

Student's Perception About Peer Assisted Learning (Pal) For Teaching The Subject Of Dental Materials To 1st BDS Students

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Abstract:

Background: Peer-assisted Learning (PAL) is proposed to be an active method of learning especially in medical/dental training programs.

Aim:- To evaluate the PAL model used in clinical skills training in our faculty from the perspective of mentors and mentees.

Materials and Methods: The present study involved an amalgamated method of Triangulation research design, integrating quantitative and qualitative methods within a time period of 3 months including all the 1st year dental students. A single mentor was allotted for to 3-4 mentees in the study for application of PAL for a total period of 8 hours. Standardized PowerPoint presentation and lecture standardisation was done for the mentors.

Results: For the mentor's questioners Cronbach's alpha was calculated to be 0.967 for 11 response and Pearson's coefficient was greater than critical value of 0.232 for each 76 respondents. For the peer mentee's survey Cronbach's alpha was calculated to be 0.979 for 13 response and Pearson's coefficient was greater than critical value of 0.378 for each 20 respondents.

Conclusion: PAL is a thus a successful method of education modality since it is cost-effective for the undergraduate students and can also improve the professional acumen of both the mentors and the mentees in the medical/dental fraternity.

Key Word: Clinical skills, Medical/dental students, Mentors, Mentees, Peer-assisted Learning (PAL)

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I. Introduction

Peer-assisted learning (PAL) is an educational method that has acquired increasing consideration amongst the healthcare sector and has been documented since Socrates and Plato period.^{1,2} It is defined as "the development of knowledge and skill through active help and support among status equals or matched companions".^{3,4} This refers to the attainment of new information and acumen with vigorous learning and training by peers instead of professional teachers (for example one student teaches the another).⁵ Social constructivism and cognitive adaptive theories are the basic founding stones for PAL.⁶ Social constructivism is typified by the education system in order to enhance the common understanding created by collective interaction in a group, hence, facilitating the students to gain knowledge from their peers.^{6,7} Secondly, cognitive adaptation helps in peer-based learning efforts and emphasizes on the comparative difference of information between a student and a teacher, thus specifying that the minor variance between student-teacher and student-students aids in better understanding.⁸⁻¹¹ This type of education system has been widely accepted in for many years globally and has shown positive correlation with the performances of the students with respect to their studies and examinations.^{3,12,13} Few other advantages of the PAL system for the students that have been identified include decrease in the subjective distress, thus improving the course satisfaction obtained due to the formation of a reciprocal social support system. The combination pair of a junior and a senior undergraduate student thus imparts huge psychological sustenance, satisfaction and facilitates in the development of personality and professional skills.^{14,15}

Peer teaching proves to be an effective mode of learning especially in subjects like anatomy,¹⁶ or in cases of preparation for clinical skill examinations,^{17,18} PAL helps to achieve a simplified environment for discussion for the upper-term and lower-term students and also involves pupils who have already cleared such transition phases and hence can help new students to adapt to the new school/college environment in order to facilitate their learning process. PAL volunteers also facilitate others to uplift their proficient skills for medical science course that included mentorship, project organization, good communication or interactive equations with

one another. It is also beneficial to determine the knowledge and skills in which students lack command. Thus, it can be stated that PAL helps to improve the learning processes of a student and also manages their self-learning procedure all throughout their life.^{19,20} There are previous studies that have evaluated the effectiveness of PAL and has documented its positive effects. In medical/dental education system, clinical skill practices consist of various training models with respect to time, duration, learning techniques, material, and staffs. These are usually allied with the school sources, simulated patient, academic member-based or point-of-care teaching that are mandated for clinical skill processes. Hence, PAL can be considered as a pecuniary mode of the resolution to reduce need for academic members who are usually required for clinical skill training for the growing number of medical students.¹¹

The students who enrol into the health-care programs are bound to experience extreme stress with respect to exams, finances, and the atmosphere, during the educational process owing to the outmoded dental education system.^{21,22} It has been seen that the stress level of the medical student decreases during the study period, while the stress levels is found to be increased among the dental students especially in the last year of the study tenure.²³ In such cases, PAL teaching system might show the potential for assuaging the stress levels for the students and helping them to succeed.

The current project emphasizes on the formative progress of the 1st year dental students and also helps to disrupt the tedium course of subjects like dental materials wherein, PAL could be utilized to enhance the cognitive and psychomotor skills for the students. Hence, the aim of the present study was to evaluate the PAL model used in clinical skills training in our faculty from the perspective of mentors and mentees.

