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ORIGINAL RESEARCH

JPKI

USING THE INDONESIAN MANCHESTER CLINICAL PLACEMENT INDEX (I-MCPI) TO ASSESS THE QUALITY OF HOSPITAL-BASED AND COMMUNITY-BASED CLINICAL LEARNING ENVIRONMENT

Audelia Kathleen Sulaiman[1], Carolyn[1], Natalia Puspadewi[1*], Elisabeth Rukmini[2]
[1]Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Katolik Indonesia Atma Jaya, Jakarta – INDONESIA
[2]Food Technology, Faculty of Engineering, Binus University, Jakarta - INDONESIA

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ABSTRACT

Background: Clinical placement is crucial to develop the fundamental competencies in providing patient care. Therefore, clinical learning environment (CLE) assessment is necessary to ensure its quality. The Indonesian Manchester Clinical Placement Index (I-MCPI) is an instrument for assessing the quality of the learning environment and the quality of training in both hospital and community placements. This study aimed to (1) measure the CLE quality of a school of medicine in Jakarta using I-MCPI and (2) explore the qualitative data resulted from the I-MCPI to draw a comprehensive conclusion about CLE.
Methods: 155 respondents filled the online I-MCPI, and ten respondents participated in the in-depth interviews. The quantitative data were analyzed using the guideline provided by the original MCPI. The qualitative data analysis was performed using content analysis method.
Results: Quantitative data resulted in ranks of the 18 clinical placements, including primary teaching hospital and its network clinical placements. Trends in Primary Health Care (PHC) placement showed lower rank on the CLE and the training quality. The primary teaching hospital was in the sixth position. The qualitative results identified issues of the supervisor's role, students' involvement, and learning facilities were identified as significant factors that influenced CLE.
Conclusion: Most respondents were satisfied with the quality of learning in clinical rotation at the school. However, respondents suggested more support for students to be actively involved in clinical services, perform clinical skills, and encourage learning facilities to optimize the CLE.

Keywords: clinical education, clinical learning environment, Manchester Clinical Placement Index (MCPI), adaptation, Indonesian MCPI

ABSTRAK

Latar belakang: *Penempatan klinik merupakan bagian penting dari pendidikan kedokteran yang memberikan peluang untuk mahasiswa menerapkan ilmu yang telah dipelajari secara langsung kepada pasien di penempatan klinik. Oleh karena itu, penilaian terhadap Clinical Learning Environment (CLE) diperlukan untuk memastikan kualitasnya. Indonesian Manchester clinical placement index (I-MCPI) merupakan instrumen untuk menilai kualitas lingkungan belajar dan kualitas pelatihan baik di rumah sakit dan Puskemas. Penelitian ini bertujuan untuk (1) mengukur kualitas CLE pada Fakultas kedokteran di Jakarta menggunakan I-MCPI dan (2) mengeksplorasi data kualitatif yang dihasilkan dari I-MCPI untuk menarik kesimpulan yang komprehensif tentang CLE.*

*corresponding author, contact: natalia.puspadewi@atmajaya.ac.id

Metode: *155 responden mengisi I-MCPI secara online dan sepuluh responden mengikuti in-depth interview. Data kuantitatif dianalisis menggunakan pedoman dari MCPI. Analisis data kualitatif dilakukan dengan menggunakan metode content analysis.*

Hasil: *Data kuantitatif menghasilkan peringkat dari 18 penempatan klinis, termasuk rumah sakit pendidikan utama dan penempatan klinik jejaringnya. Berdasarkan hasil, sebagian besar Puskesmas memiliki peringkat yang lebih rendah dalam CLE dan kualitas pelatihan. Rumah Sakit Pendidikan Utama berada di posisi keenam. Hasil kualitatif mengidentifikasi peran supervisor, keterlibatan siswa, dan fasilitas belajar sebagai faktor signifikan yang mempengaruhi CLE.*

Kesimpulan: *Sebagian besar responden merasa puas dengan kualitas pembelajaran rotasi klinik. Namun, responden menyarankan lebih banyak dukungan bagi mahasiswa untuk terlibat aktif dalam layanan klinis, melakukan keterampilan klinis, dan adanya peningkatan kualitas fasilitas pembelajaran untuk mengoptimalkan CLE.*

Kata kunci: *pendidikan klinis, lingkungan belajar klinis, Manchester Clinical Placement Index (MCPI), adaptasi, MCPI Indonesia*

