

EVALUATION OF THE EDUCATIONAL ENVIRONMENT OF POSTGRADUATE SURGICAL TEACHING

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Background: Medical Education is becoming increasingly community-oriented, student-centred, self-learning and self & peer-assessing process especially in the undergraduate years. This is happening because of increasing patient awareness of their rights in our new healthcare world of increased consultant responsibility; and implementation in the UK health institutions of the 'European Working Time Directive' and 'Modernization of Medical Careers'. The study was conducted to determine the change if any in the education environment of postgraduate surgical teaching in a leading teaching hospital in London when a teacher-centred, old-fashioned postgraduate teaching approach was replaced with a student-centred, self-assessment, portfolio-based approach. **Method:** Postgraduate Hospital Educational Environment Measure (PHEEM). Twenty postgraduate trainees filled in the questionnaire before and after the change in their learning/ teaching pattern. **Results:** The response rate was 100%. No statistically significant difference in the overall score for the two teaching environments ($p=0.8024$, 95% CI= -5.549273 to 4.349273) was found, because the loss of on-call rooms, trainee's mess and catering services statistically significantly deteriorated the social support subscale of the PHEEM scale ($p<0.0001$, 95% CI=6.66752 to 13.03248) to counteract any statistically significant improvement in the teaching role perception subscale of the instrument ($p=0.001$, 95% CI= -12.443896 to -4.856104). There was no statistically significant difference in the role autonomy perception subscale in the two methods ($p=0.3663$, 95% CI= -5.870437 to 2.270437). **Conclusions:** A student-centred approach to postgraduate teaching is better than a teacher-centred approach. However, further studies will be needed to evaluate both postgraduate teaching and training environment.

Keywords: Educational Environment, Postgraduate Surgical Trainees, Medical Education, and Postgraduate Hospital Education Environment Measure.

INTRODUCTION

Hospital environment in the UK is rapidly changing these days for everyone concerned.¹ These changes are brought about by the changing perceptions of the health care system and perceptions of the people responsible for the delivery of this system. As a result of these changes all personnel concerned with health care delivery are more frequently being treated as service providers. It is not the purpose of this article to list and discuss the changes to the health care system or their repercussions on the delivery of an effective educational environment to the postgraduate trainees but in fact to evaluate procedures of improvement to this environment in the wake of implementation of the 'European Working Time Directive'¹ and 'Modernisation of Medical Careers' initiative.^{1,2}

One aspect of teaching of the postgraduate surgical trainees (junior surgical doctors) was evaluated before and after implementation of certain changes in the learning environment. For over a year it was noticed by the surgical faculty that the attendance of postgraduate surgical trainees to the Friday morning one-hour teaching session was very poor. The programme was then abandoned by the faculty and blame of failure firmly laid to rest on the trainees.

The one-hour Friday morning teaching session involved a lecture (with or without the use of multimedia techniques) in a small room cramped for space. There was a six-monthly timetable available that showed the surgical firm responsible for lecturing every Friday morning, however the contents and topic of the lecture were not known till the time of start of actual teaching. Interesting and complicated cases or surgical topics were discussed in a very didactic old-fashioned way. Audience involvement was never sought and attendance was never compulsory. The senior faculty members very rarely attended the sessions and always complained of the poor technique but nothing was suggested to improve the quality of teaching.

Following the failure of this teaching programme, the postgraduate trainees themselves, fuelled by 'Evidence Based Medical Education' (EBME), took a new initiative. This new programme involved three one-hour teaching/clinical training sessions every week in the form of small-group teaching, utilising concepts of self-learning and self and peer assessment. A quarterly schedule showing exactly what topics were to be covered in each session was formulated and made readily available and support structure clearly defined. More importantly the trainees were encouraged to use portfolios to enhance their self-learning experience. It

was hoped that these portfolios would be used at the end of their surgical rotation as a measurement tool of their progress and learning.³

MATERIAL AND METHODS

The learning environment was measured using the Postgraduate Hospital Educational Environment Measure⁴ before the Friday morning one-hour teaching programme was abandoned and then after starting a newer more student-centred, self-learning, self and peer-assessing teaching programme spread over three one-hour small-group teaching sessions (tutorials and clinical) over each week. In this measurement instrument validated by the Department of Education, University of Dundee⁴, there are forty questions. The trainees can Agree, Disagree, Strongly Agree or Disagree or be uncertain about an item question. The items are scored: 4 for Strongly Agree, 3 for Agree, 2 for Uncertain, 1 for Disagree and 0 for Strongly Disagree. Four Items are negative and therefore in them the marking is reversed. The score range therefore is 0–160. The following is a rough guide to interpreting the overall score.

