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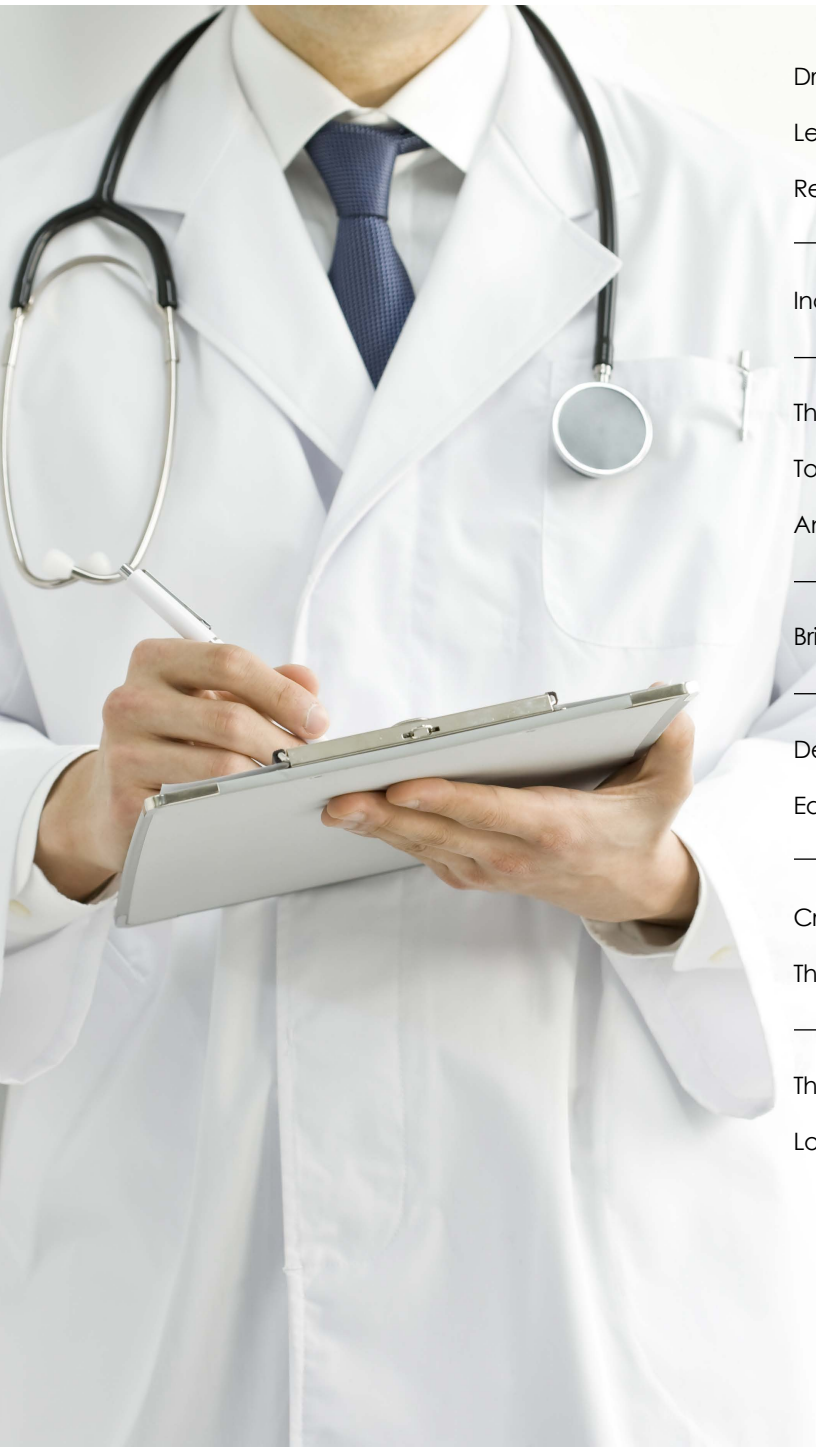

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Development and Validation of the Obstetrics and Gynaecology Educational Environment Measure (OGEEM)