II. Material And Methods

The current study utilised a mixed method of triangulation research design, incorporating quantitative and qualitative methods within a time period of 3 months. This study was conducted in the institute, after obtaining the approval from the Institutional Ethical committee. One mentor was allotted for to 3-4 mentees in the study for implementation of PAL for a total period of 8 hours (Weekly 1 hour – 1 lecture/ per topic including 3 lectures). Standardized powerpoint presentation and lecture standardisation was done for the mentors.

Peer Mentorship Program Resources that were required:

1. Role of researcher – Education Coordinator
2. Selection of Mentors- Tutors- Junior Residents
 - 250 words essay on why they want to be mentors, communication through email
 - Google form survey made and distributed online
3. Teacher's training on the run course for the mentors - by a guest speaker was conducted , which elaborated the basics of new domain of teaching. It was two hours of lecture (offline) for running and implementation of PAL.
4. Subjects for the study – All 1st year dental students
5. Topics for PAL (as per DCI curriculum)
 - Structure of matter and principles of adhesion
 - Important physical Properties
 - Biological Properties

Study Analysis and Evaluation

- All the surveys and questionnaires to be included in the study was based on Stufflebeam's CIPP model (2003)

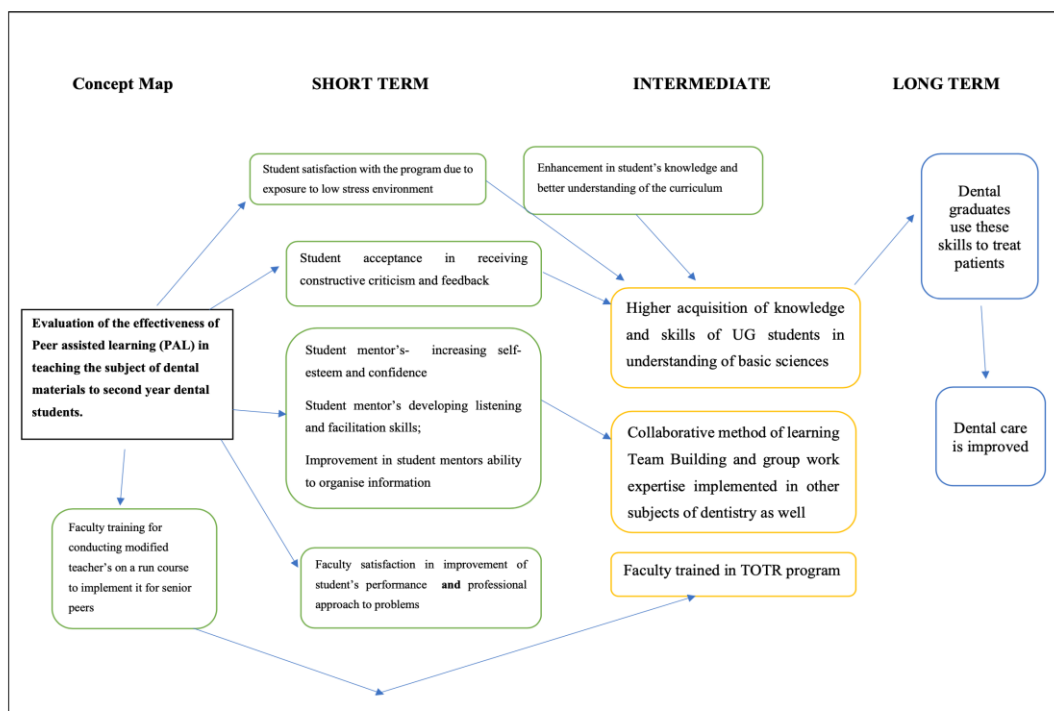
For quantitative analysis

- Data was obtained through Surveys and Questionnaires
- Initial (immediate Post PAL implementation) survey results, mainly Likert value scores from mentees and faculty was obtained
- Final survey results from faculty and mentees were quantified

For Qualitative analysis

- Open ended interview and focus group discussion with the mentors, which are to be coded and analysed by thematic analysis
- An SPSS statistical analysis was used to analyse the data and justify the research results.

