

Peer-Assisted Learning of Procedural Skill in Basti Karma (Medicated Enema) A Pilot Study

Research Article

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Abstract

Background- Peer Assisted Learning (PAL) is learning style with informative, interactive, and interesting learning. In clinical setting, PAL has been modestly used for the purpose of training of physical examination and general clinical skills examination, gross anatomy, communication skills training and resuscitation training. PAL is instruction-based model which used for teaching and learning in few medical schools and it has a great importance in today's scenario. So, one cannot ignore PAL implementation in undergraduate teaching for enhancement of skill. **Objectives-** To develop competency in Ayurveda graduate to offer standardized Basti treatment as a service to mankind. **Materials & methods-** 20 potential undergraduate students were participated in the study and peer tutor role assigned to the rapid learner undergraduate students. Testing module (*Erandamuladi Basti* preparation and administration) was based on cognitive and psychomotor skill. Study was carried forward by introductory didactic lecture on *Basti* (medicated enema) preparation and its administration, introducing the concept of PAL, training session for peer tutors, PAL session with feedback and in last assessment of the participants through OSPE. **Results** - Near about 95% students were in favor of PAL teaching method. And opined regarding good cooperative aspect, development of personal skills and keen study of subject by PAL method. **Conclusion-** PAL is one of way to develop competent Ayurveda graduate to provide standardized *Basti* treatment to mankind. Peer teaching is an easy effective way of equipping students with the procedural skill.

Keywords: Peer Assisted Learning, Procedural Skill, *Panchakarma*.

Introduction

Peer-assisted learning (PAL) is educational experiment recognized in domain of theory, research and clinical practices where students and teachers were benefited mutually. (1, 2, 3) PAL involved active participation of learner rather than getting passive knowledge from faculty. PAL achieves important role in dentistry, nursing, physiotherapy.(4)

Students experienced less stress and anxiety with peer tutors as compared to faculty.(5) PAL developed cognitive, psychomotor and communication skill (6,7,8,9) which reflected into improvement of the peers in clinical skills and decision-making confidence (10,11) and superior managerial skills.(12)

In today's scenario Ayurveda lacking behind the competent graduate to practice self-science in the society and attracted more towards modern science for the practice. So, this is need of the era to increase interest in the science and make confident Ayurveda graduates one can implement PAL in today's teaching modality for creation of skillful and competent pro Ayurveda graduates.

Objectives - To develop competency in Ayurveda graduate to offer standardized Basti treatment as a service to mankind.

Materials and Methods

Subjects: 20 participants given the consent for the PAL and enrolled in the pilot study. All the participants were of final year BAMS students.

Peer tutors: Four Rapid undergraduate students were selected among top ten students in formative college exam for the PAL. Rapid undergraduate students as 'Model Students' helping peers to become Master students. Students to students provide open environment at learning place and determine peers at which level they struggling. These students peer tutors successfully completed under graduate first, second and third year in first attempt. Additionally, all peer tutors were deemed skillful in Panchakarma procedure, as evaluated through the practical examinations and re-examined at the time of the study.

Grouping: 20 participants were divided in to four groups i.e. each group comprises of 5 potential under graduates' students and having one peer tutor (rapid learner) to each group.

Testing Module: Cognitive and Psychomotor skills of (*Erandamuladi*) *Basti* preparation and administration were demonstrated in the module. Total two sessions of PAL were conducted in one day for each group. All the

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participants were assessed through OSCE (Objective Structured Clinical Examination) on very next day at the end of two sessions, ensuring that participants devoid of any type of advantage during practical examination; they were not allowed to use practical handbooks, electronic devices during the assessment.

Procedure:

The pilot study was carried out with following order:

- Introductory didactic lecture on *Basti* preparation and its administration
- Get acquainted with the concept of PAL
- Training session for peer tutors
- The PAL session with feedback
- Assessment of the participants through OSCE (Objective Structured Clinical Examination)

Introductory didactic lecture on *Basti* preparation and its administration

One-hour introductory lecture was taken one day before the actual commencement of the PAL. The content of the lecture was –

Identification of the *Basti Dravya* (Drugs), Quantity of each drug, Order of mixing the drugs

Installation of the *Basti* instrument, Consent of the patient, Instructions to the patient, correct position of the patient, Actual *Basti* administration procedure, Disposal of Biomedical waste, Post procedural instructions to the patient

Get acquainted to Peer tutor with the concept of PAL

In the three days module, therefore, students were received handout which make available concise information of the conceptual potential benefits of PAL, which handout explained about how to conduct PAL session and explained the role of the peer tutors. Actually, PAL session mainly used to develop confidence level in problem-solving and practical skills on considering students’ requirement in the due course. Peer tutor assigned a group having similar professional year. In the background, organization and motto behind the PAL pilot study was to emphasize the student with any level or grade would be recognized as a group leader in future. Rapid learner students were well trained in doing procedure; hence they were selected. Most important fact in those potential students was that they will be felt convincingly confident handling number of procedures, and well-organized, patient and willing to do more efforts with good communication skills.

