

From bedside to classroom teaching - students' perceptions regarding peer-assisted learning for integration of clinical subjects during pre-clinical years

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ABSTRACT

Introduction:

Peer-assisted clinical integration learning is a teaching method where students at a similar level of training actively learn from each other by discussing and analysing clinical cases. This paper discusses a piloting initiative to introduce peer-assisted learning (PAL) to illustrate clinical integration in the pre-clinical phase of an MBBS programme in a private university in Malaysia. The aim was to gauge the acceptability of PAL and integrating clinical sciences in addressing the perceived gap between basic and clinical sciences, which often beleaguers undergraduate medical students.

Methods:

All year two MBBS students attended a Peer-Assisted Learning (PAL) session on hydatidiform mole, presented by both final-year and year two medical students. Student satisfaction with this teaching method was measured with a questionnaire. Retention of knowledge was measured in year three with a post-test.

Results:

141 students participated in this pilot. Satisfaction was measured on a 5-point Lickert Scale, with a score of one indicating strong disagreement and five indicating strong agreement. All mean scores indicated a generally favourable response to this method of teaching and learning.

Conclusion:

PAL and integrated clinical sessions are valuable teaching tools that can help bridge the gaps between basic and clinical sciences.

Keywords

Basic sciences, clinical integration, learning, students, session

Introduction

The first two years of medical school are the pre-clinical years, during which students are taught the basic sciences that form the basis for the clinical years in the wards. While integration is expected to bring together the basic sciences and point to its relevance in the clinical setting as espoused in the SPICES model [1] (Student-centered, Presentation-based, Integrated or Inter-professional, Community-based, Elective-driven, and Systematic), this gap often remains unaddressed. Teaching still occurs in subject-oriented silos, and learning is undertaken for the single purpose of passing an examination. The realisation that basic sciences are essential often dawns too late, resulting in a mad scramble to the finish line with attempts to master basic sciences while learning the intricacies of clinical medicine.

The SPICES model provides space for improved delivery of the undergraduate curriculum by encouraging discussion and active participation by students. This, in turn, will result in a curriculum that moves beyond knowledge acquisition and practical skills and towards one that builds professional and personal development of the medical student by developing lifelong learning and the ability to apply clinical knowledge and skills within the context of multi-disciplinary teams that deliver health care today. [2] However, teachers sometimes resist this process when delivery needs to be student-centred and teacher-facilitated [1] and not teacher-driven.

To improve integration, particularly vertical integration, and build an understanding of the importance of basic sciences in the clinical setting [3] while underlining the role of the teacher as a facilitator, we introduced Peer-Assisted Clinical Integration Learning (PACIL) as a pilot session run by final and second-year students using an actual clinical case seen on the wards. Apart from the above, we wanted to gauge student satisfaction with this delivery method and assess knowledge retention in the clinical years.

Methods

Study period, study design, and participants

This is a cross-sectional study on the perception of clinical year students (year-3 MBBS) on the applicability of integrated teaching-learning sessions in the pre-clinical phase. This was conducted among year-3 medical students from a private university in Malaysia.

Integrated teaching-learning session

All year two students in the reproductive system module attended a Peer Assisted Learning (PAL) session on the hydatidiform mole. The session was run by a group of students in their final year and year two voluntarily. The final year students presented a confirmed hydatidiform mole case, emphasising focussed areas that required basic science knowledge. The year two students presented the basic science correlates with an interactive session involving the audience. All presentations were vetted by resource persons from the clinical and pre-clinical disciplines to ensure the achievement

of the necessary learning objectives and outcomes. Resource persons were also available at the session.

Inclusion and exclusion criteria

All students who gave consent were included in the study.

Collection of data and questionnaire

The questionnaire was developed by facilitators involved in the supervision and facilitation of this PAL. All three authors deliberated on and agreed upon the questionnaire. When the same cohort of students who had the above PAL in the pre-clinical year joined year 3, they were given a test on this topic. This was early in the fifth semester. The performance of those who had completed the obstetrics and gynaecology posting was compared with those who had not.

