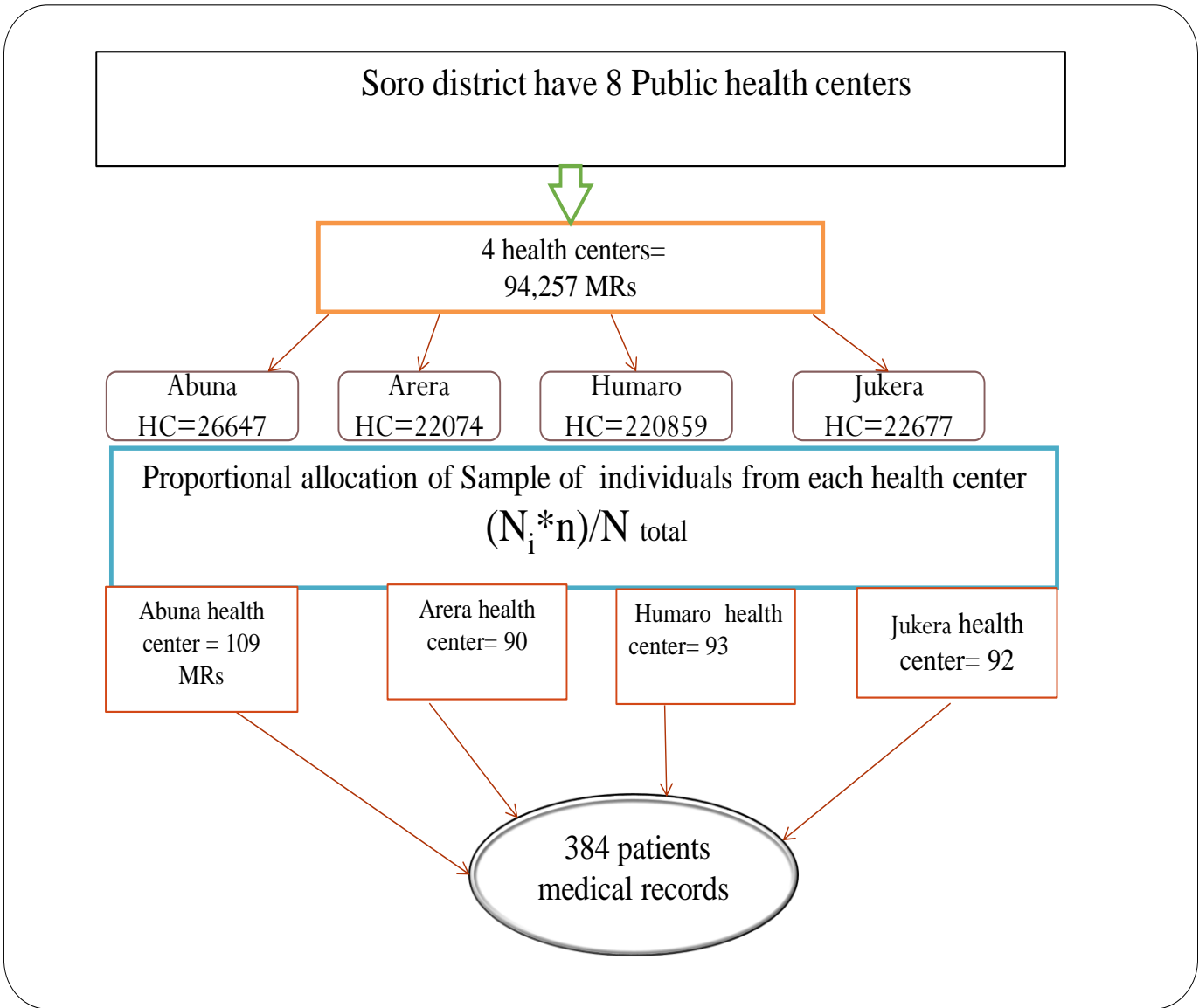
Figure 3 Schematic presentation of sampling procedure in study of quality of medical record in public health centers of Soro district, Hadiya Zone, Southern Ethiopia, 2019.

4.5. Data collection tools and procedures

4.5.1. Data collection tools

Data were collected through data gathering tools (key informant interview) for qualitative and document review (checklists) for quantitative that were prepared based on the standard for Ethiopian health centers requirements [29].

4.5.2. Data collection personnel

Eight Bachelor of Sciences (BSc) holder professionals who were previously trained on HMIS, collected all the data after training was given for two days on procedures, techniques and ways of expressing the tools to collect the necessary information. At the same time, supervisors were involved in controlling the quality of data gathering.

4.5.3. Data collection method

4.5.3.1. Quantitative data

Medical records of patients were reviewed by using checklist.

4.5.3.2. Qualitative data

Medical record personnel and case team coordinators were interviewed from four health centers based on purposely sampling, and health center officials were also interviewed about the overall medical record management system and others. Data were collected from each respondent on the standard of data gathering tools.

4.6. Study variables

4.6.1. Dependent Variables

- Quality of medical records

4.6.2. Independent Variables

- ✓ Socio-demographic characteristics
  - − Educational status
  - − Work experience
  - − Computer skill
  - − Training related to MR
- ✓ Supplies and equipment.
- ✓ Space

4.7. Operational definitions

- Medical Record: is a written medical document of patient or client by authorized service provider of health institution.
- Administrative data: is a data includes patients' medical identification/demographic data.
- Good quality MR: the medical record is labeled as having good quality if greater than or equal to eighty percent (≥80%) of the major components are completed properly, otherwise poor quality.
- % of completed quality medical record = Total Score (yes`s) / (Number of cards checked for quality × number of contents) (Taken from: Federal hospital performance monitoring and improvement manual).
- Qualified Medical Record Personnel: an employee who is full-time custodian/medical record personnel (Health Information Technician) with basic computer skill and ability to organize medical records responsible for medical records management.

4.8. Data processing and analysis

The data were entered to Epi-data version 3.1 after coded and double checked for missing values, outliers and analyzed using SPSS version 22.0. Descriptive statistics was carried out and results were presented using proportions, percentage and mean. Average mean of the contents of medical record was taken to determine the overall quality of medical record.

4.9. Data quality management

The tools were developed in English language, translated first to Amharic, and back translated to English language to check its consistency. Before collecting data and in order to perform a quality control on the checklists, 5% of the sample, in similar district in Lemo district, Jewe health Centre, Hadiya zone, pre-test was carried out on the medical records to verify that the checklists covered all essential information. Data collectors were supervised by supervisor and the principal investigator. Data collectors submitted data and it was checked for missing and consistencies by the principal investigator.

