European Review for Medical and Pharmacological Sciences 2022; 26: 2669-2675

# Effectiveness of quality clinical active audit in improving healthcare of a multispecialty hospital in a developing country

S.A. MIRAJ

Department of Public Health, College of Health Sciences Saudi Electronic University, Riyadh, Saudi Arabia

**Abstract. – OBJECTIVE: Clinical audits enable a more responsible and patient-centric healthcare paradigm by comparing patient care processes to self-defined standard norms. The current study is a descriptive prospective observational analysis performed on data extracted from in-patient active audit files from a multispecialty hospital based in Delhi NCR, India. The files were reviewed to find out if the current documentation technique adhered to the accreditation board's audit guidelines.**

**MATERIALS AND METHODS: A random sample of 325 files among all inpatient medical records from the selected wards of the hospital was analyzed in accordance with standard protocols. The information gathered was primary in nature with 15-20 files being audited from different wards daily based on fulfillment of National Accreditation Board of Hospitals (NABH) criterion.**

**RESULTS: Active audit data collection was lacking in many criteria like desired outcomes (25.2%) and others. Educating clinical staff about the necessity of accurate form recording and hospital-wide consistency of medical record keeping, providing summary of admission and discharge is vital. Utmost care should have been taken to ensure that hospital medical records are maintained in a systemic and scientific manner.**

**CONCLUSIONS: There is an acute need for proper documentation to improve the quality. Active audits of this nature should be made regular to improve the standard of care over time.**

*Key Words:*
Active audit, Checklist, Documentation, Inpatient health record.

## Introduction

"Audit" is a Latin word, and the verb *audio* ('hear') indicates both active listening and the action of investigation and interrogation of the judiciary. Transferred to the English vocabulary, "audit" takes on a meaning of "an official inspection of an organization's accounts, typically by an independent body"[1]. A clinical audit is a quality improvement cycle that involves comparing the effectiveness of healthcare to agree-upon and demonstrate high-quality standards, then, taking steps to bring practice in line with these standards to enhance care quality and health outcomes[2]. The aim of such an audit is continuous improvement of the quality of care through a systematic and critical review of current practice against explicit criteria and the implementation of changes if necessary. The audit is a regular multidisciplinary activity by which all participants of health care, including doctors, nurses, and other health professionals, carry out a systematic review of their own practices for the amelioration of the system and improving the quality ultimately. In previously reported studies[2,3], it was suggested that in hospitals and health care systems, costs can be significantly reduced by using health informatics software for the maintenance of hospital data collected over long periods of time. The judicious use of statistical tools along with such advanced technology of big data management and proper training can also help in clinical audit and its expected deliveries, benefitting patients, hospitals, and eventually the entire healthcare system[3].

Clinical audits aim at improving clinical practice standards where different aspects of patient care are compared to expected standards, and improvements are made as needed at the individual, team, or service level. The results of the re-audit can then be utilized to confirm that the modifications were successful. Likewise, an active audit is the activity of review when conducted on a continuous and regular basis of in-patients who have not been discharged yet. A series of clinical

*Corresponding Author:* Shaima A. Miraj, Ph.D, MHA; e-mail: shaima.s.ali@gmail.com

studies[4-7] have emphasized the usage of clinical audits in a variety of different clinical specialties. Health care systems from developing countries have more serious problems of maintaining quality and mostly rely on the well-known "learning by doing" mechanism, which leads to a positive correlation between patient volume and outcome quality.

The present study has been aimed to determine whether the current documentation technique of the multispecialty hospital is in compliance with the facilities and regulatory body's (National Accreditation Board of Hospitals (NABH) policies. The specific objectives were to identify the existing gaps as well as to determine the non-compliance rate of the documentation in the active in-patient files. This would help in identifying and measuring the areas of risk, as well as to improve the quality of care to patients by analyzing the shortcomings so as to make recommendations for feasible fixes.

## Materials and Methods

The present study was an observational prospective descriptive study based on the evaluation of the existing data for the period June to August 2021, sought from a 300 bedded multispecialty hospital of Delhi NCR India, name and place withheld due to privacy request. All necessary permissions with the concerned authorities were taken prior to the analysis. The random sampling method was used to determine the sample size using statistical power of 80%, an effect size of 0.20, and a level of significance set at 0.05 with a minimum sample size of 300 files was found.

