Effectiveness of Structured Group Discussion over Problem based Learning in teaching Interns Basic Concepts of Physical Medicine and Rehabilitation

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Abstract

Background: According to Graduate Medical Education 2012 regulations, Physical Medicine and Rehabilitation is an optional subject for MBBS course; thus, the concept of Medical Rehabilitation among young graduates is relatively low. The Objective of the study is to assess the effectiveness of Structured Group Discussion over Problem-based Learning in teaching fundamental concepts of Physical Medicine and Rehabilitation to MBBS Graduates.

Materials & Methods: The present Interventional study was conducted in 60 Interns of the Department of Physical Medicine and Rehabilitation,
Government Medical College, Alappuzha from June 2018 to Aug 2018.
After obtaining IRC and IEC clearance, 60 Interns were identified; and after taking Informed consent, they were divided in to two groups of 30 each.

Results: Structured Group Discussion is more effective than Problem based Learning in teaching Medical Graduates (Interns) the basic concepts of Physical Medicine and Rehabilitation and it has been found to be statistically highly significant. Structured Discussion is preferred to Problem based Learning as a Teaching Method, proven with Statistical significance. Structured Discussion not only augments the learning process, but also, helps improve the communication skills of students.

Conclusion: Structured Group Discussion is more effective than Problem based Learning in teaching Interns/ Medical Graduates, the basic concepts of Physical Medicine and Rehabilitation.

Keywords: Physical Medicine, Medical Rehabilitation, Structured Group Discussion, Problem based Learning, Effectiveness, Specific Learning Objectives, Communication Skills Training.

Introduction

Physical Medicine and Rehabilitation (PMR) is an optional subject in MBBS course, as per regulations of Graduate Medical Education 2012 [1]; hence the concept of Medical Rehabilitation among young graduates is relatively low. In order

to instill some ideas regarding Medical rehabilitation, interns were being sent to the Department of Physical Medicine and Rehabilitation, Government Medical College, Alappuzha, Kerala for one week posting. During this tenure, they could see and discuss some of the common cases presenting to PMR OP division for Medical rehabilitation. In addition, they would be taught on principles of Medical rehabilitation in various conditions like Stroke, Spinal Cord Injury, Amputations, Low back pain, Obesity and Cerebral Palsy, by case discussions in PMR ward. In such small group discussion, the topic used to be discussed by the facilitator without structuring the group or providing pre learning materials. Since the duration of posting is short and inadequate, adequate understanding of rehabilitation concepts is fairly low. Hence in this study, an idea is proposed to optimize the learning process through Problem based Learning versus Structured Group Discussion, so as to improve the understanding of basic principles of Medical Rehabilitation.

During such Structured Discussion, the interns shall be divided into groups with equal number of students; Reading materials with definite Specific learning objectives on common clinical conditions like Stroke, Spinal Cord Injury, Amputations, Low back pain, Obesity and Cerebral Palsy shall be provided to all groups. All groups have to come prepared for the structured discussion and one from each group has to present the various aspects of the topic as per the Module. When the presentation is going on, the facilitator shall project the A-V aids with specific contributory remarks for further clarification of the concepts being presented. The other group is presented with a problem based on clinical scenario of Conditions like Stroke, Spinal cord injury, Amputations, Low back pain, Obesity and Cerebral palsy, prior to the class and that group also has to come prepared based on the clinical scenario.

Further learning happens by student pedagogy along with contributions from the facilitator. Here the effectiveness of Structured Discussion over Problem based Learning in teaching basic concepts of Physical Medicine and Rehabilitation is being assessed.