- 0–40 Very Poor
- 41–80 Plenty of Problems
- 81–120 Room for Improvement
- 121–160 Excellent

However, the instrument (PHEEM) is further divided into three subscales:

Perception of role autonomy (14 items, max. score 56)

- 0–14 Very Poor
- 15–28 A Negative view of one’s role
- 29–42 A more positive view of ones role
- 43–56 Excellent perception of ones job

Perception of Teaching (15 items, max. score 60)

- 0–14 Very Poor Quality
- 16–30 In need of some Retraining
- 31–45 Moving in the right Direction
- 46–60 Model Teachers

Perception of Social Support (11 items, max. score 44)

- 0–11 Non-Existent
- 12–22 Not a pleasant Place
- 23–33 More pros and cons
- 34–44 A good supportive environment

The scores for the total as well as the subscales were analysed using SATSDIRECT software for MS Excel Parametric paired Student’s *t*-test was applied.

RESULTS

Twenty trainees returned the scale filled in before and after the change in educational programme for postgraduate surgical trainees. The response rate was 100%. Results are shown in Table-1 and Figures 1 to 4.

Table-1: Results

Paired <i>t</i> -test	Perception of Role Autonomy	Perception of Teaching	Perception of Social Support	Total
Mean of differences (n = 20)	-1.8	-8.63	9.85	-0.6
Standard deviation	8.697247	8.106365	6.799961	10.575045
Standard error	1.944764	1.812638	1.520518	2.364652
95% Confidence interval	-5.870437–2.270437	-12.443896– -4.856104	6.66752–13.03248	-5.549273–4.349273
df	19	19	19	19
T	-0.925562	-4.772049	6.478057	-0.253737
One sided P	0.1831	<0.0001	<0.0001	0.4012
Two sided P	0.3663	0.0001	<0.0001	0.8024
Power	13.23%	99.26%	99.98%	5.57%

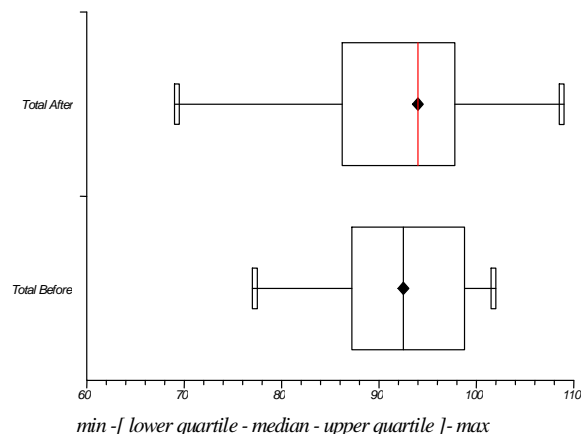


Figure-1: Total PHEEM result before and after change, the range and the median.

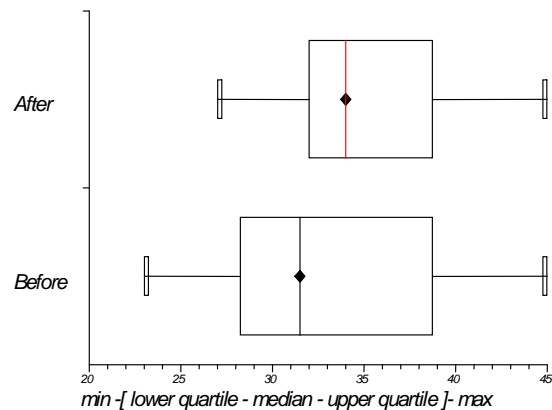


Figure-2: Range and median of the Perception of role autonomy before and after change

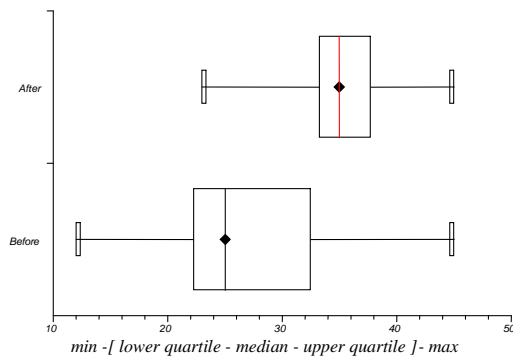


Figure-3: Median & Range for Perception of Teaching subscale of PHEEM before & after change

