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Original Research Article

Introduction of clinical audit in obstetrics for undergraduate medical students

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ABSTRACT

Background: Clinical audit is becoming increasingly important in the healthcare system to ensure a high quality of patient care. Involving the undergraduate medical students in the audit process will help them to understand the subject better and will stimulate them to critically appraise a medical issue. Clinical audit is a hands-on practice of data collection, comparison of current clinical practice with standard and find root cause analysis-based intervention to implement change ideas. Aim and objectives of current study were to introduce audit as a teaching tool in clinical posting of obstetrics and evaluate its impact and acceptability.

Methods: Final year MBBS students were enrolled for the study. The caesarean section was selected as the topic for audit. A pre-test was given before the introduction of Clinical audit. Participants were trained to do a systematic clinical audit including analyzing the collected data. They worked in small groups along with a faculty supervisor. A post-test was taken after one month. Likert scale was used to evaluate the acceptability of this tool by students.

Results: A total of 50 MBBS students of the final semester completed the pre-test, training to use clinical audit and the post-test. The results of pre-test and post-test were compared and a statistically significant improvement was found in the performance of students. This method was found to be an acceptable tool for clinical teaching by 98% of the students.

Conclusions: Final year MBBS Students performed better when clinical audit was used as a teaching tool, which was also well accepted by them.

Keywords: Clinical audit, Final year MBBS, Caesarean section, Undergraduate

INTRODUCTION

Quality Improvement (QI) is becoming increasingly relevant in today's evolving era of the medical profession. Clinical audit (CA) is recognized as one of the QI approaches to improve the quality of patient care.^{1,2} National Institute for Health and Clinical Excellence (NICE) defines Clinical Audit as a 'quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change'.³ In simple words, we

compare the practices which are being done with the ideal ones and try to correct them in a systematic manner. Clinical audit involves following stages in a cyclical process: preparing for audit; selecting standard criteria; measuring performance level; making improvements; sustaining improvements and repeat.⁴ CA has been taught in a formal manner in some medical institutions for almost two decades in postgraduate teaching programmes and is increasingly being used in the undergraduate curriculum.⁵⁻⁸ QI method of teaching and learning is being increasingly offered to medical students, although there is variation in

the teaching methodology, learning outcomes and the content.⁹ Family medicine residency program in Kuwait requires CA project as a component of the formative assessment of trainees.⁶

In undergraduate curriculum, this training is still in nascent stage and is limited to either attending a few lectures on the topic or to the undertaking of a QI project involving CA.¹⁰ Clinical audit has been made a part of undergraduate curricula in the final year at university of Notre Dame at Australia.⁷ A pilot study done recently in Birmingham, UK reported that clinical audit platform for students amongst undergraduate medical students helped them to collaborate better with supervisors.¹¹ It has been reported that by embedding CA in the clinical posting per se, the future clinician will get exposed to the knowledge required for the application of the QI projects in clinical practice.¹² Introducing the concept of CA at undergraduate level would give the students an in-depth understanding of the subject. They can chip-in and perform CA in a busy time constrained hospital under guidance of clinicians and will in turn get benefitted by understanding stepwise method of performing CA. These steps are fundamental in medical practice and will help the students in conducting wider research projects in future and also drive in them the importance of delivering evidence-based best care to the patients. The completion of an audit is also valuable career wise, as audits are weighed similar to presentations and publications across some training programmes.¹³ Selecting an apt topic for audit depends on the objectives of the audit and are usually the ones which are likely to involve healthcare processes having significant impact should be chosen for audit.¹⁴ The most important step is the defining of the standard criteria, which should ideally be evidence based. The data is collected preferably by person who is not involved in the clinical care to reduce bias. It is then analysed and compared with the standard criteria. The change ideas are incorporated based upon the root cause analysis of the discrepancy between the observed and expected process. The same cycle is again repeated.¹⁴ The topic chosen for clinical audit was Caesarean section. The mode of delivery in every pregnancy is an important decision and should be evidence-based. Every Indian medical graduate (IMG) should be well versed with this topic. CA of caesarean sections will help the IMGs to understand which patient requires timely referral and urgent caesarean section, and where it could be avoided. Final year Bachelor of medicine & bachelor of surgery (MBBS) students are about to become practicing medical officers. Therefore, in this study we took the initiative to introduce clinical audit in Obstetrics as a teaching learning tool for the final year student with the aim of stimulating them to learn and analyse the clinical practices using it.