Problem-based Learning (PBL) is a student centered pedagogy in which students learn about a particular subject through the experience of related problem solving. The cited clinical scenario for PBL shall provide the learner the right direction and a strong impetus for learning. This thought and concept was developed at the McMaster University Medical School in Canada in 1960s. [2] The PBL method is of two types - one is Discovery method and the other is Case based method. The ability to formulate the problem is the first step. The most important characteristics of the formulated problem are its Relevance, Gravity, Plausibility of intervention, Clinical logic & Prototype value and that it does have an interdisciplinary content. [3] A Structured Group Discussion refers to a set of students/ persons, having brought together to express their opinion and for subsequent exchange of views on the allocated subject, wherein the group shall be structured and provided with topics to be discussed with Specific Learning Objectives. [4] Structured Group Discussion, compared to Problem Based Learning is a statistically highly significant ($p < 0.001$) method of teaching and a learning modality. [4] Structured Group Discussion in conjunction with lecture notes, over traditional didactic lectures, has definitely improved the learning process. [5]

Small group discussion has helped students overcome the barriers and students have asked doubts with free mind. This type of discussion might have enabled the attitude of students to be highlighted and it might have been modified by hearing the views of others. In addition, students may have offered each

other educational support with the help of facilitator. Similar type of results have been shown by authors DR Kelly, DE Cunningham, P McCalister et al. [6] In their paper titled "The impact of Structured intern education program on clinical documentation", Andrew Mc Lean, Jenine Lawlor, Rob Mitchall et al have reiterated that the introduction of More Learning for Interns in Emergency (MoLIE) [7] was associated with a small but satisfactory and significant improvement in documentation, despite 80% increase in intern placements. These results suggested that Structured training program does have a potential to improve performance of interns, while simultaneously increasing training capacity. Anupama Sukhlecha, Radha dass, Deepak S. Tiwari et al [8] have emphasized that Structured Communicative Skills Training (CST) being imparted to medical interns helps in improving doctor-patient relationship. This was the major finding of their study titled "Structured Communicative Skills Training for Medical interns improves history taking skills on sensitive issues - An Interventional study". Hence, these studies revealed the positive impact of Structured learning program among Graduates/Interns in Medical education.

Objectives

1. To study the effectiveness of Structured Group Discussion over Problem based Learning in teaching Interns/Medical Graduates, the basic concepts of Physical Medicine and Rehabilitation.
2. To study the perception of Medical Interns on the said two Teaching methods.

Materials & Methods

The present Interventional Study was conducted in 60 Interns of the Department of Physical Medicine and Rehabilitation, Government Medical College, Alappuzha, Kerala from June 2018 to Aug 2018.

After obtaining IRC and IEC clearance, 60 interns are identified; Upon taking Informed consent, they are divided into two groups of 30 each – Group A under Structured Discussion and Group B under Problem based Learning method. Six sessions shall be taken simultaneously on six different Topics in two different venues; so that each topic can be covered in both groups on the same day. Group A shall have Structured discussions with A-V aids and Group B shall have Problem based Learning. Group A is structured in such a way that the thirty interns in group A shall be divided in to five groups with six Nos. in each group and each group is provided, prior to the Class, with pre learning materials having 6 specific points on corresponding subjects. All groups have to come prepared for the class, one from each group has to present one point. While presentation is going on, the facilitator shall project corresponding A-V aids with contributory remarks for further clarification. Group B shall have Problem based learning with student pedagogy and facilitator contributions on rehabilitation principles of six common clinical conditions mentioned. A clinical scenario pertaining to that topic shall be provided prior to the class and from this, the students have to identify the relevant problems and discuss. The Clinical subjects selected are Stroke, Spinal cord injury, Amputations, Low back pain, Obesity and Cerebral palsy. After each session, both groups axesshall be subject to post session evaluation with same set of questions.

Statistical Analysis

Mean scores of both groups after each session are calculated and serially tabulated. Statistical correlation of Mean scores of two groups is done by Unpaired t-test. The perception of Interns regarding each of the two teaching methods is analyzed by questionnaire on a five point Likert's chart and is further analyzed by Chi Square test. Group B shall have

Structured discussion with A-V aids, utilizing the same method for structuring and be provided with prior reading materials on same topics after the study period.

Results

The collected data was compiled using Micro soft excel 2007 and compared & analyzed by using authentic Statistical software. Unpaired t-test was used to compare post session Mean scores of two groups and Chi-Square test for 5X2 contingency table was used for analyzing Likert's chart response from two groups.

P-value <0.01 was considered as Statistically significant.