4.10. Ethical consideration

Ethical clearance was obtained from Jimma University, Ethical review board of Institute of Health. Then, permission letter also obtained from Soro district health office. In addition, verbal informed consent was taken from the selected health centers heads and all key informants. Privacy and confidentiality of the respondents were kept during and after the data collection. While reviewing records; care has been taken to make sure that no individual other than the research team members had access to records.

4.11. Dissemination plan

The final findings and recommendations will be disseminated to Department of Health policy and Management, Faculty of Public Health, Post Graduate Library and Soro District Health Office to be used as an input to plan on management of medical record quality and to improve data management system of health centers respectively. Finally, this study will be submitted for publication in reputable scientific journals.

CHAPTER FIVE: RESULTS

5.1. Description of Medical records of health centers

Three hundred eight four medical records were reviewed from four public health centers of Soro district with a retrieval rate of 100%. Of these, 109(28.3%) medical records were from Abuna Health center, 90(23.4%) from Arera Health center, 93(24.2%) from Humaro Health center and 92(24%) from Jukera health center [Figure 4]. In addition,4 health centers heads and 16 case team coordinators from respective health centers participated to support the reviewed data and to show the attributes for quality medical record production.
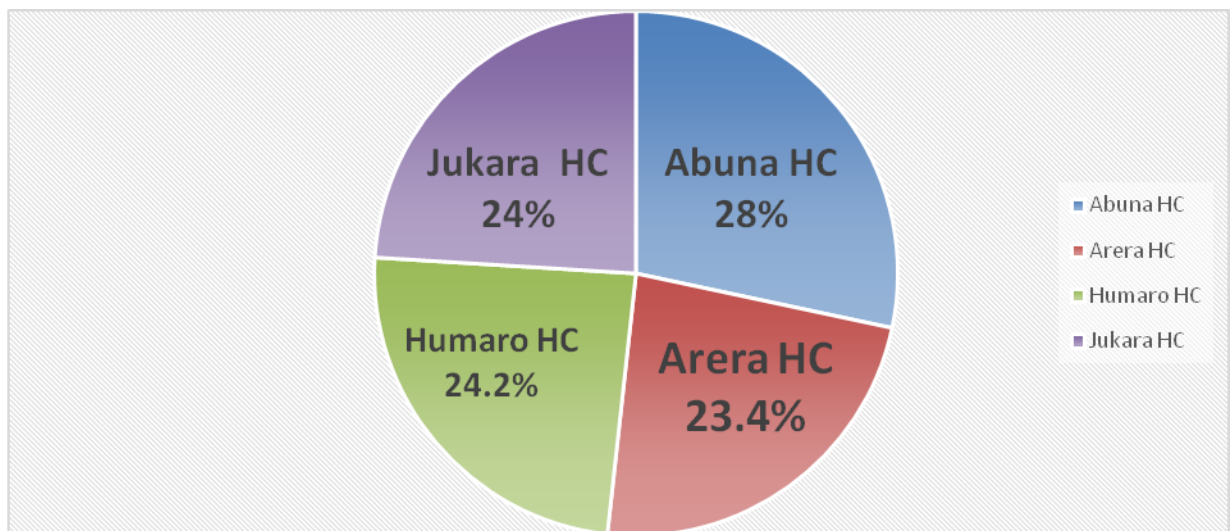
Figure 4 Pie chart. Distribution of medical records with respect to health centers, Soro district, Hadiya Zone, Southern Ethiopia,2019.

Socio-demographic characteristics of key informants

Besides of document review, sixteen case team coordinators of health centers, medical record personnel and four health centers heads participated as key informant to triangulate the reviewed data and to mention the dimensions for medical record quality in health centers. Majority of them (70%) were males and 16(80%) of participants were a diploma holder by qualification. The median age of them is 27.5 and standard deviation of 4.319. The maximum work experiences of them is 14 years and the minimum is 1 year, and 18 (90%) of participants has served for less than 5 years (Table 1).

Table 1 .Socio demographic characteristics of key informants, Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.

S. N	Variables		Frequency	Percentage
1	Sex of participants	Male	14	70
		Female	6	30
2	Age by year	20-30	11	55
		31-40	9	45
3	Educational status	Diploma	16	80
		BA	3	15
		Other	1	5
4	Service year	1-5	18	90
		5-10	1	5
		11-15	1	5

5.1.1. Components of medical records

Three hundred eight four medical records were reviewed from the last one-year period in four public health centers in Soro district. All components for the completeness of medical records were checked for the quality of medical records with respect to administrative, clinical, financial and legal contents.

Documentation of administrative data contents

Data of patient's identification or demographic data were reviewed in each of medical records of health centers. The highest value of documentation belonged to full name of patient (96%). In 328 (85%) of medical records, date of birth of patients were recorded, (82%) of them had sex of patients. The lowest recorded value in the documentation was patient's mode of arrival at health center (18%). Among the health centers, Humaro and Jukera health center had better administrative components medical records (Table 2).

Table 2. Recorded components of administrative data of medical records of patient, Soro district health centers, Hadiya Zone, South Ethiopia, 2019.

S.N	Administrative data components	Abuna HC (n=109)		Arera HC (n=90)		Humaro HC(n=93)		Jukera HC (n=92)		Total 4 HC(n=384)	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	Title and name of health center recorded	105	95.5	83	92	91	99	91	99	117	31
2	Full name of patient recorded	91	83	67	74	88	96	82	89	370	96
3	Date of birth recorded	56	52	27	30	61	66	58	63	328	85
4	Home address recorded	90	82	55	61	85	92	86	96	202	53
5	Sex of patient recorded	24	22	0	0	5	5	11	12	316	82
6	Health care record number assigned at registration	26	24	22	24	5	5	15	16	199	52
7	Mode of arrival (reason to come to HC)	57	52	37	41	39	42	48	52	68	18

Documentation of clinical data contents

Clinical components of medical records include medical and therapeutic information of the patients. The contents of these section are important from medical point of view. Among the clinical data contents, 363(95%) clinical data components recording the presenting problem/complaints, 301(78%) had records current diagnosis information, and 317(83%) had medication and diet information. Only 26 (7.0%) recorded information about service users concerning alerts /allergies (Table 3).

Table 3 Recorded components of clinical data of medical records of patient, Soro district health center, Hadiya zone, Southern Ethiopia,2019.

