ORIGINAL ARTICLE

Audits in General Practice by Medical Students

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Summary

This paper reports the implementation, findings and feedback of the audit project of the general practice (GP) module carried out in the fifth year of the MBChB (Sheffield) twinning programme with the Perak College of Medicine. After training, each student with his/her GP tutor planned and conducted the audit. All 28 students (year 2002) satisfactorily completed their audit projects. Fifty percent did an audit of hypertension, 36% on diabetes, 7% on asthma and one each (3.5%) on upper respiratory tract infection and client satisfaction. It was the GP tutors first experience at audit in their clinics. The majority of indicators of care audited did not meet the set target standards.

Key Words: Medical audit, General practice, Medical students, Undergraduate medical curriculum

Introduction

An audit can be defined as a systematic critical analysis of the quality of medical care, including procedures used in the diagnosis and treatment, the use of resources and the outcome and quality of life for the patients[1]. Audit is important as professionals have a duty to monitor their performance to ensure an efficient and effective delivery of care. Regular and systematic audit improves quality of patient care, increases accountability, improves motivation and teamwork, and aids in assessment of needs[2].

In the reversed twinning programme between the Perak College of Medicine (PCM) and the University of Sheffield, medical students in their fifth year undergo the General Practice and Community Health Care (GPCHC) module which required them to do an audit project in general practice[3].

Prior to the start of the GPCHC module, a survey of the PCM GP tutors found that only one had previous training in audit. Not one of them had ever done any audit in his or her practice.

This paper reports on how the audit component of the general practice module was implemented, as well as the findings and feedback from both students and GP tutors.

Materials and Methods

In preparation for the audit project component, a one day workshop was organized for the GP tutors in October 2001 by the Department of Primary Care and Public Health, PCM. Topics covered included – definition of audit, the audit cycle, topic selection, models of good care, indicators of care, criteria and standards, hands-on session in designing an audit study, data analysis and implementation of remedial measures with completion of the audit cycle.

The students on the first day of their GPCHC module were taught how to do an audit following topics covered in the audit workshop for GP tutors. The students were each assigned to a GP tutor. They had to plan the audit project together with their GP tutor and to complete it within the five weeks GPCHC module.

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The students had the option of doing the audit in a public primary care clinic where the doctor in charge of the clinic would be their supervisor. After discussing with their GP tutors and selecting a topic, the students did their own literature search on the relevant topics such as audit, management guidelines and consensus reports to help in the selection of indicators of care and development of criteria and standards. Some of these references identified by the students are listed[4-20].

Besides the GP tutors, the GPCHC module coordinator and two audit advisers who were PCM academic staff were available to help the students. Before the students started data collection, they had to show their selected topic and list of chosen criteria and standards to the module coordinator to ensure it had been done correctly.

After data collection and analysis, the audit was written up and submitted. Each audit project report was assessed independently by an examiner using a set criteria (see Appendix 1)[3]. Distinction was given if the students had critically appraised the relevant sources or critically evaluated the report's findings.

A copy of the audit report was sent to the GP tutor involved. Feedback from students and tutors were noted. The findings from the audits done were compiled and analyzed.

Results

Fifty percent (14) of the students chose to do audit on hypertensive care, 36% (10) on diabetic care, 7% (2) on asthmatic management, and one each (3.5%) on upper respiratory tract infection management and client satisfaction.

All except two students did their audit projects in general practice. The remaining two students did audits on diabetic care in two public primary care clinics.

The indicators of care chosen by students in the audit of hypertension, diabetes and asthma are listed in Tables I, II and III. For the audit on management of upper respiratory infection of children below five years old, chosen indicators of care included recording of temperature, otoscopic examination of ears, lung auscultation and antibiotic treatment (only given if tachypnoea, otitis media, signs of streptoccocal infection or bacterial sinusitis are present) [21-24]. In client satisfaction, the student looked into breastfeeding and play areas for children, availability of refreshments, adequacy of reading materials in waiting area, patient satisfaction with toilet facilities, waiting areas, consultation by their doctor, fee charges and explanation by dispensing staff about medications prescribed[25-27].

The number of criteria used in each audit project ranged from 3 to 11 (average 6). The actual criteria and standards used by each student even for the same indicator of care chosen varied as it was left to student and tutor to decide. For example some students for the outcome indicator in audit of hypertension chose blood pressure (BP) ≤ 140/90mmHg in last three recordings. Others decided it must be at that level in all recordings in the past six months. Yet others wanted 70% of all BP recorded in past one year to achieve the above BP reading. Some selected systolic BP ≤ 130 mmHg, diastolic BP ≤ 80 mmHg (for diabetics) and ≤ 85 mmHg (for non diabetics) in the past three visits (see Table IV). The target standard selected for the above criteria varied for each clinic (between 60% to 90%). The reason for allowing both student and tutor to decide on the criteria and target standard was because the audit projects were to be learning experiences for them. They had the opportunity to appreciate that the outcomes are set by the researchers involved depending on what they wanted for their particular clinic.

