AN ASSESSMENT OF THE HOSPITAL LEARNING ENVIRONMENT WITHIN THE UNIVERSITY OF THE WITWATERSRAND OBSTETRICS AND GYNAECOLOGY REGISTRAR TRAINING PROGRAMME

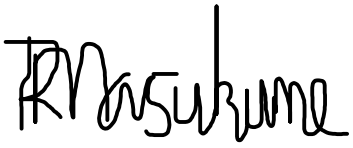
Rumbidzai Masukume

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Medicine in Obstetrics and Gynaecology

Johannesburg, November 2023

DECLARATION

I, Rumbidzai Masukume, declare that this Research Report which I submit for the degree of Master of Medicine, Obstetrics and Gynaecology, at the University of the Witwatersrand, Johannesburg is my own unaided work. It has not been submitted before for any degree or examination at any other university.

Signature: 

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DEDICATION

I am indebted to my loving husband and life partner, Mr. Tinashe. Dzomba, without whom I would not have embarked on this journey or successfully completed it. My deep gratitude is conveyed to Dr. Gwinyai Masukume, my brother, and his wife Mrs. Margaret Ryan for their unrelenting support and invaluable assistance. I am incredibly thankful for the unwavering support and love from my sister, Mrs. Farirai Masukume Mpofu, and her husband, Mr. Duncan Mpofu whose selflessness and constant efforts on my behalf have been unparalleled. I am forever indebted to my father, Dr. Alfred Tapiwa Moyo, who has served as a role model and mentor, always believing in me, providing constant encouragement and prayers, and going the extra mile to support me in ways unfathomable throughout my academic journey. To my late mother, Mrs. Gloria Moyo, whose outstanding intellect, and noble character continue to be an inspiration and have propelled me forward, I wish you were here to celebrate your family's many achievements. To my God-sent second mothers, Mrs. Rachel Ramukosi and Mrs Janet Celani Sithole words alone will never suffice in extending my heartfelt gratitude. My friends who have truly become sisters, Dr. Tracy Mavhungu Nelwamondo and Dr. Oluwaseun Adelugba, you are simply amazing! EBENEZER!

ABSTRACT

Background. The hospital educational environment is a critical component of a health professionals' education. It influences clinicians' professional development, well-being, academic success and ability to provide high-quality healthcare services. There is limited data on the postgraduate clinical learning environment (CLE) in obstetrics and gynaecology (Obgyn) in South Africa.

Research objectives. (1) to evaluate obstetrics and gynaecology registrars' perceptions of their CLE utilising the modified Postgraduate Hospital Educational Environment Measure (PHEEM) questionnaire, (2) to assess factors influencing these perceptions; (3) to evaluate the impact of the learning environment on academic outcomes, and (4) to use the results to recommend targeted improvements of the registrar training programme in Obgyn at the University of Witwatersrand (WITS).

Methods. A prospective cross-sectional study involving a convenience sample of doctors enrolled for the four-year Obgyn training programme at WITS. The modified PHEEM questionnaire was electronically sent to 80 participants between January and April 2022. Categorical variables were described using frequencies and percentages. Continuous variables were summarised by measures of central tendency. Factors associated with the PHEEM scores were evaluated using the Student's t-test and analysis of variance (ANOVA) tests. A p-value of <0.05 was considered statistically significant.

Results. Of the 80 participants, 46 (57.5%) responded to the questionnaire. The mean total modified PHEEM score (SD) was 74.9 (16.4) out of a possible 160. The mean scores in this study were as follows: perception of autonomy 27.4/56 (5.3), perception of teaching 30.2/60 (4.0), and perception of social support 17.3/44 (7.1). The overall perceptions of the educational environment were influenced by sex ($p<0.001$), supernumerary status ($p= 0.0036$), and marital status ($p=0.001$). Only two individuals did not complete the four-year training programme. A total of 81.8% of those who completed the four-year training programme passed their Fellowship of the College of Obstetricians and Gynaecologists (FCOG) of South Africa qualifying exams (FCOG 2) on their first exam attempt, however, 34.1% wrote the FCOG 2 exams after completing the four-year training.

Conclusion. During the study period, the educational environment within the Obgyn WITS circuit was perceived to be more negative than positive, indicating that all three domains of the modified PHEEM require attention to enhance the educational environment.

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ABBREVIATIONS

CLE …….……...…. Clinical learning environment
FCOG...…….Fellowship of the College of Obstetricians and Gynaecologists South Africa
HPE.....…….…… Healthcare professionals' education
IQR....…….……...Interquartile Range
Obgyn……...Obstetrics and gynaecology
PHEEM…… Postgraduate Hospital Educational Environment Measure
SD…….…….…..…Standard deviation
SMS……Short Message Services
WITS……The University of Witwatersrand

CHAPTER 1: SUBMISIBLE PAPER

An assessment of the hospital learning environment within the University of the Witwatersrand Obstetrics and Gynaecology registrar training programme

R Masukume[1,2], MBCHB, Dip Obs (SA), FCOG(SA), A. Chikandiwa[1,2], MPH, PhD, N Odell[1,2], FCOG(SA), MMED (O &G), Cert Maternal and Fetal Medicine (SA), L Chauke [1,2], MMED (O&G), Cert Maternal and Fetal Medicine (SA), MSc (Clin Research), PhD

[1] *Department of Obstetrics and Gynaecology, School of Clinical Medicine, Faculty of Health Sciences, University of Witwatersrand, Johannesburg, South Africa*

[2]*Charlotte Maxeke Johannesburg Academic Hospital, Gauteng Department of Health, Johannesburg, South Africa*

***Corresponding author**: R. Masukume (rumbi_masukume@yahoo.com)*

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Conclusion. During the study period, the educational environment within the Obgyn WITS circuit was perceived to be more negative than positive, indicating that all three domains of the modified PHEEM require attention to enhance the educational environment.

Introduction:

The hospital or clinical learning environment (CLE) is widely recognized as a critical component of graduate medical training and has become a major focus of medical education research globally.[1] The quality of the CLE determines the quality of practitioners that are trained in that environment and also the quality of patient care they provide during training and after qualification.[2,3] CLE encompasses the physical, socio-cultural, and virtual components of the training environment which shape learning, professional attitude and educational outcomes of learners.[3,4,5]. Several factors have been found to have an impact on learners' perceptions of their CLE. Among the positive factors are, structured training programmes with clearly defined learning objectives, a manageable workload, opportunities to study and, a positive social atmosphere.[4] McConnell and McKay observed that CLEs that are perceived as being positive, enhance trainees' academic achievements and promote the development of professional identity.[4,5] On the contrary, heavy workloads; lack of clear curriculum, training objectives, protected academic time and supervision as well as bullying, humiliation and lack of role models have a negative impact on educational experiences and educational outcomes of learners.[3,4,5,6]

Qualitative tools for the assessment of the CLE have been developed over the past few decades,[7] however, only a few instruments have been designed to specifically measure the quality of the postgraduate educational environment in a hospital setting.[8] Soemantri et al.[8] identified nine instruments that can be used to evaluate the CLE in healthcare professionals' education(HPE). Among the tools used to assess postgraduate learning environments, the Postgraduate Hospital Educational Environment Measure (PHEEM) is considered to be the most suitable CLE assessment tool because of its dependability, content validity, and suitability for use in different study settings.[8] Roff et al. [9] developed and validated the PHEEM to measure the postgraduate CLE for hospital-based junior doctors in the United Kingdom. The CLE assessment tool was designed to appraise academic environments and has subsequently undergone validation by multiple researchers.[7,8,9] It is comprised of 40 questions that are categorized into three distinct domains. Each domain, namely: the perception of role autonomy, teaching and social support, measures the perception of different elements of the educational environment. Specialist training in South Africa takes place in public hospitals affiliated to a medical school. The public health system in South Africa is confronted with many challenges, including resource scarcity, overcrowding, poor leadership, corruption, high medicolegal burden, and consequently, a decline in the quality of healthcare services.[10-13] These challenges

have potential to impact negatively on the quality of registrar (a doctor undergoing training to become a specialist) training and educational experiences of learners.

