SHORT COMMUNICATION

Peer Assisted Learning with a Difference: A Novel Model of T/L Innovation in Pathology

Annamma Kurien[1], Gokul Shankar Sabesan[2], M Ganesh Kamath[3]

[1] Department of Pathology, Manipal University College Malaysia, 75150 Bukit Baru, Melaka, Malaysia.
[2] Department of Microbiology, Manipal University College Malaysia (MUCM)a, 75150 Bukit Baru, Melaka, Malaysia.
[3] Department of Physiology, Manipal University College Malaysia (MUCM), 75150 Bukit Baru, Melaka, Malaysia.

ABSTRACT

Peer Assisted Learning (PAL) is a collaborative educational strategy in which students engage in teaching and learning activities alongside their peers. This methodology was used in pathology instruction for medical students. The objective of this study was to assess the effectiveness of PAL in enhancing medical students' comprehension of pathology and acquiring important professional skills. This model involved 105 medical students divided into ten groups. Each group participated in peer tutoring sessions, which included presentations, question-and-answer exercises, and evaluations. The session lasted two hours. The findings indicated that PAL activities increased student involvement, stimulated attention, and improved comprehension of pathology topics. Furthermore, the collaborative setting encouraged the development of important skills such as ethics, time management, and teamwork, preparing students for careers as healthcare professionals. The PAL approach significantly enhanced learning outcomes in pathology education by encouraging active student participation, collaboration, and skill development necessary for future medical practice.
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Corresponding Author:
Annamma Kurien, MD (Pathology)
Email: drannammakurien@gmail.com
Tel: +919845821201

INTRODUCTION

Peer-Assisted Learning (PAL) is an adjunct to teacher-led methods that can foster understanding, interest, collaboration, clinical reasoning, and teamwork. This adjunct method has been found to be useful in the training of medical students. (1,2) In the first and second years of their medical program, Manipal University College Malaysia (MUCM) in Melaka, Malaysia, employs a hybrid traditional style of teaching and learning with early clinical integration.

In the second year, pathology is taught to the students. Breast pathology is an important topic in medical education, especially as breast cancer is one of the most common tumors afflicting women in Malaysia (3). Given the high prevalence and considerable effect of breast cancer, it is critical to incorporate core knowledge about the disease early in the medical curriculum. This emphasizes the importance of focused educational efforts, such as PAL, to ensure medical students have a solid understanding of breast cancer pathology and related topics early in their training. Currently, lectures and the correlation of breast masses in mannequins are used to teach breast pathology. In order to improve student learning, this breast pathology exercise was created as a novel PAL model. This study assesses the benefits as well as the challenges encountered during the conduct of the PAL at this private medical university in Malaysia.

MATERIAL AND METHOD

This novel activity involved all the 105 medical students of the batch in mucm. They had completed four breast pathology lectures which were taught by a single faculty member. This pal activity was conducted during the two-hour practical session which was the time allotted for breast pathology in the schedule as per the curriculum.

The concerned faculty member selected ten themes related to breast pathology (as shown in Table I).

Table I: Themes, example of questions related to each theme with their expected answer.

	Themes	Example of questions	Expected answer
1.	Fibrocystic disease of breast	Which change increased risk of malignancy in fibrocystic diseases.	Atypical ductal or lobular hyperplasia
2.	Fibroadenoma and Phyllode tumour	Fibroadenoma is a benign neoplasm. Answer, true or false?	True
3.	Paget's disease of nipple	Name the classical malignant cell seen in Paget's disease of nipple.	Paget cells
4.	Aetiology of carcinoma breast	Name the susceptibility genes in carcinoma breast.	BRCa1, BRCa2
5.	Non-invasive carcinoma – DCIS, LCIS	Name the type of non-invasive carcinoma seen in Paget's disease of nipple.	Ductal carcinoma in situ
6.	Invasive ductal carcinoma	Name a gross characteristic of invasive ductal carcinoma.	Irregular borders/ grates on cutting
7.	Invasive lobular carcinoma	What is the reason for the "Indian file appearance" seen in the microscopy?	Loss of E Caderin (CDH1 gene)
8.	Biological and molecular classification	Name the possible treatment of treatment in an ER or PR positive carcinoma.	Tamoxifen (anti-oestrogen)
9.	Prognostic indicators	Name the type of carcinoma which has high proliferation rate.	Invasive Carcinoma
10.	Diagnostic methods	In a mammogram, what change is associated with malignancy?	Calcification

Preparation and grouping

One week prior to the activity, the students were divided into 10 groups. Each group was assigned a breast pathology theme (selected by the faculty) via a lot-drawing system. The themes were as per the student learning objectives for breast pathology. Additionally, each group was assigned another group's topic to prepare questions for. Each group consisted of a team leader, three presenters, three students to prepare and ask questions, and two evaluators.