In this study, a sample size of 325 files was analyzed to determine the responses. A standardized quantitative tool (checklist) was used in which indications were noted down. The checklist included the admission information (date of admission and serial number), demographics (age, sex, and patient number), history, examination, investigations, diagnosis, and treatment, attending doctor, procedures, day-by-day summary, and follow-up were all evaluated for completeness of documentation. The primary data source involved 15-30 existing files of IPD patients to be audited from various wards of the multispecialty hospital, particularly the general wards, general medicine, general surgery, pediatrics, etc., based on compliance with NABH standard criteria using the audit checklist and other forms. To determine non-compliance, random files from various wards were thoroughly examined and compared to a checklist based on several quality indicators as defined by NABH standards.

Different doctors' non-compliance was highlighted, and then, measured during the three-month audit. Likewise, a comparison of different doctors was made to determine which doctors had the highest level of non-compliance with reference to a specific indicator. Finally, an analysis was performed, and tables/graphs were created to show a visual comparison so that corrective action could be taken. Apart from the primary data, secondary data from the various hospital policies documents in various departments were also evaluated for comparison. Most of the information was collected through observations. Both types of observations –participative and non-participative – were used in learning the function and working of various departments.

## Results

In the assessment of the in-patient active file audit, we used certain important parameters of NABH standards from the checklist and determined the percentage of various outcome measures. Seven quality parameters were used for the analysis. They were non-documentation of the clinical outcomes, absence of doctor's signature in the consent form, absence of patient's signature in the consent form, absence of mention of the date, absence of mention of consent risks to the patient, use of error-prone abbreviations in the medication charts and medication charts, neither signed by the attending staff nor stamped.

With reference to the first parameter, i.e., desired clinical outcomes not documented, it was observed that out of the 206 files randomly evaluated, 53 among them lacked the same (25.72%) (Figure 1A). On further assessment, it was found that 25 files from the general medicine, 12 in general wards, 11 in obstetrics and gynecology, 4 from general surgery, and 1 from the pediatrics department had a deficiency in outcome reporting, respectively (Figure 1A). With respect to the second parameter, i.e., absence of doctor's and patient's signature in the consent form, it was observed that 15.5% and 12% of the files did not have the signature of doctors and patients in the consent form respectively (Figure 1B and 1C). The third parameter was about evaluating for the absence of date/s in the consent form, and it was