Training session for peer tutors

All peer tutors were attended a two-hours training session, arranged other than regular teaching hours because of unavailability time in routine timetable. One more session was organized for two rapid learner students who were not attended the previous training class due to personal reasons.

Throughout the training session peer tutors were taught through structured program of PAL. Structured schedule was given to the peer tutor and same teaching program was adopted for potential students and asked them to attempt the same procedure. At the end, problems encountered during the session were discussed within the groups with the help of peer tutors.

The PAL session with feedback

Four small groups were organized with trained peer tutors. At the beginning, the faculty acts as a supportive mechanism in the structured program for the purpose of directing peer tutors to their respective groups at the Panchakarma procedures rooms. The groups were located in different procedural rooms. Peer tutors already informed that the faculty available at the common porch where all procedure rooms were connected; if peer tutors had any problem, they could approach the faculty. Each peer tutor equipped with a kit comprises of 1) a list of members of the group, 2) schedule of the session, 3) Booklet of *Basti* preparation and administration and 4) Feedback forms. At the end of the session, undergraduate students should fill up their feedback form so as to record student’s reaction towards PAL initiative.

Criteria of Assessment

All twenty participants were assessed through OSPE. There were ten steps in OSPE; each step having one mark (Table no.1).

Table No.1- OSPE station

S N	Steps	Score
1	Identification of the <i>Basti Dravya</i> (Drugs)	1 mark/ 0 marks
2	Quantity of each drugs	1 mark/ 0 marks
3	Order of mixing the drugs	1 mark/ 0 marks
4	Installation of the <i>Basti</i> instrument	1 mark/ 0 marks
5	Consent of the patient	1 mark/ 0 marks
6	Instructions to the patient	1 mark/ 0 marks
7	Correct position of the patient	1 mark/ 0 marks
8	Actual <i>Basti</i> administration procedure	1 mark/ 0 marks
9	Disposal of Biomedical waste	1 mark/ 0 marks
10	Post procedural instructions to the patient	1 mark/ 0 marks

*Score “1” for each step conducted correctly or mark “0” if the step is not done or incorrectly done and calculate the Score.

Observations& Results

Table No.2- Feedback of the participants

SN	Close ended questions	SD	D	N	A	SA
1	PAL developed more interest in the topic	0	0	5%	40%	55%
2	The PAL helped in enhancing knowledge about the topic of <i>Basti</i> preparation & administration	0	0	5%	35%	60%
3	This PAL should be included in teaching other subjects of Indian System of Medicine.	0	0	10%	45%	45%
4	This PAL was effective in increasing your recall skills.	0	0	10%	30%	60%
5	PAL was very effective method for learning this topic	0	0	5%	35%	60%
Open Ended Questions:						
6	What are the benefits of PAL?	Openness of PAL session, Co-operative aspects PAL peer tutor's outlook Understanding and Awareness towards subject Developing personal skills Development of self confidence				
7	What are the shortcomings of the PAL?	Initial misconceptions Time consuming				

*(SD- Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree)

Close ended questions:

55%students strongly agree, 40% agree and 5% students were neutral about development of interest in the topic by PAL method. Regarding enhancement of knowledge about the topic of *Basti* preparation & administration by PAL, 60% students strongly agreed, 35% agree and 5% students neutral. 90% students (45% strongly agree & 45% agree) opined that PAL should be included in teaching other subjects like *Kayachikitsa*, *Shalyatantra*, *Shalakyatantra* and *Striroga-Prasutiantantra* of Indian System of Medicine and 10% remained neutral for the same. 60% students were strongly agreed with effective increase in recall skill and the effective method to learn this topic, whereas 30% & 35% students were agreed and 10% & 5% students were neutral regarding effective increase in recall skill and the effective method to learn this topic respectively (Table no.2).