S. №	Clinical data contents	Abuna HC		Arera HC		Humaro HC		Jukera HC		Total 4 HC	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	Presenting problem/complaint	105	96	85	94	87	95	86	96	363	95
2	Past illnesses	46	42	47	52	12	13	17	19	122	32
3	Current diagnoses	93	85	77	86	61	66	70	76	301	78
4	Service user alerts/allergies	18	16	0	0	2	2.2	6	7	26	7
5	Procedures and investigations	52	47	43	48	40	44	44	48	179	47
6	Medications and diets	81	74	76	84	80	87	80	87	317	83
7	Family history	24	22	2	2.2	7	8	11	12	44	12
8	Examination findings	55	50	29	32	51	55	55	60	190	50
9	Results of investigations	65	59	45	50	51	55	51	55	212	55
10	Overall assessment	52	47	51	57	63	69	42	46	208	54
11	Management plan	58	53	39	43	70	76	57	62	224	58
12	Information given to service user.	19	17	16	18	4	4	20	22	59	15
13	Follow-up entry	21	19	19	21	1	1.1	17	19	58	15
14	Authenticated by service provider	53	48	29	32	8	9	41	45	131	34

Documentation financial and legal data contents

Concerning financial and legal data in medical records, 83(21.6%) of medical records of patients had an information about service fee, and 42(10.9%) had also information about the accomplishment of medication fee. Medical records consent for retrieval and consent for treatments were the least recorded in all health centers (Table 4).

Table 4 **Recorded components of legal and financial data of medical records of patient, Soro district health centers, Hadiya Zone, South Ethiopia, 2019.**

S.N	Financial and legal contents	Frequency	Percent (%)
1	Consent for treatment	22	5.7
2	Consent for information retrieval	23	6
3	Service fee	83	21.6
4	Medication fee	42	10.9
5	Investigation fee	32	8.3

Assessment of quality medical records in terms of completeness

Accordingly, to assess the quality of medical records with respect to each major section of components, the identified necessary contents of section was calculated as follows:

Total contents fulfilled in each sections of the study (Yes's) divided by total revised medical records multiplied by number of factors in each section (the number of contents/variables in each of the section). It is reported as % completeness of medical record [32-33].

Administrative data content= total contents/total revised documents * 7

$$1600/384*7 = 29\%$$

Clinical data contents = total contents/total revised documents * 14

$$2434/384*14 = 88.7\%$$

Financial and legal contents = total contents/total revised documents * 5

$$202/384*5 = 2.6\%$$

Average mean of all components of quality of medical record in percentage=

$$\frac{\text{Admin (29)} + \text{Clinical (88.7)} + \text{legal \&financial (2.6)}}{3} = 40.2\%$$

=40.2%

27
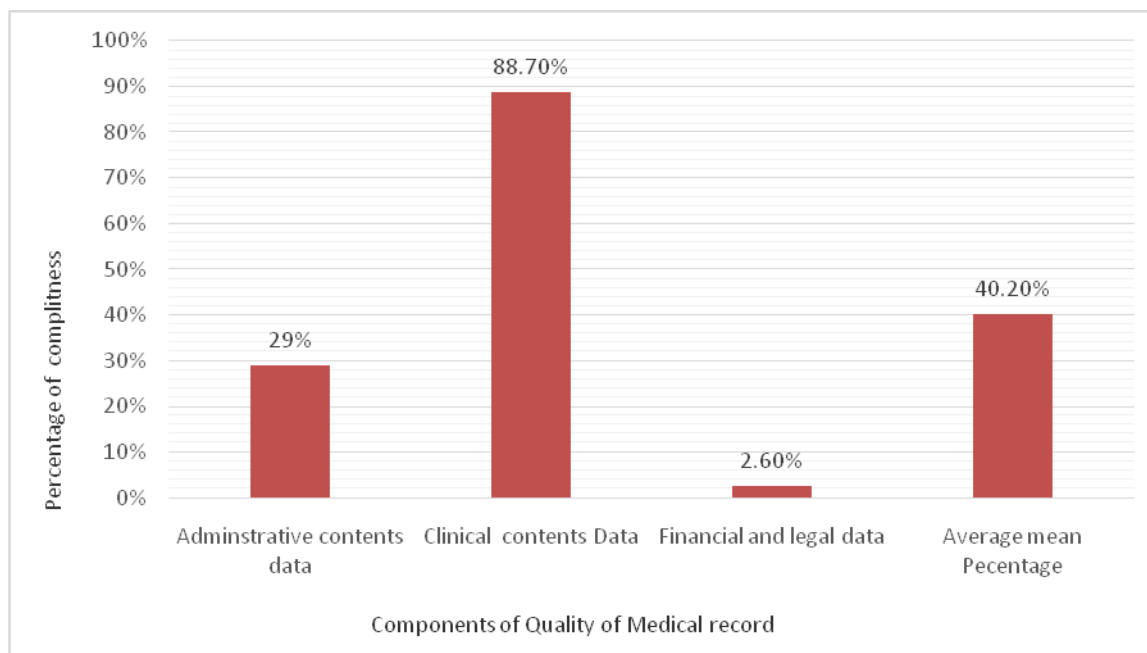
Figure 5. Quality of medical records with respect to each component Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.

View of the key informants about the reviewed medical records quality and dimensions of quality of medical records

In line with the medical record review, the key informants have also the view that there is problem with quality of the MRs. Majority of case team coordinators from the key informants, 14 out of 16 (87%), agreed that there is poor data accessibility and retrievable due to the poor unique patient numbering system. The same number (87%) replied that professionals missed to write the patient's name on all components of the chart. All of the respondents (100%) mentioned that the family history, past history and functional inquiry (including significant negative observations) are not clearly recorded and maintained in the medical record.

Fifteen (94%) of the coordinators said that allergies were not clearly documented in their respective health centers. All of the respondents (100%) commonly agreed that the chief complaint of the patient clearly stated in medical record. According to the respondents, (88%) scientifically known abbreviations and duration of symptoms were clearly written on medical

records. Similarly, respondents mentioned health centers have problem on laboratory and investigation documentation system in medical record of the patients. In contrast, 6(38%) of respondents mentioned service providers did not authenticate medical records during service provision (Table 5).