Activity structure: each group was given 9 minutes in total, this consisted of one minute for topic introduction, seven minutes for the presentation and one minute for answering questions posed by another group. Group changes were scheduled after 20 minutes, and faculty feedback was allotted 10 minutes. The total duration of the activity was two hours, with the class representatives helping with timekeeping and announcements, though they did not belong to any group.

The students were involved in various roles

Team leaders: coordinated the group's activities.

Presenters: prepared and delivered the presentation, consulting other group members during preparation.

Question preparers: created six short, rapid-fire questions (with answers of 1-2 words or sentences) related to another group's topic, ensuring confidentiality. The designated students in the group prepared the questions which was discussed among the group members and reviewed by the faculty for correctness. The finalised six rapid-fire questions were asked by the designated students of the group to the group that was presenting their topic

Evaluators: evaluated other groups (excluding their own) based on a checklist provided by the faculty, assessing presentation innovation, accuracy, use of teaching aids (e.G., Charts, whiteboards, powerpoint), and overall performance. The evaluation was scored out of 25 marks.

Faculty involvement:

The faculty member reviewed the presentation content and questions for accuracy before the activity. Feedback was provided to groups after the presentation sessions.

Feedback:

After the activity, students were given a validated feedback questionnaire via google forms. Participation in the feedback was voluntary, with informed consent obtained. All the 105 students of the batch participated in the pal activity. However, only 68 (64.7%) Of the 105 responded to the feedback.

The feedback form included 18 questions rated on a likert scale (1 = "strongly disagree" to 5 = "strongly agree") and three open-ended comment-based questions. This structured format ensured active participation, peer-led learning, and the development of critical skills among the students. The feedback questionnaire collected within one week of the session from google forms.

For this study, institutional ethics committee approval (ref: mucm/ research ethics committee – 034/2023) was obtained.

RESULTS AND DISCUSSION

Manipal University College Malaysia in Melaka Malaysia, a private medical college has effectively used numerous innovations in the teaching- learning activities and assesment (4, 5, 6). This PAL activity was conducted in the second year of the medical program, as part of pathology training. The feedback from the

students collected through the validated questionnaire formed the students' perspectives of the activity. The observations of the faculty involved in the activity were included as the faculty perspectives. Benefits and challenges as perceived by the authors were given in author perspectives.

Students' perspectives

The validated questionnaire was completed by sixty-eight students, and their responses were examined. Fifty-eight (85%) of the students reiterated that this activity enhanced their understanding of the topic, complemented the lectures, and contributed to their overall learning experience. They also believed that this activity improved their understanding of various breast lesions and the importance of breast cancers. Fifty-four (80%) students thought that the topic presentations improved their understanding of the topics. Fifty-one (75%) students felt that both the evaluation conducted by students and the question-and-answer sessions were appropriate for learning.

Fifty-five students provided specific comments regarding the various roles they had played in this activity. This comprised two class representatives who were not in any group, five team leaders (50%) and twelve speakers (37%) who were the presenters, six evaluators (30%), ten students (33%) who led the Q&A segment and twenty (95%) other team members. Forty-seven (85%) students expressed that they had performed very well in their assigned role.

Summary of strengths of the activity from the students' feedback (Table II) and summary of student feedback and suggestions for improvement (Table III) are provided.

Table II: Summary of strengths of the activity from the students' feedback.

1.	Better understanding of the topic with deeper learning and problem solving
2.	Able to do more research on topic
3.	Teamwork, peer learning
4.	Individual activities (presentation, question answer sessions, evaluation) facilitated learning
5.	Improved presentation skills
6.	Creative, fun, organised, motivational, brave concept, idea
7.	Improved student cooperation and coordination in the group
8.	Learnt about time management
9.	All students were involved
10.	Peer criticisms and compliments were possible

Table III: Summary of student feedback and suggestions for improvement.

1.	Time was not enough for presentations
2.	Presentation skills to be improved
3.	Communication among team members to be improved
4.	Preparation time could be increased
5.	Make smaller groups
6.	All subjects to have similar activities
7.	Preferred a poster presentation or lectures instead of PAL
8.	Timing of activity to not be closer to examinations for effective participation.

It has been shown that in PAL there was a deeper understanding of the topic and students felt more comfortable with the peer teachers. It was also felt that the peer tutors were more receptive to student feedback which improved overall learning. (7) The students have given their concerns about the model through their feedback. However, a meta-analysis had addressed these student concerns and reiterated the advantages in student learning (8).

Faculty perspectives

This topic in breast pathology, was allotted to the faculty as per the timetable. This PAL activity was designed to be conducted after the lectures on the topic.

The concerned faculty had to plan and coordinate the whole activity. This involved in identifying the themes / topics for student learning for the ten groups. It also included the scrutiny of the presentation content and review of the question and answer for correctness. Modification in the question was required in the groups to maintain the uniformity of questions. It was hence necessary to think of possible problem areas with ways to tackle them in the planning stage itself.