There is currently lack of data on Obgyn registrars' perceptions of their CLE in South Africa. This study was conducted to address this gap. The objectives of this study were as follows: (1) to evaluate Obgyn registrars' perceptions of their CLE utilising the modified PHEEM questionnaire, (2) to assess factors associated with these perceptions; (3) to evaluate the impact of the CLE on registrars' academic outcomes and (4) to use the results to recommend targeted improvements of the Obgyn registrar training programme at WITS.

Method:

Study design: This is a prospective cross-sectional study on the perceptions of a convenient sample of trainee doctors enrolled in the four-year Obgyn registrar training programme at WITS, Johannesburg, South Africa. Permission to conduct the study was obtained from the academic head of the department of Obgyn and ethics clearance, from WITS Human Research Ethics Committee (medical) , reference number M210350.

Data Collection

Data collection took place between January and April 2022. The study population included doctors who completed the four-year Obgyn registrar training programme at WITS between 1 January 2014 and 31 December 2019. The 80 participants received a link to complete an online questionnaire via electronic mail, short message services (SMS) and WhatsApp. The modified PHEEM questionnaire was uploaded onto Survey Monkey to enable anonymous responses. A participant information sheet detailing the nature of the study and specifying that participating in the study would be taken as consent, was also uploaded on Survey Monkey.

Data was collected using a modified PHEEM questionnaire. It is comprised of 40 questions that are categorized into three distinct domains, each measuring perception of different element of the CLE (autonomy- which refers to the degree of independence and self-directed learning that trainees experience in the CLE, teaching – which refers to the quality of educational instruction and the perceived effectiveness of teaching methods within the CLE and social support – which refers to the degree to which trainees perceive a supportive and collaborative social environment within the CLE). Fourteen questions focus on trainee autonomy, 15 on teaching and 11 on social support. The scores for each of the 40 statements

range from 0 to 4. Respondents used a 5-point Likert scale to indicate their agreement or disagreement as follows: strongly agree (4), agree (3), uncertain (2), disagree (1), and strongly disagree (0). High and low PHEEM scores indicate a positive and negative learning environment, respectively. The total maximum score is 56 for the assessment of autonomy perception, 60 for evaluation of teaching, and 44 for the appraisal of social support with a total combined score of 160.

The Interpretation of the overall score of the PHEEM for the 3 constructs is as follows:[14]

- Very poor:0-40
- Plenty of problems:41-80
- More positive than negative but room for improvement:81-120
- Excellent:121-160

Interpretation of the score for the perception of the role of autonomy:

- Very poor:0-14
- A negative view of one's role:15-28.
- A more positive perception of one's job: 29-42
- Excellent perception of one's job: 43-56

Interpretation of the score for the perception of teaching:

- Very poor quality: 0-15
- In need for some re-training: 16-30
- Moving in the right direction: 31-45
- Model teachers :46-60

Interpretation of the score for the perception of social support available:

- Non-existent:0-11
- Not a pleasant place:12-22
- More social support available:23-33
- A good supportive environment: 34-44

According to George and Mallery,[15] a Cronbach's alpha of at least 0.7 depicts an acceptable internal validity measurement of the PHEEM. Cronbach's alpha was utilised in this study to assess the modified PHEEM's internal consistency. It was determined to be 0.939. The questionnaire takes less than five minutes to complete, making it an easy and practical tool to use.[16] Boor et al.[17] carried out a study to assess the psychometric properties of the PHEEM. Among the other objectives of their study was to determine the minimum number of

respondents required for a valid evaluation of the CLE. They observed that registrars can establish a reliable score with 11 completed questionnaires.

The original PHEEM questionnaire was adapted to align with the purpose of this study. The adaptation included questions designed to elicit biographical information from participants, such as sex, age at which they began the registrar programme, whether they were supernumerary/self-sponsored (non-South African residents) registrars or government-paid registrars (i.e., non-supernumerary or South African residents), marital status and when the exams required to become an Obgyn specialist were written and passed. Because the phrase bleep is not commonly used in South Africa, question 11 was altered to "I was bleeped/called inappropriately while on call." A section for any other comments that participants may have had regarding their perceptions of the training experiences was also included in the questionnaire.

Data analysis:

Data was downloaded from Survey Monkey onto a Microsoft Excel spreadsheet. Frequencies and percentages were used to describe categorical data. The Shapiro-Wilk test was used to test for normality of continuous variables. Normally distributed data are presented as mean and standard deviation (SD) and non-parametric data summarized with median, inter-quartile range (IQR) and range. Total scores and means were calculated for each question and mean scores were also calculated for each of the three constructs of the PHEEM. Factors associated with the modified PHEEM score were evaluated using Student's t-test and analysis of variance (ANOVA) test. Our statistical analysis approach using the Likert scale was informed by work done by Khan[14] who did similar work in analysing the postgraduate CLE using the PHEEM, whereby he used the Student's t-test and ANOVA test after calculating means and S.D. All data were analysed using the statistical program STATA 15.0 ® (Stata Corp, 4905 Lakeway Drive, College Station, Texas 77845 USA). A p-value of <0.05 was considered statistically significant.

Results:

A total of 80 questionnaires were distributed; of these, 46 (57.5%) were returned and included in the study. Some participants did not respond to some of the questions, particularly the comment section which was included to give participants opportunity to raise any other issues not covered by the PHEEM questionnaire. All 46 participants responded to the PHEEM's 40

Likert scale questions. Majority of the study participants identified themselves as females (31, 67.4%), married (24, 52,2%), South Africans (44, 95.7%), wrote the final Obgyn qualifying exams within the four-year training period (29, 65.9%). Table 1 is a summary of the above.

Table 1: Baseline participant demographic characteristics and exam performance

Demographics (n=46)	**n (%)**
Age in years	
25-29	24 (52.1)
30-34	12 (26.1)
35-39	6 (13.0)
45-49	2 (4.4)
Not specified	2 (4.4)
Sex	
Female	31 (67.4)
Male	13 (28.3)
Not specified	2 (4.3)
Marital status during training	
Single	17 (37.0)
Married	24(52.2)
Not specified	5(10.8)
Supernumerary or non-supernumerary registrar status	
Supernumerary	2(4.3)
Non-supernumerary	44(95.7)
Exam performance (n=46)	**n (%), [median; IQR]**
Number of attempts at FCOG 1 exams	1 [1-2; 1-12]
If entered the registrar programme with FCOG 1 exams, the number of attempts before passing FCOG 1	1 [1-2; 1-4]
If entered the registrar programme without FCOG 1 exams, the number of attempts before passing FCOG 1	2[1-3; 1-12]
Completed the four-year registrar programme	44 (95.7)
Did not complete the registrar programme, therefore did not write FCOG 2	2 (4.3)

Wrote FCOG 2 during four-year registrar training period *	29(65.9)
Wrote FCOG 2 after completing four-year registrar training period *	15(34.1)
Passed FCOG 2 on the first attempt * If did not pass on the first attempt, the number of attempts before passing	36 (81.8) 2 [1-2, 1-4]

*n=44 for these as 44 registrars wrote the FCOG 2 exams. 2 registrars did not complete the training programme and thus did not write the FCOG 2 exams.

FCOG: Fellowship of the College of Obstetricians and Gynaecologists of South Africa; IQR: Interquartile Range.

In terms of the three domains of the PHEEM questionnaire (Table 2), the study participants had a negative view on all the three components. They were of the view that autonomy and teaching needed to be improved and they also perceived the social environment as being unpleasant. Overall, the CLE was perceived to have 'plenty of problems.

