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CLINICAL LEARNING ENVIRONMENT: WHAT DO HOUSE OFFICERS SAY?

Shamsa Humayun, Rashida Sultana*, Amina Ahmad, Saima Chaudhary**

Sir Ganga Ram Hospital Lahore Pakistan, *Sharif Medical and Dental College Lahore Pakistan, **University of Health and Sciences Lahore Pakistan

ABSTRACT

Objective: To explore effect of format change in house job training and other factors, hindering or promoting junior doctors' training/learning in their transition to practical life.

Study Design: Mixed Method Sequential.

Place and Duration of Study: Sir Ganga Ram hospital Lahore, from Nov 2011 to Oct 2012.

Material and Methods: Four hundred and ninety two doctors completed the modified PHEEM survey after completion of their house job from November 2011 till October 2012 after institutional ethical review Board's approval. Second phase comprised semi-structured FGD to triangulate findings of the survey with FGD results, to find out, in detail, about doctors' expectations from their house job training and suggestions for future after ensuring confidentiality and anonymity to study participants.

Results: The mean overall score for clinical learning environment was 77.67, implying 57.0% satisfaction. The mean total scores for autonomy; teaching & social support was 25.6, 31.9 & 20.0 respectively. Satisfaction with regard to autonomy, teaching and social support was 25.6/48 (53.3%), 31.9/52 (61.3%) and 20.0/36 (55.5%) respectively. Patterns emerged from FGD were lack of standardization, nonexistence of formative assessment, opportunistic learning, poor quality feedback & inappropriate teaching by medical officers. Skill learning under supervision, confidence in patient management and part of clinical team were motivating factors while poor accommodation, sanitation, catering facilities and short duration of rotation were hindering factors for learning.

Conclusion: Evidence generated has shown that internship year was very challenging. Dissatisfaction was expressed with unstructured opportunistic nature of training. Unstructured training program, role ambiguity, substandard physical environment and short duration of rotations were perceived to negatively influence learning. A valued member of clinical team, confidence in patient management, opportunity to acquire procedural skills under supervision and being supported were the factors perceived to enhance learning.

Keywords: House job, House officer's perceptions, Learning environment, PHEEM Inventory, Supervision.

INTRODUCTION

Clinical Learning Environment (CLE) is defined as acomplex network of forces that are effective on clinical learning outcomes[1]. Learning environment, in general, encompasses many important aspects, such as the quality of supervision, characteristic of teachers, facilities and atmosphere, which determine the quality of learning[2,3]. In contrast to classroom education, clinical education occurs in a more complex environment[4]. Measurement of learning environment provides an opportunity to improve quality of training by identifying the strengths, weaknesses, and priority areas for improvement. Internship or house job is a 1-year mandatory requirement after passing the final year exam of MBBS, where an intern works in various clinical departments of Pakistan Medical and Dental Council (PMDC) accredited hospital to acquire practical training and registration with PMDC as a practicing doctor[5,6]. This training period enables young doctors to learn clinical skills and application of theoretical knowledge inreal life setting. Transitions in medical education are emotionally and socially dynamic processes through which students increase expertise by acquiring new knowledge and skills[7,8]. Where it is a time of significant personal and professional development, it may also be source of stress and anxiety[9-11]. The latter may hinder learning[12].

Correspondence: Dr Shamsa Humayun, Professor of Obstertrics& Gynecology, Sir Ganga Ram Hospital Lahore Pakistan
Email: Shamsahumayun@gmail.com
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Inadequate preparation during medical school, poor support and education for newly qualified doctors, as they first enter clinical practice, are various factors contributing to this stressful experience of transition[13]. Since clinical learning environment is the sine qua non of medical teaching, therefore understanding of various factors influencing its quality and their impact on learning has been an area of interest for researchers. So far very few studies are published using dundee ready educational environment measure (DREEM) and postgraduate hospital educational environment measure (PHEEM) to determine the perception of medical students in Pakistan regarding their learning environment[14,15]. Nevertheless, there is a gap in evidence pertaining to the challenges faced by house officers during clinical rotations in the Pakistani context, urging more research in this area. Most importantly, doctors' in-depth perspective about quality of clinical learning environment is much needed yet least explored, especially in lieu of changed format of house job by PMDC in reducing the duration of rotation in a specialty from six to three months. Hence the aim of this study is to explore effect of format changeof house job and other factors, hindering or promoting junior doctors' training/learning in their transition to practical life. The evidence thus generated may help to identify areas for further improvement along with suggestions from the stakeholders.

