RESEARCH ARTICLE

Physiotherapy students' and clinical instructors' perceptions on effective clinical teaching and learning methods

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Abstract:

Introduction: Clinical education is an important component of physiotherapy education. It involves the application of hands-on practice in real working environment to produce independent physiotherapists that are committed to life-long learning and engaged in professional practice. **Objectives:** This study aimed to determine the perception of physiotherapy students and clinical instructors (CIs) on the effective clinical teaching and learning (T&L) methods. The difference perceptions between students and CIs were then analysed. **Methods:** All enrolled physiotherapy students and CIs involved in the clinical education in UiTM were invited to participate. A self-administered questionnaire with questions adapted from previous study was distributed through an online platform. **Results:** 90 students and 32 CIs completed the questionnaire. Both students and CIs perceived feedback to the students (students: 1.76 ± 0.71; CIs: 1.79 ± 0.62) and patient-centered activities (students: 1.76 ± 0.61; CIs: 1.91 ± 0.58) as the most effective clinical T & L methods. The perception on effective clinical T & L methods were significantly different between students and CIs on five activities. More students feel that they learn an extreme amount on activities such as (i) student self-assessment (39% vs. 16%; $p<0.05$), (ii) assessment by other students (23% vs 12%; $p<0.05$), (iii) assessment by patients (27% vs. 9%; $p<0.05$), and (iv) completing clinical folder (49% vs. 25%; $p<0.05$). On the other hand, more CIs feel that the students learn an extreme amount participating in X-ray discussion (25% vs. 18%; $p<0.05$). **Conclusions:** Feedback from instructors and patient-centered activities were perceived to be the most effective T & L methods in the clinical setting by both students and CIs. These teaching and learning methods should be formally incorporated into clinical placement educational programs.

Keywords: clinical setting, physiotherapy education, teaching and learning

1. INTRODUCTION

Kilminster et al. (2007) define clinical education as 'the provision of guidance and feedback on personal, professional and educational development in the trainee's experience of providing appropriate patient care'. Recker-Hughes et al. (2014) agreed that all stakeholders in clinical education are responsible to provide optimum effort to ensure all students have adequate access to a professional standard clinical education experience. The authors also stated that, in order to achieve this standard, various factors may contribute including CIs' competency and confidence level, education program supports, the clinical practice setting's motivation and ability to provide a high-quality teaching environment.

Clinical instructor's (CI) guidance is important in students' clinical experience. CI acts as a role model and responsible for planning, applying and evaluating the learning outcomes of the students as they progress through clinical education (McCallum et al., 2016). However, despite the guidance from CI, it is reported that clinical placement has been challenging for the students to adapt to the new learning environment (Bibi et al., 2018). Of note, there is study that reported ineffective

exposure to the clinical learning environment to some extent lead to students, in this instance, nursing students exited the field (Shen & Spouse, 2007). The research done by Ernstzen et al. (2009) found that demonstration of patient management, discussion, feedback and assessment were perceived as the most effective T & L activities by students and teachers in a physiotherapy clinical setting. Additional to that, to maximise the learning opportunities, it is found that peer-assisted learning also rendered positive outcomes by enabling active learning and reducing dependency on the educator (Sevenhuysen et al., 2015). To date, limited research is available on effective clinical T & L methods. Determining students' preferred learning approaches and modifying teaching styles accordingly is vital in producing quality education outcomes since students eventually respond to what they perceive as important. Therefore, this study aimed to determine the perceptions of effective clinical T & L methods during clinical attachment among both physiotherapy students and CIs in Universiti Teknologi MARA (UiTM). The current study also identifies if there are differences in perceptions between physiotherapy students and CIs in clinical T & L methods.

2. MATERIALS AND METHODS

This study used a cross-sectional study design among physiotherapy students and CIs in UiTM. CIs and student representatives from each batch were contacted. The representatives were asked to pass the questionnaire to their peers. The questionnaire was distributed through Google form via Whatsapp.

Inclusion criteria for physiotherapy students were (i) full-time undergraduate physiotherapy students at UiTM Puncak Alam and Bertam, (ii) experienced in clinical attachment for at least 4 weeks and (iii) able to understand English. Inclusion criteria for physiotherapy CIs were (i) working as a CI at either the Centre of Physiotherapy UiTM Puncak Alam or Bertam Campus, (ii) have at least one-year clinical experience and (iii) able to understand English. They were excluded if they were (i) uninvolved in clinical work, (ii) on leave or (iii) did not supervise student for ≥ 1year.

