International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Impact Factor (2012): 3.358

Perceptions of Learners about Peer Assisted Learning and Lectures

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Abstract: ***The study explored the perceptions of learners about peer assisted learning in comparison to established method of lectures, with a view to incorporate peer assisted learning as a supplementary method within the traditional medical syllabus . Mixed method study was conducted using randomized control trial and qualitative case study design. Study participants were recruited through convenience sampling technique from fourth year MBBS class of 2014. Participants were randomly allocated to the peer assisted learning and lecture cohorts, for the Community Medicine, Nutrition & Health course. Sources of information employed were, likert scale inventory and focus group discussion. Quantitative data was subjected to chi square and independent sample t tests. The qualitative data was analyzed by triangulation and identification of themes. Out of a total of 125 students, 99 participated in the study (79%). Key findings indicate that learners embraced peer assisted learning as an effective educational strategy for independent cooperative learning, which they found to be gratifying and enjoyable. peer assisted learning can easily be integrated in the traditional medical curriculum as an adjunct strategy to interactive, learner centered lectures. The social significance of this study was to provide insight to other educators planning to implement similar programs, based on our experience.***

Keywords: Peer assisted learning, lectures, comparison, perceptions, learners

1. Introduction

Medical education is facing variety of challenges in the 21st century, and it is in the midst of major transformation [1]. To meet these challenges, authoritative recommendations have emerged to upgrade the medical educational standards to produce health professionals with abilities for self-directed and life-long learning, teamwork, leadership and good clinical, communications and teaching skills. It is also advocated that there should be a paradigm shift from teacher-centered didactic teaching approaches to more student-centered cooperative and collaborative educational methods, which foster critical thinking at all levels [2], [3], [4], [5]. In the light of these directions, medical institutions are now geared towards developing curricula relevant to the expertise required in medical graduates. Prudent use of appropriate educational strategies in curricula is the mainstay of fulfilling the goal of making learners competent doctors of tomorrow [6], [7].

2. Literature Survey

Among the educational approaches applied in undergraduate medical education, lecture is still a preferred and established part of learning experience [7], [8], [9], [10], [11]. It is defined as "*An instruction or verbal discourse by a speaker before a large group of students*" [12]. The main advantages of lecture are coverage of topics, simplification of difficult concepts [9], easy organization and effective and economical way of conveying information to large numbers of recipients [8], [13], [14], [15]. The limitations of lecture include passivity and disengagement in the audience [14], [15], [16], and inability to develop active learning skills in learners like interaction, collaboration or assimilation of knowledge [13].

Peer assisted Learning (PAL) a recent development, was introduced in medical education by Dr. Deanna Martin in 1973 at the University of Missouri, Kansas City by the name of supplemental instruction [17]. PAL has been defined as "*people from similar social groupings who are not professional teachers are helping each other to learn and learning themselves by teaching*" [18]. It is a cooperative and collaborative learning strategy, where students learn with and from each other without the direct mediation of a teacher [19]. The benefits of peer learning are theorized to include more meaningful acquisition of knowledge [20], enhanced confidence and sense of responsibility [21], [22], and learner education at their own cognitive level [23]. This cognitive and social consonance promotes a more relaxed learning environment [24]. Four main peer learning categories exist in literature:

1. *Same-level* or *same class* equal status peers tutoring; for example, learners from the same class or year all act as tutors and learners.
2. *Same-level* or *same class* unequal status peer tutoring; for example, learners may be selected to assume the role of tutor on the basis of their higher level of skills and/or academic attainment.
3. *Cross-level* or *Near-peer teaching*, involving a single institution, for example second- or third-year undergraduates tutoring first-year students.
4. *Cross-level peer tutoring*, involving two institutions.

A large number of studies were motivated to endorse PAL by the need of an alternate yet comparable supply of teachers to combat a shortage of faculty teaching staff and increasing medical student numbers [24], [25]. The main limitation of PAL includes doubts about quality of instructional content and methodology [19], [22], [23], [26], [27]. There could be issues related to group dynamics and resources required to arrange and supervise PAL programs [22]. PAL strategy has

been widely reported in the medical schools of developed countries [27], [28], [29], [30]. It is now being tried with established benefits in the regional medical colleges of Malaysia [17], Nepal [23], Sri Lanka [26], Mauritius [31] and Iran [7]. In Pakistan, the only evidence of use of PAL strategy for undergraduate medical education was reported by Naqi (2014) in King Edward Medical University Lahore [32].