MATERIAL AND METHODS

A 2-phase mixed method sequential study was carried out in five public hospitals of Punjab. The house officers completed the modified self-administered PHEEM survey questionnaire after completion of their house job from November 2011 to October 2012. The sample size was calculated using confidence interval of 4.5 and confidence level of 95%. The total no of students in private and public medical colleges of Punjab is approximately 8000. Non-probability convenience sampling was used to select 500 young doctors. The context and process of filling the survey questionnaire was shared with participants and a verbal informed consent was procured. Anonymity was ensured by not seeking participants' true identity and instead giving them pseudonyms.

Stage-I: The PHEEM questionnaire

Instrument

Postgraduate hospital educational environment measure (PHEEM) is a validated 40-item questionnaire with reliability index of 0.86 that measures perceptions of the doctors regarding clinical learning environment[16]. In presentstudy, the customized PHEEM inventory comprising 34 statements was used[17]. This inventory hasfollowing dimensions to measure clinical environment. Autonomy (12 statements), teaching (14 statements) and social support (8 statements). Each of the 34 statements was rated on a 5 point agreement Likert scale (1-Strongly disagree, 2–Disagree, 3–Uncertain, 4-Agree, 5- Strongly agree). Inversion of rating was done for the negative statements as per PHEEM protocol. Maximum possible scores according to SriLankan PHEEM are: autonomy 48, teaching 56, social support 32 and overall desirable clinical educational environment=136.

Stage-II: Focus group discussion (FGD)

Second phase comprised semi-structured FGD to triangulate findings of the survey with FGD results, to find out, in detail, about doctors' expectations from their house job training and suggestions for future improvement[18]. By using maximal variation sampling technique, eleven doctors were selected to take part in FGD. Out of these, five had completed their rotations in medicine, surgery, pediatrics, dermatology and obstetrics and gynecology. Rest of the six worked in anesthesia, psychiatry, oncology, ENT and Eye in addition to compulsory rotations in Medicine and Surgery. Each was given pseudonyms for FGD to conceal their identities; and an informed written consent was obtained. FGD was moderated by a medical educationist unknown to participants, with past experience in qualitative data collection and moderating an FGD.

Following questions were asked from the FGD participants:

- What were your expectations/preparation when you joined house job?
- Was an orientation session arranged in the beginning of each rotation and were you assessed at the end of each rotation?
- What is your perception about newly implemented house-job training format?
- What is your opinion about the physical environment such as: duty room, work load, work place, and food and duty hours?
- What can be done to improve/enhance training/learning during house job?

Table I: PHEEM Survey.