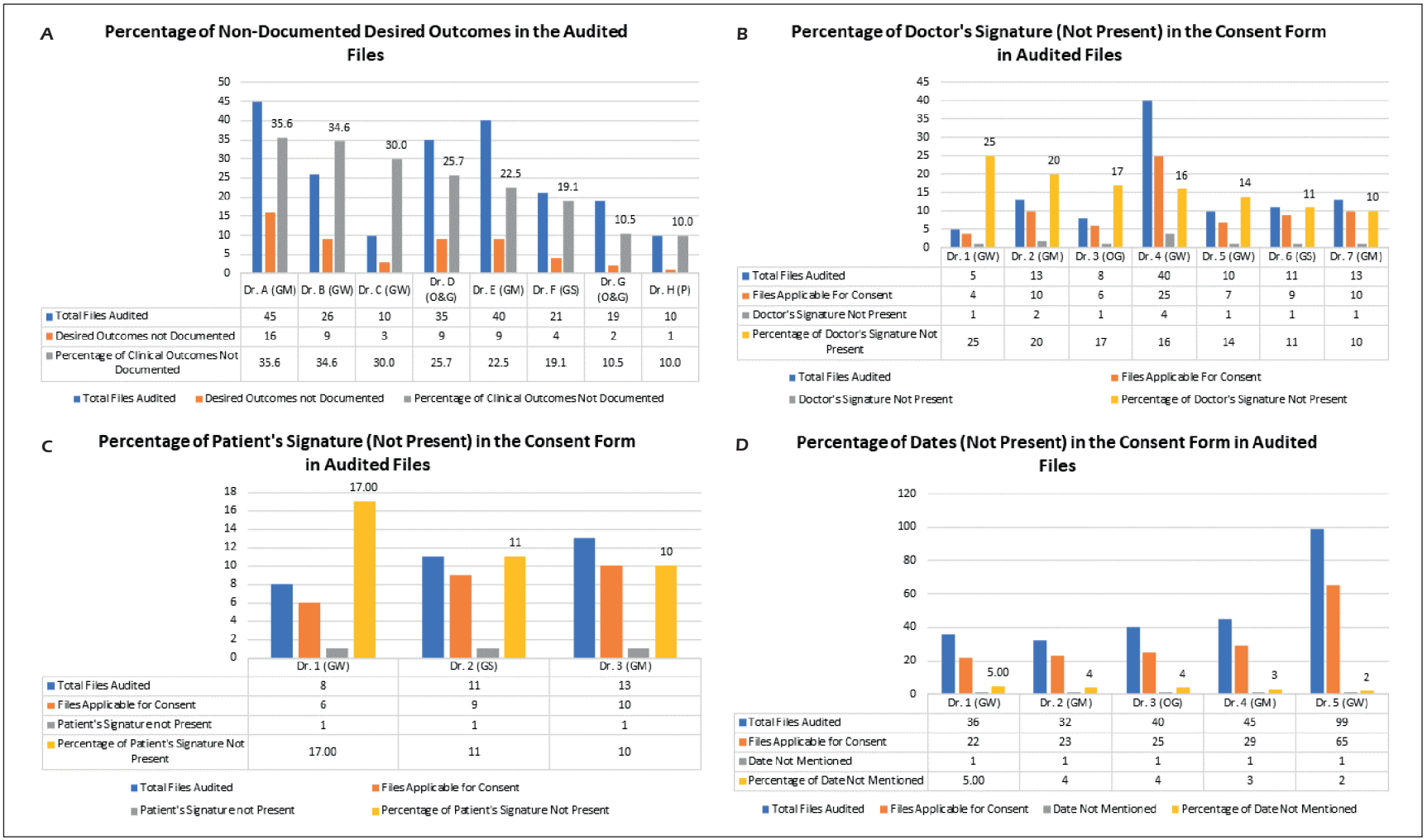


**Figure 1. A,** Percentage of non-documented desired outcomes. **B,** Percentage of Doctor's signature (not present) in the consent form. **C,** Percentage of patient's signature (not present) in the consent form. **D,** Percentage of dates (not present) in the consent form of the audited files. **Abbreviations.* (GM – General Medicine; GW – General Ward; OC – Obstetrics & Gynecology; GS – General Surgery; P – Pediatrics).

found that a meager 3% (5/164) files did not have the dates of the consent mentioned (Figure 1D). In the assessment of the next category, as shown in Figure 2, the first parameter was calculating the percentage for reporting of associated risks in the consent forms of the audited files; it was observed that in 18% of the files, the risks were not mentioned (Figure 2A). Similarly, on assessment for the absence of signature or stamping in the medication charts, it was found that in 17% of the audited files, medication charts were neither signed nor stamped (Figure 2B). The next parameter was regarding the assessment of abbreviations in the medication charts, and it was found that 18% of the audited files used error-prone abbreviations in the medication charts (Figure 2C). Finally, the composite score for all the parameters was calculated to assess the percentage of non-compliance to the NABH standards, and it was found that 14% of the files audited were deficient in fulfilling the set standards. The non-compliance ranged from moderate to severe in all ranges based on checklist analysis (Table I).

## Discussion

Active audit data collection is a very import ant tool in the evaluation of the quality assessment of the in-patient care delivery in hospitals. In the current study, in the hospital under assessment, it was found that the criteria as per the National Accreditation Board of Hospitals (NABH) were deficient in many files for the various parameters, including desired outcomes, doctor's and patient's signature, consent form not filled, error-prone abbreviations used, medicines not written in capital letters, etc. Assessment of the first parameter showed that in 25.72% of the files, documentation of the outcome measures was not reported, which could affect the delivery of the services adversely (Figure 1A).