METHODS

This prospective study was done in maternity wards of department of obstetrics and gynaecology in a tertiary level government teaching hospital, after getting approval from the Institutional Ethics Committee. The duration of

the study was 4 months. Final year MBBS students who were posted in Obstetrics & Gynaecology Department during the study period were included in the study after obtaining their informed consent. Convenient sampling was used for the students. The students who did not complete either step out of pre-test, training and post-test were excluded.

The principal investigator sensitized all faculty of the department about CA by taking orientation sessions. Caesarean section (CS), was finalised as the topic after discussion amongst the faculty as detailed knowledge about CS is an integral part of Obstetrics training, and an IMG needs to understand the concepts behind the chosen mode of delivery.

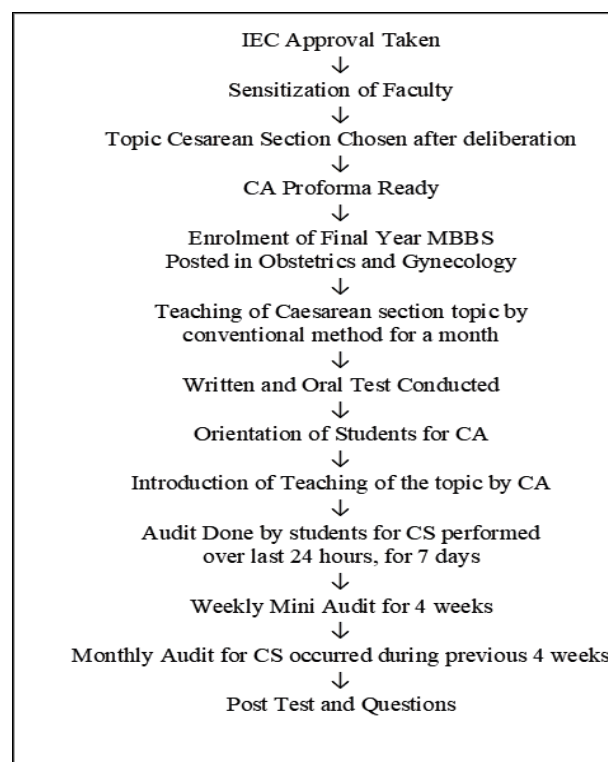


Figure 1: Flow chart of study.

Final MBBS students have two months clinical posting in Obstetrics and Gynaecology. In the first month of their posting, the students were asked to work up the caesarean section cases in their rotational duties. They presented these cases during clinics and were taught by the faculty using conventional teaching learning methods. At the end of one month, the students were given a written and an oral test (Pre-test) and marks were recorded. In the second month of the posting, faculty introduced the concept of audit to the students by taking interactive lectures for cumulative four hours. The students were explained about the steps of CA in a systematic manner and how to conduct it on caesarean section. By rotational posting, the students in the maternity ward did CA of the caesarean sections done in the preceding 24 hours. A printed audit sheet was given to them to interview each patient. It included

gestational age, parity, indication of CS, elective/emergency, partograph abnormalities, if any, timing of caesarean section, operative complications and also maternal and foetal outcomes. Students also recorded the observations and comments after doing the critical analysis of the indication and timing of the section.