Table 2: Score for each domain of the modified Postgraduate Hospital Educational Environment Measure of obstetrics and gynaecology registrars' perceptions of their clinical learning environment

Domain	Maximum possible score	Mean Score	Standard deviation	Means score (%)	Interpretation of score
Perception of role autonomy	56	27.4	5.3	48.9	A negative view of one's role
Perception of teaching	60	30.2	4.0	50.3	In need of some re-training
Perception of social support	44	17.3	7.1	39.3	Not a pleasant place
Total PHEEM score	160	74.9	16.4	46.8	Plenty of problems

Table 3 displays the mean scores for each of the 40 PHEEM questions. In terms of role autonomy, the question with the lowest score (1.17) was question 17, where participants perceived that their working hours did not adhere to the duty hour regulations, the question with the highest score (2.89) was question 29, where participants felt that they were part of a team. Question 3 had the lowest score in terms of perception of teaching (1.11). This is because participants believed they did not have protected educational time throughout their registrar training. Question 31 received the highest (2.50) as participants felt clinical teachers were accessible. In the domain of social support, question 26 received the least score (0.69), as participants believed there were insufficient catering facilities during their on-call duties, while question 16 received the highest (2.98), suggesting they had good collaboration with doctors within their grade.

Table 3: Mean scores by question

Question number	Question	Mean score/ M (SD)
	Perception of role autonomy questions:	
1	I had a contract of employment that provided information about hours of work	2.22 (1.35)
4	I had an informative induction program	1.35 (0.99) [xx]
5	I had the appropriate level of responsibility in this post	2.37 (0.97)
8	I had to perform inappropriate tasks	2.32 (0.91)
9	There was an informative registrar's handbook	1.35 (1.11) [xx]
11	I was bleeped/called inappropriately whilst on call	2.09 (1.21)
14	There were clear clinical protocols in this post	2.57 (1.09)
17	My working hours conformed to the Department of Health stipulated hours	1.17 (1.19) [xx]
18	I had the opportunity to provide continuity of care	1.76 (1.06) [xx]
29	I felt part of a team working here	2.89 (1.04)
30	I had opportunities to acquire the appropriate practical procedures to meet the logbook requirements	2.22 (1.05)

32	My workload in this job was manageable	1.26 (1.14) [xx]
35	The training in this post made me feel ready to be a consultant	2.11 (1.04)
40	My clinical teachers promoted an atmosphere of mutual respect	1.72 (1.15) [xx]
	Perception of teaching questions:	
2	My clinical teachers set clear expectations	1.93 (1.08) [xx]
3	I had protected educational time in this post	1.11 (0.99) [xx]
6	I had good clinical supervision at all times	2.17 (1.08)
10	My clinical teachers had good communication skills	2.30 (1.01)
12	I was able to participate actively in educational events	2.15 (1.21)
15	My clinical teachers were enthusiastic	2.24 (1.05)
21	There was access to an educational programme relevant to my needs	1.76 (1.10) [xx]
22	I got regular feedback from my seniors	2.07 (1.02)
23	My clinical teachers were well organized	1.94 (1.10) [xx]
27	I had enough clinical learning opportunities for my needs	1.85 (1.09) [xx]
28	My clinical teachers had good teaching skills	2.37 (1.00)
31	My clinical teachers were accessible	2.50 (0.91)
33	Senior staff utilized learning/teaching opportunities effectively	1.85 (1.05) [xx]
37	My clinical teachers encouraged me to be an independent learner	2.57 (0.93)
39	The clinical teachers provided me with good feedback on my strengths and weaknesses	1.39 (0.97) [xx]
	Perception of social support questions:	
7	There was racism in this post	1.61 (1.12) [xx]
13	There was gender discrimination in this post	2.36 (1.23)
16	I had good collaboration with other doctors in my grade	2.98 (0.85) [xxx]
19	I had suitable access to career advice	1.31 (1.09) [xx]
20	The hospitals had good quality accommodation for registrars, especially when on call	0.98 (1.11) [xx]
24	I felt physically safe within the hospital environment	1.52 (1.35) [xx]
25	There was a no-blame culture in this post	1.11 (1.12) [xx]

26	There were adequate catering facilities when I was on call	0.69 (0.89) [xx, ¥]
34	My clinical teachers had good mentoring skills	1.83 (1.04) [xx]
36	I got a lot of enjoyment from my job	2.11 (1.25)
38	There were good counselling opportunities for registrars who failed to complete their training satisfactorily	0.83 (0.85) [xx]

[xxx]Highest item score overall. [xx]Items with scores < 2. [¥]Lowest item score overall

As depicted in Table 4 below, the overall perceptions of the educational environment were influenced by gender($p<0.001$), supernumerary or non-supernumerary status($p=0.0036$) and marital status($p=0.001$).

Table 4: Factors influencing the modified Postgraduate Hospital Educational Environment Measure score calculated using the Student's t-test and analysis of variance (ANOVA) test

Characteristic	Mean Total Score n (Score %)	p-value
Age		
25-29	**78.6 (49.1)**	
30-34	**85.0 (53.1)**	
35-39	**81.0 (50.6)**	0.302
45-49	**92.8 (58.0)**	
Not specified	**78.3 (48.9)**	
Sex		
Male	**84.1 (52.6)**	
Female	**71.1 (44.4)**	**< 0.001**
Supernumerary	**61.5 (38.4)**	
Non-supernumerary	**75.8 (47.4)**	**0.0036**
Marital status		
Married	**77.9 (48.7)**	**0.001**
Single	**72.5 (45.3)**	
Not specified	**74.8 (46.8)**	

Discussion:

Assessment of the quality of the CLE in registrar training can assist in identifying problem areas as well as areas in need of improvement. This study's first objective was to evaluate the WITS Obgyn registrars' perceptions of their CLE using the modified PHEEM questionnaire. With respect to this objective, this study found that the Obgyn postgraduate CLE at WITS was perceived to be more negative than positive. The CLE scored in the category 'plenty of problems' as per the PHEEM global scale. Similar findings were reported in a study conducted among Obgyn trainees in Pakistan.[18] The mean overall modified PHEEM score in our study was 74.9. This is also in keeping with a study conducted by Berrani et al.[19] in Morocco utilizing the PHEEM comparing the perceptions of the CLE by registrars from different specialties. This study had an overall mean score of 74.5. [19] Registrars in laboratory specialties demonstrated more favourable perceptions of their CLE compared to surgical specialties and obstetrics and gynaecology trainees. These results suggest that the Moroccan CLE, like that at Wits Obgyn, is beset with numerous challenges as well. The high workload was the main contributing factor to Surgical and Obgyn registrars' negative perception of their CLE. There are currently no similar studies in South Africa or regionally to make comparisons with. A similar study was conducted in South Africa utilising the Anaesthetics Theatre Educational Environment Measure (ATEEM) questionnaire, which has characteristics similar to the PHEEM. The research was carried out among anaesthesiology registrars at WITS.[20] This study reported that registrars found the theatre teaching environment positive but also with room for improvement.

Mean scores of less than two for individual questions of the PHEEM indicate weaknesses in the CLE and mean scores greater than three, indicate strength.[8] Out of the 40 PHEEM questions, 21 scored less than 2, whereas none of the mean scores for the 40 questions were greater than three. This shows that the WITS Obgyn CLE was perceived to have more weaknesses than strengths. Of all the questions, question 16, that speaks of collaboration between peers, scored the highest mean score (2.98). Question 26 scored the least (0.69) with participants of the view that catering facilities when they were on call were inadequate. The above are in keeping with other studies. In a similar study at a Nigerian teaching hospital, question 26 recorded the lowest score (1.08) and question 16 the highest (3.16).[21]

The study's second objective was to assess factors associated with how registrars perceived their CLE. Supernumerary registrars scored the lowest mean score on all the three categories

(68.6 ;42.9%). The overall perceptions of the learning environment were influenced by whether one was a supernumerary registrar or not (p=0.0036). A study by Peer et al.[22] at the University of Cape Town evaluating the experiences of supernumerary registrars, reported that supernumerary registrars experienced xenophobia from patients (23.8%) and colleagues (47.2%) and felt disadvantaged in terms of educational opportunities, academic support, and on-call allocations. Therefore, a follow-up study is required to further elucidate why supernumerary registrars perceived their CLE at WITS Obgyn in such a negative manner and whether they, like the cohort from Cape Town, also feel disadvantaged.