60 interns were identified from 106th batch of MBBS, Govt. Medical College, Alappuzha and they were divided in to two groups of 30 each: Structured discussion group (A) and Problem based learning group (B).
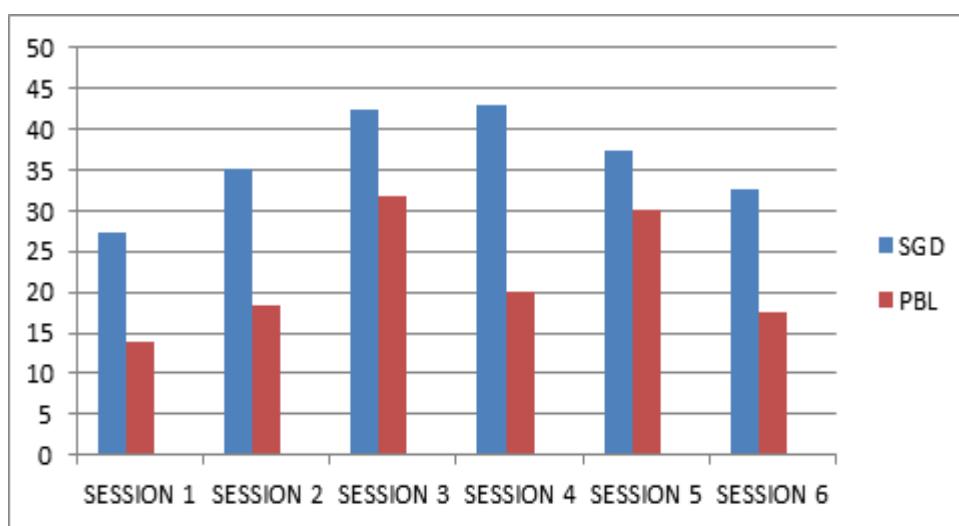
Table 1: Showing number of Interns who have attended the Sessions

Number of Session	Topic- Rehabilitation of	SGD Group (A)	PBL group (B)
I	CVA	19	24
II	LBP	16	17
III	SCI	21	19
IV	Amputations	17	16
V	CP	14	13
VI	Obesity	14	12
Total		101	101

CVA- CerebroVascular Accident, LBP-Low back pain, SCI-Spinal cord injury, CP-Cerebral palsy (Since interns are indispensable members of Clinical care, the sessions were arranged according to their time of convenience and the same reason had reflected in their attendance during different sessions)

Table 2: showing Post session Mean scores of two groups

No of Session	SGD(Mean)	SD	PBL(Mean)	SD
I	27.22	+/-8.33	13.90	+/-8.13
II	35.00	+/- 6.32	18.33	+/-9.83
III	42.27	+/- 9.32	31.81	+/-10.73
IV	42.86	+/- 9.06	20.0	+/-9.13
V	37.5	+/- 11.9	30.0	+/-7.07
VI	32.5	+/- 6.45	17.5	+/- 2.89

Graph 1: showing Mean post session Scores from SGD & PBL groups

SGD – Structured Group Discussion
PBL -   Problem based Learning.

It is evident from the Chart and column diagram that post session Mean scores are higher for the Structured Group discussion group than the Problem based Learning group; and it was statistically analyzed by Unpaired t-test and the results are as shown below.

Unpaired t-test to compare the Scores of two groups : Results are as follows:

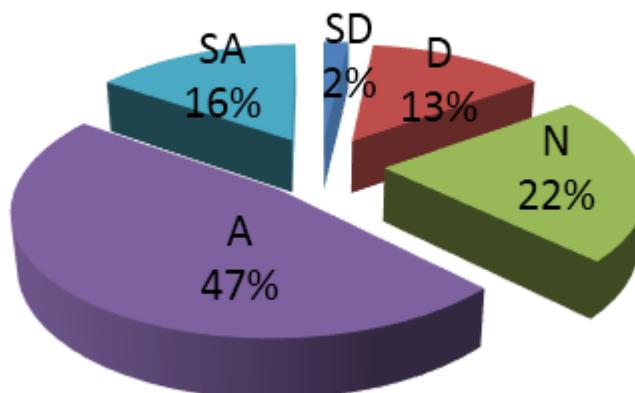The t-value is 3.72681. The p-value is 0.001965. The result is significant at p < 0.01.