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Abstract:
Background: An environment which fosters high quality social interaction, organisational culture, and values of diversity and inclusion enhances the quality of education. Due to the acuity of obstetrics and gynaecology (O&G), an adverse environmental climate may creep in. Several inventories in medicine exist, however there is no validated inventory to measure the educational environment in obstetrics and gynaecology. The aim of developing OGEEM was to tailor the inventory to O&G and include aspects of the educational climate such as physical wellbeing, resilience, bullying and undermining.
Methods: A detailed literature search was conducted and a methodology was developed which included four phases. A modified Delphi was used in phase 1 and a grounded theory approach in phase 2 with trainee interviews. Phase 3 and phase 4 included an online survey. The final questionnaire had 37 questions with a Likert scale response. The results were analysed on Excel and Cronbach's alpha was calculated.
Results: The results suggested that the final inventory was reliable in measuring educational environment. The Cronbach's alpha for the entire questionnaire was 0.96.
Conclusions: The study suggests that OGEEM has a good validity and reliability in measuring educational environment specific to O&G training.

Key Words:
Educational Environment, Obstetrics and Gynaecology, Inventory, Educational Climate

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Introduction

Kilty *et al.* (2007) identified in their national stakeholder consensus document that there are several challenges within a clinical learning environment, particularly more recently such as overcrowded clinical environments, understaffing and service pressures on clinical workload which can act as a barrier to learning outcomes.[1] The Bawa Garba case in the United Kingdom is a standing example of failure of organisational cultures and lack of senior presence in supporting juniors during patient care.[2] Dr Hadiza Bawa-Garba, a trainee paediatrician in the National Health Service (NHS) was convicted for homicide following the death of a child from sepsis and was given a two-year suspension of practice in 2015. The case unmasked several organisational failures including lack of supervision, support and excessive workload for junior and middle grade doctors.

Gafson (2017) identified six key themes which describe the trainee's feelings towards the environment in O&G: morale and undermining; training processes and paperwork; supporting supervision; work life balance and the realities of life; the NHS environment; and job satisfaction.[3] The reported attrition rate for O&G is 30%.[4] Surgical training in obstetrics and, particularly, gynaecology is dwindling with less operating time, as the majority of gynaecology surgical care is moving into ambulatory care.[5] Within these restraints, it is paramount that the learning environment is kept at a high standard so that the trainees can avail the opportunity to gain surgical and non-surgical skills in theatre and acute settings.

GMC surveys suggest that the highest reports of bullying and harassment amongst all specialties are experienced on labour ward, mainly by consultants and midwives (GMC survey 2014).[6] Undermining behaviours are detrimental to both patient safety and outcome, and to staff morale. In addition to the small numbers experiencing it themselves, many more will have witnessed such behaviours in others, leaving a long-lasting negative impression.

An environment where trainees can voice their concerns, identify areas of weaknesses and formulate learning objectives, creates the foundation for better learning outcomes and

satisfaction.[7] The authors stress in their thematic analysis of descriptive studies how a positive and meaningful learning environment develops a strong educational culture. A poor social environment, on the contrary is characterised by negative attitudes, humiliation, negativity and criticism, inefficient supervision and fewer opportunities to examine patients independently; this overall leads to poor learning outcomes.

There is a growing focus on the effect of wellbeing, resilience and retention of staff within the speciality. There are several new resources that have been added to the RCOG website on improving resilience and the impact of stress in everyday life including intervention programmes designed to reduce stress, improve personal resilience and develop self-awareness (Improving workplace behaviours RCOG, 2020).[4] In one study, Ryder (2020) did a cross sectional survey of O&G trainees in Australia and New Zealand.[8] Over half of the participants identified burnout (55%), personal stress (58%), workplace stress (62%) and depression (45%). These figures are alarming in the numbers and highlight the need for an enhanced support and working environment to allow trainees to remain resilient and develop in their careers.
Although the annual GMC survey questionnaire purports to assess the educational climate, it focuses specifically on workload, bullying and harassment and identifying training problems, (GMC training survey 2019).[9]

Materials
The study followed a structured approach across multiple phases to ensure the questionnaire is relevant and effective. Seven studies were identified that had items that could be adapted to O&G.

DREEM: Developed by Roff and McAleer (2001),[10] the Dundee Ready Educational Environment Measure (DREEM) is a validated tool for measuring the educational environment among medical undergraduates. O&G is a vast specialty with a very different environment in obstetrics compared with gynaecology. The learning environment in obstetrics and gynaecology includes training in clinics, delivery suite, early pregnancy clinics, emergency gynaecology, operating theatres in obstetrics and in elective gynaecology theatres. Using DREEM as a starting point was extremely useful for the design of the OGEEM.

