

Trainees' perceptions on learning environment in a pediatric training program in Indonesia

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Abstract

Background Learning environments in pediatric specialist training programs are complex and may influence trainees' performance and achievement. The postgraduate hospital educational environment measure (PHEEM) is useful for evaluating the role of autonomy, teaching, and social support.

Objective To evaluate the learning environment in a pediatric specialist training program in Indonesia and compare the perceptions among the junior, middle, and senior trainees.

Methods We conducted a cross-sectional study on pediatric specialist trainees in the Pediatric Specialist Training Program at Universitas Gadjah Mada, Yogyakarta, Indonesia in May 2019. Trainees filled the Postgraduate Hospital Educational Environment Measure (PHEEM) questionnaire online, which had been translated into Indonesian.

Results All 136 trainees, consisting of 35 (25.7%) junior, 44 (32.3%) middle, and 57 (42%) senior level, completed the survey. The mean total PHEEM score for all trainees was 108.10 (SD 17.03), which indicates needs improvement. The mean scores for the role of autonomy, teaching, and social support were similar among trainee levels. Nevertheless, junior trainees scored lower than the middle and senior trainees for the question on performing inappropriate tasks.

Conclusion The learning environment of our pediatric training program is perceived as good, but needing improvement. There is no difference in perception of learning environment among trainee levels. [Paediatr Indones. 2022;62:249-56 DOI: 10.14238/pi62.4.2022.249-56].

Keywords: pediatric trainee; learning environment; level of training

Postgraduate medical education specialist training programs have unique and complex structures, which combine services and training within the programs. The core of professional development is exposure to patients in hospitals, which are often not a learning-friendly environment.¹ Such programs have high workload and stress, which may have serious implications for trainees' performance and behavior as well as curricula outcomes.²

The learning environment in a specialist training program consists of the physical, emotional, and intellectual environment,³ and is important for trainees' performance and achievement. A good learning environment has been proven to improve trainees' performance, behavior, engagement, way of thinking, and achievement, which ultimately leads to better patient care.^{4,5} The postgraduate hospital educational environment measure (PHEEM) is an instrument to assess the clinical learning

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environment of postgraduate medical training; it has been adopted and translated widely, with good validity and reliability.⁶⁻¹¹

The interpretation of each PHEEM items is based on the trainee's perception, which may be affected by many factors, such as resources of the country or institution, the curricula, and the condition of the trainees themselves. Trainees of different levels may differ in their perceptions because of different experiences, workload, stress, and responsibilities. Several studies on this topic have been published, but the results varied.^{4,12-15} We aimed to evaluate the learning environment in a pediatric specialist training program in Indonesia, which has rarely been reported. In addition, we compared the perceptions among the junior, middle, and senior trainees.

Methods

We conducted a cross-sectional study using data obtained from a survey performed in May 2019 in the *Pediatric Specialist Training Program* (PSTP) at the Universitas Gadjah Mada (UGM) Faculty of Medicine, Public Health and Nursing in Yogyakarta, Indonesia. Trainees filled the *Postgraduate Hospital Educational Environment Measure* (PHEEM) questionnaire, to assess the quality of education in the PSTP UGM.

The PSTP UGM is one of 15 PSTPs institution in Indonesia. The program encompasses a 45-month training period divided into three levels: junior, for the first 12 months; middle, for 18 months; and senior for 15 months. The training activities include clinical work at a tertiary hospital and some district hospitals, as well as academic tasks such as case presentations, journal reading, and research.

The PHEEM questionnaire was translated into the Indonesian language and evaluated for validity and reliability, with Cronbach's alpha of 0.89 and 0.91 in the first and second trials, respectively.⁹ The PHEEM questionnaire consists of 40 items: 14 items for evaluating autonomy (item no. 1, 4, 5, 8, 9, 11, 14, 17, 18, 29, 30, 32, 34, and 40), 15 items for evaluating teaching quality (item no. 2, 3, 6, 10, 12, 15, 21, 22, 23, 27, 28, 31, 33, 37, and 39), and 11 items for assessing social support (item no. 7, 13, 16, 19, 20, 24, 25, 26, 35, 36 and 38).¹⁰

All pediatric trainees who were registered as active

trainees in PSTP UGM in May 2019 were invited to complete the survey. The questionnaire was distributed and completed online. Participation in the survey was voluntary and anonymity was assured. The trainees were asked to choose one of a five-point scale which ranged from 0 to 4 as follows: (0) strongly disagree, (1) disagree, (2) uncertain, (3) agree, (4) strongly agree. Four items in the questionnaire (items number 7, 8, 11, and 13) were negative statements and scored in reverse order.