S. No	Questions for feed back	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Mean	SD
1	My Consultant sets clear standards to be achieved	81	233	103	56	19	2.61	1.01
2	I am able to allocate time for continuous medical education	45	124	126	147	50	1.93	1.14
3	I had an informative orientation program before each rotation	29	134	89	155	85	1.71	1.20
4	I have the appropriate level of responsibility in this position	74	293	73	47	5	2.78	0.85
5	I have good clinical supervision	61	271	90	52	18	2.61	0.95
6	My working hours confirm to the guidelines provided by the PMDC	43	173	145	85	46	2.16	1.10
7	I have to perform inappropriate tasks during working hours	49	133	77	158	75	1.84	1.25
8	There are informative guidelines about house job in final year	21	91	71	171	138	1.36	1.19
9	My consultant/seniors have good communication	69	230	83	75	35	2.45	1.12
10	There is sex discrimination in the post.	65	169	77	117	64	2.10	1.27
11	There are clear protocols in the post	37	194	137	93	31	2.22	1.04
12	My consultant/seniors are enthusiastic	80	250	97	45	20	2.66	0.98
13	I have good collaboration with my co-house officers	121	302	43	18	8	3.03	0.79
14	I have suitable access to career guidance	25	150	122	119	76	1.85	1.16
15	This hospital has good quality accommodation for house officers, especially when on call	28	139	71	112	142	1.59	1.31
16	I get regular feedback from seniors	45	124	126	147	50	1.93	1.14
17	My consultant is well organized	112	260	63	40	17	2.83	0.98
18	I feel physically safe within the hospital environment/ward	75	228	75	77	37	2.46	1.14
19	I am blamed inappropriately by my consultant/seniors	64	183	97	110	38	2.25	1.16
20	There are adequate catering/canteen facilities in the hospital	41	158	66	95	132	1.75	1.36
21	I have enough clinical learning opportunities	42	275	84	82	9	2.52	0.92
22	My consultant has good teaching skills	114	271	65	35	7	2.91	0.87
23	I feel part of the team working here	62	281	92	48	9	2.68	0.87
24	I have opportunities to perform appropriate practical procedures	57	263	89	66	17	2.56	0.97
25	My seniors and consultants are accessible	62	281	78	51	20	2.63	0.96
26	My workload in this post is fine	27	176	75	127	87	1.85	1.23
27	My consultant is a good role model	106	251	83	34	18	2.79	0.97
28	I get a lot of enjoyment out of my present job	43	205	112	88	44	2.23	1.11
29	My consultant/seniors encourage me to be an independent learner	50	250	106	66	20	2.49	0.98
30	The consultant/seniors provide me with good feedback on my strengths and weaknesses	36	215	115	94	32	2.26	1.05
31	My consultant/seniors promote mutual respect among members of my unit	51	266	81	61	33	2.48	1.05
32	Internship gave me opportunity for research	24	123	121	140	84	1.72	1.15
33	The training in this post makes me feel ready to practice independently as a medical officer	44	189	118	101	40	2.19	1.11
34	Learning during house job is well organized	21	149	114	142	66	1.83	1.13

Total Question: 34, Total Score: 136, Overall impression: Mean ± SD= 77.6728 ± 36.64729
More positive than negative but room for improvement
PHEEM interpretation:
0-34: Very Poor, 35-68: Plenty of problems, 69-102: More positive than negative, 103-136: Excellent
Question no. 7, 10, 19 are scored in reverse because of their negativity, Missing values are scored 2 for uncertain

Data analysis

Quantitative data analysis:

PHEEM questionnaire data were analyzed using SPSS version 16 and descriptive statistics

such as frequencies, mean and standard deviation were calculated as displayed in table-II.

Qualitativedata analysis:

FGDs were audio recorded and later transcribed. Transcriptions were given to the participants for verification and possible modifications

support. Each theme represented similar ideas existing in the transcribed FGD. The thick description under 3 major themes was further scrutinized for certain patterns, which were then categorized according to similarity of context and views expressed for that situation. These themes and patterns along with transcribed FGDs were

Table II: Perception of Role autonomy.

No.	Questions	Total No.	Mean	SD
3	I had an informative orientation program before each rotation	492	1.72	1.20
4	I have the appropriate level of responsibility in this position		2.78	0.85
6	My working hours confirm to the guidelines provided by the PMDC		2.16	1.10
7	I have to perform inappropriate tasks during working hours		1.84	1.25
8	There are informative guidelines about house job in final year		1.36	1.19
11	There are clear protocols in the post		2.22	1.04
23	I feel part of the team working here		2.68	0.87
24	I have opportunities to perform appropriate practical procedures		2.56	0.97
26	My workload in this post is fine		1.85	1.23
31	My consultant/seniors promote mutual respect among members of my unit		2.48	1.05
32	Internship gave me opportunity for research		1.72	1.15
33	The training in this post makes me feel ready to practice independently as a medical officer		2.19	1.11

Total Question= 12, Mean ± SD = 25.626 ± 13.0631 (25-36) More Positive perception of one's job
PHEEM interpretation:
0-12: Very poor, 13-24: A negative view of one's role, 25-36: Positive perception of one's job, 37-48: Excellent perception of one's job

Table III: Perception of teaching.