The study was approved by the Human Research Ethics Committee (HREC) Universiti Teknologi MARA (UiTM) reference number REC/11/2021 (UG/MR/929). The participants completed the Participants Information Sheet (PIS) and signed consent prior to answering the questionnaire. The first section of the questionnaire includes questions on demographic characteristics. Two different sets of data on type of participants were gathered depending on whether the participant is the CI or the student. Specifically, CIs will need to provide information on age, level of education and year of experience working as clinical instructor (not necessarily in UiTM) while physiotherapy students need to provide information on current study level and study year.

Both students and CIs then proceed to the second section of the questionnaire where they were required to rate how much they learnt from six T & L activities. Score indications were as follows; 1: 'I learn an extreme amount', 2: I learn a lot, 3: I learn a reasonable amount, 4: I learn a minimal amount and 5: I learn nothing. The higher the score is perceived as less effective method while the lower the score indicates more effective methods.

Questionnaire used in the present study was adapted from a previous study by Ernstzen et al. 2009. Specifically, the questionnaire comprises of six categories on T & L activities – i) Patient centered activities, ii) Discussion, iii) Feedback to the student, iv) Student assessment, v) Other, and vi) Specific clinical tasks.

Data were analyzed by using the Statistical Package for the Social Sciences (SPSS) software Version 20. Descriptive analysis was used to evaluate the demographic data and the perceptions on effective T & L methods. As the data were not normally distributed, a non-parametric test (Mann-Whitney U-test) was used to compare the perceptions between physiotherapy students and CIs. Statistical significance was set at $p < 0.05$.

3. RESULTS AND DISCUSSION

A total of 32 CIs and 90 students completed the questionnaire. Data was collected from December 2021 to April 2022. Majority of the students were female (81%), studying bachelor's degree level (74%) and majority of the CIs aged between 25-30 years (84%), with bachelor's degree qualification (84%) and have more than two years of experience as a CI (69%). Table 3.1 shows the characteristics of the students and CIs on age, gender, campus, level of education, current study years and year of working experiences.

Table 3.1 Demographic characteristic of students (n=90) and CIs (n=32)

Variables	Categories	Students		CIs	
		n	(%)	n	(%)
Age	< 25 years	90	(100)		
	25-30 years			17	(53)
	> 30 years			15	(47)
Gender	Male	17	(19)	5	(16)
	Female	73	(81)	27	(84)
Campus	UiTM Bertam	23	(26)	9	(28)
	UiTM Puncak Alam	67	(74)	23	(72)
Level of education	Diploma	23	(26)		
	Bachelor's Degree	67	(74)	27	(84)
	Master's Degree			5	(16)
Current study year	Year 2	12	(13)		
	Year 3	31	(35)		
	Year 4	47	(52)		
Years of experiences	< 2 years			10	(31)
	2-5 years			17	(53)
	> 5 years			5	(16)

3.1 Perceptions of students and CIs on effective clinical teaching and learning activities

From the six T & L activities, the activity where students learn an extreme amount according to the student's and CIs

were patient-centered activities followed by feedback to the students. Meanwhile, activity 'student's assessment' has lowest percent (28%) rated by CI while 'others' activity (39%) was rated lowest by students as effective T & L activities. Table 3.2 shows the results from 90 students and 32 CIs on effective T & L methods.

'Feedback to the student' activity was rated as student learning an extreme amount by both students and CIs and was consistent with previous study by Burgess et al. (2020) which stated that tips for teaching in the clinical setting is must observe and provide students with accurate feedback, so the students understand what exactly the skill they must produce. Feedback encourages students to involve in decision making and helps to improve learning outcomes by providing the student with evaluation on their performance and assist their educational progress (Burgess et al., 2020).

Moreover, activities that focus on patient (patient-centered) were also perceived by both students and CIs as effective clinical T & L method. This finding is consistent to a study by Rosewilliam et al. (2019) which stated that clinical placement learning affects the development of patient-centered and shape student's attitudes towards patient-centered care. Other study also suggested that patient-centered care is considered a moral and fundamental value to provide satisfaction to the patients and care provider, enhance better health processes and provide more effective care (Cheraghi et al., 2017). This current study revealed that both students and CIs rated student learnt well when student demonstrates patient assessment/treatment and the instructor facilitates the process. Having brief demonstrations followed by discussion would be good methods to promote active learning in students thus enhancing student's learning experience (Wang, 2020).