ATEEM: Created by Holt & Roff (2004),[11] the Anaesthetic Trainee Theatre Educational Measure (ATEEM) addresses the educational environment in the operating theatre for anaesthetic trainees. Some aspects of this measure apply to trainees in obstetrics and gynaecology.

STEEM: Designed by Cassar (2004),[12] the Surgical Theatre Educational Environment Measure (STEEM) focuses on the surgical training environment, particularly in operating theatres. It includes pre-operative patient interactions, theatre participation with learning objectives, and clinical supervision.

EBM: Bergh (2014)[13] measured perceptions of the educational environment in Evidence-Based Medicine (EBM). The study included postgraduate trainees from various medical branches and evaluated the effectiveness of a clinically integrated EBM course. The author had a very comprehensive approach on 7 aspects of learning- knowledge and learning materials, learner support, general relationships and support, institutional focus on EBM, education, training and supervision, EBM application opportunities and affirmation of EBM environment. However, this study did not delve into the depths of behaviours and climate in different clinical areas that determine a good learning. Although participants were largely from O&G, this study evaluated the effectiveness of a clinically integrated evidence-based medicine course.

ACLEEM: Developed by Riquelme et al. (2013),[14] the Ambulatory Care Learning Educational Environment Measure (ACLEEM) targets postgraduate doctors in ambulatory care. The survey was designed using DREEM and PHEEM methodologies and involved a mixed approach of qualitative research and the Delphi technique.

NOTTS: Non-Technical Skills for Surgeons (NOTTS) is a behaviour rating system for surgeons, focusing on non-technical aspects of performance during intraoperative surgery. It includes categories such as situation awareness, decision making, communication & teamwork, and leadership.[15,16] It was noted that many complaints and litigations arise because of failure by surgeons to communicate effectively with patients and colleagues especially when things go wrong (Hinshaw, 2016).[17] Ratings and feedback are given on four categories of non-technical skills:

i. Situation Awareness
ii. Decision Making
iii. Communication & Teamwork

Leadership

Increasing Diversity
Maslow's theory (1943)[18] of human motivation and self-actualisation provides a useful premise for establishing a sense of belonging amongst students/ learners. In the current climate, it has to be acknowledged that there has been an increase in growing diversity of student population in terms of

age, gender and cultural background.[19] Discriminatory or hostile learning at environments have a negative effect on learners,[20] and this is quite evident in O&G where there have been several a reports of humiliation bullying and harassment.

Physical Well-Being

There is an increasing recognition of the importance of physical well-being amongst healthcare providers and the fact that poor health can have a direct impact on adverse standards of care. As the demands on doctors have increased in terms of workload, reduced resources and increasing litigation pressures, so do the levels of stress related illnesses amongst the medical fraternity.

Methods

Preliminary Inventory Design: The initial questionnaire was based on GMC guidelines focusing on four domains: knowledge, skills and performance; safety and quality; communications, partnerships and teamwork; and maintaining trust. A Likert scale was utilised for responses.

Phase 1 - Modified e-Delphi Panel: The preliminary inventory consisting of 20 questions was circulated to 58 obstetricians and gynaecologists for feedback. Their comments helped refine the questionnaire without introducing bias.

Phase 2 - Focus Group Discussions: The updated inventory was validated through focus group discussions to ensure specificity and relevance of questions, capturing the perspectives of junior and middle-grade doctors. Twelve registrar-level doctors were selected for interviews, providing insights into their experiences and the learning environment. Consent and confidentiality were emphasised throughout the process.

Phase 3 - Online Survey: A revised questionnaire with 31 items was uploaded to an online platform for further validation by 50 medical educators, focusing on the quality and relevance of the items.

Phase 4 - Final Distribution: The validated survey was distributed to approximately 150 trainees and specialty doctors, with a response rate expected between 60-70%. The survey included provisions for negative items related to workplace issues.

Data Collection Tools: Various methods were employed for data collection throughout the phases, including email, face-to-face interviews, and online surveys to ensure comprehensive feedback and updates to the inventory.