At the end of each week, a mini-audit cum teaching session was conducted by faculty and the students presented a brief outline of all caesarean sections done in the previous week. The flow of the study is being shown in Figure 1. Out of these, six CSs were randomly chosen for critical appraisal and presented by the students on the basis of their CA done by them. The justification of indication, appropriateness of timing, and complications were discussed in an interactive session. It was an open interactive discussion where the faculty member acted as facilitator in the discussion and the active discussion was taken up by the students. The faculty resolved the doubts where some clinical points needed discussion during this session. In the event of any adverse outcome in the patients or discrepancy between the observed and expected process, corrective steps were discussed in more detail to enhance the learning process. The cumulative cases of four weeks were again kept for monthly final audit which was attended by all students of the batch. The cases were selected randomly and were presented in the similar way as mini-audit. At the end of the second month, participants underwent a post-test on similar lines of pre-test, which was conducted for the students. The acceptability of CA as a tool for teaching undergraduate students was assessed using a five-point Likert scale. Following two open-ended questions were also included in the questionnaire: What were the limitations of using the audit method and What can be done to make this method more effective? Thematic analysis using the inductive approach was used to analyse the qualitative data. The written transcripts of the students' answers were coded into different heading based upon the idea or the expression contained in the text. These codes were then classified into various themes on the basis of identification of similar patterns. The themes were then cross checked to see if all the data was included in the analysis. The results were compiled in Microsoft excel. Descriptive statistics were used to analyse the results. Paired t test was used to analyse the pre and post test scores. SPSS version 23 software was used for the statistical analysis.

RESULTS

Out of 57 MBBS students of the final Year MBBS enrolled for the study, 50 were analysed (7 were excluded as they did not take the post-test). Ten CA sessions of 161 CS were done (eight mini-audit and two final audit). The results of pre-test and post-test were compared and analyzed (Table 1). The difference between the pre-test and post-test marks was highly significant (20.5 ± 2.8 vs. 15.8 ± 2.7 , p value < 0.001). Almost all (98) of participants found the tool acceptable for clinical teaching.

The limitations of clinical audit as brought out by the students is depicted in Figure 2. The most common limitation found by 46 students was that CA was time consuming. A few students (6) did not find any limitation, and two students believed that it should be done earlier in fourth semester of MBBS course when students are less busy. The major themes which were generated in the qualitative analysis of the limitations stated by the students were 'Time consuming', 'Incomplete information', 'formal training required', 'Incorrect Timing of Introduction and Less guidance from residents.

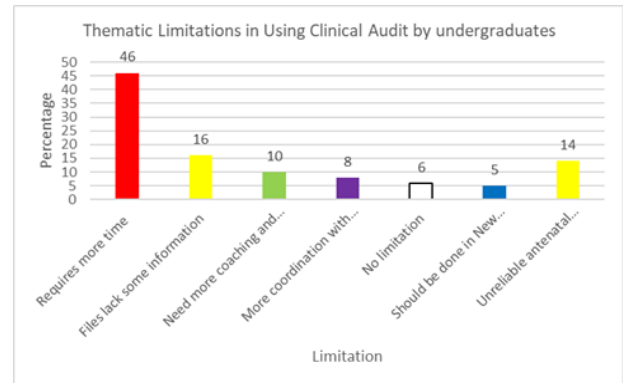


Figure 2: Thematic limitations in using clinical audit by undergraduates.

The suggestions by the students to improve the CA process and themes generated for improvements have been depicted in Figure 3. Almost one fourth of students (26) suggested that more discussion and training should be done before the audit tool is used for teaching purpose. Two students also requested for video training before students start the audit project. Some students felt that the audit should be explained by junior residents as they were closest to them in hierarchy. Some (4) have suggested that it should be made compulsory so that all students are mentally prepared for the audit project as they come to final year of MBBS. 'Need of focused training by teachers', 'student priming', 'More user-friendly recording', 'Need of hand holding', 'Demonstration of the technique,' and 'Improvement in documentation', themes were generated from the suggestions given by the students.

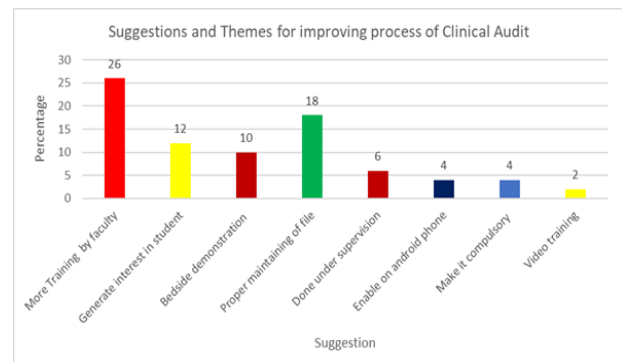


Figure 3: Thematic suggestions for improving process of clinical audit.