No.	Questions	Total no.	Mean	SD
1	My Consultant sets clear standards to be achieved	492	2.61	1.01
2	I am able to allocate time for continuous medical education		1.93	1.14
5	I have good clinical supervision		2.61	0.95
9	My consultant/seniors have good communication		2.45	1.12
12	My consultant/seniors are enthusiastic		2.66	0.98
16	I get regular feedback from seniors		1.93	1.14
17	My consultant is well organized		2.83	0.98
21	I have enough clinical learning opportunities		2.52	0.92
22	My consultant has good teaching skills		2.91	0.87
25	My seniors and consultants are accessible		2.63	0.96
29	My consultant/seniors encourage me to be an independent learner		2.49	0.98
30	The consultant/seniors provide me with good feedback on my strengths and weaknesses		2.26	1.05
34	Learning during house job is well organized		1.83	1.13

Total Questions: 13, Mean ± SD = 31.9471 ± 13.26678 (27-39) Moving in the right direction
PHEEM interpretation:
1-13: very poor Quality, 14-26: In need of some retraining, 27-39: Moving in the right direction, 40-52: Model teachers

of interpretations by researchers. Researcher A (first author) then color coded responses under each question and categorized the whole thick description into 3 major themes (priori codes), corresponding with the PHEEM conceptual framework revolving around: perception of role autonomy, perception of teaching and social

given to researcher B (2nd author) and C (3rd author). Variance among researchers was reduced through discourse regarding interpretations, themes and patterns representing similar chunks of data. The reduced thick description was displayed in matrices by placing themes and trends in a table and using comments verbatim to

give in depth insight into the issues and for triangulation of interpretations (see table-I). Conclusions were approached, using a constant iterative process by re-visiting research question, FGD questions, transcriptions and matrices by all researchers individually toverify and consolidate the final summaries[19].

RESULTS

Completed questionnaires were returned by 492 out of 500 participants with a response rate of 98%. Among respondents, 355 (72.2%) were female and 121 (24.6%) were male, 16 did not mention their gender. Majority were unmarried (86.2%). The mean overall score of PHEEM survey was 77.67 implying 57.0% satisfaction, indicating more positive than negative factors however, indicating room for improvement (table-I). Mean total scores for autonomy, teaching & social support were 25.6, 31.9 & 20.0 respectively (table II, III & IV). Satisfaction with regard to autonomy, teaching and social support was 25.6/48 (53.3%), 31.9/52 (61.3%) and 20.0/36 (55.5%) accordingly.

Thematic Analysis

The patterns emerged were categorized under predetermined PHEEM themes (priori codes) namely: perception of role autonomy, perception of teaching & social support, as given in table-V.

DISCUSSION

The house job is a critical time for making career decisions and gaining confidence in clinical skills, communication and teamwork practices. It provides them a key opportunity to play the role of physician, acquire the language of medicine and understand the hierarchy of the profession[20]. Itis perceived as a major transition with an abrupt increase in workload and responsibility, where performance transfers from "knowing" to "doing"[21]. They must learn to balance such diverse demands as responsibility for patient care, economic hardships, on-call schedules, patient death, the need for constant learning, the task of teaching, along with the necessities of family and personal life[22]. The overall score obtained on PHEEM questionnaire was 77.6 indicating more positive than negative perception of training environment. This is very encouraging and motivating for the supervisors. This was confirmed by FGD results as majority of respondents agreed that house job training provides an excellent opportunity for skill learning, patient management, knowledge application and team work. (Thematic analysis table-V comment 4,5,6). The ample opportunity to acquire procedural skill and working as clinical team member with PHEEM survey score (2.56 & 2.68) perceived very satisfying by the participants. However, they feel that it is opportunistic and varies from unit to unit. Hence, stressing on the need for better organization and standardization of training opportunities. Same was evident from survey score 1.8 (table-I Q-34) and thematic analysis (table-V comment 7&8). Working as clinical teammember and actively involved in patient care plan improves confidence and promotes learning as supported by survey score more than 2 (table-I, Q4, 13, 21) and results from FGD (table-V, comment 30, 31, 33, 34). Confidence in patient management also enhances self-efficacy and positively influences learning (table-V comments 31, 32). Evidence suggests that formal and informal orientation, role clarification and nurturing learning environment are needed to support learning during this period[23,24]. It requires existence of a standardized and structured training program for the house officers as well as for the clinical team. Due to nonexistence of formal orientation and learning outcomes about training in final year and at the beginning of each rotation, young trainees fail to comprehend what is expected out of them, leading to stress and frustration (table-V, comment 1, 2 & 3). PHEEM survey score less than 2 highlights lack of orientation sessions and structured program as key issues, negatively influencing learning. These findings are supported by FGD results as well (table-V Comment 10, 14 & 17). Survey scoring 1.83 and FGD indicate absence of a structured training program for house job, which promotes opportunistic training

and role ambiguity among interns and clinical team members (see table-V, Comments 9, 13 & 16). Clinical learning occurs in the fast paced and dynamic environment, with clinician-teachers struggling to handle dual roles of care seniors and house officers depend on them for support, supervision and learning (table-V, comment 19 & 20). PHEEM score regarding quality and attitude of staff towards teaching was more than2 (table-I Q 12, 22), indicating house

Table IV: Social perception.