Findings in the audit of hypertension, diabetes and asthma are listed in Tables I, II and III. In the audit of hypertension, three clinics (38%) had a register of hypertensive patients. The only process indicator in which more than 50% of clinics met the target standard was the recording of blood pressure (see Table I). Only one clinic met the target standard for blood pressure control. For audit on diabetic care, six clinics (86%) had a diabetic register. More than 50% of the clinics met target standards in recording blood pressure, blood sugar results and height (see Table II). None achieved target standards in blood sugar control. Table III shows the results on audit on asthma management in two private GP clinics.

All 28 students completed the audit project satisfactorily with nine students obtaining distinction marks.

Feedback from the students showed that they were able to follow the steps and do the audit successfully. They encountered no problems with most GP clinics.

The GP tutors and clinic staff were helpful. The medical records were detailed enough for audit. They understood the difference between audit and research after completing the audit project. Problems encountered were insufficient numbers of clinic patients suffering from conditions in the area they initially wanted to audit such as heart failure management. In a couple of clinics, records were too scanty to audit.

The GP tutors said it was their first experience at having an audit done in their clinics. They felt that the present medical students were more fortunate than them as they were never trained in audit in their medical schools. Some were worried they could not cope or guide the students as they were new at audit. Some were still confused in criteria / standards selection and sampling methods. In spite of these misgivings and the awareness that weaknesses might be revealed, all the GP tutors had good and positive attitudes and allowed the students to audit their practices.

Table I: Audit of hypertension in 14 private general practice clinics

Indicators of care	Number of clinics audited for indicator mentioned	Number of clinics audited that achieved target standards	Percentage of clinics audited that achieved target standards (%)
Structure indicators			
Hypertension registry	8	3	38
Functional ECG machine	1	1	100
Written management protocol	1	0	0
Process indicators			
Recording of blood pressure	13	7	54
Recording of weight	8	3	38
Recording of smoking status	7	0	0
Monitoring of urine albumin / serum creatinine	5	2	40
Monitoring of lipid profile	4	0	0
Recording of blood sugar results	4	2	50
Recording of height	4	0	0
Fundoscopy	3	0	0
ECG monitoring	2	0	0
Interval between follow-ups	2	1	50
Recording of history of diabetes mellitus	1	0	0
Health education given	1	0	0
Outcome indicators			
Blood Pressure control (systolic)	3	0	0
Blood Pressure control (diastolic)	6	1	17
Blood Pressure control (both systolic/ diastolic)	6	0	0

Table II: Audit of diabetes in 10 clinics (8 private general practice and 2 public primary care clinics)

Indicator of care	Number of clinics audited for indicator mentioned	Number of clinics audited that achieved target standards	Percentage of clinics audited that achieved target standards (%)
Structure indicators			
Diabetic registry	7	6	86
Functional opthalmoscope	1	1	100
Recall system for defaulters	1	0	0
Written management protocol	1	1	100
Process indicators			
Feet examination	8	2	25
Recording of Blood Pressure	7	6	86
Recording of blood sugar results	6	4	67
Recording of weight	6	2	33
Monitoring of urine albumin / serum creatinine	6	1	17
Fundoscopy	6	2	33
Recording of height	3	2	67
Monitoring of HbA1c	3	0	0
Monitoring of lipid profile	2	1	50
Referral to eye clinic for complications	1	1	0
Outcome indicators			
Blood sugar control	9	0	0
Blood Pressure control (systolic)	1	0	0

Table III: Audit of asthma management in 2 private general practice clinics

Indicators of care	Number of clinics audited for indicator mentioned	Number of clinics audited that achieved target standards	Percentage of clinics audited that achieved target standards (%)
Structure indicators			
Asthma registry	2	0	0
Process indicators			
Recording of smoking status (active /passive)	2	0	0
Diagnosis confirmed by clinical symptoms/peak expiratory flow rate	1	1	100
Monitoring of peak expiratory flow rate/ symptom chart	1	0	0
Lung auscultation	1	0	0
Health education given	1	0	0
Outcome indicator			
Free from attacks requiring visits to emergency department / admission	2	1	50
Free from oral steroids requirement	1	0	0

Table IV: Outcome criteria and target standards selected by each clinic in the audit of hypertension, diabetes and asthma management

