

The Training Needs of Malaysian House-Officers on Core Obstetrics and Gynecological Competencies

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Abstract

Background: Internship prepares a newly graduated medical practitioner to be fully conversant and confident with the routines during clinical practice. Information on competencies on basic core clinical skills at an early stage of training is essential. So appropriate measures can be implemented to ensure adequate competence is acquired in the available period. This study was performed to assess the training needs of house officers overtime and the outcome of their training on core obstetric and gynecological (Ob&Gyn) competencies.

Methods: This was a longitudinal study of the level of competence and training needs of house-officers on the core (Ob&Gyn) competencies as required by the Ministry of Health Malaysia. Three domains of competencies that were the practical knowledge, procedural competencies, and the personal and professional attributes were assessed. The assessment was done at two points, which were the beginning and the end of the posting to enable evaluation of the level of competency and training needs over time. The data were obtained using a set of a questionnaire developed based on the competencies required by the Ministry of Health Malaysia. A Likert scale of 1-5 was used to measure the house officers' perceptions of the items studied. A P value <0.05 was considered statistically significant.

Results: Responses from 416 house-officers from eight participating hospitals were available for analysis. The mean entry scores at the beginning of (Ob&Gyn) rotation of three domains of assessment -practical knowledge, procedural competencies, and personal attributes- were 2.86 (SD 0.679), 2.21 (SD 0.222), and 3.72 (SD 0.734) and mean exit scores of the three domains of assessment at the end of the rotation were 3.84 (SD 0.553), 3.14 (SD 0.712), and 4.22 (SD 0.641), respectively. The improvements were statistically significant (P=0.0001 in all areas). Factors that were associated with higher scores at the entry-level were the female sex, number of prior clinical rotations, and where they graduated from.

Conclusion: Whilst the training needs of the house-officers in the core (Ob&Gyn) competencies significantly reduced over time, specific areas of unpreparedness related to undergraduate medical training were identified. These areas need attention to ensure graduates are optimally prepared for starting work.

Keywords: HOUSE-OFFICERS, TRAINING NEEDS, CORE OBSTETRICS & GYNECOLOGICAL COMPETENCIES

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Introduction

Medical internship in Malaysia has undergone many innovations since the inception of the Malaysian Medical Council (MMC). The MMC

is the statutory body established under the Medical Act 1971 and is entrusted with the responsibility of recognizing medical institutions to license their graduates to practice medicine in Malaysia. The number of public hospitals that offer intern training has also been increased from 38 hospitals in 2009 to 44 hospitals in 2015 in light of ensuring adequate clinical exposure and good quality of training (1). Furthermore, to enhance their clinical skills, from 2008 the period of the intern training has been extended from one year to two years, which encompasses six major disciplines namely internal medicine, pediatrics, surgery, obstetrics and gynecology, orthopedics, and emergency medicine/anesthesiology with 4 months in each discipline. The houseman training program was further reviewed to ensure the house officers (HOs) develop the attitude of accountability and ownership of their patients. This was done through the introduction of the Modified Flexi System in 2013 where the HOs are expected to work 65-75 hours per week and will have adequate training exposure including in wards, clinics, and operation theatres (2).

The transition from medical students to junior doctors is perceived as a daunting challenge for final-year medical students and new medical interns (3). HOs are faced with the realities of being a doctor in high-pressure challenging environments, which are different from their initial training in medical schools. Successful adaptation of this period involves undertaking a truly professional role, transferring theoretical knowledge into practical patient care and learning new skills (4). All medical schools must ensure that their graduates are well prepared and competent to start work (5). Competence-based forms of curricular development have replaced the traditional based curriculum across many universities globally (5). The assessment of this clinical competence is an important part of curricula to satisfy national requirements, which ensures that graduates are prepared to demonstrate independent clinical practice (6). However, undergraduate curricula are not standardized and each school delivers a

diversity of approaches (7). The utmost priority is the need for the universities to identify core competencies and occupational standards that a medical professional must demonstrate at the HO level. The competency-based education must make explicit links between education and practice such that education is tailored to the requirements of practice (8).