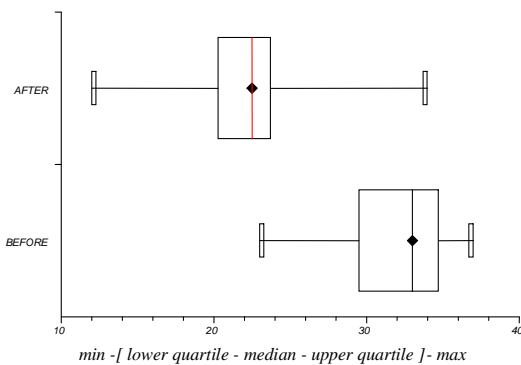


Figure-4: Median and Range for the Social Perception subscale of PHEEM before & after change

DISCUSSION

Over hundreds of years the structure of medical education and the methods of its delivery remained largely unchanged even though vast technological advances in the field of medicine & information took place. However, the same cannot be said of the last thirty odd years in which major research and development has taken place in the field of medical education.⁵ This followed a change in the attitude towards general education over the last sixty year.^{5,6} As a more community oriented, student-centred, self-learning and peer and self-assessing theme towards undergraduate teaching slowly creper into medical undergraduate training, it was not the case in postgraduate medical teaching and training especially in the specialty of surgery and interventional medicine.⁷ These changes therefore took these specialties by surprise when these newer breed of students hit the hospital wards as postgraduate trainees. They had a whole new understanding of the education system and were very self-reliant. It soon became painfully clear that it would be difficult to revert them back to the more didactic methods of education, in which students are expected to have a

passive role and the entire teaching is teacher-oriented. The problem was confounded by the European Working Time Directive, which reduced the working and therefore the teacher-led training and teaching hours of the doctors.^{1,2} The problem was also exaggerated by the new developments in the structure of the healthcare system putting greater responsibility of patient care directly on consultants and therefore making it more difficult for them to find time to dedicate to trainee teaching.^{7,8}

This was perhaps reflected in the failure of the teaching programme set up for the postgraduate surgical trainees. It should have not come as a surprise because the programme reflected a teacher-oriented didactic lecture approach to teaching to which the trainees were completely unaccustomed.⁹ When the programme was shut down, following a brainstorming session with the trainees a new more student-oriented, self-reliant, self-assessed, portfolio-managed programme was set up.

The aim of this study was to determine if there was any difference in the learning environment perceived by the trainees between the two programmes. To that end an instrument of evaluating this environment developed and validated by the Department of Education; University of Dundee, PHEEM was used. The hypothesis that the trainees found an improvement in the educational environment was tested using parametric paired *t*-test. It was found that there was no statistically significant difference in the overall PHEEM scale result (two-sided $p=0.8024$). However when the subscales were assessed separately it was found that while there was no statistically significant difference in the role autonomy subscale (two-sided $p=0.3663$) there was observed a statistically significant improvement in the learning environment (two-sided $p=0.0001$) which was nearly balanced by a statistically significant deterioration in the social support (Two-sided $p<0.0001$).

It was found on further scrutiny of the PHEEM scale and subscales that the improvement in teaching was perceived in the teachers' communication, feedback, preparation, access, encouragement and interpersonal skills. However, at about the same time that this study was being conducted, the on-call rooms were taken away from the junior doctors and the junior doctor's mess dismantled. With no privacy during and out-of-working hours, no social support and no catering services in the hospital it came as no surprise that the social support subscale of PHEEM was negatively affected undermining the improvement in the teaching process and any overall improvement it would have resulted in. Stressful and inhospitable hospital environment has an adverse effect on a trainees' performance.¹⁰

CONCLUSION

In conclusion, excellent evaluation tools to evaluate educational environment, educational orientation, methods of learning and assessment are available and more being constructed and improved upon. In this time and age when the whole health care system is rapidly changing, it is important that medical undergraduate and postgraduate training and education keep up with these changes and keep abreast the changes in their own individual sectors. If that is not maintained we may have a whole generation of doctors who are poorly trained in context with the healthcare system change.

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