Sex also had a substantial ($p<0.001$) impact on how registrars rated their educational environment. Gough J. et al. [23] evaluated the acceptability of the PHEEM in nine Australian hospitals. Like our findings, their study found that males evaluated 80% of the PHEEM items higher than females. According to Kilminster,[24] in the CLE, females learn and work differently, and as a result are more disadvantaged compared to males. To investigate these claims, additional research must be conducted.

Marital status significantly influenced impressions of the CLE (p=0.001), with married individuals having a more positive perception of the CLE. Damestoy et al.[25] found that marital partners were a significant source of emotional support for their sample in a study evaluating stress and residents' lifestyle in Montreal, Canada. Their findings contrasted with other studies which found that the stress of training caused serious difficulties in registrars' relationships.[25]

This study's third objective was to evaluate the impact of the CLE on academic outcomes. This study found that registrars who started training without passing FCOG 1 examinations needed more attempts to pass the FCOG 1 exams. Over a third (34.1%) of registrars wrote their FCOG 2 after completing their training period with some writing and only passing up to 10 years post-commencement of their registrar time. Despite the educational environment being perceived as negative and with over a third of registrars writing their FCOG 2 examinations for the first after completing their four-year training, 81.8% of those who wrote, wrote and passed their FCOG 2 examinations on the first attempt. Some registrars stated that postgraduate learning is independent and self-directed thus one must be self-motivated, organized, and focused to pass their examinations within the four-year training period. It is possible that the registrars' sense of motivation and focus contributed to their success despite the difficult CLE.

The last objective of this study was to use the results to recommend targeted improvements of the registrar's training programme in the WITS Obgyn CLE. Targeted improvements to the Wits Obgyn CLE were based on the areas that scored the lowest mean scores and are as follows:

1. Issue a comprehensive registrar's handbook that includes information on the job description, duties, expectations and information on working hours.
2. Ascertain that registrars have protected time for educational pursuits.
3. Provide opportunities for career counselling and advice.
4. Ensure that the accommodation conforms to the necessary standards.
5. Ensure the availability of acceptable quality, hygienic catering facilities.
6. Institute annual PHEEM surveys to measure the quality of the CLE.
7. Create a tailored program for supernumerary registrars to help them integrate into the setting and culture of the educational environment.

Study Limitations

It is a possibility that the contact details of some participants could have changed since the completion of their training period. Furthermore, some of the doctors contacted may have chosen not to participate in the study. Knowing the reasons for non-response would have been useful.

Despite the sample size being small (46 participants) in this study, the number of completed questionnaires provides a reliable score. Online surveys are known for their low response rates, with the number of those who undertook the training limiting the number who could be invited to participate. Another limitation may be that respondents were asked to recall their thoughts and experiences, which may have introduced recall bias, although the consistency in responses suggests that this may not have been an important factor. Only 2 supernumerary registrars responded to the questionnaire, therefore the findings regarding supernumerary registrars need to be interpreted with caution. Larger studies are required to further explore this. Despite the limitations indicated above, the study assists in identifying training programme areas of dissatisfaction, which can aid decision-making processes to improve the CLE.

Conclusion:

The WITS Obgyn CLE was perceived to be more negative rather than positive. All three PHEEM domains must be addressed to improve the CLE. For postgraduate clinical training institutions, it is essential to incorporate routine quality assessments of the CLE using a validated instrument. This would encourage the development of qualified specialists who prioritize and maintain their own well-being while giving patients the safest, highest-quality care possible.

Financial support and sponsorship:

None required.

Conflicts of interest:

There are no conflicts of interest.

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CHAPTER 2: INSTRUCTIONS TO AUTHORS

Author Guidelines

Type of articles considered by the SAMJ.

The SAMJ will no longer limit the articles accepted to those that have 'general medical content' but is intending to capture the spectrum of medical and health sciences, grouped by relevance to the country's burdens of disease. This content will include research in the social sciences and economics that is relevant to the medical issues around our burden of disease. Please see 'A new vision for the SAMJ – and a call for papers' for a full discussion of the new directions for the SAMJ.

We accept the following types of articles:

Research, Reviews, Clinical trials, Editorials, In Practice (Previously Forum incl. Case Reports), Correspondence, Obituaries, Book reviews, Ad hoc supplements e.g., guidelines, conference/congress abstracts, Festschrifts*

The following articles are by invitation only:

Guest editorial, Continuing Medical Education (CME)

*Contact claudian@hmpg.co.za for information on submitting ad hoc/commissioned supplements, including guidelines, conference/congress abstracts, Festschrifts, etc.

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All articles published in the South African Medical Journal are open access and freely available online upon publication. This is made possible by applying a business model to offset the costs of peer review management, copyediting, design, and production, by charging a publication fee of R7 440 (VAT incl.) for each research and In Practice article published. The publication fee is standard and does not vary based on length, colour, figures, or other elements.

The publication fee is payable when your manuscript is editorially accepted and before production commences for publication. The submitting author will be notified that payment is due and given details on the available methods of payment. Prompt payment is advised; the article will not enter into production until payment is received.

Authorship

Named authors must consent to publication. Authorship should be based on: (i) substantial contribution to conceptualisation, design, analysis, and interpretation of data; (ii) drafting or critical revision of important scientific content; or (iii) approval of the version to be published. These conditions must all be met (uniform requirements for manuscripts submitted to biomedical journals; refer to www.icmje.org)

If authors' names are added or deleted after submission of an article, or the order of the names is changed, all authors must agree to this in writing.

Please note that co-authors will be requested to verify their contribution upon submission. Non-verification may lead to delays in the processing of submissions.

Author contributions should be listed/described in the manuscript.

Conflicts of interest

Conflicts of interest can derive from any kind of relationship or association that may influence authors' or reviewers' opinions about the subject matter of a paper. The existence of a conflict – whether actual, perceived or potential – does not preclude publication of an article. However, we aim to ensure that, in such cases, readers have all the information they need to enable them to make an informed assessment about a publication's message and conclusions. We require that both authors and reviewers declare all sources of support for their research, any personal or financial relationships (including honoraria, speaking fees, gifts received, etc) with relevant individuals or organisations connected to the topic of the paper, and any association with a product or subject that may constitute a real, perceived or potential conflict of interest. If you are unsure whether a specific relationship constitutes a conflict, please contact the editorial team for advice. If a conflict remains undisclosed and is later brought to the attention of the editorial team, it will be considered a serious issue prompting an investigation with the possibility of retraction.

Research ethics committee approval

Authors must provide evidence of Research Ethics Committee approval of the research where relevant. Ensure the correct, full ethics committee name and reference number is included in the manuscript.

If the study was carried out using data from provincial healthcare facilities, or required active data collection through facility visits or staff interviews, approval should be sought from the relevant provincial authorities. For South African authors, please refer to the guidelines for submission to the National Health Research Database. Research involving human subjects must be conducted according to the principles outlined in the Declaration of Helsinki. Please refer to the National Department of Health's guideline on Ethics in Health research: principles, processes, and structures to ensure that the appropriate requirements for conducting research have been met, and that the HPCSA's General Ethical Guidelines for Health Researchers have been adhered to.

Clinical trials

As per the recommendations published by the International Committee of Medical Journal Editors (ICMJE), clinical trial research is any research that assigns individuals to an intervention, with or without a concurrent comparison/control group to study the cause-and-effect relationship between the intervention and health outcomes. All clinical trials should be registered with the appropriate national clinical trial registry (or any international primary register, if relevant), and the trial registration number should be cited at the end of the abstract. All clinical trial reports must also contain a data sharing statement as per the recommendations of the ICMJE. Statements are to indicate:

whether individual deidentified participant data will be shared.

what data will be shared; whether additional, related documents will be available.

when the data will become available and for how long; by what access criteria data will be shared.

Please see the ICJME announcement for further details and illustrative examples of data sharing statements: ICMJE Data Sharing Statements for Clinical Trials

Since 1st December 2005, all clinical trials conducted in South Africa have been required to be registered in the South African National Clinical Trials Register. The SAMJ therefore requires that clinical trials be registered in the relevant public trials registry at or before the

time of first patient enrolment as a condition for publication. The trial registry name and registration number must be included in the manuscript.