In an earlier study conducted by Singh et al[8], it was found that in a multispecialty hospital, out of the several wards – like the medical, gynecology, obstetrics, surgical, pediatrics, and psychiatry – gynecology and pediatric wards were not found appropriate and up to date. There was clearly a large discrepancy between the standard of record-keeping in various departments, mostly due to avoidable errors, made in sheer carelessness and casual approach. It has also been noted by Robertson et al[9] and Walker et al[10] that in surveyed hospitals, it is a common feature that the interns/residents are mainly responsible for filling in the in-patient records, which are not sincere in their duties, resulting in errors and deficiencies. They should be taught how to adequately fill in the records in a scientific manner, which must be monitored by weekly checks of the medical records by consultants to assure that they are being completed.

The findings of the present analysis also suggest a similar situation where carelessness by most of the staff leads to such lapses in medical records and audits (Figure 1B, Figure 2A, 2B and 2C). With no serious monitoring being followed, these resulted in audit lapses of callous nature, violating the NABH guidelines, ultimately affecting the efficiency of the health care system. With proper training judicious and honest use of audit information, the stakeholders of the health care system can make improvements in health care delivery, benefitting both the government and the patients by the synergistic use of health information system-generated data. As medical records form a very important and critical document in any hospital, they are vital for legal purposes, as well as for future planning of the hospital medical care system.

Utmost care should have been taken to ensure that all hospital medical records are maintained in a systemic and scientific manner, using some of the state-of-the-art technologies which are easily available. This was totally wanting in the present random sampling of the audit files. The importance of the medical records should have also been communicated to all the concerned staff. No periodic audits of the medical records were done by the senior staff, which could have helped to determine the possible deficiency in keeping records. The hospital was found to have been facing certain problems like not having clear objectives and planning, lack of clarity on the methods of record-keeping coupled with lack of organizational support, which acted as possible challenges for lapses in clinical audit causing common discrepancies.

In this regard, it was stated that the health care industry gradually generated large amount of complex and diverse data, such as record keeping, compliance, and regulatory requirements of clinical audit in the absence of proper infrastructure and management, is not done properly for the benefit of the patients. It was suggested by some authors[3] that expenditures can be significantly lowered by employing proper health informatics software whereby statistical techniques