Themes	Trends/word frequency	Comments Verbatim
Perception of Role Autonomy	1.Learning protocol (8) Orientation (7) 2.Skill (11)Procedure Learning (7)	C1: No, I was not given any objectives in any of the unit. C2: I agree on having an orientation class before the start of rotation so, that we could know what exactly we have to learn and do during the rotation. C3: there was no orientation session and no learning objective were either provided by institution or identified by myself. C4: I have learnt basic skills of emergency in surgery and instrument handling. C5: Regarding skills, I met my targets. C6: Regarding clinical skills, I learned well in all units. C7: We all agree that in the same specialty learning is different in different units. It depends in which unit you get house job there is no standardization C8: We all agree that in the same specialty learning is different in different units C9: It depends in which unit you get house job there is no standardization.
Perception of Teaching	1.Supervision (6) and support (6)	C10: In medicine, towards the end of third month, we were able to manage everything; under supervision of an M.O. and knew what needs to be done next. C11: Yeah, I was supported by my seniors in some units. They always supervise me and tell what to do. C12: I think I was supported by my seniors. I was helped a lot regarding patient management.
	2.Standardization /16	C13: We all agree that training is not standardized in the same specialty and vary from unit to unit. C14: Learning outcomes were not provided beforehand. We had MCQ written assessment at the end of one year but certificate does not depend on result. No standardization and no standard operating procedures. C16: Yes, there is no standardization. And it varies from ward to ward. It is individualized effort. More effort you put in, more you learn C17: There should be standard protocol, standard baseline for each house officer regarding the unit they are in. C18: We had end rotation assessment in medicine and dermatology, not in surgery.
	3.Medical officers attitude/13	C19: MOs are your seniors and you learn from them. At the end of the day it's not the professor who spends that much time with you as the MOs; In emergencies, in wards. C20: every unit would have different M.Os some of whom would be more eager to teach us; some M.Os would just not bother teaching us. C21: The experiences are different because of different units, different M.Os and their willingness to teach.
	Feedback/12	C22: Yes, Medical Officers give feedback to a certain extent. C23: There is no formal feedback.
Perception of Social Support	De motivating factors 1.Physical environment (15)	C24: Duty room should be improved because after such hectic duties, you should at least be able to take proper rest. As per food, it's pathetic, we manage somehow. C25: We were asked to shift patients, run to blood bank, Lab even search for patient relatives! And as there is no proper food facility so I have to order. C26: Living facilities were unbearable. 2 hours that you get to sleep after being up for 24 hours are spent up in throwing the bugs away. C27: In day time, I felt tired, irritated and my performance was obviously affected.
	2.Short Duration of Rotation (12)	C28: I think rotation should be for 4 months and medicine & surgery should be compulsory as it is very beneficial. And 4 months should be for sub-specialty, we like to opt for. C29: As far as medical skills are concerned, very short period is there to learn important clinical skills.
	Motivating Factor	
	2.Confidence in Patient Management (13)	C30: I am confident that i can work independently now. C31: I am able to manage patients independently to some level. C32: I think I'm confident to manage patients independently.
	Clinical Team Member (15)	C33: I think, I am a part of clinical team however. C34: I always felt that I am part of a clinical team. I give my opinion and they respect my opinion. So it is a good feeling in a house job that you are doing something actively and contributing.