Data Analysis Methodology: The study utilised Excel for quantitative data analysis, employing descriptive statistics and Cronbach's alpha for reliability assessment. A high reliability score (over 0.8) was targeted, indicating internal consistency among questionnaire. Descriptive statistics were reported as mean, median and standard deviation. Reliability index was calculated using Cronbach's alpha for each subheading and for the entire questionnaire. Alpha was calculated by excluding each question from the questionnaire to identify any rogue questions.

Internal consistency values over 0.8 are considered to have a high reliability. Very high reliabilities are not necessarily desirable, as this indicates that the items may be redundant. The goal in designing a reliable instrument is for scores on similar items to be related (internally consistent), but for each to contribute some unique information as well.

Ethical Approval and Considerations: Ethical approval was granted by the Dundee Ethics Committee. The study ensured that participants were informed about the voluntary nature of their involvement and the lack of remuneration for their time.

Confidentiality and Insider Researcher Role: The study maintained participant confidentiality throughout the process, acknowledging potential challenges in safeguarding anonymity.

Results

Phase 1: Preliminary Questionnaire

A preliminary questionnaire with 20 questions was sent to 58 participants in the East of England Deanery, yielding a response rate of 20% with 12 participants providing feedback. The feedback indicated that all questions were relevant, but some suggestions for improvement included grouping questions under specific subheadings related to clinical learning and the training environment. Additionally, language amendments were recommended to enhance clarity, resulting in the expansion of the questionnaire to a 31-item inventory.

Phase 2: Interviews and Thematic Analysis

This involved interviews with 12 doctors, each lasting between 21 to 48 minutes. Participants rated each item on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The analysis revealed that items with a mean score of 3.5 or above were considered relevant. A detailed analysis of the mean scores for various questions, indicating that some questions were perceived as less relevant and required further clarification or rewording.

Phase 3: Delphi Method and Refinements

50 clinicians from various specialties participated in a modified Delphi process. The response rate was 34%, and many participants provided comments on the quality of questions. Key refinements included adding an "other" option in question 2 to capture non-trainee responses, clarifying questions with multiple components, and incorporating age discrimination into the questionnaire. This phase emphasised the importance of leadership skills and the impact of job-related stress on health and wellbeing.

Phase 4: Final Questionnaire Distribution (Table 1)

The final questionnaire consisted of 44 items divided into five sections, covering clinical skills, induction and supervision, the environment, and overall experience. The response rate was 34%, with 51 respondents from various training levels. The face validity and construct validity were high and the reliability assessed with Cronbach's alpha suggested a high internal consistency of 0.83- 0.92 in each section and 0.96 for the overall questionnaire. The response rate for the final questionnaire was 34% (51/151) which compares well with previous similar surveys (e.g. Gafson 2017)[3].

	Question: 5 options and white boxes for each question	Cronbach's alpha
1	Which hospital do you work in?	
2	What is your level of training?	
3	There are opportunities for achieving the competencies required by the curriculum for my level of training in obstetrics.	0.958
4	There are opportunities for achieving the competencies required by the curriculum for my level of training in gynaecology	0.960
5	I feel valued as a member of the team.	0.961
6	I play an active part during the pre-operative team briefing in theatre.	0.956
7	I have opportunities to acquire the non-technical skills (NOTTS) appropriate to my level of training.	0.961
8	My work load is appropriate for the level of my training and tailored towards my training achievements	0.962
9	The rota allows a good balance of training opportunities and service commitments.	0.962
10	The rota offers me flexibility to pursue activities pertinent to my development e.g. attend courses.	0.961
11	There is regular protected teaching held in my current post.	0.960
12	I have opportunities to learn and practice variety of clinical 3procedures.	0.962
13	The training in this post allows me to develop satisfactorily and helps prepare me for the next stage in my career.	0.961
14	Consultants support me in improving my skills in leadership and human factors.	0.960
15	I had a detailed induction at the start of my post.	0.962
16	I was able to set my goals at the induction meeting with my educational supervisor.	0.961
17	I receive effective supervision from my educational supervisor.	0.962
18	Consultants provide feedback through work based assessment forms in a timely manner.	0.962
19	There is good support & opportunities for trainees who struggle to meet training needs/requirements.	0.962
20	Consultants provide me with constructive feedback on my strengths and weaknesses.	0.962