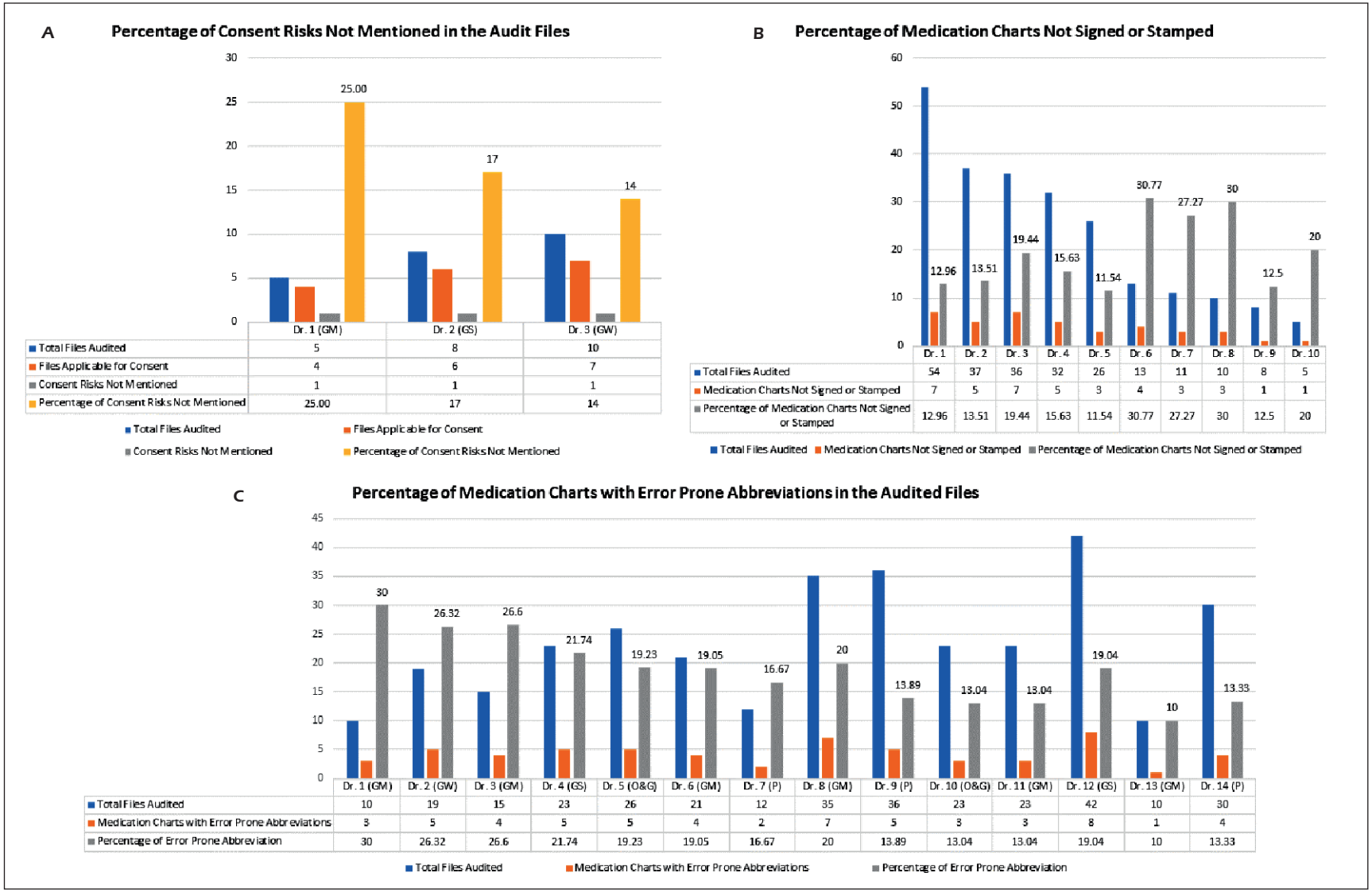


**Figure 2. A,** Percentage of consent risks (not mentioned). **B,** Percentage of medication charts (not signed or stamped). **C,** Percentage of medication charts with error prone abbreviations in the audited files. **Abbreviations*. (GM – General Medicine; GW – General Ward; OC – Obstetrics & Gynecology; GS – General Surgery; P – Pediatrics).

**Table I.** Percentage of non-compliance to the NABH standards.

| Sl.NO | Standards | Non_compliance |
|---|---|---|
| 1 | Desired outcomes not documented | 25.72% |
| 2 | Doctor's sign. Not present in the consent form | 15.5% |
| 3 | Patient's signature is not present in the consent form | 12% |
| 4 | Date not mentioned in the consent form | 3% |
| 5 | Risks not mentioned in the consent form | 18% |
| 6 | Medication charts with error-prone abbreviations. | 18% |
| 7 | Medication charts without capital letters. | 3.7% |
| 8 | Medication charts are not signed and stamped. | 17% |
| Total | | 14% |

could be judiciously used for the management of big data suggesting appropriate predictive models and training which could benefit everyone including patients, hospitals, system making it a sustainable[3].

Recently, Hill et al[11] have compiled a review on the applications of continuous quality improvement (CQI), a tool often used in industrial and manufacturing sectors, in the health care settings too. In the present study, this concept was not found to be used, as evident from several discrepancies observed in the clinical audit analysis of the files randomly checked from the hospital records under investigation. This may be probably due to the limited success of CQI, as several uncertainties remain to its effectiveness, given the complex and diverse nature of health systems prevailing in hospitals of a developing country. Or secondly, it may be due to lack of infrastructure, inadequate manpower, and management-related issues. Data of the present study are well supported by the above facts that, due to these challenges, most hospitals may not implement the concept of quality control or any tool to remove errors and mistakes, which get slowly compounded.

Some of the limitations of the study observed while conducting the study were that the quality of the data available could be improved, engagement with clinicians was not optimal, skills and training of the stakeholders was not up to the mark, feedback was not provided, as well as strategies to translate findings into process quality improvement. It is recommended here that instead of wholly depending upon this old concept of CQI, in the clinical audits and removing their discrepancies, a mixed approach as convenient to the hospitals or health care system may be used, such as lean management, six sigma, Plan-Do-Study-Act cycles, and root cause analysis as stated by Rubenstein et al[12]. On the other hand, according to Baker et al[13] scientific evidence does not provide clear support about the real effectiveness of clinical audits. There could be a starting point to design studies and analyses to validate clinical audits in different operating contexts. Similar conflicting evidence on the effectiveness of clinical audit has been provided earlier by Grimshaw et al[14]. Thus, in view of these citations, we have to deal with caution on the applications and effectiveness of clinical audits[15]. It appears that any audit does have an impact on maintaining quality through its main purpose of official inspection. The aim of such an audit is continuous improvement of the quality of care through a systematic and critical review of current practice against explicit criteria and the implementation of changes if necessary.