PRACTICE POINTS

- CLE assessment is useful to find out the actual state of clinical learning process and to improve the students' clinical learning experiences by analyzing the challenges faced during clinical placement and designing strategies to overcome those challenges
- I-MCPI is a valid and reliable measurement to assess CLE in Indonesian setting
- Supervisor's role, students' involvement, and learning facilities are found as significant factors that influenced CLE in our study
- Supervisor's role as a leader in each clinical rotation is crucial in creating good learning experiences during clinical placement

INTRODUCTION

One goal of medical education is to support the development of future physicians that would excel holistically.[1] Clinical placement is crucial to develop the fundamental competencies in providing patient care. It enables medical students to apply the knowledge and skills they learned during their preclinical years to actual patients within the healthcare unit environment.[2] However, students' abilities to learn effectively within this environment are often affected by the bustling healthcare unit, quantity and variety of patients' cases, inter-profession teamwork, and competing interest and responsibilities.[2,3] Thus, proper support is necessary to ensure their success in learning. Considering the importance of clinical learning in facilitating students' development of patient care competencies, clinical learning environment (CLE) assessment is necessary to ensure its quality.

There are several tools to assess the learning environment in the undergraduate program, such as The Dundee Ready Educational Environment Measure (DREEM),[4] the Manchester Clinical Placement Index (MCPI), the Clinical Learning Evaluation Questionnaire (CLEQ),[5] and the Undergraduate Clinical Education Environment Measure (UCEEM).[6] Each of these instruments assesses various aspects of the CLE. For example, CLEQ assesses the quality of teaching and organization of learning during clinical rotation and its impact on students' clinical learning experiences,[5] UCEEM assesses the readiness of the

workplace to facilitate clinical learning, students' readiness and engagement in workplace activities along with the quality of teaching or supervision during clinical learning,[6] while MCPI assesses the quality of the learning environment and the quality of training.[7] Compared to other CLE assessment instruments, MCPI has fewer items and provides a free comment column to capture the students' qualitative perception of the CLE. MCPI not only includes teaching hospitals, but also community placements as the CLE.[7]

In Indonesia, the medical education curriculum consists of an undergraduate (preclinical) curriculum and clerkship (clinical rotation). Medical students perform their rotation in hospital-based placement in the primary teaching hospital and partnering hospital and community placement in Primary Health Care Units (PHCs). The main teaching hospital generally has adequate clinical supervisors and patient cases, both in quantity and variety. On the other hand, PHC typically has more patients but less dedicated trained clinical supervisors to support students' learning.

The clinical rotation at the School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia (SMHS AJCUI), consists of major rotations (ten weeks) and minor rotation (five weeks). Students spend half of the major clinical rotation at SMHS AJCUI's primary teaching hospital before leaving to partnering hospitals and/or public PHCs. Contrarily, students do their entire minor clinical rotation in one placement but not necessarily at the primary teaching hospital. Regardless of their placements, all students undergo final rotation assessment at the primary teaching hospital to standardize their learning outcome. Considering the variability of CLE at these various placements, there is a need to assess the quality of each placement to ensure that each student gets the essential supports during their clinical learning experiences.

This is a part of Indonesian adaptation of MCPI study.[8] The adaptation of MCPI into Bahasa Indonesia is intended to help Indonesian medical educators and schools of medicine to assess the CLE. In addition, I-MCPI helps the students to assess their CLE conveniently and contextually. That study analyzed and confirmed the validity (r: 0.60-0.89) and reliability (Cronbach's Alpha: 0,87) of I-MCPI.[8]

This study aimed to (1) measure the clinical learning environment's (CLE) quality of a medical school in Jakarta using I-MCPI, and (2) explore the qualitative data resulted from the I-MCPI to draw a comprehensive conclusion about the primary teaching hospital and the affiliated clinical placements' CLE.

METHODS

This research was a mixed method study using a concurrent design. The quantitative and qualitative data were collected simultaneously using the I-MCPI. The I-MCPI consists of five sets of questions related to the quality of the learning environment and three sets of questions for the quality of training. One set of questions consists of quantitative measurement using the Likert scale (1-6) and qualitative assessment using two open-ended sentences with a comment column. The SMHS AJCUI Research Ethics Committee has approved this research.