Table 5 **Evaluation of medical record quality by key informant of Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.**

. N	Variables	Responses	Frequency	Percentage
1	Patient file easily and readily retrievable	Yes	2	13
		No	14	87
2	The records readable to all reviewers	Yes	8	50
		No	8	50
3	The patient's name written on all components of the chart	Yes	2	13
		No	14	87
4	The patient's name, age, sex and address clearly shown on the chart	Yes	12	75
		No	14	25
5	The date of each visit recorded	Yes	10	63
		No	6	37
6	The family history, past history and functional inquiry clearly recorded and maintained	Yes	0	0
		No	16	100
7	Allergies clearly documented	Yes	1	6
		No	15	94
8	The chief complaint clearly stated	Yes	16	100
		No	0	0
9	The durations of symptoms noted	Yes	14	88
		No	2	12
10	There clear documentation of the requested lab investigations	Yes	11	69
		No	4	25
11	Scientifically known abbreviations frequently used	Yes	14	88
		No	2	12
12	Authorized service providers authenticate on MR	Yes	6	38
		No	10	62
13	MR of a patient/client starts as soon as the service seeker enters in to the health centers	Yes	10	63
		No	6	37
14	Respective service providers correct wrong documentation immediately	Yes	11	69
		No	5	31

5.2. Assessment of dimensions of quality of medical record

In the present study ,10 (63%) of study case team coordinators mentioned the presence of the gaps on medical record entries (dating, and signing by responsible professional). In addition, there was no monitoring, evaluation and supervision carried on medical record department by responsible bodies. Moreover, according to respondents, 15 (94%) medical record forms were not held by a clip or fastener and none of the health centers auditing of MR document as of the standard (Table 6).

Table 6 Variables for quality medical records, Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.

S. N	Variables	Responses	Frequency	Percentage
1.	Medical record entries by responsible professional	Yes	6	37
		No	10	63
2.	Efficient supervision on the MRD	Yes	3	19
		No	13	81
3.	Smooth flow of work practiced among units of the MRD	Yes	7	44
		No	9	56
4.	Use of unique patient identifier in health center	Yes	8	50
		No	8	50
5.	Use of a clip or fastener to hold medical record forms	Yes	1	6
		No	15	94
6.	Keeping MRs retention for maximum period	Yes	5	31
		No	11	69
7.	Implementation of regular monitoring and evaluation process	Yes	3	19
		No	13	81
8.	Auditing MR document as of the standard.	Yes	0	0
		No	16	100

5.2.1. Space for medical record quality

According to the standard, 13(81%) respondent noted that there is no specific storeroom for medical record department in the health centers. Also, half of them mentioned that there was separated areas for filing active and inactive medical records in the health centers premises (Table 7).

Table 7 Space for quality of medical records, Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.

S. N	Variables	Response	Frequency	Percentage
1	MRD space to handle all functions properly	Yes	7	44
		No	9	56
2	The design of facilitates to handle the traffic of people, records and equipment inside the MRD	Yes	7	44
		No	9	56
3	Separately provided active and inactive MR filing areas	Yes	8	50
		No	8	50
4	A storeroom for MRD	Yes	3	19
		No	13	81

5.2.2. Supplies for medical records quality

All lists of standardized printed formats were also evaluated in medical records of patients in each health centers. Two hundred sixty-seven (70%) medical records had no standardized registration/front sheet. Ninety-two (24%) of them had no history and physical examination format or chart. Two hundred fourth (62%) of records had no investigation and treatment charts. Relatively, Humaro health center medical records had the necessary formats of medical records than other health centers. Arera health center had no any medication chart that was necessary for completeness of medical record (Table 8).

Table 8 **Availability of necessary formats in medical records of patient, Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.**

S. N	List of formats	Abuna HC (n=109)		Arera HC (n=90)		Humaro HC(n=93)		Jukera HC (n=92)		Total (n=384)	
		count	%	count	%	count	%	count	%	count	%
1	Front/face sheet available	38	35	41	46	6	7	32	35	117	30
2	History and examination chart available	73	66	51	57	90	98	77	84	291	76
3	Investigation chart available	21	19	6	7	86	94	31	34	144	38
4	Medication chart available	24	22	0	0	92	100	30	33	146	38
5	Consent for treatment available	12	11	1	1	3	3.3	6	6.5	22	6
6	Consent for information retrieval form available	13	12	5	5	4	4	5	5.0	27	7

Opinion of key informants on availability of supplies for medical record quality

All key informants claimed that there was no MR standards, guides and manuals to set minimum threshold for provision of effective service for client/patient. In addition, 15 (94%) of key informants noticed that MRD had no any adequate security system at health center (Table 9).

Table 9 **Supplies for quality medical record in Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.**

S. N	Variables	Responses	Frequency	Percentage
1	Written rules and regulations of MR	Yes	0	0
		No	16	100
2	Adequate MRD security system (i.e. fire control system, fireproof cabinets)	Yes	1	6
		No	15	94
3	Availability of MR inputs in the health center	Yes	3	19
		No	13	81

In addition to interviewee's responses, the four health centers were checked for availability of necessary basic supplies which are important for recording, processing, documenting, filing and retaining medical records safely and in a secured manner. According to the national health center supplies requirement, majority of supplies were not adequate to run the basic medical recording system. Only Humaro health center had investigations request format and medication prescription format (Table 10).

Table 10 **Supplies and equipment, Soro district health centers, Hadiya Zone, Southern Ethiopia, 2019.**

S. N	Item	Abuna	Arera	Humaro	Jukera	Frequency	Percentage
1	MR folder with front sheet			√	√	2	50
2	Photocopy			√		1	25
3	Printer			√		1	25
4	Computer			√	√	2	50
5	Shelf	√	√	√	√	4	100
6	Stationary			√	√	2	50
7	Investigations request format			√		1	25
8	Medication prescription format			√		1	25
9	Consent forms	√				1	25
10	Log book	√	√	√	√	4	100

5.2.3. Human resource requirement

5.2.3.1. Capacity building

Fourteen (88%) respondents mentioned that the shortage of employee related with the medical record in the health center. In addition, there was no provision of frequent on-job training to employee. All respondent confirmed that no formal training on MR given to all health centers staffs who have a role to medical record. Thirteen (81%) of the respondents answered the lack of regular monitoring and evaluation process is another gap to keep quality MR (Table 11).