The aim of this study was to investigate the HOs' perceptions about their preparedness to take on their role within the obstetric and gynecological (Ob&Gyn) team with regards to their competence in performing/assisting the basic core procedures as stipulated in the ministry of health (MOH) logbook. The relevance to self-perceived competence may indicate levels of self-efficacy among the interns, and these could, in turn, contribute to the understanding of the behavior of students with respect to the competency domains being assessed. Any low self-perceived competency domains may suggest areas for improvement within a curriculum. The results of the study are expected to provide feedback to the intern Training Committees established at the hospital level in the relevant clinical departments, and at the State Health Department level. This would further contribute to improvise the logbook on core (Ob&Gyn) competencies that are expected of an intern to perform at the start of their internship and be able to perform independently by the end of their intern training period.

Materials and Methods

Sample

This is a longitudinal study conducted in eight hospitals in Malaysia. The sample included 416 HOs in the department of (Ob&Gyn) from August 2016 to February 2017. The selection of hospitals was randomly done, and both general hospitals and the district hospitals were included. A cluster sampling method was used where all HOs in the identified hospitals were invited to participate in the study and written consents were obtained. The minimum sample size as calculated with 95% confidence interval and

5% margin of error was 357.

Questionnaire Design

A study questionnaire was designed to self-assess the HOs' competencies on core Ob&Gyn as stipulated in the Ministry of Health (MOH) logbook at the beginning and end of training enabling the evaluation of level of competency and training needs over time. These conditions include range of clinical tasks with regards to their knowledge, procedural skills, and personal attributes during the first month of their rotation and re-evaluate themselves during the last month of their rotation (Exit). A Likert scale of 1-5 (1: very incompetent/training very much needed, 2: incompetent/ training needed, 3: somewhat competent/training somewhat needed 4: mostly competent/little training needed, 5: very competent/training not needed) was used to measure the HOs' perceptions of the knowledge and procedural skills studied. For the personal attributes, HOs self-assessed their relative strength on nine personal attributes: accepting responsibility, patients' needs and safety as priority, recognizing one's capabilities, ability to perform tasks under stressful and demanding clinical situations, team playing, awareness of the ethical principles and sense of professionalism, interaction with all categories of staff, patient interaction and communication, attention to detail and response to feedback. The scoring for the personal attributes is by 5-point Likert scale with the HOs' strongest personal attribute was scored 5, and the weakest personal attribute was scored 1. To maintain anonymity no identifying information was captured on the questionnaires.

Validity and Reliability of the Questionnaire

The questionnaire was scrutinized by the consultants of Ob&Gyn and piloted on a sample of HOs in Hospital Tuanku Jaafar Seremban and reviewed. The consensus view was that the questions provided a satisfactory means of assessing the HOs' views of their preparedness so confirming that the questionnaire had face

validity. Content validity was ensured by deriving the expected core Ob&Gyn competencies from the present logbook used by the Ministry of Health Malaysia and the literature search and by cross-referencing with the areas explored by other authors in the published literature. Construct validity was not regarded as an issue as the questions concerned concrete self-perceptions on the core competencies rather than abstract concepts.

Data Collection

Data collection was conducted during the beginning and end of their rotation in Ob&Gyn. One of the authors visited all the recruited sites to introduce the study and hand out hard copies of the questionnaire. Each site had a dedicated medical officer who was in charge of administering the questionnaire to the HOs at the beginning and completion of the training. The completed questionnaires were posted back to the research team. The research assistant was responsible to send remainders to the in-charge medical officer on the timelines of questionnaire administration to participants ensuring that data collection is completed at two points during the rotation.

Exclusion Criteria

Participants who are not willing to enroll in the study and who did not complete the questionnaire to the end were excluded from the analysis.

Approval for the present study was obtained from the Research and Ethics Committees of the institution. Written informed consent was obtained from every participant prior to the inception of the study.

Statistical Analysis

The collected data were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) software version 17.0. The results are expressed in terms of proportion, mean, standard deviation (SD), and standard error of the mean (SEM). A comparison between self-assessment of HOs at the first (entry) and fourth months

(exit) for each parameter was done using paired t-tests on each assessed domain. One way ANOVA test was used to verify whether the HO's assessments were influenced by other variables such as age, sex, previous number of rotations, graduating at a ($P \leq 0.05$) level of significance.