Respondents were recruited using purposive sampling, with inclusion criteria: (1) final (sixth) year students; and (2) had passed all 14 clinical rotations placement. A total of 155 sixth-year students filled out the I-MCPI online using Google forms. During the preliminary analysis, we found that students only wrote short sentences in the free comments section. It is the same as found by Leduc et al. that Asians tend to have a more closed communication style.9 Thus, we decided to conduct in-depth interviews with ten students to enrich the qualitative data by exploring the students' perspectives on their CLE. We selected students who underwent clinical rotation at the same time and place yet gave contrasting score in their I-MCPI. We purposefully interviewed these students to better understand how, and why, their clinical learning experiences differed. Interviews were conducted via Zoom. All interviews were audio-recorded, transcribed, and then analysed using the content analysis method.

The quantitative data obtained from I-MCPI were calculated using the following formula7:

- Quality of learning environment score (5 items):

$$\frac{(leadership + reception + people + facilities + organization)score\ x\ 100}{30}\ \%$$

- Quality of training score (3 items):

$$\frac{(Instructions + Observations + Feedback)score\ x\ 100}{18}\ \%$$

Scores taken from the I-MCPI Likert scale (1-6) fitted to the formula. We used the median value for both the learning environment and training qualities for our quantitative analysis due to abnormal data distribution (Shapiro-Wilk, $p<0.05$).

The 14 clinical rotations consisted of five major rotations (surgery, internal medicine, pediatrics, OBGYN, and public health) and nine minor rotations (dermatology, ophthalmology, neurology, forensic medicine, psychiatry, radiology, anaesthesia, dentistry, and otorhinolaryngology). The clinical placements were done in AJ Hospital (main teaching hospital), S Public Hospital, C Hospital, A Hospital, P Hospital, K General Hospital (forensics rotation), CB Hospital, D Psychiatric Hospital, G Hospital (surgery and radiology rotations), KS General Hospital (dermatology rotation). Several North Jakarta PHC (public health and OBGYN rotations), such as PN in District level and PJ, PG, KM, MM, PA, PL in Sub District level were also included in this study.

RESULTS AND DISCUSSION

Quantitative Data Analysis

The quantitative data taken from 155 respondents built this analysis. Table 1 showed participants' demographic data.

Table 1. Demographic Data of the Participants

	N	%
Gender		
Male	53	34.19
Female	102	65.81
Age (y.o)		
23	10	6.45
24	133	85.81
25	12	7.74

Table 2 showed the results of the 18 clinical placements. Total I-MCPI score resulted ranks of the clinical placements. The column results for quality of learning environment and quality of training score also showed sub-assessments based on the I-MCPI. C Hospital has the best quality of learning environment and training. The assessment combination in clinical placements led to a different ranking with a sequence of numbers in the respective superscript marks.

Tabel 1. Perbedaan Skor Pengetahuan Mahasiswa pada Kelompok Metode ABLE PBL dan CTJ (*Pre* dan *Post*)

No.	Clinical Placement	Quality of Learning Environment Score (%)	Quality of Training Score (%)	Total I-MCPI Score
1.	C Hospital	92.67%[1]	93.89%[1]	93.13%
2.	D Hospital	88.33%[2]	88.89%[3]	88.54%
3.	P Hospital	85.00%[6]	93.75%[2]	88.28%
4.	MM PHC	86.67%[3]	88.89%[4]	87.50%
5.	K Hospital	86.67%[4]	83.33%[6]	85.42%
6.	AJ Hospital	83.61%[8]	84.26%[5]	83.85%
7.	PR Hospital	85.71%[5]	80.56%[8]	83.78%
8.	A Hospital	83.93%[7]	81.11%[7]	82.87%
9.	S Hospital	82.73%[9]	77.53%[12]	80.78%
10.	PJ PHC	78.33%[11]	80.56%[9]	79.17%
11.	CB Hospital	76.67%[12]	77.78%[11]	77.09%
12.	KM PHC	73.33%[13]	80.56%[10]	76.04%
13.	KS Hospital	73.33%[14]	69.44%[13]	71.87%

No.	Clinical Placement	Quality of Learning Environment Score (%)	Quality of Training Score (%)	Total I-MCPI Score
14.	G Hospital	80.00%[10]	55.56%[16]	70.84%
15.	PL PHC	65.00%[15]	63.89%[14]	64.58%
16.	PG PHC	64.17%[16]	51.39%[18]	59.37%
17.	PN PHC	57.50%[17]	58.33%[15]	57.81%
18.	PA PHC	55.00%[18]	55.56%[17]	55.21%
Average from All Clinical Placement		77.70%	75.85%	77.01%