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Patient Consent

Information that would enable identification of individual patients should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) has given informed written consent for publication and distribution. We further recommend that the published article is disseminated not only to the involved researchers but also to the patients/participants from whom the data was drawn. Refer to Protection of Research Participants. The signed consent form should be submitted with the manuscript to enable verification by the editorial team.

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Any individual who is identifiable in an image must provide written agreement that the image may be used in that context in the SAMJ.

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Ethnic/race classification

Use of racial or ethnicity classifications in research is fraught with problems. If you choose to use a research design that involves classification of participants based on race or ethnicity, or discuss issues with reference to such classifications, please ensure that you include a detailed rationale for doing so, ensure that the categories you describe are carefully defined, and that socioeconomic, cultural and lifestyle variables that may underlie perceived racial disparities are appropriately controlled for. Please also clearly specify whether race or ethnicity is classified as reported by the patient (self-identifying) or as perceived by the investigators. Please note that is not appropriate to use self-reported or investigator-assigned racial or ethnic categories for genetic studies.

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SAMJ is an HPCSA-accredited service provider of CPD materials. Principal authors can earn up to 15 CPD continuing education units (CEUs) for publishing an article; co-authors are eligible to earn up to 5 CEUs; and reviewers of articles can earn 3 CEUs. Each month, SAMJ also publishes a CPD-accredited questionnaire relating to the academic content of the journal.

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Preparing an article for anonymous review

To ensure a fair and unbiased review process, all submissions are to include an anonymised version of the manuscript. The exceptions to this are Correspondence, Book reviews and Obituary submissions.

Submitting a manuscript that needs additional blinding can slow down your review process, so please be sure to follow these simple guidelines as much as possible:

An anonymous version should not contain any author, affiliation or particular institutional details that will enable identification.

Please remove title page, acknowledgements, contact details, funding grants to a named person, and any running headers of author names.

Mask self-citations by referring to your own work in third person.

General article format/layout

Accepted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction, which will delay publication.

General:

Manuscripts must be written in UK English.

The manuscript must be in Microsoft Word format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes).

Please make your article concise, even if it is below the word limit.

Qualifications, full affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.

Abbreviations should be spelt out when first used and thereafter used consistently, e.g., 'intravenous (IV)' or 'Department of Health (DoH)'.

Include sections on Acknowledgements, Conflict of Interest, Author Contributions and Funding sources. If none is applicable, please state ‘none’.

Scientific measurements must be expressed in SI units except blood pressure (mmHg) and haemoglobin (g/dL).

Litres is denoted with an uppercase L e.g., 'mL' for millilitres).

Units should be preceded by a space (except for % and ºC), e.g., '40 kg' and '20 cm' but '50%' and '19ºC'.

Please be sure to insert proper symbols e.g., μ not u for micro, a not for alpha, b not B for beta, etc.

Numbers should be written as grouped per thousand-units, i.e., 4 000, 22 160.

Quotes should be placed in single quotation marks: i.e. The respondent stated: '...'

Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.

If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the only exception. Please DO NOT use fill, format lines and so on.

SAMJ is a generalist medical journal, therefore for articles covering genetics, it is the responsibility of authors to apply the following:

- Please ensure that all genes are in italics, and proteins/enzymes/hormones are not.

- Ensure that all genes are presented in the correct case e.g., TP53 not Tp53.

**NB: Copyeditors cannot be expected to pick up and correct errors wrt the above, although they will raise queries where concerned.

- Define all genes, proteins and related shorthand terms at first mention, e.g., ‘188del11’ can be glossed as ‘an 11 bp deletion at nucleotide 188.’

- Use the latest approved gene or protein symbol as appropriate:

Human Gene Mapping Workshop (HGMW): genetic notations and symbols

HUGO Gene Nomenclature Committee: approved gene symbols and nomenclature

OMIM: Online Mendelian Inheritance in Man (MIM) nomenclature and instructions

Bennet et al. Standardized human pedigree nomenclature: Update and assessment of the recommendations of the National Society of Genetic Counselors. J Genet Counsel 2008; 17:424-433: standard human pedigree nomenclature.

Preparation notes by article type

Research

Guidelines

Research

Guideline word limit: 4 000 words

Research articles describe the background, methods, results, and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion, and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are to fill a gap in the literature, a logical extension of previous work, or to answer an important clinical question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section, which should consider primary outcomes first before any secondary or tertiary findings or post-hoc analyses. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

Select figures and tables for your paper carefully and sparingly. Use only those figures that provided added value to the paper, over and above what is written in the text.

Do not replicate data in tables and in text.

Structured abstract

This should be 250-400 words, with the following recommended headings:

o Background: why the study is being done and how it relates to other published work.

o Objectives: what the study intends to find out.

o Methods: must include study design, number of participants, description of the intervention, primary and secondary outcomes, any specific analyses that were done on the data.

o Results: first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.

o Conclusion: must be supported by the data, include recommendations for further study/actions.

Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors.

Do not include any references in the abstracts.

Here is an example of a good abstract.

Main article

All articles are to include the following main sections: Introduction/Background, Methods, Results, Discussion, Conclusions.

The following are additional heading or section options that may appear within these:

Objectives (within Introduction/Background): a clear statement of the main aim of the study and the major hypothesis tested or research question posed.

Design (within Methods): including factors such as prospective, randomisation, blinding, placebo control, case control, crossover, criterion standards for diagnostic tests, etc.

Setting (within Methods): level of care, e.g., primary, secondary, number of participating centres.

Participants (instead of patients or subjects; within Methods): numbers entering and completing the study, sex, age and any other biological, behavioural, social, or cultural factors (e.g., smoking status, socioeconomic group, educational attainment, co-existing disease indicators, etc) that may have an impact on the study results. Clearly define how participants were enrolled and describe selection and exclusion criteria.

Interventions (within Methods): what, how, when and for how long. Typically for randomised controlled trials, crossover trials, and before and after studies.

Main outcome measures (within Methods): those as planned in the protocol, and those ultimately measured. Explain differences, if any.

Results

Start with description of the population and sample. Include key characteristics of comparison groups.

Main results with (for quantitative studies) 95% confidence intervals and, where appropriate, the exact level of statistical significance and the number need to treat/harm. Whenever possible, state absolute rather than relative risks.

Do not replicate data in tables and in text.

If presenting mean and standard deviations, specify this clearly. Our house style is to present this as follows:

E.g.: The mean (SD) birth weight was 2 500 (1 210) g. Do not use the ± symbol for mean (SD).

Leave interpretation to the Discussion section. The Results section should just report the findings as per the Methods section.

Discussion

Please ensure that the discussion is concise and follows this overall structure – sub-headings are not needed:

Statement of principal findings

Strengths and weaknesses of the study

Contribution to the body of knowledge

Strengths and weaknesses in relation to other studies

The meaning of the study – e.g., what this study means to clinicians and policymakers.

Unanswered questions and recommendations for future research

Conclusions

This may be the only section readers look at, therefore write it carefully. Include primary conclusions and their implications, suggesting areas for further research if appropriate. Do not go beyond the data in the article.

CHAPTER 3: PROTOCOL

TITLE : AN ASSESSMENT OF THE HOSPITAL LEARNING ENVIRONMENT WITHIN THE UNIVERSITY OF WITWATERSRAND OBSTETRICS AND GYNAECOLOGY REGISTRAR TRAINING PROGRAMME

Dr. R. Masukume (MBBCh)

Student number: 0501277A

Supervisors

1) Professor Lawrence Chauke, Clinical head of Department of Obstetrics and gynaecology, Charlotte Maxeke Johannesburg Academic Hospital

2) Dr Natalie Odell, Consultant, Department of Obstetrics and gynaecology, Charlotte Maxeke Johannesburg Academic Hospital

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List of abbreviations

CHBAH	Chris Hani Baragwanath Academic Hospital
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
ERH	Edenvale Regional Hospital
FCOG(II)	Fellowship of the College of Obstetricians and Gynaecologists of South Africa part two
KAH	Klerksdorp Academic Hospital
PHEEM	Postgraduate Hospital Educational Environment
RMMCH	Rahima Moosa Mother and Child Hospital
SRH	Sebokeng Regional Hospital
WITS	University of the Witwatersrand

1. INTRODUCTION AND BACKGROUND

It is essential for medical practitioners in South Africa to undergo a post graduate training programme prior to becoming specialists in various disciplines. Throughout this period of time, the trainee doctor is referred to as a registrar and is employed by the South African government. The registrar is expected to work in state hospitals, affiliated to one of the nine medical schools in the country. Thus, it can be said that registrar training is predominantly work-based experiential learning. This training lasts between four to five years, depending on the speciality chosen and concludes by the registrar sitting for the Fellowship of the College of Medicine exit examination. On successful conclusion of the examination process, the registrar is then eligible to register as a consultant1.