Open Ended Questions:

As per the student's perspective, they were benefited by PAL session with openness, cooperation, understanding and increased awareness towards the subject, developing personal skills with improved self-confidence (Table no.2).

Shortcomings:

On the short coming of the PAL, students remarked its initial misconceptions and noted PAL as time consuming teaching method (Table no.2).

Assessment of the participants:

Students were assessed through OSPE and mean score were calculated. In step of identification of the *Basti Dravya*, order of mixing the drugs, correct positioning of the patient, *Basti* administration procedure and post procedural instructions to the patient; all students were correct in procedure. But, in steps likewise quantity of each drugs, Installation of the *Basti* instrument, Consent of the patient, Instructions to the patient; students were not up to the mark however in 9th step i.e. Disposal of Biomedical waste only 50% students attempted correctly (table no.3).

Table No.3- OSPE assessment of the participants

SN	Steps	Mean Percentage
1	Identification of the <i>Basti Dravya</i> (Drugs)	100%
2	Quantity of each drugs	85%
3	Order of mixing the drugs	100%
4	Installation of the <i>Basti</i> instrument	95%
5	Consent of the patient	70%
6	Instructions to the patient	90%
7	Correct position of the patient	100%
8	Actual <i>Basti</i> administration procedure	100%
9	Disposal of Biomedical waste	50%
10	Post procedural instructions to the patient	100%

Statistical analysis:

Table no.4 & 5 are depicting statistical analysis of level of agreement among studied population. As the collected information is quantitative data and comprises more than 2 groups hence RM ANOVA and one-way RM ANOVA analysis respectively with 95 % confidence level with 0.05 precision was performed. The observed value of degree of freedom is 3 with p value 0.392 to 1.000 (table 4) and degree of 4 freedom with p value 0.129 to 0.597 (table 5) which indicate that there is no statistically significant difference.

Table No.4- Statistical analysis following steps by RM ANOVA

Step	Group	Normality	Median	25%	75%	SD	DF	P
1	G1	Failed	1	1	1	0	3	1.000
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		
3	G1	Failed	1	1	1	0	3	1.000
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		
4	G1	Failed	1	0.75	1	0.447	3	0.392
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		
6	G1	Failed	1	0.75	1	0.447	3	0.572
	G2		1	0.75	1	0.447		
	G3		1	1	1	0		
	G4		1	1	1	0		
7	G1	Failed	1	1	1	0	3	1.000
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		
8	G1	Failed	1	1	1	0	3	1.000
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		
10	G1	Failed	1	1	1	0	3	1.000
	G2		1	1	1	0		
	G3		1	1	1	0		
	G4		1	1	1	0		

Table No.5- Statistical analysis following steps by One Way RM ANOVA

Step	Treatment Name	Normality	N	Median	Std Dev	DF	p
2	G1	Pass	5	1	0.447	4	0.145, NS
	G2		5	1	0.548		
	G3		5	1	0		
	G4		5	1	0		
5	G1	Pass	5	1	0.447	4	0.597, NS
	G2		5	1	0.548		
	G3		5	1	0.548		
	G4		5	1	0.447		
9	G1	Pass	5	1	0.548	4	0.129, NS
	G2		5	1	0.548		
	G3		5	1	0.548		
	G4		5	1	0.548		

Discussion

Close ended question

95% (40% Agree, 55% Strongly Agree) participants were opined that PAL developed more interest in the topic and 5% participants neutral about it. 95% (35% Agree, 60% Strongly Agree) participants were agreed and 5% participants were neutral about that the PAL helped in enhancing knowledge about the topic of *Basti* preparation & administration. As per Ediger (2007) qualitative study of PAL recognized enhanced personal learning though the PAL program. (13)

90% (45% Agree, 40% Strongly Agree) participants said that PAL should be included in teaching other

subjects like *Kayachikitsa*, *Shalyatantra*, *Shalakyatantra* and *Prasutitantra* of Indian System of Medicine and 10% participant neutral regarding it. Anne Herrmann-Werner (2017) concludes with an outlook that how PAL can progress towards various courses and necessity of further research by reviewing narratives provided by overview on features and determinants as well as underlying learning theories and developments in PAL. In addition, Herrmann concludes motives for implementation by highlighting comparison in between advantages and disadvantages. (14)