This study also found that, activity of student's assessment has the lowest percent rated by CI for students to learn extreme amounts during clinical practice. This is because the criteria of student assessment in questionnaire involve assessment by other students, assessment by patients and students assessing their own learning may cause CI to not agree for student assessment activity because they must be assessed by the correct person.

Table 3.2 Perceptions of students and CIs on effective teaching and learning methods during clinical attachment

Score		1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	Mean ± SD
Patient-centered activities	Student	57 (63)	27 (30)	5 (6)	1 (1)	0 (0)	1.44 ± 0.66
	CI	20 (63)	10 (31)	1 (3)	1 (3)	0 (0)	1.47 ± 0.72
Discussion	Student	38 (42)	44 (49)	7 (8)	1 (1)	0 (0)	1.68 ± 0.67
	CI	14 (44)	15 (47)	2 (6)	1 (3)	0 (0)	1.69 ± 0.74
Feedback to the student	Student	53 (59)	30 (33)	6 (7)	1 (1)	0 (0)	1.50 ± 0.68
	CI	21 (66)	9 (28)	1 (3)	1 (3)	0 (0)	1.44 ± 0.72
Student assessment	Student	37 (41)	39 (43)	13 (14)	1 (1)	0 (0)	1.76 ± 0.74
	CI	9 (28)	18 (56)	4 (13)	1 (3)	0 (0)	1.91 ± 0.73
Others	Student	35 (39)	45 (50)	9 (10)	1 (1)	0 (0)	1.73 ± 0.68
	CI	13 (41)	17 (53)	1 (3)	1 (3)	0 (0)	2.00 ± 0.56
Specific clinical tasks	Student	37 (41)	44 (49)	9 (10)	0 (0)	0 (0)	1.69 ± 0.65
	CI	14 (44)	16 (50)	2 (6)	0 (0)	0 (0)	2.03 ± 0.55

Score indications were as follows
1: 'I learn an extreme amount'
2: 'I learn a lot'
3: 'I learn a reasonable amount'
4: 'I learn a minimal amount'
5: 'I learn nothing'

3.2 Perceptions of students and CIs on effective clinical T & L activities in each category

In each of the activities, students and CIs were then asked to rate from 1 ('I learn an extreme amount') to 5 ('I learn nothing') on which T & L methods they thought to be the most effective in clinical T & L. From feedback activity, majority of the students agreed that they learnt an extreme amount when instructor gives verbal feedback about clinical practice (52%) while on the other hand, most CIs (47%) agreed that students learn the extreme amount when they give feedback on their limitations (Figure 3.1). Students can correct their weakness immediately upon receiving feedback, hence effective learning can occur during clinical attachment. Aglah et al. (2014) also stated that students would have performed better if feedback was given to them on time. However, the component of feedback rated as the student learnt an extreme amount was different between students and CI. For students, they learnt the most when CI gives feedback about clinical practice and on student's skills rather than feedback on limitation, strength, and knowledge. This is congruent with a study by Anderson (2012) which stated that giving feedback to clinical learners (e.g., students) about their performance is important for them to become a competent clinician as the feedback would enable them to assess their own personal performance.
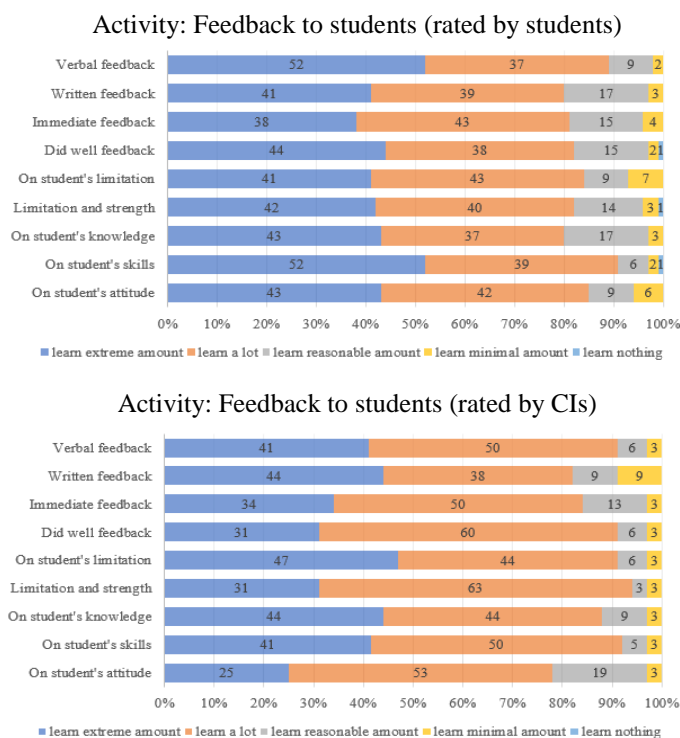
Activity: Feedback to students (rated by students)

Activity: Feedback to students (rated by CIs)

Figure 3.1 Perceptions of effective clinical teaching and learning methods among students and CIs on feedback activity. Data were presented as percentage (%).