## Conclusions

Clinical audits enable a more responsible and patient-centric healthcare paradigm by comparing patient care processes to self-defined standard norms. They also provide essential input to medical practitioners, hospital administrators, and policymakers. Educating clinical staff about the necessity of accurate form recording and hospital-wide consistency of medical record providing a summary of admission and discharge is vital. Utmost care should be taken to ensure that the hospital medical records are maintained in a systemic and scientific manner; the use of technological methods soft wares can be of great help in removing errors. The importance of correct medical record-keeping must regularly be exercised and communicated as well to all the concerned staff, monitored by senior consultants to avoid lapses. This can help to determine the possible deficiency in keeping records and rectify them beforehand, instead of getting piled up and being pointed out by clinical audits.

**Conflict of Interest**
The author declares no conflict of interest.

## References

1) Oxford Dictionary. Available from: http://www.oxforddictionaries.com/definition/english/audit.
2) Alyacoubi S, Albaraqouni L, Elessi K, Bottcher B. The Introduction of Clinical Audit as a Quality Improvement Tool in Gaza. Clinical Audit 2021; 13: 15-19.
3) Miraj SA. Challenges and Perspectives of Health Informatics and its Management in Developing Asian Countries. Biosc Biotech Res Comm 2017; 10.
4) Esposito P, Dal Canton A. Clinical audit, a valuable tool to improve quality of care: General methodology and applications in nephrology. World J Nephrol 2014; 3: 249-255.
5) Hut-Mossel L, Ahaus K, Welker G, Gans R. Understanding how and why audits work in improving the quality of hospital care: a systematic realist review. PLoS One 2021; 16: e0248677
6) Foy R, Skrypak M, Alderson S, Ivers NM, McInerney B, Stoddart J, Ingham J, Keenan D. Revitalising audit and feedback to improve patient care. BMJ 2020; 368: m213.
7) Sykes M, Thomson R, Kolehmainen N, Allan L, Finch T. Opportunities to enhance ward audit: a multi-site qualitative study. BMC Health Serv Res 202; 21: 226.
8) Singh MM, Patnaik SK, Sridhar B. Medical audit of documentation of inpatient medical record in a multispecialty hospital in India. Int J Res Foundation Hosp Healthc 2017; 5: 77-83.
9) Robertson AR, Fernando B, Morrison Z, Kalra D, Sheikh A. Structuring and coding in health care records: a qualitative analysis using diabetes as a case study. J Innov Health Inform 2015; 22: 275-283.
10) Walker RW, Viney R, Green L, Mawanswila M, Maro VP, Gjertsen C, Godfrey H, Smailes R, Gray WK. Trends in stroke admissions to a Tanzanian hospital over four decades: a retrospective audit. Trop Med Int Health 2015; 10: 1290-1296.
11) Hill JE, Stephani AM, Sapple P, Clegg AJ. The effectiveness of continuous quality improvement for developing professional practice and improving health care outcomes: a systematic review. Implement Sci 2020; 15: 23.
12) Rubenstein L, Khodyakov D, Hempel S, Danz M, Salem-Schatz S, Foy R, O'Neill S, Dalal S, Shekelle P. How can we recognize continuous quality improvement? Int J Qual Health Care 2014; 26: 6-15.
13) Baker R, Hearnshaw H, Robertson N. Implementing change with clinical audit. Chichester: Wiley 1999; pp. 1-21.
14) Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, Grilli R, Harvey E, Oxman A, O'Brien MA. Changing provider behavior: an overview of systematic reviews of interventions. Med Care 2001; 39: II2-I45.
15) Khan T, Alderson S, Francis JJ, Lorencatto F, Grant-Casey J, Stanworth SJ, Foy R. Repeated analyses of national clinical audit reports demonstrate improvements in feedback methods. Implement Sci Commun 2020; 1: 106.