3. Problem Definition

Lahore Medical & Dental College (LMDC) is a private sector institution, which is affiliated with University of Health Sciences (UHS), Lahore, which fosters a traditional discipline based curriculum. Earlier studies conducted at LMDC reported that there was dissatisfaction among learners with lectures as a mode of information transfer [33], [34]. The preferred means of learning highlighted in these studies were, independent self–study, skills lab and small group work. Department of Community Medicine at LMDC introduced supervised *same year* PAL program in the 4th year class of 2012 and 2013, as an adjunct to lectures and small group tutorials. Though there was no formal evaluation of these sessions, this activity was enjoyed and endorsed by students in both academic years for wider application in other Departments. The specific attributes of PAL sessions appreciated by learners were relaxed and informal environment, lack of boredom, active participation in their own learning and cooperation among peers to assist each other.

The present study was conducted with the aim to assess the perceptions of learners about PAL in comparison with lectures. The main purpose of the study was to assess the educational applicability PAL, in terms of learner satisfaction and adoption of this model as a supplementary method to lectures within the traditional medical syllabus.

4. Methodology

A mixed method study was conducted using randomized control trial (RCT) and qualitative case study design, employing focus group discussion method. Ethical approval for the study was obtained from LMDC Ethical Review Board (ERB) and Curriculum committee. The study was conducted over a period of 21 weeks at Department of Community Medicine.

A non-probability convenience sampling technique was used. The entire 4th year MBBS class of session 2014 (125 learners) constituted the sampling frame. The class was informed about the objectives and the methodology of the study, and written informed consent was obtained from learners in the class who agreed to participate in the study. The sample size was 99. These participants were randomly allocated to the experimental (PAL) and control (Lecture) cohorts. The PAL group had 49 learners while the Lecture group was made up of 50 subjects. The PAL cohort was subdivided into five groups, with ten learners in four subgroups and nine learners in the fifth subgroup. Each subgroup was allocated a separate room.

The course chosen for the study was *Nutrition & Health*. This course has a longitudinal theme and is taught in a number of subjects during the five years of medical education therefore, the concepts were not new to the learners.

The PAL model chosen was s*ame level or same class* peer assisted learning, with *equal status* of participants. In this model all participants acted as both learners and teachers at the same time. The learners in the experimental group were given an introductory lecture on PAL regarding its structure, aims, benefits, guidance on selecting roles within the group and guidance on methods for running the sessions. An emphasis was placed on cooperation, team work, active problem solving and making session plans.

Both lecture and the PAL sessions were conducted simultaneously in the two hours long timetable slots provided for *Nutrition* course. The duration and content covered in each session were the same for both the groups. Half an hour before the session ended, the learners in both the groups were handed their personal workbook, as an aid to revise and summarize the learning that takes place in this course. For each session, the learners completed the pertinent workbook section. The workbooks were collected at the end of the session, to be redistributed again at the beginning of the next session.

A seven point Likert type rating scale was used for end of course assessment of learners' perceptions about their learning experience in both the Lecture and PAL groups. This inventory was adapted from a questionnaire devised by Hammond et al. (2010) to evaluate PAL sessions in the undergraduate physiotherapy program in UK [28]. Online permission was obtained from John Hammond to modify and use his tool. Hammond's original questionnaire was pilot tested among 20 students in 4th year MBBS class of 2013. In the light of difficulties faced by the respondents in filling the questionnaire and suggestions provided by them, original questionnaire was revised, to make it suitable for the purpose of the present study. The five point rating scale was converted to a seven point scale with options ranging from *least agreeable* to *most agreeable*. The modified inventory had 22 statements, 12 from the original questionnaire and 11 new ones. These statements reflected learner perceptions grounded in the theoretical framework of peer assisted learning. The main domains covered were concept building and comprehension (questions one to seven), learning skills development (questions eight to eleven), interactive and cooperative learning (questions twelve to fifteen), and learning environment (questions sixteen to twenty two).