Training at the University of the Witwatersrand (WITS) for obstetrics and gynaecology takes place at three major academic hospitals. These are, Rahima Moosa Mother and Child Hospital (RMMCH), Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) and Chris Hani Baragwanath Academic Hospital (CHBAH), all located in Johannesburg, South Africa. The registrars are expected to attend to women during pregnancy and those who present with any gynaecological conditions. Training also takes place at three smaller teaching hospitals attached to the Obstetrics and Gynaecology department, where registrars are also expected to rotate through i.e. Sebokeng Regional Hospital (SRH), Edenvale Regional Hospital (ERH) and Klerksdorp Academics Hospital (KAH).

Training in a clinical environment is noted by Lucas et al. to present a challenge for registrars who are required to balance diverse demands placed on them2. Daugherty et al., observed that these demands include caring for patients, abiding by the call rosters (which often involves long working hours), managing patient demise, meeting academic requirements, teaching responsibilities, the requirements of their consultants and the obligations of their personal lives3. This environment must therefore be conducive to enable registrars to achieve a balance and meet all of the afore-mentioned demands.

2. PROBLEM STATEMENT:

The clinical learning environment of the WITS obstetrics and gynaecology registrar program has not been studied before. The circuit endeavours to conduct registrar evaluations on a six-monthly basis, however, the assessments are not based on the use of a standardised scientifically approved evaluation tool. Supervisors complete progress report forms and the registrars similarly complete a progress form. A study carried out in a Nigerian teaching hospital by Idon et al., similarly had the supervisors completing progress forms – they mentioned that these evaluations focused only on "the registrar's progress and do not take into consideration registrars' perceptions of their trainers and other components in the environment in which they work, and how these affect their learning4."

The quality of the learning environment in which registrars work influences their academic success and the standard of health service delivery rendered. In order for the above two to be achieved, namely; academic success and quality health service delivery, routine quantitative assessments of the educational environment has to be carried out and modifications made to the environment as necessary.

3. LITERATURE REVIEW:

The clinical learning environment is a topical subject and is at the forefront of research. There are multiple definitions of the clinical learning environment. Earlier definitions had a focus on the overall atmosphere and climate of the environment, for example, Clapham et al., defined it "as a set of factors that describe what it is like to be a learner within that organisation"5. This incorporates the student's experiences within that environment. Newer definitions by Kilty et al., stated that the clinical learning environment comprises the culture i.e. social behaviour and customs, social interactions and material context in which residents work whilst they learn6. In the South African context, residents are referred to as registrars.

Registrars' views of their clinical learning environment has gained global prominence because of the effect the learning environment has on trainees' well-being, healthcare service delivery

and academic performance. Kilty et al., stated that the "clinical learning environment is the foundation of graduate medical education." The quality of the hospital learning atmosphere determines the quality of practitioners produced in that environment and the level of patient care that they deliver; not only whilst they are in that learning environment, but over years of practice after qualifying as specialists6.

There are positive and negative factors that are noted to contribute to learner's perceptions of their learning environment. Positive factors include clearly structured learning objectives, social support, a structured training program, manageable workloads, opportunities for studying and a positive social environment. It was noted by McConnell and McKay that learning environments that are perceived as being positive encourage trainees' academic accomplishments and enable them to develop their professional identity as future healthcare providers7.

According to Daugherty et al., "several problems have been noted with the clinical learning environment, including high workloads, leaving minimal time for academia, teaching by humiliation and a lack of clear objectives regarding the scope of the curricular3." Other negative factors include bullying of trainees, poor quality of supervision, burnout among trainees and poor role models. A study conducted in South Africa by Zeijlemaker et al., assessed the incidence of burn out among registrars in the School of Clinical Medicine at the University of the Witwatersrand. They found that the rates of burnout were higher at this institution than recorded in national and international literature8.

Negative factors have been noted to lead to a low morale and dissatisfaction amongst residents. Kilty et al., have noted that in the UK and Ireland, there has been a mass exodus of residents and also strike action due to the negative factors that exist in the clinical learning environment6. As several challenges have been identified in the clinical learning environment, Daugthery et al., believe that an appropriate learning climate is thus a significant indicator of the quality of registrar's postgraduate training3. The quality of the learning milieu of training hospitals has been recognised, hence tools have been developed to assist in quantitatively evaluating this environment.

Mohanna et al., considered three parameters when assessing the hospital learning environment "A) Physical Environment (safety, food, shelter, comfort and other facilities),

B) Emotional Climate (security, constructive feedback, being supported and the absence of bullying and harassment) and

C) Intellectual climate (learning with patients, relevance to practice, evidence-based learning, active participation by learners, motivating and planned education)9."

Without knowing how registrars perceive the learning environment, it is difficult for universities to effectively improve the learning environment and thus the academic success of registrars in their exit exams.

Several tools are available for the quantitative measure of the learning environment. Soemantri et al., conducted a study which identified nine different tools used to assess learning milieu in health professions training. They also sought to evaluate the reliability and validity of these tools. Five out of nine tools were excluded as these were developed for use in particular specialities and settings. One tool did not show content validity. Another tool had to have modifications for it to be used in a postgraduate rather than undergraduate setting. Only two tools demonstrated content validity - the Postgraduate Hospital Educational Environment Measure (PHEEM) together with a tool designed by the Rotem et al. PHEEMs dependability was superior to that of Rotem et al., questionnaire. The PHEEM was thus deemed to be the most suitable tool due to its reliability, content validity and its appropriateness for use in different study settings10.

The PHEEM consists of forty questions regarding the learning environment. Idon et al, 4 highlight that the questions are divided into three sections which are

"1) perceptions of role autonomy,

2) perception of teaching and

3) perception of social support."

5 Replies to each question are scored on a five-point measure with 0 for strongly disagree, 1 for disagree, 2 for uncertain, 3 for agree and 4 for strongly agree. The greatest score for the forty questions is 160 and the lowest is 0. A higher score denotes a better educational environment3.

Authors such as Roff et al., mentioned that the PHEEM was designed by researchers in the West Midlands of the United Kingdom and Scotland. They carried out a study in which they sought to validate the PHEEM in the United Kingdom. The conclusion was that use of PHEEM produced reliable results. PHEEM used in numerous different groups, including senior medical officers and registrars from various areas of specialisation was found to have similar reliability coefficients in all11.

PHEEM has been found to be a globally used tool for evaluating the learning environment for doctors in training4. Wall et al., conducted research with the aim to assess the characteristics of the PHEEM. In this study they used data derived from several countries, namely, Netherlands, Brazil, Chile and the United Kingdom. The results showed that the PHEEM is a reliable tool with a Cronbach's alpha of 0,98284. Use and validation of PHEEM has similarly occurred in a Danish hospital setting12, in Sri-Lanka 13 and in several other countries.

The PHEEM was used in the African context in Nigeria at Maiduguri teaching hospital, where it pointed out areas of weaknesses and strengths in the clinical learning milieu and the speciality departments4. The Nigerian study noted that it is a simple and practical tool; which is easy to use and that it takes less than five minutes to complete4.

Another African study using the PHEEM was conducted in Morocco by Berrani et al., among surgical specialities and obstetrics and gynaecology residents. The residents in surgical specialities and obstetrics and gynaecology did not perceive their learning environment as positively as those in laboratory specialties14. In the same study the authors noted that surgical specialties and obstetrics and gynaecology had lower PHEEM scores, particularly in the social support and teaching domains globally14.