We followed the standard interpretation of PHEEM, which was to evaluate each item's score as well as the overall score.¹⁰ Mean scores were interpreted as follows: 3.5 or more, good quality; 2 and 3, needs improvement; 2 or less, problems need further exploration. An overall score of 0-40 indicated a very poor educational environment; 41-80 indicated plenty of problems; 81-120 indicated more positive than negative, but with room for improvement; and 121-160 indicated an excellent educational environment. The scores for each area were interpreted as follows: for perceptions of autonomy 0-14 (very poor), 15-28 (negative view of one's role), 29-42 (more positive perception of one's job), and 43-6 (excellent perception of one's job); for perceptions of teaching: 0-15 (very poor quality), 16-30 (in need of some retraining), 31-45 (moving in the right direction), and 46-60 (model teachers); for perceptions of social support: 0-11 (non-existent), 12-22 (not a pleasant place), 23-33 (more pros than cons), and 34-44 (good supportive environment).

We calculated the mean overall score and means of the three areas. The comparison of mean score between two groups was analyzed using unpaired student's T-test, whereas the comparison between more than two groups was analyzed using ANOVA. The comparison of proportions between groups was done by Chi-square test or Fisher's exact test, if the expected value for one or more cells was <5. A P value < 0.05 was considered to be statistically significant. All data analysis was conducted using *Stata software version 12* (StataCorp, College Station, Texas). This study was approved by the Ethics Committee of the UGM Faculty of Medicine and Public Health and Nursing.

Results

All 136 (100%) trainees completed the questionnaire. Almost half (42%) of the trainees were senior level, followed by middle (32.3%) and junior (25.7%). The characteristics of the trainees are presented in **Table 1**.

The overall PHEEM score was 108.1 (SD 17.0). The majority (73.5%) of trainees had overall scores between 81 and 120, while 27 (19.9%) trainees scored >120, and 9 (6.6%) trainees scored < 80 (**Table 2**). There were no significant differences in total scores among training levels. The mean total score for role of autonomy in all trainees was 38.4 (SD 6.5) out of 56, which indicated a more positive perception of one's job. The mean teaching score was 41.9 (SD 6.5) out of 60, which indicated moving in the right direction. For social support, the mean score was 27.8 (SD 5.3) out of 44, which indicated more pros than cons (**Table 3**).

The mean scores of each item for all trainees are shown in **Table 3**. Most items scored between 2 and 3, while 10 items scored 3 or more, and none scored 3.5 or more. Three items that scored less than 2 were related to accommodation (question no. 20), no-blame culture (question no. 25), and catering (question no. 26). Seven out of ten items that scored 3 or more were related to the clinical teacher's performance and skills.

The mean overall score and for each area, i.e., role of autonomy, teaching, and social support, were not different among trainee levels (**Table 3**). However,

there were significant differences ($P < 0.05$) among trainee levels for 6 specific questions as follows: no. 8 (perform inappropriate tasks), no. 11 (bleeped inappropriately), no. 12 (participate actively in educational events), no. 27 (opportunity to have clinical learning), no. 31 (my clinical teachers are accessible), and no. 32 (my workload in this job is fine). For no. 8 (perform inappropriate tasks), the junior trainees scored lower compared to the middle and senior trainees. The junior trainees scored less than 2 (suggesting a problem which needs further exploration), while the middle and senior trainees scored between 2 and 3 (needs improvement). For other questions (nos. 11, 12, 27, 31, and 32), despite differing scores among trainee levels, all scores still ranged between 2 and 3. Hence, the interpretation was similar. Nevertheless, there was also a tendency for junior trainees to score lower than the middle and senior trainees on those questions.

