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Original article

A study on the effectiveness of teaching the principles and methods of clinical audit to medical postgraduates

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ABSTRACT

Background: Clinical audit is based on the concept of quality assurance in health care. It is important for all health care providers especially specialists and consultants to be aware of the principles governing clinical audit in addition to the methods in conducting such an audit.
Objectives:
- To assess the knowledge and attitude of medical postgraduate students on clinical audit.
- To evaluate the effectiveness of an interventional program conducted to educate the principles and methods of conducting clinical audit to medical postgraduates.

Methods: The study was done in 92 postgraduate medical students in our institute using a pre-test and post-test questionnaire, evaluating their knowledge on different perspectives of medical audit and also assessing the change in their attitude towards audit after an educative interventional program. The questionnaire consisted of 13 knowledge questions and 3 attitude questions. Each question was scored and the overall maximum score was 35.
Results: The mean post-test score (24.45 ± 3.21) was significantly higher than the mean pre-test score (16.18 ± 3.41) using paired *t*-test ($p < 0.001$) indicating that the educational intervention was effective in improving the understanding of the candidates on clinical audit.
Conclusion: It is imperative for all medical postgraduates to realize the importance of clinical audit in addition to acquiring the skill of conducting a meaningful and successful clinical audit. Attainment of such a competency can be achieved through planned repeated interventions and help usher in an era of best quality of patient care.

1. Introduction

It is important for all clinicians to realize the growing importance of the clinical audits. A clinical audit is considered as an integral part of the clinical practice. It is a quality improvement process that seeks to improve patient care and outcomes.[1,2] Evaluation of patient outcomes in the field of medicine have been conducted since as early as 1853.[3] The aim of the clinical audit process is to ensure adequate quality of care in the management of patients. With the current day and age of advanced medical care, it is crucial to review and constantly improve the standard of care provided. This requires sustained efforts in the unrelenting strive towards providing the best possible quality of care to patients.

The "Quality Initiative" considered forerunner of clinical audit, was launched by the Royal College of General Practitioners in 1983 to define specific objectives for patient care and monitor the extent to which those objectives were met.[4] Later, the National Institute for health and Clinical Excellence (NICE) published the paper "Principles for Best Practice in Clinical Audit", which defined 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".[2]

Hence it is necessary to understand and be familiar with the underlying principles and methods in conducting a clinical audit. This is especially important from the perspective of the medical

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post-graduate who is not only the future specialist and consultant but an important stakeholder in ascertaining whether quality care is offered to all patients in a particular health care unit. It is therefore essential for all medical postgraduates in various disciplines to have first-hand knowledge of clinical audit. It is also being increasingly recognized by the academic sectors that postgraduates should be trained to conduct clinical audit conceptualizing it as an essential component of evidence based medicine.[5,6]

Accordingly, our study was designed to assess the knowledge of postgraduate students on the principles and methods of clinical audit in our tertiary care teaching hospital and also to evaluate the effectiveness of an interventional training program in medical audit which was conducted specifically with the objective of sensitizing and imparting knowledge on how to conduct a clinical audit.

2. Materials and methods

The study protocol was approved by the institutional human ethics committee before the start of the study (Approval Number: 13/289). The study was done prospectively in a tertiary care teaching medical college hospital using a pre-test and post-test questionnaire that was validated by a team of three experts from the hospital clinical audit committee and institutional quality control committee. After obtaining a written informed consent, the questionnaire was administered to the postgraduate students at the beginning and at the end of an educational program on how to conduct clinical audit by audit experts. The questions framed evaluated the knowledge and attitude of medical postgraduates about clinical audit before and after the program. The data was collected from the participants of two consecutive programs conducted in two successive years. Each participant attended only one of the two consecutive sessions. The questionnaire consisted of 16 questions out of which 13 were knowledge and three were attitude questions.

2.1. Statistical analysis

The questions were scored and statistical difference in the mean pre-test and post-test score was analyzed using paired *t*-test. The results of the survey was also analyzed qualitatively and expressed as frequency distribution of percentages.