Figure 1:-Concept Map for the study



III. Result

Mentor's as well as mentee's questioners were analysed separately. Both the questioners were tested for validity and reliability of the data. For the mentor's questioners Cronbach's alpha was calculated to be 0.967 for 11 response and Pearson's coefficient was greater than critical value of 0.232 for each 76 respondents. For the peer mentee's survey Cronbach's alpha was calculated to be 0.979 for 13 response and Pearson's coefficient was greater than critical value of 0.378 for each 20 respondents. Hence the both questioners were valid and reliable. Results for peer mentor and peer mentee are summarized in Table 1 and Table 2. Kruskal-Wallis test was run to check the significance and p-value obtained for all the responses. In both the surveys p-value was >0.05 which was highly significant.

Table no 1 Descriptive Analysis Peer Mentor Survey

S.No	Question	Mean	Mode	Standard deviation	variance	Minimum to Maximum	p-value
1	My peer mentors and I are enjoyed a high-quality relationship	4.57	5	0.822	0.676	1-5	0.001**
2	I am effectively utilising my peer mentors advice	4.62	5	0.730	0.532	2-5	>0.001**
3	I am benefitted from the mentoring relationship	4.57	5	0.838	0.702	1-5	>0.001**
4	The peer mentoring ran smoothly	4.61	5	0.801	0.642	1-5	>0.001**
5	I would recommend this type of learning method to others too	4.64	5	0.795	0.632	1-5	>0.001**
6	I am gained better sense of how to approach the subject topic	4.59	5	0.819	0.671	1-5	>0.001**
7	I am acquired new skills with this new domain of learning.	4.53	5	0.887	0.786	1-5	>0.001**
8	I was being able to clear my doubts effectively	4.61	5	0.818	0.669	1-5	0.002**
9	My communication skills have also improved through this mentoring program	4.50	5	0.856	0.733	1-5	>0.001**
10	My peer mentors were easy to talk to	4.78	5	0.506	0.256	3-5	0.002**
11	I respect my peer mentors	4.92	5	0.317	0.100	3-5	>0.001**

**** P-value significant**

Table no2 Descriptive Analysis Peer Mentee Survey

S.No	Question	Mean	mode	Standard deviation	variance	Minimum to Maximum	p-value
1	My peer mentees and I are enjoyed a high quality relationship	4.42	5	0.692	0.480	3-5	0.001**
2	My mentees effectively used my advice	4.21	5	0.787	0.620	3-5	0.004
3	My mentees and I are benefitted from the mentoring relationship	4.37	5	0.684	0.468	3-5	0.005**
4	The peer mentoring ran smoothly	4.42	5	0.769	0.591	3-5	0.003**
5	I would recommend this type of learning method to others too	4.63	5	0.684	0.468	3-5	0.001**
6	I am gained better sense of how to approach the subject topic	4.42	5	0.692	0.480	3-5	0.007**
7	I am acquired new skills with this new domain of learning.	4.53	5	0.697	0.485	3-5	0.004**
8	I am became open minded and able to consider other people's attitudes	4.47	5	0.697	0.485	3-5	0.007**
9	My communication skills have also improved through this mentoring program	4.53	5	0.697	0.485	3-5	0.007**
10	It was easy to talk to my mentees	4.53	5	0.697	0.485	3-5	0.015**
11	I respect my peer mentees	4.58	5	0.607	0.368	3-5	0.001**
12	I feel prepared to be a mentor	4.32	5	0.749	0.561	3-5	0.001**
13	This project helped develop leadership qualities	4.21	5	0.713	0.509	3-5	0.003**

IV. Discussion

PAL is a method that affects the specialized capability of both mentees and mentors completely by enhancing their communication skills. The present study included both qualitative and quantitative data collection modalities so as to strengthen the thorough understanding and examination. This type of survey also provides additional information regarding the efficacy of PAL in enhancing the education of the medical students with respect to their clinical skills and also facilitates the seniors to acquire significant teaching skills.²⁴

PAL incorporates all the programmes in which students/peers learn from students/peers. Peer-to-peer training methodology in PAL system involves such aspects wherein both students (i.e., the teacher and the one being taught) keep learning and profiting.²