The PHEEM has also been used in Kwazulu Natal, South Africa to evaluate paediatric interns learning environment15. The South African study similarly showed that PHEEM is a dependable and valid instrument in evaluation of postgraduate clinal environments.

4. AIM:

The aim of this study is to evaluate WITS obstetrics and gynaecology registrars' perceptions of their clinical learning environment using the PHEEM questionnaire and to use the results to recommend targeted improvements of the registrar training program at WITS.

5. OBJECTIVES:

5.1 To assess trainees' perceptions of their clinical learning environment using PHEEM

5.2 To analyse if these perceptions are influenced by:

a) Gender

b) Age

c) Race

d) Being a supernumerary/self-sponsored registrar

e) Marital status

5.3. To determine the percentage of registrars who passed their fellowship and the number of years it took to do so.

5.4. To determine the number of registrars who passed their fellowship exam on first attempt

5.5 To identify areas that need improvements in the learning environment in the WITS Obstetrics and Gynaecology Department

6.1 STUDY DESIGN:

This will be a cross sectional observational study by means of a self-administered questionnaire.

6.2 STUDY SETTING:

The WITS obstetrics and gynaecology academic circuit made up of CMJAH, CHBAH, RMMCH, SRH, KAH and ERH.

6.3 PARTICIPANTS:

All registrars who started their registrar time in the WITS circuit during the period 1 January 2010 to 31 December 2015 who are willing to participate will be the participants in this study. Registrars who started their registrar time in January 2010 completed their four-year training period in December 2014 and those who started in December 2015 completed their training period in December 2019. This allows the investigators to assess how long after completion of the four-year period participants are writing their exams as it has been noted that due to the work load in the circuit and other factors in the circuit, registrars are writing their part two exams after completing their time; with some writing these exams years after completion of their time. Essentially, an assessment is being made of registrars who completed their training time between the period January 2014 and December 2019.

An information sheet will be issued to the willing participants together with the modified PHEEM questionnaire. The information sheet will inform participants of the details of the research (see Appendix 1).

The informed consent information sheet is attached in Appendix 2. Consent will be implied by the undertaking to fill and submit the questionnaire; therefore, participants will not have to sign a consent form. The modified PHEEM questionnaire is attached in Appendix 3.

A list of all the registrars who started the registrar program between 1 January 2010 and December 2015 will be obtained from the Department of Obstetrics and Gynaecology at WITS. The number of registrars who started their training in this period according to the database is one hundred (100) registrars. Participants will be invited to answer the questionnaire on Survey Monkey.

Additional sections will be added to the standard PHEEM questionnaire to obtain:

1) Biographical information such as the participants gender, age at which they commenced the registrar programme, race, supernumerary/self-sponsored registrar versus government paid registrar and marital status.

2) Year of commencement of the registrar programme

3) If FCOG (I) exams were obtained prior to commencement of the registrar programme or afterwards: if afterwards, how many attempts were made and how long into the programme where the examinations passed

3) If FCOG(II) exams have been written

4) If yes, then the year in which FCOG(II) exams were written and passed and how many attempts at FCOG(II) were made

5)If no, reasons for not writing exams

6) Was registrar time completed? If no, reasons for failure to complete registrar time.

Question 11 has also been modified as to read “I was bleeped/called inappropriately whilst on call” as the term bleep is not routinely used in the South African context. A section for any other comments that participants may have has been added.

6.4 ANALYSIS OF STATISTICS:

The data will be collated and analysed to determine the outcomes of the objectives. Descriptive statistics will be used such as means, standard deviations, frequencies and percentages.

7. ETHICS:

Permission to conduct the study will be sought from the Academic Head of Obstetrics and Gynaecology within the WITS circuit. Ethics clearance will be obtained from the WITS Human Research Ethics Committee. By virtue of completing the questionnaire, participants will be deemed to have given consent.

8. DATA COLLECTION SHEET:

The modified PHEEM, a self-administered forty item questionnaire as described above (see Appendix 3) will be used as the data collection sheet.

9. LIMITATIONS:

There is a possibility that some potential participants may not be contactable as contact details may be out of date. Some participants may telephonically agree to participate but they may not return the completed questionnaire.

10. FUNDING:

No funding will be required for this study.

11. TIME LINE:

Year	2020								2021				
Month	1	2	3	8	9	10	11	12	01	02	03	04	05
Review of Literature													
Protocol preparation													
Assessment of protocol													
Ethics clearance													
Data collection													
Analysis of data													

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3.1 APPENDIX A

PARTICIPANT INFORMATION SHEET, INFORMED CONSENT SHEET and DATA COLLECTION SHEET

Research Project Title

An assessment of registrar's perceptions of the hospital learning environment within the University of Witwatersrand obstetrics and gynaecology registrar programme.

Invitation

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.

What is the aim of this study?

The study aims to assess the postgraduate learning environment in the University of Witwatersrand Obstetrics and Gynaecology circuit. Information obtained from this study will be used to make improvements to the learning environment in this circuit.

Do I have to take part?

Participation is voluntary. If you agree to participate kindly proceed to the informed consent page and the questionnaire after reading this information sheet.

What will be required of me if I participate in the study?

- Read the informed consent page.
- Complete and submit the attached modified Postgraduate Hospital Educational Environment Measure questionnaire to rumbi_masukume@yahoo.com (it is expected that completion of the questionnaire will take less than 10 minutes of your time)

What type of information will be sought from me?

Demographic information as well as information pertaining to the postgraduate hospital learning environment in this circuit

What are the benefits of participating in the study?

There will be no direct benefits to you. However, the findings of this study may lead to improvements in the learning environment for the current and future WITS Obstetrics and Gynaecology registrars.

What are the risks of participating in the study?

There are no anticipated risks to associated with your participating in this study

What will happen to the results of the study?

The results of the study will be used in study reports, presentations or published.

What do I do if I have any problems or concerns?

Please contact the researcher (Dr R. Masukume) directly if there are any challenges or concerns. If you feel that the matter has not been dealt with adequately please contact the research supervisors (Professor Lawrence Chauke and Dr. Natalie Odell). This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Dr Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for

the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Contact Details :

Dr R. Masukume

0501277A@students.wits.ac.za

0711208595

Prof L. Chauke: Lawrence.chauke@wits.ac.za

Dr. Natalie Odell: odellnn1011@gmail.com

INFORMED CONSENT SHEET

AN ASSESSMENT OF HOW THE HOSPITAL LEARNING ENVIRONMENT WITHIN THE UNIVERSITY OF WITWATERSRAND OBSTETRICS AND GYNAECOLOGY REGISTRAR PROGRAMME AFFECTS ACADEMIC SUCCESS

1. I agree to participate in this research study.

2. I am aware that all information I provide for this study will be treated with utmost confidentially.

3. I understand that participation involves a once-off completion of a self-administered questionnaire.

4. I understand that even if I agree to participate, I can withdraw at any time during the questionnaire or omit answering questions without any consequences.

5. I understand that extracts from my questions may be quoted in MMed, conference presentations and published papers.

6. I understand that there are no direct benefits to participating in this research study.

7. I understand that there are no risks associated with participating in the study.

8. I understand that I am free to contact the researcher to seek further clarification and information.

9. By continuing with the questionnaire, I acknowledge that I have read and understand the above information and therefore give consent.

MODIFIED POSTGRADUATE HOSPITAL ENVIRONMENT EDUCATIONAL MEASURE

 Kindly answer the following questions – highlight your answer of choice with an X in the provided boxes

 Some questions require more information – kindly fill your answer on the dotted lines

 Kindly add any other comments at the end of the questionnaire with regards to your experiences in the WITS Obstetrics and Gynaecology circuit

- Age: ……
- Gender: Female Male Other
- Race: African Coloured Indian White

Other

- Where you a supernumerary registrar? Yes No
- Marital status during registrar time Single Married
- Year and month of commencement of registrar programme ……..
- Did you have FCOG(I) examinations prior to commencement of the registrar programme? Yes No
- If no, in which year and month did you obtain your FCOG (I)?……..
- How many attempts at FCOG(I) did you have prior to passing?.....
- Did you complete the registrar programme Yes No

 If no, state reasons for leaving the registrar programme……
……..……
……..