A focus group discussion (FGD) was conducted with ten learners in the PAL group to assess their opinion about their peer assisted learning experience. The participants of FGD included five students with the highest scores and five students with the lowest scores in the end of module test. A guide was used for the focus group discussion Notes were also taken by the two researchers present at the discussion.

Quantitative data was entered, cleaned and analyzed in SPSS version 20. *Cronbach's α test* was applied to test the intra-

item reliability of the items in the Likert scale inventory. *Independent sample t test* was applied to assess the difference in the perception scores in the Lecture and PAL groups. A p value ≤0.05 was considered the cut off point for statistical significance.

An inductive approach was used for qualitative data analysis. The tape recorded FGD was transcribed and cross checking of the transcript was done independently by the two researchers present at the discussion. The transcript was compared with the notes taken by the two researchers (triangulation). NVivo software was used for data coding and management. The qualitative data was also matched with the results of Likert scale analysis of perceptions about PAL.

5. Results

Out of the 4th year MBBS class of 125, 99 learners participated in the study (response rate 79.2%). The inter-item reliability of the study tool used to assess perceptions (Likert scale) was 0.94.

Table 1: Perceptions of 99 learners in Lecture and PAL groups

Sr. No.	*Statements*	*Mean ± sd Lecture group n = 50*	*Mean ± sd PAL group n = 49*	*t test (p value)*
Concept building and comprehension				
1.	The sessions generated awareness of course expectations	4.72 ± *1.443*	5.33 ± *1.663*	**-1.939*(0.05)***
2.	The sessions were helpful in understanding the subject matter of the course	4.90 ± *1.693*	5.45 ± *1.569*	-1.673*(0.10)*
3.	The sessions provided opportunity to clarify basic concepts of the course	5.10 ± *1.717*	5.18 ± *1.692*	-.244*(0.81)*
4.	The sessions provided opportunity to clarify complex concepts of the course	4.28 ± *1.785*	4.84 ± *1.700*	-1.589*(0.11)*
5.	The sessions motivated me to learn more about the course	4.74 ± *1.904*	5.14 ± *1.708*	-1.108*(0.27)*
6.	The sessions were helpful for me in better preparation of solving workbook assignments	4.58 ± *2.232*	5.90 ± *1.432*	**-3.488*(0.001)***
7.	The sessions were helpful for me in solving previous exam questions	3.94 ± *1.766*	4.49 ± *1.769*	-1.547*(0.12)*
Learning skills development				
8.	The sessions were helpful in planning my own learning activities	3.54 ± *1.887*	5.39 ± *1.497*	**-5.391*(<0.001)***
9.	The sessions inspired me to use multiple study resources	3.38 ± *2.079*	5.33 ± *1.853*	**-4.915*(<0.001)***
10.	The sessions inspired me to develop self- study skills	4.66 ± *1.825*	5.33 ± *1.761*	-1.849*(0.07)*
11.	The sessions inspired me to develop group- study skills	4.14 ± *1.938*	6.06 ± *1.144*	**-5.991*(<0.001)***
Interactive and cooperative learning				
12.	The sessions were helpful in improving my communication skills	3.94 ± *2.024*	4.96 ± *1.903*	**-2.580*(0.01)***
13.	The sessions were helpful in obtaining others' perspectives on the course	4.58 ± *1.842*	5.27 ± *1.511*	**-2.022*(0.05)***
14.	The sessions stimulated me to take active part in discussions	4.20 ± *2.000*	5.65 ± *1.653*	**-3.936*(<0.001)***
15.	The sessions provided an opportunity for learning with others	4.26 ± *1.936*	6.02 ± *1.127*	**-5.515*(<0.001)***
Learning environment				
16.	The sessions were informal	4.40 ± *1.852*	5.45 ± *1.849*	**-2.820*(0.006)***
17.	The sessions made learning enjoyable	4.38 ± *2.108*	6.02 ± *1.362*	**-4.589*(<0.001)***
18.	The sessions provided reassurances about course related concerns	4.72 ± *2.061*	5.33 ± *1.313*	-1.742*(0.08)*
19.	The atmosphere of the sessions was comfortable and relaxed	5.18 ± *1.956*	6.22 ± *1.177*	**-3.212*(0.002)***
20.	The sessions provided opportunity to air concerns away from teaching staff	4.34 ± *1.698*	5.24 ± *1.601*	**-2.727*(0.008)***
21.	I was allowed to ask questions whenever required	5.92 ± *1.523*	5.92 ± *1.592*	0.005*(0.10)*
22.	The environment was conducive for me to discuss with peers the course related questions and explanations of the answers	4.72 ± *2.061*	6.16 ± *1.297*	**-4.161*(<0.001)***
Global rating		**6.20 ± *1.666***	**8.12 ± *1.301***	**-6.390 *(<0.001)***