Table 11 **Capacity building assessment for quality of medical records in Soro district health centers, Hadiya zone, southern Ethiopia, 2019.**

S. N	Variables	Response	Frequency Out of 16	percentage
1	Enough number of MRD personnel	Yes	3	19
		No	13	81
2	Formal training for MRD director and technicians in MR	Yes	0	0
		No	16	100
3	Qualified and competent employee in the health center	Yes	2	12
		No	14	88
4	Provision of induction and orientation for new employee in MRD	Yes	8	50
		No	8	50
5	Provision of on-job training frequently to employee	Yes	2	12
		No	14	88
6	Merit based employee placement	Yes	4	25
		No	12	75

5.2.3.2. Human resource appointment with the national standard

All health centers heads mentioned that "*According to the national standard, none of the medical record employees of health center were qualified MR personnel. It is unexpectedly those who assigned in MR department were guards and runners without their qualification, satisfactory induction, orientation and on-job training*". Among the four health centers, only one qualified Health Information Technology (HIT) professional was assigned at Humaro health center even if he has been working in data managing department (Table 12).

Table 12 **National standard requirement of health professional and medical record personnel in Soro district health centers, Hadiya zone, southern Ethiopia, June,2019.**

S.N	Professionals	Standard For each	Abuna HC	Arera HC	Humaro HC	Jukera HC	Total in 4 HCs	Percentage with standard (%)
1	HO	2	2	0	1	0	2	25
2	GP	1	0	0	0	0	0	0
3	Mid wafers	3	1	2	1	1	5	41.6
4	Ophthalmic nurse	1	1	0	0	0	1	25
5	Psychiatric nurse	1	0	0	0	0	0	0
6	Laboratory tech.	2	1	0	1	1	3	37.5
7	Pharmacy tech.	3	1	1	1	1	4	33.3
8	Nurse	5	4	7	5	6	22	110
9	Medical record personnel	3	0	0	1	2	3	25
10	HIT	1	0	0	1	0	1	25
	Total	22	10	10	11	11	41	46.5

CHAPTER SIX: DISCUSSION

6. DISCUSSION

Quality of medical records is an important property to provide safe, timely, and equitable medical service. Medical record is an initial point of patient data production and primary source for all health information related to patient care and that can have used to communicate and document critical information among health professionals. It has also faced a challenge in quality related with the basic component of quality of standards in many of health facilities of the country. This study was intended to assess the quality of medical record in terms of completeness, accessibility, retention, durability, storage, security and human resources of medical records.

In this study,384 medical records were reviewed for assessing quality and to identify dimensions of medical record for quality; (40.2%) of components of the quality medical records completed based on the standard of health centers medical record requirements. Similarly, a study that conducted in rural hospital of Ethiopia showed that 45.7% of medical records were completed [9]. Inconsistence with a study of Minilik II Referral hospital, the completeness of medical record was 73% [26].

In present study, it is clear that the result shows all medical records were incomplete in these health centers. However, medical records have a significant benefit for high quality and efficient care management of patients. In many of health centers set up of developing countries including Ethiopia, medical record has not been a priority, generally inadequately supported and poorly managed. To alleviate the quality problem related with medical records studies have indicated the presence of interventions to improve the completeness of medical records [9, 33-34].

In the current study, completeness of medical record formats was evaluated. Although the availability of medical record formats as a standard in health facilities [29], but the availability of formats was below the standard in this study. The finding showed that the incompleteness of medical record formats might be due to the shortage of formats in the health centers. Supporting

this, a study that conducted in England revealed that evidence-based standards and record keeping format are necessary for standardization of recording patient information [35].

In medical recording system, however, administrative data components are an essential for quality medical records, patient identification number and mode of arrival of patients to health center were not registered in majority of medical records in this study. Accurate patient identification is the beginning for an efficient medical record system [11]. As of Ethiopian health centers standard [29], a patient shall have only one medical record and unique identification number in the health center. In contrast, all studied health centers heads replied that" *… duplication of MR was observed as a common practice…"* that seriously contradicts to the requirement of health centers in Ethiopia. In comparison with a Nigerian study [36], properly recording of patient's name (75%) and writing of unit number on the front sheet was (59%), unlikely, the finding of our study indicated that patient name was (47%), unit number (52%). This could be associated with shortage of registration formats in the health centers.

Medical records should be easily accessible by administrative staffs that have occasion to retrieve them easily [3]. In Ethiopia, only 14% of returning patients could locate their medical records [9]. Similarly, as respondents replied that low number of medical records (13%) could be retrieved and located in MRD of this study. Almost half of MR (51.8%) had unique identification number. This might be due to duplicated and improperly used identification number. However, according to the standard, health center shall establish a master patient index with a unique number for each patient that help to get MR easily from the shelf [11].

The medical record must contain enough information, which will enable the attending physician to give effective continuity of care and to determine the condition of the patient at any given time. Documentation of the events and all significant consultations, assessments, observations, decisions, interventions and outcomes of the treatments are filled with chronological order. A study that conducted in Nigeria revealed that (87.7%) records contained information on past medical history, treatment and medication administration was 94.68%, and follow-up details was 93.62% [36]. Whereas the result of this study showed that past illnesses was recorded in (31.8%), medications and diets was (82.6%) and follow-up entry (15.1%). Varying with Nigerian

study, this was much lowered and it needs enhancement for completeness and better quality of medical record.

Furthermore, this study showed the gaps about missed information among the clinical data components related with family history, the information that has to be given for service users and information of alert and allergies in patient medical records. Quality medical records front page should contain red or fluorescent allergy stickers to alert the health care provider of a potential emergency that can interfere with a patient's medical care or treatment [28-29]. Likewise, as of the standard, documented medical information of a patient during ambulance service including medication administered shall be documented and attached into the medical record [29].

Better registration of patient information will benefit the quality of the healthcare process and it will reduce the risk [34]. However, Investigations request format and medication prescription format were absent in (75%) of health centers of this study. This might have problem for quality of medical record by reducing contents or completeness of MR. A low number of medical record (34%) were authenticated by service provider officials in the studied health centers. As standard stated "entries in the patient's medical record shall be written legibly, dated, and signed by the custodian/recording person" [29].

In this study, none of the health centers was implementing auditing of MR document. Majority of the respondents said that|" … *Since lack of regular monitoring and evaluation process, there was problem in quality of medical records in the health centers…"*According to the study which conducted in eastern Ethiopia, the presence of auditing, evaluation and monitoring is needed to data quality improvement changes with the supervisory directives and feedback role [20,34]. Similarly, a study conducted in Rwanda [10], showed that the importance of proper medical record management in facilitating high quality care in health institution. It has also contributions in accreditation efforts and medical record auditing to prove implementation of a policy or guideline.