Results

Sociodemographic Data

The questionnaires were completed by 416 HO's. After excluding the missing data, the median age was 25 (range 22 to 35) years, most of them were women ($n=241$, 62.2%), graduated from Malaysian private universities ($n=137$, 38.8%) and had completed at least one prior rotation before their Ob&Gyn rotation ($n=281$, 72.1%). The sociodemographic profile is displayed in table 1.

Quantitative Data Self-Assessed Competencies for Obstetrics & Gynecology Internship

The mean entry scores at the beginning of Ob&Gyn rotation of three domains of assessment (practical knowledge, procedural competencies, and personal attributes) were 2.86 (SD 0.679), 2.21 (SD 0.222), and 3.72 (SD 0.734). Mean exit

scores at the end of Ob&Gyn rotation of three domains of assessment were 3.84 (SD 0.553), 3.14 (SD 0.712), and 4.22 (SD 0.641), respectively. The improvements were statistically significant ($P=0.0001$ in all areas). Using the score of 3 in Likert scale as marker of somewhat competent in the questionnaire, it was identified that at the commencement of the rotation, most of the HO's felt they are inadequately prepared across the range of assessed domains (knowledge and procedural competencies) except the personal attributes that the score was 3. The HO's felt that there was a need for training in most of the assessed areas of competencies. The mean entry score for practical knowledge was 2.86 (SD 0.679) with highest in cardiotocography (CTG) interpretation (3.13) and lowest for obstetrical emergencies such as cord prolapse (2.39), and uterine inversion (2.18).

For procedural competencies, the mean entry score was 2.21 (SD 0.722) with the highest observed in obstetrical procedures such as episiotomy (2.71) and lowest for gynecological procedures such as sterilization, laparoscopy, and hysteroscopy (1.87-1.92, respectively). At the end of the rotation, on the HO's re-evaluation of their competencies there was a statistically significant increase in self-perceived competencies in the knowledge and practical

Table 1: Sociodemographic data of house officers

No	Characteristics	n	%
1.	Sex (*n=382)		
	Females	241	62.2
	Males	141	37.8
2.	Age (years) (*n =379)		
	22-<25	221	54.4%
	25-30	154	44.3%
	>30	2	0.04%
3.	Graduating university (*n=376)		
	Malaysian public University	92	22
	Malaysian private University	137	38.8
	Overseas University (India, Indonesia, Russia, Jordan, Egypt, UK, Australia, Canada)	145	36.2
4.	No of completed previous rotations (*n=383)		
	No previous rotation	102	26.8
	Completed one rotation	144	36.9
	Completed more than one rotation	137	35.2

*Missing data (sex=34, age=37, graduating university=40, No of completed rotations=35)

competencies being 3.84 (SD 0.553), and 3.14 (SD 0.712 P=0.000). Regarding the personal attributes, the HOs rated themselves highest mean score of 3.56 (SD 0.523) on the attribute ‘awareness of ethical principles and sense of professionalism’ at the entry of rotation and rated the attribute “ability to interact with patients and their families” highest 4.15 (SD 0.514) with statistically improved ratings at the end of rotation. No parameter of competencies decreased with retrospective analysis at the end of rotation across the range of domains assessed. The mean scores of the competencies

assessed comparing the entry and exit of the Ob&Gyn rotation are displayed in table 2-6. Analyzing the factors such as age, sex, previous number of rotations, and graduating university, it was identified that at the entry of the rotation, there was a statistically significant difference in the perception of assessment in all three domains of competencies among women (P=0.00, P=0.018, d P=0.022) and among HOs who had completed at least one rotation prior to Ob&Gyn with significant difference in knowledge and personal attributes domains (P=0.01, P=0.04). With regards to the place of

Table 2: Self-assessment of competency domains at the beginning and end of obstetrics & gynecology rotation (n=383)