5.1 Concept Building and Comprehension

As seen in *Table 1*, within concept building and comprehension, there was not much difference in the perceptions of learners in both groups regarding the usefulness of their respective sessions in understanding the subject matter of the course, clarifying basic and complex concepts, learning more about the topic and solving previous exam questions. However, there was stronger agreement in the PAL group that their sessions generated awareness of course expectations (*p=0.05*) and were helpful in better preparation of solving workbook assignments (*p=0.001*).

5.2 Learning Skills Development

Learning skills development was perceived to be higher in PAL sessions than in the Lectures. There was highly statistically significant difference in agreement within the PAL and Lecture groups regarding the helpfulness of sessions in planning learners' own learning activities, providing inspiration to use multiple study resources and develop group- study skills (*p=<0.001*).

5.3 Interactive and Cooperative Learning

Similarly, a statistically significant difference was observed in the perceptions of PAL and Lecture groups regarding interactive and cooperative learning. PAL learners were in higher agreement that their sessions improved their communication skills ($p=0.01$), were helpful in obtaining others' perspectives on the course ($p=0.05$), stimulated them to take active part in discussions ($p=<0.001$) and provided an opportunity for learning with others ($p=<0.001$).

5.4 Learning Environment

Regarding the learning environment, there was not much difference in scores among the Lecture and PAL groups pertaining to their respective sessions being conducive in providing reassurance about course related concerns and opportunities to ask questions whenever required. Interestingly, PAL group scored statistically significantly higher scores in rating their sessions informal ($p=0.006$), enjoyable ($p=<0.001$), comfortable and relaxed ($p=0.002$). PAL group was also in higher agreement that their learning environment was conducive to air concerns away from teaching staff ($p=0.008$) and to discuss with peers the course related questions and explanations of the answers ($p=<0.001$).

The overall agreement with statements on the Likert scale questionnaire was greater among the PAL group with a statistically significant higher global rating of 8.12 of their sessions compared with the rating of 6.20 for the Lectures ($p=<0.001$).

5.4.1 Focus group discussion (FGD) findings with the PAL group

Qualitative analysis of data resulted in emergence of five main themes:

1. Learning Environment
2. Group Dynamics
3. Accomplishment of Learning
4. Comparison of Lectures and PAL
5. Incorporating PAL in the regular teaching program

5.4.2 Learning Environment

Overall, comments about the learning environment in PAL were positive. Learners liked the atmosphere and were comfortable during the sessions:

"Enjoyable experience."

"We were active and didn't feel sleepy. PAL was not boring at all."

"We were more relaxed than in lectures."

Social interaction was cherished by many and they enjoyed making new contacts:

"There was interaction with people we knew and those whom we did not know before. We made new friends"

"Interacting with random people rather than regular friends was a new experience."

The PAL environment was found to be suitable for learning:

"Environment was conducive for learning. It kept you involved."

"We took five to ten minutes break whenever we wanted."

Group Dynamics

A sense of closeness and interactive collaboration was explicit among the comments of PAL group members:

"There was good co-operation among group members."

"Enjoyed interacting with others rather than study alone."

"There was good communication and discussions within group members."

"If the other group members were working then it was difficult to sit back and not do anything."