There are noteworthy benefits that are obtained from a PAL teaching outline,²⁵ wherein, the senior students (mentors) acquire excellent teaching skills, understanding and practice,²⁶ and the junior students (mentees) learn about the basic methods and techniques of the subject. The mentors must accomplish a complete knowledge of the content and forestall relevant questions regarding a particular topic that is to be taught, and thus in this process individual information loopholes are recognized and focussed on.²⁷ Additionally, this type of teaching also requires the mentors to thoroughly elucidate the typical concepts to the mentees; thus, such an amalgamation and vocalisation of appropriate data is an effective learning approach.²⁸ There are numerous previous studies that have shown noteworthy improvement in the mentors' teaching abilities both, subjectively and objectively, and also has enhanced their clinical skills and upsurged the confidence level of the senior students (mentors).²⁹ As a medical or dental professional, the primary role of a practitioner is to explain the medical information to patients which is equivalent to the tutor-medical student communication.³⁰ Therefore, the major teaching principles that can be incorporated in the PAL system are:- producing pre-existing information, recognizing areas for learning, gathering new information, evaluation and encouraging various questions.³¹

The advantages of Peer Assisted Learning (PAL) are well-recognized with constructive and useful effects on the *examination scores, student gratification and personal and professional growth*. This type of education system has been adopted as a resource amongst the medical/dental fraternity where there are limitations on resources that can force the teachers to use any new educational setting that can be cost effective as was illustrated by Glynn LG *et al.* (2006)⁴ who exhibited an extremely significant data and high level of tolerability amongst the tutors and tutees for PAL in their study.

Several studies have been conducted so far to estimate the efficiency of PAL training system among the students of the medical education system. A similar study was done by Batchlender AJ *et al.* (2010)³² which recommended that there can be improvements regarding the perception of the readiness for official evaluations amongst the peers. Their study displayed that senior students were well-placed to back their juniors, enabling greater comprehension and knowledge through the understanding of any fresh experience. The implementation of PAL programs in undergraduate medical/dental education system is projected to be an exhilarating method of imparting knowledge and will help the future practitioners. There were numerous other studies that were found to be analogous to the results of the present study as were reported by by Burke J *et al.* (2007)³³, Field M *et al.* (2007)³⁴, Silbert BI *et al.* (2012)²⁴, Chan E *et al.* (2021)³⁵.

Aydin MO *et al.* (2022)¹¹ conducted a cross-sectional study to evaluate the views of mentees and peer mentors with respect to their clinical practice amongst the medical/dental students in Burs Uludag, Turkey. They reported that the implementation of PAL produced positive responses from the peer assisted learning (PAL) training program. The authors considered PAL to be an effective education prototype owing to its low cost undergraduate medical/dental training thus, enhancing the professional acumen of both the teacher and learners. This type of training module can be incorporated as a substitute in medical/dental specialities, specifically at times when there are insufficient academic members. This study was found to be congruent to the present research work done with the undergraduate dental students.

PAL enhances the learning amongst the students (mentees) and also provides opportunities to formulate an effective teaching group and has the ability to combine the advantages of practical exercises and operant training in an approachable atmosphere. Such a milieu appears to be favorable in communicating with the medical/dental practitioner and thus improves the confidence before a training is being executed. There are few studies that have expressed that the clinical acumen acquired by the mentees was however, not prejudiced by peer training, and a comparatively difficult subject could be educated to the first student and passed on to others satisfactorily thus, making the atmosphere enjoyable. However, amidst all the above-mentioned benefits, the question about the in-depth knowledge about the medical/dental skills that should be imparted to the mentees still remains obscure. Hence, it is mandatory to follow the exact curriculum that is being set for the undergraduate training program, while emphasizing on the development of mentors and mentees in the PAL training program.^{26,36}

LIMITATIONS

The main limitation for the present study was that there were no examinations conducted for clinical skill training of the mentees as it was a pilot study. An examination is considered to be essential for the effectiveness

of the study module that would probably harvest more objective outcomes. Secondly, the insufficient tutorial knowledge and expertise of the mentors was also an imperative factor affecting the teaching process.

V. Conclusion

PAL is a hence efficacious education system with its cost-effective advantage being a major relief for the undergraduate students. It also enhances the professional acumen and skills of both the mentors and the mentees and can also be used as substitute in medical faculties at colleges where the number of faculty associates is insufficient and there is lack of patient care service and other education responsibilities. PAL has become an indispensable part of medical/dental training programs and it is quite ensured now that it will be applied and accepted by the medical/dental fraternity in the near future also. With increased digitalisation, web-based PAL or combined formats have been accepted now-a-days. However, more extensive research is essential to recognize the set-ups and amalgamations of various techniques that could work in favour of PAL.

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