Competencies	Entry	Exit	P value
Knowledge	2.86±0.679	3.84±0.553	<0.0001
Procedural competencies	2.21±0.22	3.14±0.712	<0.0001
Personal & professional attributes	3.72±0.734	4.22±0.641	<0.0001

Table 3: Self-assessment of the knowledge domain (n=383)

Competencies	Entry	Exit	P value
Hypertension in pregnancy	2.67	3.45	<0.0001
Heart disease	2.84	3.41	<0.0001
Diabetes	2.89	3.57	<0.0001
Vaginal bleeding	2.66	3.43	<0.0001
Postpartum haemorrhage	2.64	3.44	<0.0001
Uterine inversion	2.18*	3.28	<0.0001
Term breech	2.41	3.56	<0.0001
Cord prolapsed	2.39*	3.48	<0.0001
Early pregnancy	2.74	3.67	<0.0001
Cardiotocography	3.13***	4.02	<0.0001
Abnormal menstruation	2.59	3.58	<0.0001
Pelvic mass	2.61	3.51	<0.0001

*Lowest at the entry of rotation, **Highest at the entry of rotation

Table 4: Self-assessment of obstetrical procedural competencies (n=383)

Competencies	Entry	Exit	P value
Normal delivery	2.15	4.10	<0.0001
Breech delivery	2.19	3.34	<0.0001
Vacuum-assisted	2.15	3.10	<0.0001
Forceps-assisted	2.09*	3.03	<0.0001
Episiotomy	2.71**	3.76	<0.0001
Manual removal of placenta	2.40	3.28	<0.0001
Clinical pelvimetry	2.29	3.16	<0.0001
Early pregnancy assessment	2.61	3.14	<0.0001

*Lowest at the entry of rotation, **Highest at the entry of rotation

Table 5: Self-assessment of gynecological procedural competencies (n=383)

Competencies	Entry	Exit	P value
Pelvic ultrasound	2.17	3.58	<0.0001
Intrauterine contraceptive device insertion	2.05	3.29	<0.0001
Pap smear	2.46*	3.10	<0.0001
Endometrial sampling	2.40	3.42	<0.0001
Cervical biopsy	2.21	3.64	<0.0001
Dilatation and curettage	2.06	3.41	<0.0001
Tubal sterilization	1.92	2.95	<0.0001
Cystectomy	1.87**	3.09	<0.0001
Hysteroscopy	1.92	2.86	<0.0001
Laparoscopy	1.93	2.68	<0.0001

*Lowest at the entry of rotation, **Highest at the entry of rotation

Table 6: Self-assessment of personal attributes (n=383)

Competencies	Entry	Exit	P value
Accepting responsibility for welfare of patients	3.22	4.03	<0.0001
Place patients' needs and safety at the center of the care process	3.40	4.08	<0.0001
Recognizing professional capabilities and limitations	3.40	4.10	<0.0001
Does not shy away from responsibilities; demonstrate the ability to perform tasks under stressful and demanding clinical situations.	3.40	4.08	<0.0001
Good bedside manners and exhibits team-player qualities.	3.55	4.12	<0.0001
Awareness of the ethical principles and sense of professionalism, and ensures all clinical actions are guided by them.	3.56	4.11	<0.0001
Able to interact with all categories of staff respectfully and with ease. Able to give orders firmly without being overbearing, listens to new ideas and respects other opinions.	3.54	4.12	<0.0001
Ability to interact with patients and their families on a broad range of personal and clinical circumstances (including counseling and consent taking).	3.53	4.15	<0.0001
Able to discuss and relate clinical issues to fellow colleagues and staff.	3.47	4.10	<0.0001

graduation, 47.8% (n=44) and 66% (n=101) of the HOs from Malaysian public and private universities showed higher scores in their level of self-assessment in the knowledge and personal attributes compared with the overseas graduates (P=0.01, P=0.019). However, at the exit, only the number of previous rotations was statistically significant for knowledge and personal attributes (P=0.04, P=0.023). The one-way ANOVA test for verifying the HOs' perception varied with the sex, age, place of graduation, and previous rotations as displayed in table 7.