providersand teachers[25]. The mean score of 31.9 for perception of teaching in our study, indicates fairly good quality of teaching albeit with a room for further improvement. Our findings suggest that medical officers in a unit act as immediate officers' satisfaction in this regard. However, in depth exploration revealed expression of dissatisfaction (table-V, comments 21). This disparity was due to the fact that in survey they were commenting about professorial staff. While

in FGD they were talking about medical officers. This can be explainedaspoor time management by medical officers owing to their competing responsibilities towards teaching and patient care[25,26]. Effective supervision assists in development of medical professionalism and contributes to improved patient safety, better health outcomes, and faster acquisition of skills by trainees[27]. Respondents in FGD felt that they were appropriately supervised during training (table-V comment 10,11,12) which validates mean score of more than 2 on questions concerning supervision in PHEEM inventory). Feedback is an integral and important element of teaching as it encourages and enhances the learners' knowledge, skills and professional performance. It aids in improvement of the performance of the learners with the basic aim of helping them achieve their goals in addition to the educational objectives[28,29]. However, a score less than 2 on survey (table-I Q 16) and the fact highlighted in FGD that supervision and feedback were mostly provided by junior team members with limited experience and no formal training needs attention (table-V, Comment 22 & 23). Despite consensus that supervision and feedback is an important aspect of improved learning capabilities, the available literature has revealed an increase in numbers of reports of dissatisfaction both from learners' as well as educators' aspects[30]. One of the important determinants of effective clinical learning is performance assessment. In our hospitals due to absence of structured training program training is time bound. A house officer gets a certificate without assessment after one year[31]. Our respondents in FGD expressed that they do not receive periodic feedback on their performance neither they are exposed to assessment. (table-V; comments 14, 18). If thegoal of house job training is to make young doctors proficient and confident practitioners, then workplace-based assessments such as mini clinical evaluation exercise, direct observation of procedural skills, case-based discussion or multisource feedback may be considered[32].

Table V: Themes, Trends & Comments Verbatim.

No.	Questions	Total No.	Mean	SD
10	There is sex discrimination in the post	492	2.10	1.27
13	I have good collaboration with my co-house officers		3.03	0.79
14	I have suitable access to career guidance		1.85	1.16
15	This hospital has good quality accommodation for house officers, especially when on call		1.59	1.31
18	I feel physically safe within the hospital environment/ward		2.46	1.14
19	I am blamed inappropriately by my consultant/seniors		2.25	1.16
20	There are adequate catering/canteen facilities in the hospital		1.75	1.36
27	My consultant is a good role model		2.79	0.97
28	I get a lot of enjoyment out of my present job		2.23	1.11

Total Questions: 09, Mean ± SD = 20.0997± 10.31741 (19-27) More pros than cons
PHEEM interpretation:
0-9: Non existent, 10-18: Not a pleasant place, 19-27: More pros than cons, 28-36: good supportive environment

Transitions are known to be stressful and capability to thrive despite challenges may help students to achieve favourable outcomes despite stressful situations[33,34]. Humans strive to achieve astate of homeostasis, which consists of physiological stability and psychological consistency[35]. Our doctors' perceptionof basic facilities was not very encouraging. They labeled it as "more pros than cons"with mean PHEEM score of 20.0. FGD also supported the survey results and participants complained about the sub standard duty rooms, lack of internet facility, poor dining services and deplorable quality of food (see table-V; comment[24,26]. As a result, they experience sleep deprivation leading to fatigue. Consequently,

they are unable to actively participate in clinical learning opportunities, resulting in suboptimal performance and dissatisfaction at both learners' and patients' end PHEEM score 1.75, 1.59 (table-V; comment 27). Similar findings were reported by Gillard *et al*[36]. In addition, humiliation bypara-medical staff, shifting patient, running to lab, getting patient ready for examination were sources of stress and deterrents to effective learning (table-V, Comment 25).The problems perceived by our respondents were similar to those reported by others[37,38]. Short duration of rotation was another factor identified by the participants negatively influencing the quality of learning. This component was not part of PHEEM survey and specifically explored in FGD to get an insight about the recently changed format of house job. They felt that 2-3 months' rotation is in appropriate to get a grip on even the basics of that particular discipline, (See table-V; comment 28,29). The same has been reported by Bernebo *et al*[39]. In short, house job training is a critical time in the career of young doctors. A structured training program and good learning environment will augment the usefulness of this time period.

CONCLUSION

Evidence generated has shown that internship year was very challenging. Dissatisfaction was expressed with unstructured opportunistic nature of training. A valued member of clinical team, confidence in patient management, opportunity to acquire procedural skills under supervision and being supported were the factors perceived to enhance learning. Unstructured training program, role ambiguity, substandard physical environment and short duration of rotations were perceived to negatively influence learning. Implementation of a structured competency based training program can resolve various issues and can make this year a worth while learning experience.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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