Notes: Superscript numbers reflected the placement's rank within the subset scores of I-MCPI

As shown in Table 2, PHC placements had relatively lower MCPI scores in all aspects compared to hospital placements. However, MM PHC was in the fourth place with total MCPI score of 87.50%, quality of learning environment score of 86.67%, and quality of training score of 88.89%. On the other hand, AJ hospital, as the primary teaching hospital, was in the sixth, eight, and fifth place based on the total MCPI score (83,85%), the quality of learning environment score (83.61%), and training score (84.26%) respectively. We also found an interesting finding in G Hospital in which the quality of learning environment (80.00%) and training (55.56%) differed greatly.

Qualitative Data Analysis

The content analysis generated a total of 22 codes. AK, C, and ER conducted inter-rater agreement (IRA) of the emerging codes in three phases: (1) each rater grouped the verbatim transcripts based on the coding provided by AK, which resulted in 17 out of 318 citations (5.35%) IRA; (2) AK, C, and ER met to discuss the preliminary IRA results; (3) AK re-grouped the transcripts based on the inter-rater meeting result and produced 208 out of 318 quotes (65.41%) IRA.

We further analysed the codes and their subsequent quotes to find any emerging themes. Three major themes have emerged: the role of mentor in facilitating students' learning during clinical placement, students' involvement, and the learning facilities. The following were some notable verbatim quotes.

The role of mentor

Students needed a mentor to optimize their learning experiences during clinical rotations. The role of mentors may come from the designated clinical supervisor(s) at the clinical placement and from junior doctors (called as 'supervisor assistant'). Students mentioned that aside from getting exposed to various clinical cases and activities, they needed someone who cared about their learning progress to freely convey their questions and aspirations.

> *"The one who guides and gives an extensive explanation, and so... students can freely express the problem well [without any burden]." (TAS68)*

> *"...the assistant supervisors at AJ hospital are kind... [they] taught us … during nightshifts … [or when we have] relatively free time for discussions." (N110)*

One significant role of a supervisor was the role of a teacher responsible for providing academic support, such as facilitating students' learning through bedside teaching and providing feedback to students. Students further mentioned that constructive feedback could be more effective and would positively influence their clinical learning experiences.

> *"... Maybe, some supervisors have a good intention, but they deliver their feedback with cynicism or else. So... several students can't accept it..." (S118)*

Another supervisor's role was to model excellent evidence-based clinical service for students during their clinical placements.

"For me, some doctors have great skills, so he becomes my role model. So..I would like to learn more.. More motivated to learn than before. … … And it helps us to study more materials from the said supervisor. More experiences for clinical skills which we couldn't obtain from a textbook..." (M113)

Students' Involvement in Clinical Work

Involvement in clinical work was influential in developing students' clinical competencies and creating meaningful learning. Students pointed out their experiences getting involved in health services in clinical placements as their highlights during clerkship. Through this activity, students could perform their clinical skills with patients and built their confidence in performing medical practices, with guidance and supervision from their supervisor.

"P Hospital allows us to perform our practiced skills because there are many patients (who need the examinations). There is visible support from supervisors, as long as the skills were performed while being observed by a supervisor." (IC84)

Learning Facilities

Diagnostic tools are crucial factors while giving patient treatment. Medical students mentioned they need the primary diagnostic facilities, such as gold standard diagnostic tests used for diseases following GP's competencies.

" ...We certainly need basic facilities, because if they are not available, we can't learn... But for some who want to pursue their study as a specialist... they could see and know the tools earlier and learn more. But, again, this experience differs for each of us...." (B121)

Learning spaces were used for the mentoring session and report presentation, while break rooms were necessary for resting time after shifts. The number of students studying at the placement should factor into room size.

"...At AJ hospital, I think, there are still lacking rooms for medical students, taking in the number of medical students who were placed in the hospital, while the room is so small..." (T126)

Tools and equipment influence students' clinical learning.