Clinic	Outcome criteria	Target Standard
	Hypertensive care	
1	SBP ≤ 140 in the past 6 months	70%
2	DBP < 90 in the last 3 recordings	60%
3	DBP < 90 in every follow-up visit in the past 1 year	60%
4	DBP ≤ 90 in the last 3 visits	60%
5	SBP ≤ 140 & DBP ≤ 90 at least 2 readings in the past 1 year	70%
6	Last 3 recorded BP ≤ 140/90 in elderly (age ≥ 65) or ≤ 130/85 (age < 65, diabetics or with renal insufficiency)	60%
7	All BP ≤ 140/90 in past 6 months	60%
8	SBP < 140	60%
	DBP < 85 (non diabetics), <80 (diabetics) in last 3 visits	60%
9	Average of last 3 DBP ≤ 90	80%
10	BP <140/90 (<135/85 in diabetics) in last 3 visits	70%
11	DBP ≤ 90 in 70% follow-up visits in past 1 year	70%
12	SBP ≤ 140 and DBP ≤ 90 in past 6 months	70%
13	DBP ≤ 90 in past 1 year	70%
14	BP ≤ 140/90 in last 3 follow up visits	80%
	Diabetic care	
1	RBS ≤ 10 or FBS ≤ 7 in at least 80% of the visits in past 6 months	80%
2	70% of RBS < 10 or FBS <7 in past 6 months	70%
3	RBS < 7.8 or FBS < 6.7 in last 3 visits	70%
	HbA1c < 7.5% in past 12 months	60%
	BP < 130/85 in last 3 visits	60%
4	RBS < 11 or FBS < 7 in every visit past 3 months	60%
5	70% RBS < 10 or FBS < 7 in past 1 year	70%
6	RBS < 10 or FBS < 7 on every visit in past 6 months	70%
7	RBS < 10 in last 3 follow up visits	60%
	SBP < 135 in the last 3 follow up visits	60%
8	FBS ≤ 6.7 in every visit in past 6 months	60%
9	RBS < 10 or FBS < 7 in at least 75% results in past 1 year	60%
10	RBS < 10 in last 3 visits	80%
	HbA1c ≤ 7%	80%
	Asthma care	
1	Free from severe attacks requiring A&E visit / admission in past 6 months	60%
2	Free from severe attacks requiring nebulization at A&E, GP clinic or hospitalization in the past 6 months	80%
	Not on oral steroids for past 6 months	80%

Note: SBP ≤ 140 = systolic blood pressure less than or equal to 140 mmHg, DBP < 90 = diastolic blood pressure less than 90 mmHg; RBS ≤ 10 or FBS ≤ 7 = random blood sugar less than or equal to 10 mmol/l or fasting blood sugar less than or equal to 7 mmol/l.

Discussion and Conclusion

Although the GPs realize the importance of assessing and maintaining quality of care in their practice, many have difficulty actually doing audits in their clinics. This study found that even among senior GPs who had been teaching medical students, the majority had no training in audits and had never done audits in their practice. One GP tutor said that he would like to audit his practice but lacked the knowledge, prior to the audit workshop in October 2001.

There appears to be a lack of training opportunities for GPs in medical audit in Malaysia. Most educational talks and activities organized by medical associations and pharmaceutical companies deal with clinical conditions and management, particularly the pharmacological aspects. In recent years the Academy of Family Physicians in Malaysia have included audit and research as part of the vocational training. However vocational training in Malaysia is not compulsory as yet, hence few GPs are involved in formal training.

In the United Kingdom, the Royal Colleges and Faculties require evidence of audit for accrediting posts for specialist training and Medical Audit Advisory Groups exist to assist the process[1]. Audits are thus routinely done in general practice. It has also become part of their undergraduate medical training [28-29].

Publications in audits done in general practice are few in number. Another problem is a busy GP finds little time for audits. In this study because the audit project is compulsory, GP tutors involved had to assist the students in an audit. In the process they themselves benefited. One outcome of the GP tutors audit workshop was that a group of participants undertook an audit of diabetes in their respective clinics. The findings were presented in the WONCA Asia Pacific Regional Conference of Family Medicine in Kuala Lumpur in March 2002[28]. Recently the same group did a second audit after completion of the audit cycle which showed a significant improvement in the achieved standards and quality of care[29].

The findings in the audits done in general practice by the medical students showed a less than optimal care in the management of hypertension, diabetes mellitus and asthma. As the primary objective of the audit project was for students to learn the process of audit and not to assess and compare the performance of GPs, the audit reports were sent to the respective GP tutors for their information and further action. It was hoped that the findings and recommendations made by the students would spur the GP tutors to pursue the matter and attempt to improve the quality of care of their patients.

In conclusion, implementation of the audit project in the GPCHC module benefited both the medical students and GP tutors. Audit projects should become a compulsory component in both the undergraduate medical curriculum as well as postgraduate vocational training for GPs.

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APPENDIX I

Criteria in audit project assessment

In the clinical audit project, this student has:

Identified a topic for investigation that is both appropriate and useful to the attachment practice	❑
Defined clear criteria with reference to available literature	❑
Set standards following discussion with relevant members of the practice team	❑
Compared process and outcomes of current practice with standards	❑
Drawn conclusions and made recommendations for future development within the practice	❑
Presented a clear, concise report	❑

Distinction Category

In addition to the above, the student has:

Critically appraised the relevant sources quoted	❑
Critically evaluated the implications of the report's findings for the practice	❑