"If we saw anyone who is not involved, when we finished our work, we would help out that person."

Each group managed the way their learning activities would take place:

"In our group we divided the topics among all members, followed by discussions and then we solved the workbook."

"In some groups one person read and the others listened. They finished in less time. In the other groups, everyone read a portion and then discussed. They needed more time."

Accomplishment of Learning

All participants liked the PAL learning experience:

"Overall it was a good learning experience."

"I liked the active learning in PAL sessions."

"I liked the self- study aspect of PAL."

The different activities in PAL sessions were seen as an enhancement to learning. Reiteration was perceived as an effective mode of studying:

"PAL had double benefit. Firstly, we did self- study. Secondly, at the time of solving workbook we had to study again as it was an open book activity."

"Repetition made learning easy and effective. Important points were highlighted."

"When we read the topic ourselves we can only retain a certain amount as we cannot write everything down to learn. In group discussions we had a baseline memory from self-study and on top of that when someone speaks we grasped that as well. So there was double learning"

Participants were satisfied that they accomplished their learning within the PAL sessions which saved them a lot of time:

"Good time management and planning. There was minimal need of revision at home."

There was a universal agreement that PAL was appropriate for studying *Community Nutrition and Health* course:

"PAL was good choice for Community Nutrition and Health course. We learned the topic well."

All participants agreed that they did not need assistance from teachers while studying in their groups:

"We had no problem or needed any guidance in studying during the PAL session."

There was a unanimous agreement that PAL was favourable for the preparation of class test and final professional examinations:

"PAL sessions were sufficient for solving past exam questions."

"We covered the whole topic in our sessions and then again for the test. I think this was a good preparation for the final exam."

Comparison of Lectures and PAL

Interestingly, none of the participants wanted to abolish lectures completely:

"*There should be 50% Lectures and 50% PAL.*"

"*Lectures should only be kept to explain new or difficult concepts like Biostatistics. There should be more PAL sessions*."

However, PAL was rated higher than lectures in terms of mental concentration, relaxation and learning for examinations:

"In lectures, no one can focus for 25 minute but in PAL sessions we use to complete our reading in 20 to 25 minutes. We were focused and not bored like in lectures."

"In lectures the same voice is in one pattern and there is no variation. In PAL sometimes I spoke sometimes someone else did, so there was variation."

Incorporating PAL in the regular teaching program

All FGD participants were of the opinion that PAL should be part of the routine academic program:

"This system must be adopted on regular basis."

None of the participants wanted to change the PAL model:

"The way it was it was good. It should continue as it is."

"Same level peer model was good. Don't want leaders."

6. Discussion

The results from the present study showed that 4th year MBBS students embraced the concept of same year peers assisted learning in Community Medicine *Nutrition* course. This study substantiated the benefits of peer assisted learning in promoting conducive environment for social and cognitive congruence and making learning gratifying and enjoyable.

The PAL cohort members perceived all aspects of their learning experience to be more favorable than the Lecture group. The social and the environmental features were the most endorsed benefits of peer involvement in teaching. The quantitative analysis revealed that in comparison with Lecture cohort, significantly greater satisfaction was observed in peer learners regarding their mode of interactive and cooperative learning, ease of communication and active participation in discussions. The above mentioned points were again highlighted in the focus group discussions (FGD) and other advantages added were forming new associates, close cooperation among group members, helping and involving each other to learn, and effective planning and managing learning tasks. The social attributes of collaborative learning have been reiterated in medical education research, forming the main reason for its application as an effective educational strategy. Many researchers have acknowledged the impact of collaboration among peers in enhancing team work and communication skills [16] [17], [18], [27], [28]. Peer learners in our study found their sessions helpful in valuing viewpoints of others. Ibraheem and Aijaz (2011) and Hammond et al., (2010) also reported that one of the qualities of PAL which impressed their students was the opportunity to take on board other learners' views and ways of thinking, and analyzing them with their own perceptions [17], [28].