3. Results

A total of 92 postgraduates participated in the study. The study which was done at a single centre in two consecutive years involving two different batches of 2nd year postgraduates from various specialties, 39 students participated in the first year and the remaining 43 in the next successive session in the following year.

The first question on the need for an audit evoked diverse array of responses both in pre and post-test. The four options which were included were (1) audit has to be an integral part of clinical practice, (2) done to evaluate adverse patient outcomes, (3) as academic program in medical education and (4) administrative evaluation of patient care. Though all the four choices may be apparently appropriate, doing an audit as a mere administrative evaluation is unjustified as the objective of any clinical audit is betterment of patient care, based on which, the first three options are considered the correct responses. At the end of the session, it was observed that about 60% had clearly excluded administrative evaluation though only 20% of them had acquired complete knowledge on the need for clinical audits in contrast to only 8% who were aware of this before the program as made obvious by pre-test analysis. It was apparent that the term 'audit' had been deeply entrenched with the belief of being a tool for administrative evaluation, as made evident from a statistical comparison of pre-test and post-test scores ($p = 0.904$) (Table 1).

Answering the question on types of clinical audit which can be standard based, adverse occurrence screening or critical incident monitoring and peer reviewed, only 50% in the pre-test agreed that all three were indeed the audit types while the post-test revealed that 82.6% accepted "all the above" as the appropriate response.

In assessing the understanding of the students on the types of evaluation, design of the audit and the stages in the audit cycle, it could be demonstrated that there was definitive acquisition of knowledge on these aspects of audit based upon the increase in percentage of the responders opting for the correct answer in the post-test when compared to the pre-test (Figs. 1 and 2).

On the ethics approval perspective, a shift in the responses favoring the need for ethics committee approval before publication of the results (54.3%) rather that at the beginning of the audit (9.8%) was evident in the post-test, contrary to the impression of most students in the pre-test that ethics committee's approval had to be obtained before the start of an audit (59.8%). A considerable increase in the proportion of participants who indicated that there

Table 1
Comparison of pre-test and post-test scores on knowledge questions in clinical audit.

Knowledge/Attitude on clinical audit	Pre-test score Mean ± SD	Post-test score Mean ± SD	Mean difference of the paired sample ± SD	P value
Need for audit	0.47 ± 0.68	0.49 ± 0.68	−0.02 ± 0.85	0.904
Types of audit	2.78 ± 1.48	3.51 ± 1.11	−0.72 ± 1.85	<0.001
Types of evaluation	0.67 ± 0.95	1.37 ± 0.93	−0.69 ± 1.12	<0.001
Design	1.52 ± 0.85	1.96 ± 0.29	−0.43 ± 0.82	<0.001
Steps in audit cycle	0.44 ± 0.83	1.82 ± 0.56	−1.38 ± 1.01	<0.001
Ethical approval process	0.53 ± 0.79	1.42 ± 0.69	−0.89 ± 1.02	<0.001
Who can conduct audit	3.64 ± 0.97	3.87 ± 0.61	−0.22 ± 1.01	0.034
Who can make recommendations	1.28 ± 1.05	1.63 ± 1.06	−0.34 ± 1.50	0.029
Tool for prioritizing topic	0.61 ± 0.92	1.24 ± 0.97	−0.63 ± 1.14	<0.001
Defining aims	0.93 ± 1.00	1.52 ± 0.85	−0.58 ± 1.09	<0.001
Criteria selection	0.54 ± 0.89	1.35 ± 0.94	−0.80 ± 1.15	<0.001
Standard definition	0.76 ± 0.97	1.50 ± 0.87	−0.73 ± 1.35	<0.001
Commonest method involving service users	0.58 ± 0.49	0.78 ± 0.41	−0.20 ± 0.56	0.01
Audit is not research	0.51 ± 0.50	0.91 ± 0.28	−0.40 ± 0.51	<0.001
Professional responsibility	0.71 ± 0.45	0.82 ± 0.38	−0.11 ± 0.50	0.041
Achievement of same performance level as in research indicates lag in quality	0.20 ± 0.39	0.26 ± 0.44	−0.06 ± 0.48	0.203
Overall score	16.18 ± 3.41	24.45 ± 3.21	−8.28 ± 4.02	<0.001

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