21	I experience a professional relationship with my consultants which helps create a good learning environment.	0.961
22	I feel comfortable and happy in my post.	0.961
23	I work in collaboration with midwifery and nursing teams.	0.963
24	I feel able to discuss and ask questions relating to clinical care.	0.962
25	I feel able to challenge or voice concerns without the fear of intimidation.	0.961
26	The environment is free from undermining, bullying and harassment.	0.962
27	I have observed others being a target of humiliation, negativity and criticism.	0.962
28	There is sex/race discrimination in this post.	0.962
29	There is age discrimination in this post.	0.963
30	Trainees and non-trainees are treated equally in this post.	0.962
31	Within the environment that I work, there is a culture of promoting mutual respect.	0.961
32	There is a supportive learning culture i.e. learning from incidents rather than a blame culture.	0.961
33	The consultants set a role model that I learn and reflect from.	0.961
34	There is a good social interaction amongst colleagues/peers in the department.	0.961
35	My job does not have a negative impact on my health and wellbeing.	0.962
36a	Would you consider returning to this post for another term?	0.961
36b	Would you recommend this post to a friend/colleague for training?	0.960
37	I found the questionnaire easy to complete.	0.963

Discussion

1. Clinical Skills and Training:

- The study found that opportunities for achieving competencies required by the curriculum in O&G were generally satisfactory. However, there were specific areas where training was lacking, such as obstetric and gynaecological scanning.

The balance between service commitments and training was a significant concern. Many trainees felt that their workload was not appropriately tailored to their training needs, and the rota did not allow a good balance between training opportunities and service commitments.

2. Supervision:

- The education meetings with supervisors were generally positive, with trainees able to set goals and receive effective supervision. However, there was a need for improvement in providing support to trainees who struggle to meet training requirements.

The feedback from consultants was timely, but there was room for improvement in the constructive feedback on strengths and weaknesses.

3. Environment:

- The study highlighted issues of discrimination, bullying, and harassment within the training environment. Many trainees reported experiencing or witnessing sex, race, and age discrimination.

The culture of promoting mutual respect and a supportive learning environment was found to be lacking in some areas. More trainees witnessed bullying and harassment than experienced it themselves, indicating a broader issue within the environment.

4. Questionnaire Feedback:

The final OGEEM questionnaire was found to have high reliability and internal consistency, with a Cronbach's alpha of 0.96 for the entire questionnaire and was easy to complete.

The study provides valuable insights into the educational environment for trainees in obstetrics and gynaecology, identifying strengths and areas for improvement. The findings underscore the necessity for ongoing evaluation and adaptation of training practices to enhance the educational experience for all trainees.

Limitations of the study: The study faced challenges including low response rates, particularly in phases I and the impact of the COVID-19 pandemic on data collection. Despite these challenges, the feedback received was valuable and the final response rate of 34% was comparable to previous studies.

Implications for future research: The OGEEM inventory can be effectively utilised across various hospitals to assess the educational environment in obstetrics and gynaecology. A follow-up survey post -COVID restrictions and with workload changes/ waiting lists recently could reveal changes in the educational environment and identify areas for improvement in teaching and training.

Conclusions and Recommendations:
Measuring educational environment in medical specialties is not a new concept. There have been several researches done in various specialties but no existing inventory specific to O&G exists. Based on the literature review and analysis of methodologies used in the existing studies, an inventory (OGEEM) was developed specifically for the educational environment in O&G. O&G has been a specialty that has been an outlier in the GMC annual surveys conducted for trainees and the feedback has highlighted the highest rates of bullying and undermining. The RCOG have put in several measures to enhance the training experience and to help with the trainees' physical wellbeing and resilience. With this background, the OGEEM was thought to be a valuable tool to measure the training environment in O&G.

High levels of interest and engagement from trainees and consultant colleagues in contributing to the validation of OGEEM indicated the study was worthwhile. It is also an evidence of the passion that many educationists have in helping to develop a high quality educational environment. Use of the questionnaire in other deaneries and globally with research into how it is received both by trainees and trainers and its perceived usefulness is also recommended. Finally some key areas (e.g. empathy and resilience) were missing from previous inventories. It is recommended these are reviewed, modified and revalidated with these themes in mind.

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