Medical record officers and clerks should have sufficient basic education to enable them to file accurately in both alphabetical and numerical order, and to spell patient names correctly [29]. There shall be full-time medical record personnel with basic computer skill and ability to

organize medical and staffs such as card sorter and runner who are available shall to perform patient registration, retrieving, filing and recording chart location [29]. In contrast to this, no MRD personnel working in the health centers are qualified in health record management. Majority of MRD personnel are not oriented and trained with medical recording keeping skill as well as record management system. All of the key informants unexpectedly mentioned that" *…medical record personnel in our health centers are un qualified and not trained and they are guards and cleaners…".*

According to the standard requirement of health centers in Ethiopia, [29] the medical record forms shall be prepared in line with the national/Regional State guideline and approved by the health center management. Improperly, in all health centers there were no standards, manuals, guidelines, rules and regulations related to medical record. Efficient and accessible record-keeping guidelines for the documentation of patient information may lead to better communication between healthcare providers and it could have contribution for better patient outcomes and safer healthcare [36].

As (88%) respondents claimed that, there was the shortage of qualified and adequate number of competent employees related with the medical record in the health center. Provision of frequent on-job training to employee is a critical step to improve medical record managing system. Moreover, study finding showed interventions increased the performance of human resources at health institutions [37].

The availability of charts as of standard may improve quality of medical record in terms of completeness, readability, accessibility, accuracy and exchange of patient information between healthcare providers and health institutions [38,39]. Chart missing was determined per patient as simple test on availability [40]. In the present study, lack of face sheet, investigation chart and treatment charts were observed in medical records of patent. Similarly, a study that conducted in Iran showed that missing charts was a problem in quality of medical record. The finding also indicated that some of the medical records documented without fixing of missing sheets and/or incompleteness of their sheets [40].

According to the national human resource standard at health center [29], this study result indicated that the distribution and type of human resources appointments in health center was below the standard. This might cause for incompleteness and influence on the quality of medical records. Also, it is important to note that (81%) of the respondents replied that lack of regular monitoring and evaluation process is another obstacle to ensure quality MR in all health centers.

In addition to respondents, four health centers were checked for availability of necessary basic supplies for recording, processing, documenting, filing and retaining medical records safely and in a secured manner. Our findings indicated that exceptional to Humaro health Centre which relatively had some of the supplies, but other health center had a lack of resources/supplies for medical recording. This finding indicates that the implementation of improvement is needed with the availability of basic supplies for medical record process.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1. Conclusions

Majority of medical records had poor quality on administrative, financial, and legal contents and incompleteness as of the requirement of health centers standard of the country. Human resource who assigned in medical record department were unqualified and not enough to run medical record managing system. Absence of medical record formats, regular monitoring and evaluation were common problem in all studied health centers.

The findings of this study also indicated that lack of accessibility of the medical record for returning service users, absence of separate store room for storage of medical records, lack of consistent and efficient supervision, standardized formats, written rules and regulations of medical records, failure to conduct training and lack of adequate human resources were investigated as a challenge for quality of medical records.

7.2. Recommendations

Therefore; based on the findings of the study the following recommendations forwarded for responsible bodies at different levels. Since there is poor quality in components of medical records particularly in administrative contents of data, monitoring and evaluation, Supportive supervision, induction/orientation and on-job training should be provided for medical record personnel and staffs of health centers related to medical record. The district health office should hire qualified, competent and efficient human resource. Zone Health department should also provide all necessary input /supplies to have quality medical record in the health centers.

REFERENCES

1. Ajlouni M. Assessment of Medical Records Services at Ministry of Health Hospitals in Jordan. Bethesda, MD: The Partners for Health Reform plus Project, Abt Associates.2006

2. Bennett Sara., editors. World Health Organization, author. Sound Choices: Enhancing Capacity for Evidence-informed Health Policy. ISBN 978 92 4 159590 2 (NLM classification: WA 540.2002. pp.1

3. National Healthcare Records Management Advisory Group. Health Service Executive. Standards & Recommended Practices for Healthcare. Records Management. Ireland. May 2011.

4. Ministry of Health. Policy Directive, Health Care Records - Documentation and Management. 73 Miller Street North Sydney NSW 2060, Publication.2002. p.2 http://www.health.nsw.gov.au/policies/.

5. WHO 2003. Improving Data Quality, A Guide for Developing Countries.2003.

6. Health M. *Overview of the Sector*. 2013; Available from: http://www.moh.gov.et/English/Information/Pages/Overview%20of%20the%20Sector.aspx.

7. MOH. Federal Democratic Republic of Ethiopia. Ministry of Health, Health Sector Development Program IV In line   with GTP 2010/11 – 2014/15.2010

8. Waju B. Health care quality management, unpublished teaching material of Jimma university. 2018.

9. Bradley E, Hart Wig KA, Laura A, Rowe A, Emily J. et al. Hospital quality improvement in Ethiopia: a partnership–mentoring model. *Int J Health Care*; 2008; 20(6): 392–399.

10. Kiviri W, Wong R, Davi C, Rahim L, Nyirasebura D, Bizimana T. Improving Patient Medical Record Organization in a Hospital Intensive Care Unit in Rwanda. *Global Journals Inc*. (USA).2015;15: 13.

11. MOH 2016. Ethiopian National Health Care Quality Strategy. Ethiopia. Addis Ababa Institute for health care improvement.

12. MOH 2016. Ethiopian national health care quality strategy: Transforming the Quality of Health Care in Ethiopia.

13. Ejigu E, Tadeg H. Development of the National Minimum, Standards for Healthcare Facilities in Ethiopia. A Milestone for Country Ownership and Sustainability of Best Practices. June 2014.

14. WHO 2006. Medical Records Manual: A Guide for Developing Countries. World Health Organization, 20 Avenue Appia, 1211 Geneva 27. p7.

15. Endriyas M, Alano A, Mekonnen E, Ayele S, Kelaye T, Shiferaw M. et al. Understanding performance data: health management information system data accuracy in Southern Nations Nationalities and People's Region, Ethiopia. *BMC Health Services Research*; 2019; 19:175.

16. Huffman EK. Medical Record Management. 9th Revision. Berwyn. Physicians' Record Company, 1990. 33 -35.

17. Shaun T. The potential of electronic medical record systems to support quality improvement work and research in Norwegian general practice. 2003

18. Akanbi MO, Ocheke AN, Agaba PA, Daniyam CA, Agaba EI, Okeke EN, Ukoli.CO. Use of Electronic Health Records in sub-Saharan Africa: Progress and challenges. *J Med Trop.* 2012; 14(1): 1–6.