Discussion

The PSTP learning environment in our institution was perceived by the trainees as being more positive than negative, but with room for improvement (total PHEEM score of 108.1). A similar result was reported by other pediatric training programs in Indonesia, with scores of 105.3 and 116.4.¹⁶ Our result was also similar compared to those of pediatric training programs in other countries, such as Saudi Arabia

Table 1. Characteristics of the trainees

Characteristics	Junior(n=35)	Middle (n=44)	Senior (n=57)	Total (n=136)
Female, n (%)	24 (68.6)	29 (65.9)	46 (80.7)	99 (72.8)
Year of training, n (%)				
Year 1	33 (94.3)	0	0	33 (24.3)
Year 2	2 (5.7)	26 (58.1)	26 (58.1)	28(20.6)
Year 3	0	17 (38.6)	11 (19.3)	28 (20.6)
Year 4	0	0	27 (47.4)	17 (19.8)
Year 5 or more	0	1 (2.3)	19 (33.3)	20 (14.7)

Table 2. Total score based on the trainee level

Characteristics	Junior(n=35)	Middle (n=44)	Senior (n=57)	Total (n=136)	P value
Total score 41-80, n (%)	1 (2.8)	3 (6.8)	5 (8.8)	9 (6.6)	0.540
Total score 81-120, n (%)	29 (82.9)	33 (75.0)	38 (66.7)	100 (73.5)	0.224
Total score 121-160, n (%)	5 (14.3)	8 (18.2)	14 (24.5)	27 (19.9)	0.460
Mean total score (SD)	108.1 (17.0)				

Table 3. Mean scores of each item

Variables	Total	Junior	Middle	Senior	P value
Perception of "role of autonomy"					
1 I have a clear description of work that provides hours	2.7 (0.9)	2.7 (1.0)	2.8 (0.9)	2.7 (0.8)	0.892
4 I had an informative orientation program	2.9 (0.7)	3.0 (0.6)	2.9 (0.7)	2.9 (0.7)	0.918
5 I have the appropriate level of responsibility during my training	2.9 (0.7)	2.9 (0.6)	2.8 (0.9)	3.1 (0.6)	0.141
8 I have to perform inappropriate tasks	2.3 (0.9)	1.8 (0.9)	2.6 (0.8)	2.4 (0.9)	0.001**
9 There is an informative House Officers handbook	2.6 (0.9)	2.6 (0.9)	2.5 (1.1)	2.7 (0.9)	0.620
11 I am bleeped inappropriately	2.9 (0.7)	2.7 (0.7)	3.1 (0.6)	3.0 (0.7)	0.030**
14 There are clear clinical protocols in this post	2.6 (0.8)	2.8 (0.7)	2.7 (0.8)	2.5 (0.8)	0.330
17 My working hours conform to what is required in the internship regulations	2.4 (0.9)	2.1 (1.1)	2.5(0.8)	2.5(0.9)	0.055
18 I have the opportunity to provide continuity of care	2.7 (0.7)	2.6 (0.8)	2.8 (0.7)	2.8 (0.6)	0.544
29 I feel part of a team working here	3.0 (0.6)	2.9 (0.5)	3.1 (0.5)	3.0 (0.7)	0.301
30 I have opportunities to acquire the appropriate practical procedures for my grade	3.0 (0.5)	2.9 (0.5)	3.0 (0.5)	3.0 (0.5)	0.394
32 My workload in this job is fine	2.3 (0.8)	2.0 (0.8)	2.4 (0.8)	2.4 (0.8)	0.034**
34 The training in this post makes me feel ready for postgraduate studies	2.9 (0.6)	3.0 (0.6)	2.9 (0.6)	3.0 (0.6)	0.617
40 My clinical teachers promote an atmosphere of mutual respect*	3.0 (0.5)	3.0 (0.5)	2.9 (0.6)	3.0 (0.6)	0.572
Total score of the above items (out of 56)	38.4 (6.5)	36.8 (6.2)	38.9 (6.6)	38.9 (6.5)	0.279
Perception of Teaching					
2 My clinical teachers set clear expectations	2.9 (0.7)	3.0 (0.6)	2.9 (0.8)	2.8 (0.7)	0.351
3 I have protected educational time during my training	2.4 (0.9)	2.3 (0.9)	2.5 (1.0)	2.4 (0.9)	0.515
6 I have good clinical supervision at all times	2.8 (0.8)	2.7 (0.9)	2.7(0.8)	2.9 (0.7)	0.238
10 My clinical teachers have good communication skills*	3.1 (0.6)	3.1 (0.5)	3.0 (0.6)	3.1 (0.6)	0.772
12 I am able to participate actively in educational events	2.9 (0.5)	2.7 (0.6)	2.9 (0.5)	3.0 (0.5)	0.028**
15 My clinical teachers are enthusiastic*	3.1 (0.5)	3.1 (0.5)	3.0 (0.5)	3.19 (0.6)	0.853
21 There is access to an educational program relevant to my needs	2.8 (0.7)	2.9 (0.6)	2.8 (0.7)	2.8 (0.7)	0.907
22 I regularly receive feedback from seniors	2.6 (0.8)	2.6 (0.7)	2.5 (0.9)	2.7 (0.7)	0.500
23 My clinical teachers are well organized*	3.0 (0.5)	3.0 (0.4)	3.0 (0.6)	3.1(0.5)	0.598
27 I have enough clinical learning opportunities for my needs	2.4 (0.9)	2.3 (0.9)	2.2 (0.9)	2.7 (0.7)	0.022**
28 My clinical teachers have good teaching skills*	3.2 (0.5)	3.1 (0.4)	3.2 (0.6)	3.2 (0.5)	0.989
31 My clinical teachers are accessible	2.4 (0.8)	2.1 (0.8)	2.5 (0.8)	2.6 (0.8)	0.014**
33 Senior staff utilize learning opportunities effectively	2.7 (0.7)	2.6 (0.7)	2.6 (0.7)	2.7 (0.7)	0.609
37 My clinical teachers encourage me to be an independent learner*	3.0 (0.4)	3.0 (0.4)	3.0 (0.5)	3.0 (0.3)	0.560
39 The clinical teachers provide me with good feedback on my strengths and weaknesses	2.7 (0.7)	2.9 (0.5)	2.6 (0.8)	2.7 (0.8)	0.405
Total score of the above items (out of 60)	41.9 (6.5)	41.3 (5.6)	41.5 (6.9)	42.7 (7.7)	0.482
Perception of social support					
7 There is racism in this post	2.8 (0.9)	2.6 (1.0)	3.0 (0.7)	2.9 (0.9)	0.135
13 There is sex discrimination in this post	2.9 (0.8)	2.9 (0.8)	2.9 (0.6)	2.8 (0.8)	0.834
16 I have good collaboration with other doctors in my level*	3.1(0.5)	3.1 (0.4)	3.1 (0.5)	3.1 (0.4)	0.840