"Hm... well, ideally... I think at least we should have had a projector for presentations... Then, desks and chairs.... Then, for a break room, we need at least a mattress for sleeping as usual... hm..... what is more.... maybe, with a laser pointer or else, so it would be easier (to prepare for presentation), so we don't need to borrow from the administrative office each time.." (S118)

I-MCPI Scores and the Quality of CLE

As shown in Table 2, students tend to give lower MCPI scores for community PHC placements, except MM PHC, which placed fourth. Based on the interviews, students typically had better clinical learning experiences in placements where: (1) the clinical supervisors actively played their roles as mentors facilitating students' learning, (2) students felt accepted in their clinical placement by being involved not only in taking care of the patients but also being seen as co-workers by other healthcare professionals in that placement; and (3) students had access to resources necessary to support their learning, from the availability of learning space(s) and learning tools and/or equipment to the availability of diagnostic tools.

These findings are consistent with the theoretical underpinnings of MCPI, which is ExBL in communities of practices (COP).[7] Students valued being involved in a real COP and learned from experience by engaging in actual patient care with proper guidance. These conditions enable students to engage in a Real Patient Learning (RPL) reflective process in applying their prior knowledge to patient care.[10] Students expressed desires to be accepted as co-workers and as active members of a COP. By becoming a member of healthcare COP, students can interact with other healthcare workers and continuously improve their knowledge and medical practice skills through negotiation of meanings and legitimate peripheral participation.[7,11,12]

Further examination of the I-MCPI scores for community PHC placement showed that the placements generally scored low on all aspects of

CLE. Students perceived feedback, facilities, and leadership aspects needed improvement. On the other hand, students' involvement in community PHC placements was perceived better than all the other aspects of CLE. Different from other community PHC placements, MM PHC, which was headed by one chief physician, showed a good leadership score. The leadership role involved providing clear job descriptions and well-distributed duties. In addition, students experienced many opportunities to interact with the patients and other healthcare workers at MM PHC.

Findings from this study confirmed the long-standing challenges of community PHC in Indonesia, such as lack of workforce in number and quality of healthcare providers, lack of decent facilities, and poor organization.[13] Subdistrict PHCs may only has one physician leader who oversees all activities there.[14] PHCs often struggle to provide day-to-day patient care due to the lack of manpower, thus it is not surprising that PHCs were unable to provide sufficient mentorship for students. Further, there is a lack of dedicated and trained clinical supervisor at PHCs to facilitate students' learning, which further hinder students' clinical learning.

Facilities of community PHCs scored low based on students' assessment. As primary care facilities, PHCs typically only handle mild to slightly moderate health problems, while more severe health cases are often referred to the next level of care. Hence, the diagnostic facilities in PHCs are often limited to the bare necessity, such as X-Ray and standard laboratory.[15] The limited availability of learning resources at PHCs impacts students' learning. Regardless, PHC placements could better prepare students for their future work, as it provides the real-life context of public health and services in Indonesia.[16,17] These situations, however, might create a conflict between ideal and actual medical practice for students. A dialogue to address these discrepancies during clinical placement is necessary to bridge the gap between ideal and actual medical practice.[18]

Our study found that AJ Hospital, as SMHS AJCUI's primary teaching hospital, only placed sixth in overall CLE quality—which is lower than one of the PHC (see Table 2). This is intriguing because as a primary teaching hospital, AJ Hospital should have had the necessary resources to conduct clinical learning. Further investigation on AJ Hospital's MCPI score showed that students gave the highest score for Internal Medicine (IM) rotation and lowest score for Paediatrics rotation. Students felt that IM rotation had more dedicated clinical supervisors who invested their time and energy in ensuring students' success, more patients and better learning facilities compared to other rotations. Further, students were required to perform diagnostic procedures themselves. Students agreed that this experience was beneficial in preparing them to practice in remote areas that do not have proper access to diagnostic facilities. These findings resonated the three themes from our qualitative analysis.

Paediatric rotation had mixed reviews from students. During this rotation, students were station in various clinical settings, such as the ER, NICU, PICU, and wards (pediatric and newborn). While they agreed on the value of these experiences, they noted that they were too busy to oversee the patients in multiple places at the same time. Further, the number of paediatric patients was lower than IM patients, students required a clearer and more organized job distribution during this placement. Referring to the success of MM PHC in creating good learning experiences, students' learning might be improved if there is one dedicated supervisor who acts as a leader in Paediatric rotation. This leader would be responsible to manage students' formal and informal clinical experiences, including the learning activities and mentorship.