3.3 Comparison on the students and CIs perception on effective clinical teaching and learning methods

The results revealed that students and CI had significantly different perception on activity 'participate in an X-ray discussion' (U=984, z=-2.75, p=0.006) with CI perceived higher learning values to this activity compared to the students. Besides, students reported high learning value when assessing their own learning however CIs rated significantly lower learning values (U=1041, z=-2.45, p=0.014). A few other activities rated by student which they perceived to have high learning values compared to CIs were when they were assessed by other students on patient management, when they completed a clinical folder for assessment and when they are assessed by the patient regarding the patient care.

Majority of the students agreed that they learnt an extreme amount when instructor gives verbal feedback about clinical practice (52%), instructor gives feedback on student's skills (52%) and when students completed a clinical folder (49%). On the other hand, most CIs (47%) agreed that students learn an extreme amount when they give feedback on the student's limitations, evaluate students using a mock test situation (47%) and write a case report on patient management (47%). Same as students, there are only a small number of CI (15%) believed that physiotherapy's students will learn nothing when they observe surgery and make posters during clinical practice.

Moreover, activity of student's assessment has the lowest percent rated by CI for students to learn extreme amounts during clinical practice compared to the student. This is because the criteria of student assessment in questionnaire involve assessment by other students, assessment by patients and students assessing their own learning may cause CI to not agree for student assessment activity because they must be assessed by the correct person. Consistent with Vae et al. (2018), who also supported that assessment is a great tool for effective T & L, they further elaborated that the assessment should be clear and systematic to encourage students' continuous learning process. When being assessed by an untrained person, the knowledge may differ from what has been thought in the actual education process. However, the result differs from students as they thought that self and peer assessment helped them identify learning gaps, locate necessary resources to fill such gaps and reflect critically which positively impact learning (Ndoye, 2017). This may explain results of the present study which students rated self and peer assessment significantly more effective than that rated by the CIs.

In addition to student assessment activities, students perceived that they learnt minimal amount or nothing from an activity of X-ray discussion during clinical practice. Surprisingly, the students specifically did not value X-ray discussion as high as CI valued the activities. This may be due to students lack insight into the complexity and importance of the assessment. It was found by Ball et al. (2017), that final year physiotherapy students in their study were still incapable to interpret

unreported chest X-ray whilst this skill is crucial as part of their physiotherapy assessment in "on call" situations. The same authors even suggested that newly qualified physiotherapists receive additional training in chest X-ray interpretation as the formal undergraduate curriculum does not adequately prepare the students. For that reason, the value of X-ray discussion needs to be addressed in the clinical education program to raise awareness of their importance.

Although, this study did not specifically measure the effect of each of the T & L activities, the amount of learning from each of the T & L activities the students or the CIs perceived can be used as a parameter to indicate the method is effective. Consistent with the Learning Pyramid proposed by the NTL Institute of Applied Behavioral Science, they also suggested teaching method where students learn the most, in this instance 'by teaching others' as an 'effective' study method (Yusuf et al. 2015).

4. CONCLUSION

In a physiotherapy clinical context, the present study provide clinical educators with recommendations for an effective clinical T & L methods as perceived by students and CIs. Feedback to the students and patient-centered activities were seen to be the most successful in aiding learning in the clinical setting from both CIs' and students' point of view. These T & L methods should be formally incorporated into clinical placement educational programs.

The present study has some limitations that should be taken into consideration. Firstly, this study focuses on one institution and the perceptions cannot be generalised to physiotherapy students from other universities. Future research on T & L methods are required among population from other universities to broaden the population as difference background of CIs may provide differences practice of effective T & L methods to the student. Secondly, this study represents a descriptive investigation of the perceptions of T & L activities during clinical placements. Further investigations into the relationship between student characteristics (i.e. learning styles, personality, etc.) and the perception of T & L methods may allow development of strategies to optimize the clinical education process.

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