Sample size, sampling technique and data analysis

This study applied census sampling. The 5-point Likert scales were described using mean and SD as the initial report and then converted into a categorical variable of satisfaction. The chi-square test was used for inferential statistics.

Ethical committee approval

Ethical approval was obtained from the Institutional Review Board before the study was conducted.

Results

A total of 141 students participated in this pilot. Satisfaction was measured on a 5-point Likert Scale with a score of one indicating strong disagreement and five strong agreement. The results with a mean score are presented in Table 1. All mean scores were above 3, indicating a generally favourable response to this method of teaching and learning (88%).

Table 1: Student perception regarding Peer-Assisted Clinical Integration Learning (PACIL)

Student Perception	Mean*	(SD)
The session was interesting.	3.57	(0.818)
The session helped me understand Molar Pregnancy.	3.6	(0.804)
The session taught me how to approach a patient with this condition.	3.22	(0.817)
The session helped with constructive and critical thinking.	3.3	(0.748)
The session allowed me to identify learning objectives and relate them to the clinical scenario.	3.31	(0.76)
I am better able to evaluate a case of molar pregnancy.	3.35	(0.823)
Peer teaching allows me to apply knowledge, solve clinical problems and make decisions.	3.4	(0.84)
Sessions like this should be introduced in the Phase 1 programme.	3.45	(0.911)
This session makes learning better due to interaction with clinical year students.	3.38	(0.93)
I am more confident regarding patient interaction after this session.	3.17	(0.887)

These sessions will improve my clinical year performance. 3.36 (0.86)

* Based on a 5-point Likert scale

In semester five, all students took part in the assessment. Eighty had completed the obstetric and gynaecology posting, and sixty-one had not. Of the former, 87.5% passed the assessment, and of the latter, 73.8% passed. The overall pass rate was 81.5% (Figure 1). This result was statistically significant (p-value 0.037), indicating that the PACIL session was useful and that exposure to Obstetrics and Gynaecology in semester five improved students' performance (Table 1).

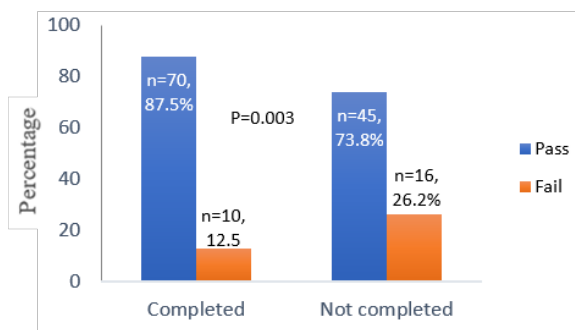


Figure 1: Results of Assessment in Year 3 Semester 5

Positives included a better understanding of the topic, increased confidence in applying knowledge when evaluating clinical situations, acceptance of PAL as a method of instruction, and agreement that more such sessions would be introduced in the curriculum. Additionally, knowledge retention of a topic was evident even in those who had not rotated through Obstetrics and Gynaecology in semester five. However, it was evident that re-exposure improved outcomes.

There was still a preference for a lecture if it were available. Sixty-five percent felt this session would improve their ability to interact with patients in their clinical years. We also found no adverse effect on the academic performance of the year five students who participated in this activity. They also indicated that the session was a good review of a core topic for them and supported this teaching activity.

Discussion

Teaching and learning are dynamic processes, and we are currently in a phase where there is pressure to incorporate various virtual and augmented reality techniques to enhance learning. The basic premise of such efforts is to create a collaborative approach to learning that is less pressured and teacher-centric.

In this process, we should not forget about other delivery options that are collaborative, less technical, and less teacher-centric while not sacrificing the benefit of face-to-face contact. PAL sessions afford this.

This pilot study looked at the usefulness of clinical integration sessions in building the ability to bridge the gap between the basic science and clinical years. We also wanted to look at the acceptability of using peers or student teachers to deliver the session with facilitation from the teachers.

Teachers feel most comfortable when they are information providers. However, today's changing needs of curriculum delivery require a teacher available to consult and assist students with areas of the curriculum that they did not understand and had difficulties with [4]. In contrast, the student takes charge of their teaching and learning process, resulting in a change that increases the potential for improved performance and future learning. [5]

This study lays bare the veracity of both these claims based on the grasp and retention of the core knowledge required to be mastered. The required understanding was successfully transmitted and retained over a period, as evidenced by the performance in the post-test administered one semester after the initial session.