19. Cline GB, Luiz JM. Information technology systems in public sector health facilities in developing countries: the case of South Africa. *BMC Med Inform Decis Mak*. 2013; 24;13:13. doi: 10.1186/1472-6947-13-13.

20. Sultan A, Jira C, Beyene W. Utilization of Health Information System at District Level in Jimma Zone Oromia Regional State, South West Ethiopia. *Ethiop J Health Sci.* 2011; 21(Suppl 1): 65–76.

21. World Health Organization, Regional Office for the Eastern Mediterranean (2004). Quality improvement in primary health care: a practical guide. http://www.who.int/iris/handle/10665/119694.

22. Beyene W, Jira C, Sudhakar M. Assessment of Quality of Health Care in Jimma Zone, South west Ethiopia. *Ethiop J Health Sci.* 2011; 21(Suppl 1): 49–58.

23. Abera E, Daniel K, Letta T, Tsegaw D. Utilization of health management information system and associated factors in Hadiya zone health centers, Southern Ethiopia. *Research in Health Science*; 2016; 1:2.

24. Randall SM, Ferrante AM, Boyd JH, Semmens JB. The effect of data cleaning on record linkage quality. *BMC Medical Informatics and Decision Making* 2013; 13:64.

25. Privacy Manual for Health Information. Corporate Governance and Risk Management.2005-2009.version 2: PD2005-593.

26. Tola K, AbebeH, Gebremariam Y, Jikamo B. Improving Completeness of Inpatient Medical Records in Menelik II Referral Hospital, Addis Ababa, Ethiopia. *Advances in Public Health* Volume 2017, Article ID 8389414, 5 pages. https://doi.org/10.1155/2017/8389414.

27. Canadian medical Association. (2012). Medical Records Management. Module 6. MD Financial Management Inc.p.1

28. Public Health Act 2010 No 127 Current version for 28 February 2019 to date (accessed 10 June 2019 at 17:41) http://www.legislation.nsw.gov.au/.

29. Health Center-Requirements. First Edition. Ethiopian Standard. First edition ES 3611:2012. pp87.

30. Health Records and Information Privacy Act 2002 No 71). http://www.legislation.nsw.gov.au/maintop/view/inforce/act+52+2009+cd+0+N.Current version for 1 July 2019 to date (accessed 8 July 2019).

31. CSA. Central Statistical Agency: Statistical Abstract. Ethiopia: projection report. 2018. Addis Ababa.

32. Medical Record Review Guidelines (2012): California Department of Health Care Services, Medical Managed Care Division. Available at: http://cencalhealth.com/for_providers/ provider_ manual/pdf/X/Medical ReviewGuidelines.pdf

33. Mohammed N, Kumie A, Curry L. Thesis on: Improving the completeness of medical records at inpatient department of Dalefage Primary Hospital, west Afar, Ethiopia. School of Graduate Studies of Addis Ababa University, 2014.p6

34. Anwar WA, Abo El Ezz, NF, Elhossiney, DM, Abd Allah RA. Measurement of Completeness of Medical Records in Family Health Centre in El Shorouk City. *The Egyptian J Comm Med.* 2016; 34(3): 69-77.

35. Clinician's Guide to Record Standards – Part 1: Why standardize the structure and content of medical records? Royal College of Physicians, Published by the Digital and Health Information Policy Directorate October 2008. Gateway number 10508.

36. Adeleke IT, Adekanye AO, Onawola KA, Okuku AG, Adefemi SA, Erinle SA. et al. Data quality assessment in healthcare: a 365-day chart review of inpatients' health records at a Nigerian tertiary hospital. *J Am Med Inform Assoc.* 2012; 19:1039–1042. doi:10.1136/amiajnl-2012-000823

37. Lilford RJ, Mohammed MA, Braunholtz D, Hofer TF. The measurement of active errors: methodological issues. *BMJ Qual Safety Health Care*; 2003; 12: Suppl 2

38. Helfand M, Freeman M. (2008). Evidence-Based Synthesis Program Assessment and Management of Acute Pain in Adult Medical Inpatients: Portland VA Health Care System, Oregon Evidence Based Center.

39. WHO 2006. Medical Records Manual: A Guide for Developing Countries Revised and Updated.

40. Pourasghar F, Malekafzali H, Kazemi A, Ellenius J, Fors U. What they fill in today, may not be useful tomorrow: Lessons learned from studying Medical Records at the Women hospital in Tabriz, Iran. *BMC Public Health* 2008, 8:139 doi:10.1186/1471-2458-8-139.

Annexes

Annex 1.

JIMMA UNIVERSITYINSTITUTE OF PUBLIC HEALTH DEPARTMENOF HEALTH POLICY AND MANAGEMENT.

Tools to assess quality of medical records and facilities for quality medical record Information sheet

Dear Respondent

My name is ………………………………I am here with you on behalf of Martha G/yohannis. She is a student of Jimma University, Institute of health and she is conducting a research on *quality of medical records and facilities for medical record quality among health centers in Soro district of Hadiya zone* for partial fulfillment of master of public health in health services management. The researcher kindly requests your participation in filling this questionnaire because your participation by giving clear and accurate answer is very important for realization of the research. Please be sure that all the information provided in this questionnaire will be used for the study purpose only and treated with at most confidentiality, you are not obliged to answer any question that you do not want to answer. Your participation in this study does not involve any direct risk or benefit for you. It is very useful since your answers and those of other participants will help to improve the problem related to quality of medical records. If you need any further information or explanation regarding to the study, you can have this address to contact.

Name – Martha G/yohannis.   Tel no – 0913042840.

E-mail –erqoce1980@gmail.com

Based on the information provided are you willing to participate in the study?

Yes_____ No_____

If Yes- read the consent form to the participant, sign it and continue the interview.

If No- thank and skip to the next participant.

Informed consent

Informed consent Certified by: Respondent's signature -----------------Date----------------

Interviewer: Name------------------------------------- Signature--------------------------------

Questionnaire number-----------------------------------

Date of interview-------------------Time started-------------------Time completed------------

Result of interview:

1. Completed

2. Respondent not available

3. Refused

 4. Partially completed

Checked by: Supervisor: Name _____ Signature_____

Please kindly provide responses by **writing or ticking** the numbers and by filling in the spaces provided as applicable.