I-MCPI and the Main Ideas toward better CLE

The I-MCPI score directly showed the quality and input for clinical education organizers and teaching hospitals, while the qualitative results confirmed future improvements needed for clinical placement. Figure 1 showed the concept mapping of qualitative aspects and interpretation related to clinical placement. Training quality in a teaching hospital depended on each clinician as the mentor. A critically aware clinician would benefit from self-development and simultaneously improve training quality.[19]

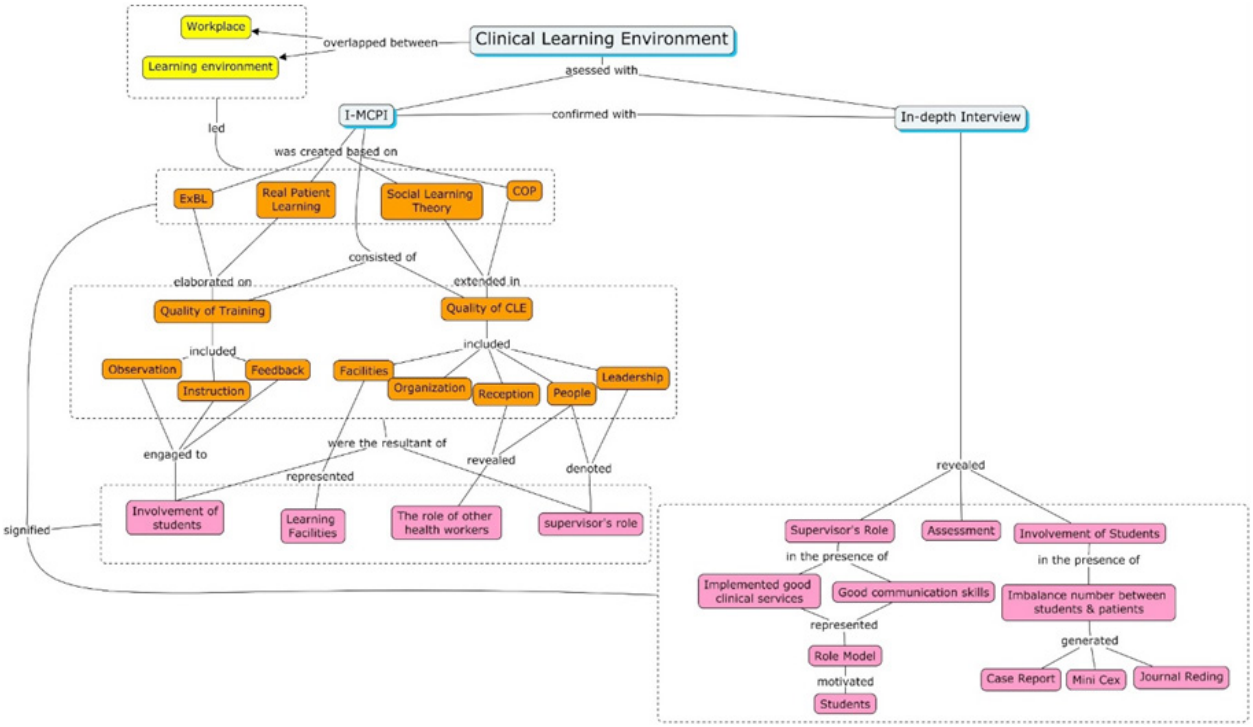

Figure 1. Concept Map

The CLE is complex, therefore, difficult to assess. 'Work' and 'learning' overlap in the CLE. In the 'work' context, students participate in providing care to patients. However, students were expected to achieve a set of learning goals within educational context.[20] These two factors overlapped each other and thus signify the CLE; for example, patient care diversity exposure is related to learning outcome, mediated by supervision and learning style.[20–22]

The role of senior doctors is essential in providing practical, intellectual, and emotional support to students.[10] The 'Leadership' and 'People' item in I-MCPI assesses the role of senior doctors in clinical placements. According to the respondents, senior doctors motivate students to express their aspirations and participation in learning. Students mentioned that senior doctors who carry out good clinical services with good communication skills became the students' role models and encourage further learning.[23]

Students benefited from inclusive CLEs, where they feel accepted as part of the professional team during clinical placement. The 'people' and 'reception' items in I-MCPI reflected the level of inclusiveness. An inclusive CLE also fosters students' sense of belonging to a healthcare team and enables students to learn the formal and informal aspects during the placement.[24,25]