Studies in other parts of the world have also illustrated the need to address the gap created by teaching the basic and clinical sciences in silos, a similar study in Saudi Arabia in 2017 revealed an increased awareness of the need to apply basic sciences in clinical management, albeit in the speciality of haematology and immunology. [6] This, in turn, serves to underline that this initiative is cross-disciplinary and even inter-professional if we allow ourselves to explore alternative curriculum delivery methods with more open minds.

Different delivery models have been used to illustrate the need to use clinical cases to build a bridge between basic and clinical sciences; one common thread that runs through all these efforts is the need to use real clinical cases to link basic and clinical sciences while building clinical reasoning skills, active participation, and collaborative learning. [7, 8] which are essential skills for lifelong learners. This was seen in our study, and students agreed that this instructional activity improved their critical thinking skills and ability to apply basic sciences in the clinical context.

Using peers as student teachers in our study was also viewed positively. Students felt that these interactive sessions made them better learners and improved their confidence to some extent in managing their clinical years. Incorporating simulated patients in these sessions could further strengthen the latter to augment clinical skills.

PAL provides a safe learning environment where students feel less likely to be judged when asking questions. They also enjoy interacting with senior students and appreciate the more relaxed learning environment.

In our study, we administered a post-test based on this topic in the next semester of study. The students involved were in their clinical years, and we found a remarkable pass rate score in this post-test. Other studies have also illustrated the same, indicating some evidence of better student performance with PAL. [8] However, this area needs more

study because while student learner comfort with PAL is clearly positive, its effect on objective performance is less evident.

A scoping review in 2016 indicated that the evidence is mixed with an equal indication of performance that is improved and not improved among student learners. There was an indication that PAL worked well for simple practical skills and less well for complex practical skills and theory sessions. Also, the review seemed to indicate that the student teachers showed improved performance, lending credibility to the dictum “when you teach, you learn.” [9]

Another recent review added a more favourable verdict in support of PAL, with better performance seen in those cohorts that incorporated PAL in their teaching and learning strategies. This review also indicated a better impact on clinical year students when PAL was used to teach practical skills. Remarkably, this review also indicated better knowledge retention in cohorts that underwent PAL, as evidenced by better results in a post-test held four weeks after the initial delivery of the material [10]; our pilot also indicated this to some extent.

The evidence regarding the effect of PAL on student tutors is also positive, with improvements seen in the domains of knowledge, skills, and attitude. Due to cognitive and social congruence, communication, empathy, and leadership also improve, which spills over positively to their undergraduate and postgraduate education and future careers. [11]

Conclusion

PAL and integrated clinical sessions are valuable teaching tools that can be useful in bridging the gaps between basic and clinical sciences. It has positive impacts in the areas of cognition and skills and affects both groups of students involved. There should be increased use of this method in undergraduate medical education as it will enhance collaborative learning among medical students as well as encourage them to take charge of their learning journey while using their teachers as facilitators and sounding boards to ensure they remain on track in their pursuit to become good health professionals.

Limitations and future scope

This study, which concerns a single module of an undergraduate medical programme, should be extended more widely involving other modules and perhaps schools to gauge its efficacy as a teaching-learning method.

Abbreviations

Peer Assisted Clinical Integration Learning (PACIL), Peer Assisted Learning (PAL)

Relevance of the study

This study is relevant to improving teaching learning strategies in which teachers are facilitators and students take charge of their learning needs.

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None.

Authors' contribution

- a. Study planning: SG, GR, AKKM
- b. Data collection: SG, GR, AKKM
- c. Data analysis/ interpretation: AKKM
- d. Manuscript writing: GR, SG, AKKM
- e. Manuscript revision: SG, GR, AKKM
- f. Final approval: SG, GR, AKKM
- g. Agreement to be accountable for all aspects of the work: SG, GR, AKKM

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Availability of data and materials

All data underlying the results is available in the article; no additional source data is required.

Competing interests

None declared.

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