Table 3. Mean scores of each item (continued)

Variables	Total	Junior	Middle	Senior	P value
20 This hospital has good quality accommodation for junior doctors, especially when on call**	1.9 (1.1)	1.9 (1.1)	2.2 (1.1)	1.8 (1.1)	0.224
24 I feel physically safe within the hospital environment	2.9 (0.7)	2.9 (0.7)	3.0 (0.6)	2.8 (0.7)	0.261
25 There is a no-blame culture in this post**	1.9 (0.9)	1.7 (1.0)	2.0 (0.9)	2.0 (0.9)	0.186
26 There are adequate catering facilities when I am on call**	1.3 (1.0)	1.2 (1.1)	1.6 (1.0)	1.2 (0.9)	0.135
35 My clinical teachers have good mentoring skills*	3.0 (0.5)	3.0 (0.3)	3.1 (0.5)	3.0 (0.6)	0.848
36 I get a lot of enjoyment out of my present job	2.6 (0.7)	2.4 (0.8)	2.6 (0.7)	2.7 (0.6)	0.054
38 There are good counseling opportunities for junior doctors who fail to complete their training satisfactorily	2.4 (0.9)	2.5 (0.8)	2.4 (1.0)	2.4 (0.8)	0.742
Total score of the above items (out of 44)	27.8 (5.3)	26.9 (5.2)	28.6 (5.1)	27.6 (5.5)	0.313
Total PHEEM score	108.1 (17)	105 (15.5)	109 (17.4)	109.2 (17.6)	0.799

*Items with score > 3; ** Items with score < 2; *** P< 0.05 (among junior, middle and senior trainees)

with a score of 100¹⁷ as well as New Zealand with scores of 106.3 by basic trainees and 114.2 by advanced trainees.¹⁵ Nevertheless, our finding was higher than a Pakistan score of 83.9¹⁸ and lower than a Sri Lanka score of 129.¹⁴ The study in Sri Lanka used a different questionnaire scale, with scores ranging from 1 to 5 (maximal score of 200), while we used 0 to 4 in our and other studies (maximal score of 160).¹⁴ Similar results were observed in other specialist training programs, e.g., internal medicine, psychiatry, dermatology, and intensive care in other countries, with scores ranging from 96.5 to 112.23.^{4,19-21} Nonetheless, evaluation among physician residents in Japan⁵ and urology trainees in Saudi Arabia²² revealed lower scores of 57.6 and 77.7, respectively. The different PHEEM scores among specialist training programs and countries are expected, as they are related to the availability of resources of the countries or institutions, workload and curricula of the program, or condition of the trainees. A systematic review of 30 studies from 14 countries documented that PHEEM scores were significantly different between levels of training, disciplines, and clinical training sites.⁷