1. **Check list for reviewing contents of medical records**

If the indicators of medical record qualities in terms of completeness available in medical record of patient say yes, if not say no

S.No	Item	Availability		remark
		Yes	No	
Part I. **Administrative data**				
1	Title and name of health center			
2	Full name (forename and surname)			
3	Date of birth			
4	Home address/current address (if different).			
5	Gender.			
6	Marital/civil partnership status			
8	Healthcare record number assigned at registration			
9	Mode of arrival. (reason to come to HC)			
Part II. **Clinical data with their formats**				
1	Face sheet or registration form			
2	History and physical examination chart			
3	Investigation chart			
4	treatment chart			
5	presenting problem/complaint			
6	past illnesses			
7	current diagnoses			
8	Service user alerts/allergies.			
9	Procedures and investigations.			
10	Medications and diets			
11	Family history.			
12	Examination findings.			
13	Results of investigations.			
14	Overall assessment.			
15	Management plan.			
16	Information given to service user.			
17	Follow-up entry			
Part III**. Are there legal documents**				
1.	Consent for treatment			
2.	Consent for information retrieval			
3.	Authenticated by responsible service provider			
Part IV. **Financial data (service if the service is free tick on remark)**				
1	Service fee			
2	Medication fee			
3	Investigation fee			

Annex 2.

JIMMA UNIVERSITY INSTITUTE OF PUBLIC HEALTH DEPARTMENOF HEALTH POLICY AND MANAGEMENT.

1. Interview questions prepared for key informants (case team coordinators) of health centers.

Dear respondents:

The purpose of this interview is purely to assess the quality of medical records and facilities for medical record qualities in Soro district public health centers. I would like to request you to participate voluntarily in the study. The information obtained from will be used to make informed decision about the realities of quality of medical records in study area. Your genuine responses will therefore; be treated with utmost confidentiality. You are kindly requested to respond to all questions as honesty as humanly possible in order to enable the researcher accurate conclusion on the title. Please, briefly state your response for the open-ended items.

Thank you in advance for your cooperation!

    I. Personal data
      1. Office/health institution name ----------------------------------
      2. Gender   Male--------   Female -------
      3. Age -----
      4. Educational status   diploma---   first degree----second degree and above------   other if any-----
      5. Service year in the sector -------

II. Qualitative interviewing questions related to medical record quality.

S.No	Indicators for quality of medical records	Availability and functionality		
		Yes	No	Remark
1	Is each individual patient file easily and readily retrievable?			
2	Are the records readable to any and all reviewers?			
3	Is the patient's name written on all components of the chart?			
4	Are the patient's name, age, sex and address clearly shown on the chart?			
5	Is the date of each visit recorded?			
6	Does the family history, past history and functional inquiry (including significant negative observations) clearly recorded and maintained?			
7	Are allergies clearly documented?			
8	Is the chief complaint clearly stated?			
9	Is the durations of symptoms noted?			
10	Is there clear documentation of the requested lab investigations?			
11	Are scientifically known abbreviations frequently used?			
12	Does authorized service providers authenticate on MR?			
13	Does MR of a patient/client starts as soon as the service seeker enters in to the health centers?			
14	Is wrong documentation corrected immediately by respective service providers?			

If any, please specify --

III. Qualitative interviewing Questions related to the facilities for the quality of medical record at MRD.

S.No	Indicators of facilities for medical records quality.	Response		
		Yes	No	Functionality
1	Does the location of the MRD accessible for all users of its service?			
2	Is the MRD have enough space to handle all its functions properly			
3	Does the design of facilitates the traffic of people, records and equipment inside the MRD?			
4	Is efficient supervision carried on the MRD?			
5	Doe smooth flow of work among various units of the MRD practiced?			
6	Are active and inactive filing areas provided separately?			
7	Is there a store room for the MRD?			
8	Are there available written rules and regulations of MR?			
9	Are there enough number of MRD personnel to effectively perform the functions as assigned to the department?			
10	Do the director of the MRD and technicians have formal training in MR?			
11	Does a unique patient identifier is used in your health center?			
12	Are medical record forms held in your health center together by a clip or fastener?			
13	Do MRD have an adequate security system (i.e. fire control system, fireproof cabinets)?			
14	Does MRs retained to maximum duration of period?			
15	The availability of qualified and enough number of competent employee in the health center			
16	Provision of induction and orientation for newly hired employee concerning on medical record			
17	Availability of MR inputs in the health center			
18	Provision of on-job training frequently to employee			

If any additional, please specify --

…………………………………….

Thank you for your cooperation!

Annex 3.

JIMMA UNIVERSITYINSTITUTE OF PUBLIC HEALTH DEPARTMENT OF HEALTH POLICY AND MANAGEMENT

1. Semi- structured interview prepared for health center heads

This is an assessment innocent for academic purpose on the quality of medical record and facilities for quality medical records in Soro district health centers. Your information is kept both confidential and strictly private. Regarding your participation in the research, you are free to respond or stop your participation at any moment in the interview process. Thus, I ask your permission and willingness to give genuine and honest response.

Thank you in advance for your cooperation!

Personal information

Sex

Age

Occupation

Educational status

Experience

Place of work process

Position title

I. Interview guide/question

1. Does the health center have standards related to medical record?

    If there, what type? --

2. Is it used for relative purposes? Yes/no

3. Is there qualified and enough number of competent employees in the health center? Yes/no

4. Is induction and orientation given for employee concerning on their occupation? Yes/ no

5. Are MR inputs available and enough by their proportion? Yes/no

6. Has the On-job training provided frequently to employee?

    If there, how?

    If no, why?

7. Are employees hired based on merit and experience?

8. Are regular monitoring and evaluation implemented?

9. Is MR document audited as of the standard?

10. Are all Medical Record entries to be completed, dated and signed?

11. Over all, how is the quality of the medical record in your health center?---------------------

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12. What facilities the health center has for the quality of medical records?

Thank you for your cooperation!

Annex 4

Check list prepared for reviewing the availability of necessary supplies for MR in the medical record room/ department.

Supplies and equipment

Name of the health center_____ Code No_____

If available say yes, if not say no.

S. No	Item	Standards	Availability		If yes, is it functional and adequate?
			Yes	No	
1	MR folder				
2	photocopier				
3	printer				
4	Computer				
5	MPI file cabinets				
6	Shelves for filing				
7	MPI files				
8	Stationeries				
9	Request formats				
10	Laboratory				
11	Face sheet or registration record:				
12	Authorization form				
13	Consent for release of information				
14	Master patient index				
15	Log book				
16	Fire extinguisher				
17	Cart				
18	Ladder				