90% (30% Agree, 60% Strongly Agree) participants were agreed and 10% participant neutral about effectivity of PAL in increasing recall skills. 95% (35% Agree, 60% Strongly Agree) participants were thought that PAL was very effective method for learning this topic but, 5% participants were neutral about it. In order to implementation PAL program, Tolsgaard MG et.al. (2007) Weyrich P et.al (2009) emphasize in the faculty survey that PAL program was effective for the students as well as the group leaders. (15,16)

David Arendle (2014) in his study brought to notice that PAL sessions attract students towards various academic abilities; they discover new skills and knowledge among them. (17)

Open Ended Questions

In the open-ended feedback, students marked benefits of the PAL session as it provides openness to the peers and offer co-operative aspects by the PAL peer tutor's outlook which reflected as understanding and awareness towards subject content. PAL also developing personal skills and self-confidence. In addition, Blohm M et.al (2014), Heni M (2012) stated that the professional, conventional teaching skill was required to reframe in order to develop appropriate and competent teaching of practical skills. Thus, the strength of PAL lies in the specific structured transformation of skills and structuring procedural of training program with central importance. (18, 19)

OSPE assessment

100% participants were successful in the identification of the *Basti* Dravya (Drugs), orderly mixing the drugs, positioning of the patient, actual *Basti* administration procedure and post procedural instruction given to the patient. Near about 100% means 95% participants install *Basti* instrument correctly, 90% participants appropriate given the instruction to the patient and 85% participants recollect the exact quantity of the drugs. All the participants' expressed their views in formal discussion that OSPE is the good method of assessment of the practical skill, which covered the all aspects and factual reflection of students understanding. This was supported by Monaghan M, et.al. in the study for the subject of biochemistry in a medical college for perception and performance of students about OSPE which showed the findings that students felt that OSPE was fair, well-structured and a better form of examination; this kind of exercise covered proper knowledge and assessed the relevant practical skills and focus on the weak areas of the students for better

improvement in the future. (20)

Regarding step of consent taken from the patients for *Basti* administration; 30% students not attempted the step correctly; however, it was the medical negligence by the participants which was supported through the advisory by Supreme Court in the article Martin F. D'Souza v. Mohd. Ishfaq (2009) 3 SCC 1 that, "a doctor should not experiment unless necessary and even then, he should ordinarily get a written consent from the patient". (21) Furthermore, only 50% participants disposed the biomedical waste in the appropriate manner. In today's scenario Indian health providers have casual approach towards biomedical waste management, Das and Biswas (2016) revealed in their study that a lack of knowledge in different tiers of healthcare providers which adversely affects their practice and regular intensive training programs should be held, especially for paramedical and housekeeping staff to develop their practical skill. (22)

Strengths and limitations of the study

While reviewing the strengths of the study, it was observed that PAL generates interest in the topic and increases recall skills with developing personal skills, self-confidence and offers co-operative aspects for group dynamic.

The rapid learner students started session directly without prologue that creates initial misconceptions in the undergraduate students, which take some period to reduce error during commencement of the session and also note done limitation that PAL is time consuming teaching method, need to minimize the session with modified teaching module.

Interpretation and implications

Many systematic reviews were published related to PAL in selected context comparable to conventional teaching. There is indication to propose that participating in PAL program benefited students and teachers academically and professionally. Long-term effects of PAL in Ayurveda teaching institute remain poorly understood because of less awareness regarding health professional medical education in recent scenario. To propagate and for the implication of such programs on large scale; future research should aim to address the same.

Controversies raised in the study

Out of the box student discuss the issue regarding teaching technique of tutor which create bias in the study, because the students understanding level were depends upon the teaching elegance of the tutor, how effectively tutor taught the undergraduate students, that reflect in the student's performance.

Future recommendation

The scope of the study includes suggestions for future PAL research projects including evaluation of the degree of formal training required for quality tutor trainer, which directly associated to quality patient management and prospective studies. PAL inspires an undergraduate student and tutors towards Ayurveda health profession education as observed in the present

study, so evidence based medical education research projects should be plan through PAL session to develop more interest in the field of Ayurveda and to cultivate research attitude in budding Ayurveda physicians. More robust research is needed to quantify the potential benefits of PAL in Indian system of medicine.

Conclusion

This study provides considerable evidence for Peer Assisted Learning in the undergraduate students to learn procedural skill in the subject of *Panchakarma*. So, it is the one of the ways to develop competent Ayurveda graduate to provide standardized *Basti* treatment to mankind. Peer teaching is an easy effective way of equipping potential students with the procedural skill at the undergraduate level to set Ayurveda globally.

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