 If yes, year and month of completion of registrar time……

• Have you written FCOG(II) Yes No

 If yes, year and month in which you wrote FCOG(II) – first attempt ……

• Did you pass FCOG(II) on first attempt Yes No

 If no, in which year and month did you pass FCOG (II) ……

 how many attempts did you have prior to passing? ……

 What do you think might have contributed to you having to write more than once?-----
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1. I had a contract of employment that provided information about hours of work

Strongly agree Agree Uncertain Disagree

Strongly disagree

2. My clinical teachers set clear expectations

Strongly agree Agree Uncertain Disagree

Strongly disagree

3. I had protected educational time in this post

Strongly agree Agree Uncertain Disagree

Strongly disagree

4. I had an informative induction programme

Strongly agree Agree Uncertain Disagree

Strongly disagree

5. I had the appropriate level of responsibility in this post

Strongly agree Agree Uncertain Disagree

Strongly disagree

6. I had good clinical supervision at all times

Strongly agree Agree Uncertain Disagree

Strongly disagree

7. There was racism

Strongly agree Agree Uncertain Disagree

Strongly disagree

8. I had to perform inappropriate tasks

Strongly agree Agree Uncertain Disagree

Strongly disagree

9. There was an informative registrar's handbook

Strongly agree Agree Uncertain Disagree

Strongly disagree

10. My clinical teachers had good communication skills

Strongly agree Agree Uncertain Disagree

Strongly disagree

11. I was bleeped/called inappropriately whilst on call

Strongly agree Agree Uncertain Disagree

Strongly disagree

12. I was able to participate actively in educational events

Strongly agree Agree Uncertain Disagree

Strongly disagree

13. There was sex discrimination in this post

Strongly agree Agree Uncertain Disagree

Strongly disagree

14. There were clear clinical protocols in this post

Strongly agree Agree Uncertain Disagree

Strongly disagree

15. My clinical teachers were enthusiastic

Strongly agree Agree Uncertain Disagree

Strongly disagree

16. I had good collaboration with other doctors in my grade

Strongly agree Agree Uncertain Disagree

Strongly disagree

17. My working hours conformed to the department of health stipulated hours

Strongly agree Agree Uncertain Disagree

Strongly disagree

18. I had the opportunity to provide continuity of care

Strongly agree Agree Uncertain Disagree

Strongly disagree

19. I had suitable access to career advice

Strongly agree Agree Uncertain Disagree

Strongly disagree

20. The hospitals had good quality accommodation for junior doctors, especially when on call

Strongly agree Agree Uncertain Disagree

Strongly disagree

21. There was an educational programme relevant to my needs

Strongly agree Agree Uncertain Disagree

Strongly disagree

22. I got regular feedback from my seniors

Strongly agree Agree Uncertain Disagree

Strongly disagree

23. My clinical teachers were well organised

Strongly agree Agree Uncertain Disagree

Strongly disagree

24. I felt physically safe within the hospital environment

Strongly agree Agree Uncertain Disagree

Strongly disagree

25. There was a no-blame culture in this post

Strongly agree Agree Uncertain Disagree

Strongly disagree

26. There were adequate catering facilities when I was on call

Strongly agree Agree Uncertain Disagree

Strongly disagree

27. I had enough clinical learning opportunities for my needs

Strongly agree Agree Uncertain Disagree

Strongly disagree

28. My clinical teachers had good teaching skills

Strongly agree Agree Uncertain Disagree

Strongly disagree

29. I felt part of a team working here

Strongly agree Agree Uncertain Disagree

Strongly disagree

30. I had opportunities to acquire appropriate practical procedures for my grade

Strongly agree Agree Uncertain Disagree

Strongly disagree

31. My clinical teachers were accessible

Strongly agree Agree Uncertain Disagree

Strongly disagree

32. My workload in this job was fine

Strongly agree Agree Uncertain Disagree

Strongly disagree

33. Senior staff utilised learning opportunities effectively

Strongly agree Agree Uncertain Disagree

Strongly disagree

34. My clinical teachers had good mentoring skills

Strongly agree Agree Uncertain Disagree

Strongly disagree

35. The training in this post made me feel ready to be a consultant

Strongly agree Agree Uncertain Disagree

Strongly disagree

36. I got a lot of enjoyment from my job

Strongly agree Agree Uncertain Disagree

Strongly disagree

37. My clinical teachers encouraged me to be an independent learner

Strongly agree Agree Uncertain Disagree

Strongly disagree

38. There were good counselling opportunities for doctors who fail(ed) to complete their training satisfactorily

Strongly agree Agree Uncertain Disagree

Strongly disagree

39. The clinical teachers provided me with good feedback on my strengths and weaknesses

Strongly agree Agree Uncertain Disagree

Strongly disagree

40. My clinical teachers promoted an atmosphere of mutual respect

Strongly agree Agree Uncertain Disagree

Strongly disagree

41. Additional comments……
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3.2 APPENDIX B: DEPARTMENTAL APPROVAL

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

OBSTETRICS AND GYNAECOLOGY
School of Clinical Medicine

24th January 2021

Dear Dr R. Masukume

Re.: Request to Conduct Research within the Wits Training curcuit

An Assessment Of The Hospital Learning Environment Within The University Of Witwatersrand Obstetrics And Gynaecology Registrar Training Programme

I hereby as Head of Department Obstetrics and Gynaecology give you permission to conduct research in the Department of Obstetrics and Gynaecology. The permission is depending on ethical clearance from HREC and the fact that all other permissions have been obtained.

I wish you all the best with the project.

Prof Hennie Lombaard

Head of Department Obstetrics and Gynecology

Rahima Moosa Mother and Child Hospital

Adj. Professor Department of Obstetrics and Gynecology, University of Witwatersrand.

Faculty of Health Sciences
Johannesburg Hospital I Private Bag X39, Johannesburg, South Africa I **T** +27 11 488 3179 I **F** +27 11 643 2522 I www.wits.ac.za

3.3APPENDIX C: ETHICAL APPROVAL

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Dr R Masukume
School of Clinical Medicine
Department of Obstetrics and Gynaecology
Medical School
University

E-mail: rumbi_masukume@yahoo.com

CC: Supervisor: Dr N Odell and Professor L Chauke
<odelln1011@gmail.com>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2021/11/24

REF: R14/49

PROTOCOL NO: **M210350** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *An assessment of the hospital learning enviroment within the University of Witwatersrand Obstetrics and Gynaecology registrar training programme*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R49 Dr R Masukume

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M210350

NAME: **(Principal Investigator)**	Dr R Masukume
DEPARTMENT:	School of Clinical Medicine Department of Obstetrics and Gynaecology Medical School University
PROJECT TITLE:	*An assessment of the hospital learning enviroment within the University of Witwatersrand Obstetrics and Gynaecology registrar training programme*
DATE CONSIDERED:	2021/03/26
DECISION:	Approved unconditionally
CONDITIONS:	
NOTE:	If contact information regarding student study participants is required, please contact the Registrar's office - <Nicoleen.Potgieter@wits.ac.za>
SUPERVISOR:	Dr N Odell and Professor L Chauke
APPROVED BY:	Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2021/11/24

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in March and therefore reports and re-certification will be due in the month of **March** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Signature of Principal Investigator

02/03/22
Date

3.4. APPENDIX D: TURNITIN REPORT

Turnitin Originality Report

Processed on: 23-Aug-2023 2:25 PM SAST ID: 2149927352

Word Count: 4423

Submitted: 1

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< 1% match (S Peer, S A Burrows, N Mankahla, J J Fagan. "Supernumerary registrar experience at the University of Cape Town, South Africa", South African Medical Journal, 2016)
S Peer, S A Burrows, N Mankahla, J J Fagan. "Supernumerary registrar experience at the University of Cape Town, South Africa", South African Medical Journal, 2016

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