Table 1: Distribution of students according to marks obtained in pre-test and post-test.

Marks obtained	Number of students in pretest N (%)	Number of students in post-test N (%)	Significance Paired t test
Mean±SD	15.8±2.7	20.5±2.8	
Less than 10	0 (0)	(0)	
10-14	14 (28)	89 (31.45)	<0.001
15-19	33 (66)	45 (15.9)	
20-24	3 (6)	44 (15.55)	
25-29	0 (0)	(0)	

DISCUSSION

In the present study, we introduced CA to Final year MBBS students in their posting in Obstetrics after teaching them how to actively participate in all steps of a clinical audit. It was found it to be an effective tool for learning. Positive results of learning about QI with audit method have been reported in many studies.^{6,12,15} A study done on medical undergraduates in Liverpool university reported that audit methodology helped them to become better caregivers and they were motivated to learn better when they actively participated in a medical audit project work.⁸ Final year medical students in Notre Dame, Australia, opted for audits in clinical disciplines and reported that this technique improved their learning and had positive impact on the health care delivery.⁷ In a recent study done in 2020, using a clinical audit platform for students, based on a 5-point Likert scale, students were found to have more confidence in approaching their supervisors, and ability to perform CA on their own.¹¹ CA has been shown to stimulate the analytical behaviour of the undergraduate students, where in the students appraised critically and even suggested how to make improvements in the process.¹⁶

In the present study, almost all of the students found audit to be acceptable as a method for clinical teaching and felt actively involved in the audit process. Similar to our study, as many as 72 final year Australian medical students reported a high level of satisfaction with the resources provided and most students were successful in achieving the intended learning objectives.⁷ Our results were also in tandem with study done at Liverpool, which found that while doing the audit project, commitment of most students was very high.⁵ A recent study in Birmingham reported that, the students involved in CA were able to make their supervisors happy by their quality of work.¹¹

Various studies have reported barriers in the execution of CA as a teaching learning method. The common barrier in our study was that it was time consuming, needed more faculty involvement and that it should be done in earlier semesters when they are less busy. This was similar to findings from a study in Kuwait where students brought up issues like lack of practice resources, reluctance of clinicians towards auditing the provided care, lack of training and mentorship and difficulty in comparing the actual findings to the standard evidence-based criteria.⁶ Students cited difficulty in performing CA, lack of interest

from potential supervisors and high workload of the studies as a potential barrier in another study.^{16,17} A study has reported that short length of the CA could be both a limitation as well as strength. On one hand students in the study felt one week was a very short time to conduct and present the findings of CA even if the task was shared, but on the contrary, this time constraint allowed the students to stay focussed on the project.¹⁸

Our students felt that rigorous training of the methodology by faculty, introduction of CA in earlier semesters would help in better understanding of the CA process. Near-peer teaching involving the junior residents has been shown to be a feasible and sustainable method to teach QI skills at undergraduate level. The junior doctors are already involved in QI projects and students may find it more comfortable working with them.¹⁹ For CA to be incorporated in the regular teaching curriculum, institutions should make provision to enhance resources, mentorship, educational supervision and training in CA methods to the students so that they may accomplish successful completion of CA projects. Therefore, it may be suggested that introduction of CA in the undergraduate medical curriculum, will have long lasting benefits, as they get exposure to analysis, learning research work, doing QI projects, apart from learning the basic academic domain. Completing a structured clinical audit during final year of undergraduate medical education prepares the students for future QI activities in patient care.¹⁶ Involving medical students in research and audit can also help the health system tackle the challenges of today, and also help to build consultants for the future who have the right skills to critically appraise, lead and improve healthcare services.²⁰

CONCLUSION

Clinical Audit tool can be used as a teaching learning tool at the undergraduate MBBS level. Final year MBBS students achieve better results in a clinical topic if clinical audit is used as a teaching tool. They are able to critically appraise a healthcare topic in a systematic way. Nearly all the students found the use of this tool acceptable.

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