In the current study, the informal and relaxed learning environment was another significantly higher source of satisfaction in PAL cohort compared with the Lecture group. This not only enhanced learner enjoyment and active engagement in peer learning, but also provided a platform to air concerns away from faculty members and discusses academic matters freely with colleagues. The FGD participants also mentioned being more focused in peer activities than they were in lectures, lack of boredom and opportunity to relax when required, as supplementary attributes of PAL environment. The opportunity to ask questions was equally endorsed by both PAL and Lecture groups. Hammond et al. (2010) also noticed that their study participants valued the informal environment in peer led sessions which allowed them to "sound out ideas away from lecturers" and enjoy cooperative learning [28]. Similarly, Glynn et al. (2006) reported that the peer learners found their environment relaxed and comfortable with no inhibitions to communicate and seek knowledge [27]. Shankar et al. (2011) stated from Nepal, that students are more likely to open to their peers and share difficulties and concerns [26]. Participants from his study enjoyed the "friendliness" of the PAL environment. The opinion that PAL environment was friendly and there was less inhibition in communicating with peers was likewise shared by students in the study conducted by Naqi (2014) in Lahore [32]. In the opinion of Kommalage and Thabrew (2011), the cognitive distance, which is the student teacher space, is wider in Asian cultures [26]. This distance is reduced among peers which removes the internal inhibitions, and improves the learning process. Significantly greater number of PAL participants compared with their Lecture colleagues perceived their sessions was instrumental developing their learning skills. They comprehended peer-managed learning to be better in planning personal learning activities, using multiple study resources and developing group study skills. Additional information provided by FGD participants about PAL sessions was that learning was achieved through combination of self-study and group discussions. They found their activities to be helpful in managing their learning time effectively, which abolished the need to revise their work outside the college time. They were confident that they accomplished their learning goals for *Health and Nutrition* course which equipped them to prepare for assessments. All agreed that for the process of learning, they did not need faculty guidance. This was also depicted in the non-use of any human resource by the PAL cohort, except their peers. The literature search conducted by Burgess et al. (2014) confirmed that peer endeavors prepare learners to plan and lead their own learning activities with a greater willingness to acquire knowledge [25]. Naqi (2014) concluded from his research experience that PAL motivated and empowered learners which enhanced their self-confidence [32]. Shankar et al. (2011) made observations from their study results that after attending PAL sessions, learners were confident that they could attempt questions and prepare for examinations [23].

Peer group was significantly more assured than their Lecture equivalents in admitting that PAL generated awareness of course expectations and preparing them to attempt workbook exercises. However, there were comments from participants of FGD regarding the need for consultation with faculty

members on attempting some workbook questions, the answers to which they could not even find on internet. The research conducted by Hodgson et al. (2013) also revealed that though their study participants were satisfied with the active learning part of PAL, they still expressed more confidence in faculty teachers than their own peers for imparting conceptual knowledge [19].

Through FGD, learners voiced their concerns about lectures being monotonous, with loss of attention span after 15 to 25 minutes and lack of opportunity to relax. Many recommendations emerged from FGD. Participants were of the opinion that *same year, equal status* model of PAL should be part of regular teaching. The only change that was required in the present set up was flexibility in PAL sessions, which should be task oriented rather than time- bound. Learners still wanted lectures to clarify complex concepts, with PAL as a supplementary method. Other research conducted in this field also recommended addition of PAL in the regular teaching program [23], [28], phasing it in gradually [32].

There was no difference in rating for conceptual clarity, developing self- study skills, getting reassurance about course related concerns and opportunity to ask questions between PAL and Lecture groups. This maybe because Community Medicine lectures are interactive and teachers use student-centered approaches like asking questions as well as giving post-lecture assignments which require reading and literature search.

7. Conclusions

The study concludes that Lecture and peer assisted learning are both important educational strategies which cater for different learning needs of medical learners. PAL has benefits of collaborative and cooperative learning experience which was manifested in the strong social congruence among PAL group in the present study. The cognitive congruence and metacognition advantages of PAL were apparent in the study. Lecture was still perceived by learners as an irreplaceable learning approach but PAL was endorsed as a supplemental program to provide opportunities to learners for self-directed, dynamic, enjoyable and relaxed learning experience and responsibility. Thus PAL can easily be incorporated in a traditional curriculum, along with lectures.

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