Discussion

The present study explored self-perceived adequacy in the preparation of recent graduates

to function effectively in their roles as HOs. Assessment of graduates' performance is vital to identify the strengths and weaknesses in medical education and to diagnose the curricular situation. While there is not necessarily a correlation between self-evaluation and competence, it is reported that in high levels of self-reported lack of confidence or low self-belief in specific areas of the curriculum there is a need for a closer examination, and gaps in the curriculum which may suggest limited exposure in clinical settings may require training enhancements (9-11). The data from our study suggest that a proportion of HOs did not perceive that they have the appropriate level of competence at the beginning of their rotation, in the domains of knowledge and procedural skills. They reported low confidence

Table 7: House officers clinical competency self-assessment by sex, age group, graduating university, and number of prior rotations (n=383)

No	Characteristics	n	%	P value (Entry)	P value (Exit)
1.	Sex				
	Females	241	62.2	Knowledge P=0.00*, practical P=0.018*, personal attributes P=0.022*	P=0.063
Males	141	37.8			
2.	Age				
	22-25	221	54.4%	P=0.73	P=0.62
	25-28	154	44.3%		
>30	2	0.04%			
3.	Graduation University				
	Malaysian public university	92	22	Knowledge P=0.01*, Personal attributes P=0.019*	P=0.92
	Malaysian private university	137	38.8		
	Overseas university (India, Indonesia, Russia, Jordan, Egypt, UK, Australia, Canada)	145	36.2		
4.	No of completed previous rotations				
	No previous rotation	102	26.8	Knowledge P=0.01*, Personal attributes P=0.04*	P=0.04*
	Completed one rotation	144	36.9		
	Completed more than one rotation	137	35.2		

*Significant P<0.05

in their ability to manage common obstetrical and gynecological conditions. Significant lower confidence levels were reported in the management of obstetric emergencies and incompetence perceived in procedures such as tubal sterilization, laparoscopy, and hysteroscopy. This raises concerns about the adequacy of procedural skills training and knowledge application in the undergraduate program. With the apprenticeship model in senior clerkship as adopted in many medical schools in Malaysia, the learning is established through observation, trial, demonstration, see one, do one, and teach one model (12, 13). However, there is evidence to suggest that the apprenticeship model may not always provide sufficient experience and practice with procedural skills as it is highly variable and greatly dependent on patient case-mix, care setting, and other clerkship circumstances such as competition with higher-level learners for learning opportunities (14). This is more evident in obstetrics and gynecology clerkship, which is unique because of its fast-paced and unpredictable nature. There are both

the medical and surgical practice components, and the added consideration of the fetus when making medical decisions for the patient. These elements can make the Ob&Gyn clerkship a challenging environment for learners and affecting their preparedness for housemanship (14). Challenges to clinical exposure may be due to inter-professional challenges related to midwifery students and midwives and a lack of “hands-on” experience with deliveries, in theatre, or because of male sex. The relationship between sex and confidence as reported in our study may in part be due to this reduced opportunity for exposure in clinical settings for male students, caused by being asked to leave by midwives or by patients who feel uncomfortable with male students (15). It is also possible that women’s greater confidence can be attributed to their identification with women’s health issues.

Our study revealed low competence in practical knowledge in the management of obstetrical emergencies. There is evidence that medical school simulation training in obstetric

emergencies prepares the students for obstetric house jobs and better performance in obstetric skills (16, 17). We are unsure if the medical schools in our study have incorporated simulation into their teaching methods. More research is required to determine whether simulation training in obstetrics emergencies translates to an objective improvement in performance (17). The positive finding in our study was the moderate perceived competence in the interpretation of CTG, episiotomy suturing, and performing pap smear. This reflects that medical school's preparation for labor ward seems promising. Pap smears are part of a government surveillance program for cervical cancer, and this is convincing that medical schools are placing emphasis on the importance of knowing how to perform this crucial procedure.

At the completion of the four months of rotation, the housemen felt knowledgeable and competent to manage most of the core Ob&Gyn conditions. There is no change in the confidence levels of endoscopic procedures. This raises the questions if these are the expected tasks for HOs and the need to be included as core competencies in logbooks.