It was important to have a "lead" person to plan, coordinate and endorse the design, implementation and delivery of this activity. (9) . The concerned faculty took the lead role in this activity. The efforts behind planning a PAL activity are well emphasised in literature (10). It was important to have effective administrative support for the successful conduct of the activity. (9)

The main benefit of this novel PAL model was the simplicity of the design and its implementation. Though

PAL is not a new concept, this model is unusual because every student in the class participated. There was no division of students based on prior academic performance. This activity allowed all students to reinforce their knowledge of breast pathology. This concept was well appreciated by students as evidenced in their feedback. The activity could be completed within the planned time. However, the student groups felt that more time could be allotted for this activity. There was no time planned for the faculty to give feedback to the students on their performance in different roles. The faculty could also have allotted adequate time to students for clarifying doubts or for emphasizing on significant points after their presentations.

Authors' perspective

The present model is a novel PAL activity in Pathology with a difference. It was an activity "of the students, by the students and for the students" coordinated and guided by a faculty. It was aligned with the curriculum in breast pathology and included all the learning objectives.

It is a fact that this model of PAL complemented the lectures while making it interesting which was appreciated by the students. It is a time of active learning by the students. However, though it made them have a deeper learning of the subject, it did not replace the lectures. (1) The attention span of the students was less hence this activity was done to reinforce the important aspects of breast pathology without curtailing the lectures. But it may be possible to consider the use of PAL activity without lectures in appropriate topics.

This PAL activity was conducted during the two-hour session which was the curriculum time for the practical sessions. The students emphasised the gross and microscopic characteristics of the breast lesions in their presentations as would be done in practical sessions. The faculty supplemented the self-directed learning hours for this activity.

PAL peer tutoring program usually involved senior students tutoring the junior students. (10,11) However, this model was an active learning group activity led by students from the same batch. There would be direct peer to peer interaction where students of the class would be either be 'tutors' or 'tutees at some stage of their learning.

This present model involved peers of similar educational level. There was no distinction or classification between good and weak students as the groups were selected according to their roll numbers. So, students needing additional curricular support (SNACS) were all part of the groups and were not differentiated. This PAL activity hence was found to have a positive impact on overall learning.

Though there has been a debate about whether this should be a compulsory or a voluntary activity (9), in the present model all the students had to compulsorily participate in the activity.

The examination performance in PAL was found to be similar with teacher led learning. (7,8). However, the comparison of students' performance in their examination was not done in the current model.

All the students who were the respective group's members contributed to the many roles assigned to the group and interacted well with one another. The group leaders headed the activities and made all decisions appropriately. The topic was efficiently delivered by the student presenters. They considered it difficult but rewarding to teach other groups on the subject. The quality training and motivation of peer tutors formed an important factor in PAL. (9). The questions were carefully prepared by the students in charge of the Q&A sessions. The student evaluators assessed the presentations while taking an active part in the process. The concerned faculty reviewed their evaluations and determined that they were fair.

Students adhered to the principle of keeping confidentiality during the preparation for Q & A session. As a result, they learned the principles of integrity from this. The student evaluators gained experience regarding integrity in the fair evaluation through their roles. All these were in addition to the knowledge gained on the subject. PAL related activities also helped students to prepare them for their future role as medical science educators and future health care professionals. (12)

The success of any program or activity is by evaluation before it is incorporated as another teaching method. (8,9). In the present model, the students feedback and the author's perspectives have shown a positive impact of this activity.

The vantage points of this T/L method are provided in Table IV.

Table IV: Summary of the vantage points of the T/L activity

1.	Tutors and tutee of same cohort
2.	Fusion of Self-directed learning with PAL
3.	No differentiation of high achievers and SNACS
4.	Student led teaching/learning activity.
5.	Student led evaluation.
6.	Student led peer tutoring.
7.	Hidden curriculum - Team building, leadership, communication, values, time management and professionalism.
8.	More engaging than didactic lecture or other teaching/learning activity.
9.	Valuing competition while focusing on individual contribution
10.	Involvement of entire cohort in active learning.

This model of PAL could be effectively used integrating different subjects in medical curriculum in pre-clinical

and clinical years. However, it was important to identify topics that were appropriate for this student led activity avoiding more complex topics that needed to be taught by teachers. (13). It can also be used as another method of method of continuous student assessment.

Limitations of study

This is an initial experience of a novel model of PAL. It is necessary to further evaluate this model by detailed studies before incorporating it as an effective teaching model. Pre and post-test analysis of the topics need to be done in the future for better reliability. The response rate for feedback was 68 (64.7%), which was most likely related to the fact that it was collected one week after the activity using Google Forms. The feedback was voluntary and not compulsory, resulting in a low response rate.

CONCLUSION

This PAL model involved all the students of a batch during their pathology training. It has the benefits of a novel activity that stimulates students' interests, which they found interesting. Each student in the group experienced a deeper level of learning through the activities. Also helped them to understand integrity, time management, and teamwork as they learned to become future health professionals.

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