Even though the overall and category scores (autonomy, teaching, and social support) in our study indicated that the learning environment in our training program was satisfactory, a number of concerns were documented. Of major concern were the accommodation and catering facilities when on-call and the no-blame culture. Our hospital does not provide a dormitory for trainees on call, and the number of trainees exceeds the number of available

on-call rooms. The lack of good accommodation and adequate catering facilities for doctors on-call were also identified in a systematic review as two of the top three weaknesses of the learning environment in a medical training program.⁷ Often the curricula and educational needs are the main focus in a specialist training program, while accommodation and catering are frequently neglected. Improving these areas require more advanced discussion and consideration from many parties, as they are related to hospital management. This consistent finding, however, should serve as a strong impetus to improve trainee accommodation and catering.

A no-blame culture was implemented to improve the quality of care by learning from mistakes and putting safeguards in place to prevent reoccurrence. This area was identified as one of the weak aspects of our training program, indicating that it has not been implemented well in our setting. The causes of medical errors may vary; they are not always due to human error, but also to unsafe and reckless behavior.²³ Clinical supervisors should develop a better understanding of a no-blame culture and medical error concepts. Moreover, a specialist training program should provide a conducive learning environment, supporting the trainees to work in a culture that does not identify all errors and mistakes as blameworthy.²⁴

Our clinical supervisors were perceived as good, as the score for “teachers’ enthusiasm, teaching and communication skills” were amongst the highest. Most questions related to clinical supervisors scored high. Lack of regular feedback from clinical supervisors and

lack of counseling for junior doctors who failed to complete their training satisfactorily were common weaknesses reported in previous studies.⁷ However, this was not the case in our setting, which emphasized the quality of our clinical supervisors, leading to a better learning-teaching process. This finding served as important positive feedback for our supervisors, as the educational environment had never been evaluated before.

There were conflicting findings on the relationship between trainee levels and satisfaction with the learning environment in our specialist training program, for 6 specific questions. However, we found no differences in perceptions of the learning environment between junior, middle, and senior trainees overall. A study in Sri Lanka reported that senior trainees had the lowest satisfaction score compared to junior trainees, which may have been caused by their stress in preparing for the final exam, much heavier workload, and less time to study.¹⁴ A similar result was identified among trainees in intensive care units in the UK,⁴ in which the junior trainees (house officers and senior house officers) perceived significantly better learning environments than did the senior trainees (specialist registrars). In contrast, a New Zealand study reported that advanced trainees perceived their learning environment more positively than the basic trainees.¹⁵ These differences may have been due to different access to educational opportunities, workload, experiences, psychological conditions, and various training locations of the different levels of training, which varies among countries and institutions.⁷

Despite the lack of a significant overall relationship between trainee level and perception of the learning environment, junior trainees scored lower than the middle and senior trainees for overall and three areas evaluated. They also had significantly lower scores for items such as performing inappropriate tasks, bleeped inappropriately, ability to participate actively in educational events, accessibility to clinical supervisors, and workload. Many factors may influence conditions, but the possibility of bullying of the junior trainees should be taken into account. Bullying can be categorized into threats to professional status, threats to personal standing, isolation, overwork, and effects on self-confidence.²⁵ The rate of bullying seems to be higher in medical faculties than in other higher education departments.²⁶ This interesting

interpretation warrants follow up, in order to prevent further impact on psychological well-being of the bullied person in terms of future performance, career choice, and retention within the profession.²⁷

The 100% participation of the trainees was a strong point in our study, yet the result does not represent the general condition in Indonesia. A multicenter study using the same questionnaire needs to be done. In addition, a mixed method of quantitative and qualitative study may reveal better solutions to improve training quality. We also suggest comparing the PHEEM score of the trainees serially when they are in junior, middle, and senior levels, to better evaluate the correlation between trainee level and PHEEM score.

To conclude, the learning environment in the pediatric specialist training in our institution is perceived as satisfactory by the trainees, regardless of the level of training. We identify some strengths, weaknesses, and issues, which are useful to improve program quality. The catering and accommodation facilities as well as the no-blame culture are the most problematic areas which needs further exploration and improvement. Nevertheless, good quality of clinical supervisors and collaboration with peers in the same trainee level are strengths of our training program.

Conflict of interest

None declared.

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