Personal attributes are one of the evaluation parameters of Malaysian houseman training logbook at the completion of their rotation in each specialty. In our study, awareness of ethical principles and sense of professionalism was rated the highest. It is promising to note that cognitive base of professionalism is reflected, although self-perception professionalism has measurement limitations that present challenges to measure real professional behaviors and have to be addressed by using different tools by different raters in different contexts (18).

In our attempt to compare our findings with other studies assessing the experiences of interns and their transition from undergraduate to interns, we identified that there are few studies on the same issue. The largest published data is from UK. Most of these studies identified the lack of preparedness with differences between medical schools in how they prepared their graduates felt by their undergraduate medical trainees.

The studies demonstrated that graduates from Problem based learning curriculum felt more prepared and confident than graduates from traditional curriculum (19). This finding supports ours that Malaysian graduates rated themselves higher compared with graduates from international universities considering the diverse curricular background.

Over the last 20 years, the curriculum has evolved in Malaysia with the trends appear to move towards integration, PBL, and community-oriented medical education (COME) in most medical schools (20). However, there are no studies so far in Malaysia examining the graduates' preparedness for skills required in relation to their type of training. One local study conducted among the University Universiti Kebangsaan Malaysia interns specifically addressed the preparedness of graduates in emergency skills and identified that competency to life-saving procedures such as cardiopulmonary resuscitation seems to be unsatisfactory (18).

Study Limitations

The present study has several limitations. First, the study examined only one rotation in housemanship. The inherent bias of subjective opinions of respondents and possible effects of memory recall of the clerkships experience in the obstetrical skills are acknowledged. We cannot account for the actual dexterity in performing the skills as evidenced by the improved confidence levels at the end of the rotation. The lack of triangulation or verification of this self-claimed data is a potential limitation. However, perceptions are important as they guide and have an impact on performance, confidence, and ability to do the job (20).

Conclusion

This study highlights that most of HOs do not feel well prepared to start their housemanship generally and in key specific areas (skills in obstetric emergencies). This raises concerns regarding the adequacy of procedural skills

training and knowledge application in the undergraduate program. However, the evidence of significant improvement in the overall level of competency by the end of the clinical rotation is a reflection of adequacy of training in MOH hospitals. This is supported by the findings that background factors were largely neutralized by the end of the rotation such as sex and undergraduate training. The data reported here will be relevant to those involved in providing undergraduate and house officer training as well as those involved in directing and monitoring improvements including the Malaysian Medical Council, medical schools, and hospital intern training committee.

Recommendations and Practical Application of the Results

Our findings indicate a need for increased on-the-job training. The apprenticeship of legitimate peripheral participation may pose problems for final year students being an observer rather than participatory. In the final year, students must proactively involve themselves in legitimate tasks in preparation for the workplace. The novice student at the beginning of clerkship who is peripheral in the team must become an integral part of the team with increasing competence in the final year (21). Furthermore, the present system of specialty-based training of the undergraduates reinforces compartmentalization of the subject content and therefore it is pertinent for curricular reform to develop a model with greater integration, and with multidisciplinary learning sessions, that would allow the students to observe the inter-relations among specialties and enhance the learning experience (22).

While action geared towards addressing the deficiencies during the undergraduate phase, it is vital that the progress of the internship trainees through the training program is closely observed, and feedback offered to ensure that the relevant learning opportunities are effectively utilized (23). Skills that are currently included in the MOH logbook for houseman, which are either of a level that is outside of what is expected from

medical graduates or could more effectively be learned at a later phase of training need to be identified, and objectives related to these skills revised or moved to a subsequent stage, as appropriate. The findings of this study will be used to provide feedback to medical schools on the adequacy of undergraduate training and to the MOH to achieve the desired level of competence in core Ob&Gyn competencies to function as HOs and in preparation for higher level of function. We believe that future area of research is the area of competency beyond knowledge, skills, and attributes to prepare them for professional practice of the future, e.g. information management, and critical/analytical thinking.

Ethical Review

The study received ethical approval from the International Medical University Ethics Committee and the National Medical Research Register.

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