Students' involvement in clinical learning is a significant part of both COP and ExBL.[7] Three items of I-MCPI assess students' involvement: observation, instruction, and feedback. Clear and systematic instructions during placement, along with providing important practice points to be considered are crucial to facilitate students' involvement. Our findings indicated that the quality of clinical placement is influenced by leadership quality. This leader is responsible for ensuring students get appropriate instruction, supervision, and mentorship from other supervisors or healthcare workers during clinical placement.[10]

Students highlighted their desire for a balanced student to patient ratio. This demand corresponds with one of the tenets in RPL theory, that students require hands-on experience in managing patients to build repertoires of mental images and schemas. These experiences help students to better comprehend the extent and complexity of illness and disease by reflecting on their involvement and

connecting theory to practice.[10] Scientific activities, such as case reports and journal reading, may be helpful to complement the lack of hands-on experiences, but cannot fully replace it.

Several students mentioned their concerns regarding equity of material and assessment of student knowledge. Clinical clerkship typically takes place in various locations, thus the knowledge and skills gained would vary among each placement. In addition, senior doctors' methods in providing clinical services may also differ and thus influence students' learning. Meanwhile, AJCUI required students' assessment at AJ Hospital. This assessment strategy is seen as less representative of students' learning during their placement at various locations. A System of assessment that combines formative and summative assessments would be preferrable in this situation.[26]

ExBL regards facilities as part of organizational support for students to deal with challenges in practice, which include rooms for students and learning resources that support students' learning.[7] In our study, students also considered the availability of complete or advanced diagnostics and therapy modalities as a part of facilities. Students defined complete diagnostic and therapy modalities as medical equipment that are necessary to perform 'gold standard' diagnostic examination and primary therapy. The term gold standard means a benchmark for the best available supporting examination tools for some conditions with known results.[27] In contrast, students claimed that the availability of books, computers and other materials does not significantly impact their learning as they could easily access their materials online through their mobile phone.

The most vital point of this research was the usage of I-MCPI that showed a rich qualitative aspect. Those crucial points may develop not only the participants but, most significantly, contribute to evaluation toward clinical education in the school of medicine. The role of patients in clinical placement seems untouched in this study. Students in this study seemed to focus on the quantity and variety of patient cases more than patient involvement during clinical learning. Hence, we surmised that students had yet to consider their patients as learning subjects. Research related to patients as teachers in clinical placements has shown critical results in assisting students' capacities. A separate study focusing on patients' involvement during clinical rotation is necessary to explore this phenomenon.

CONCLUSION

This study obtained an overall score of 77.01% for the CLE quality, which consisted of 77.7% and 75.8% for the quality of learning environment and of training. The CLE's essential aspects were the role of mentor, students' involvement, and learning facilities to support students' learning. Community PHC displayed the reality of students' future work as doctors and showcased the real struggle in balancing the demand for clinical services, diagnostic facilities, and workforce. Adequate guidance is necessary to facilitate students' learning in clinical rotation. Faculty development is needed to improve training quality in the clinical placements.

RECOMMENDATION

This study is limited to only one school of medicine in Jakarta. The next agenda will be to further research in other Indonesian medical schools using the I-MCPI to describe the CLE. In addition, the author also suggests interviewing more respondents so the data would be more diverse and would cover more perspectives. This study could also be carried out with respondents who are still in clinical rotation learning, so the I-MCPI could be used as a daily instrument to assess the ongoing clinical rotation. We encouraged other medical schools also to try the I-MCPI to evaluate their clinical learning environment. We strongly believe that these practices will enhance the quality of medical doctors produced by Indonesian medical schools.

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COMPETING INTEREST

The authors declare that there are no competing interests related to the study

AUTHORS CONTRIBUTION

Audelia Kathleen Sulaiman – wrote the first draft of the manuscript with support from C and NP. AKS performed the survey and data collections together with Carolyn.

Carolyn – together with NP and ER conceived of the presented idea. Carolyn helped Audelia to collect the data.

Natalia Puspadewi - is the corresponding author for further research agenda and potential collaboration. NP developed the theory for the presented article.

Elisabeth Rukmini – together with NP and C conceived of the presented idea. ER verified the analytical methods and supervised the data collection. She encouraged the breakthroughs in writing the discussion.

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