P value is < 0.001965, which means that the difference of Mean scores between two groups is Statistically significant.

Table-3 shows Likert's chart response in two groups

Response	SGD	Percentage%	PBL	Percentage%
SD	15	1.86	45	5.57
D	107	13.24	109	13.49
N	180	22.28	303	37.5
A	382	47.28	301	37.25
SA	124	15.35	50	6.19
TOTAL	808		808	

Graph 2: showing Likert's chart response in SGD group
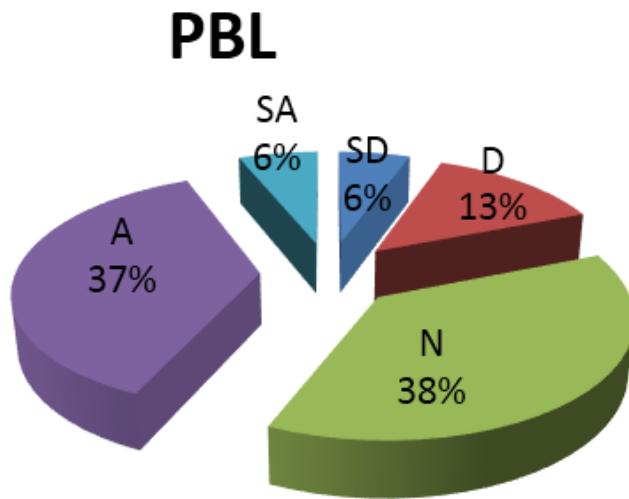
SD- Strongly Disagree

D – Disagree

N-Neutral

A-Agree

SA- Strongly Agree

The above response chart and pie diagram showed that 63% of Interns voted for Structured Group discussion to be implemented as a Teaching method; only 22% remained Neutral and 15% disliked it (Disagree)

Graph 3: showing Likert's chart response in PBL group

SD-Strongly Disagree

D-Disagree

N-Neutral

A-Agree SA- Strongly Agree

The above chart and pie diagram showed that only 43% of Interns voted for Problem based Learning method as Teaching tool; 38% remained Neutral and 19% disagreed. Statistical analysis of these responses was done with Chi-square 5x2 contingency Table method and the results are as follows:

Statistical analysis was done using Likert's 5x2 contingency table Method.

The Chi-square statistics, p-value and statement of Significance appear beneath the table. Blue means you are dealing with dependent variables and Red, independent variables.

Results						
	SD	**D**	**N**	**A**	**SA**	*Row Totals*
SGD	15 (30.00) [7.50]	107 (108.00) [0.01]	180 (241.50) [15.66]	382 (341.50) [4.80]	124 (87.00) [15.74]	808
PBL	45 (30.00) [7.50]	109 (108.00) [0.01]	303 (241.50) [15.66]	301 (341.50) [4.80]	50 (87.00) [15.74]	808
Column Totals	**60**	**216**	**483**	**683**	**174**	**1616 (Grand Total)**

The Chi-Square statistic is 87.4189. The p-value is

< 0.00001. (The result is significant at $p < 0.01$.)

Here the p value is <0.00001 and it shows that the difference in % between two groups are Statistically significant and SGD is definitely a preferred method of learning compared to PBL.

Discussion

Results of this Study showed that Teaching by Structured Group Discussion method is Statistically highly significant over Problem based Learning method. These results are consistent with the results of the study conducted by Ajay Meshram et al. [4] Structured group discussion will enable a student to self learn the topic based on salient points and will help train him/her to express the ideas

openly in the presence of facilitator. This not only improves their knowledge, but also their level of self confidence for public expression of ideas. The students can modify their views while participating in such discussion. Similar results were reported in Studies done by DR Kelly DE Cunningham and P Mac Calisters [6]. The only drawback of this method is that students should be given the salient points to be prepared well in advance for sufficient self preparation. Hence Structured Discussion definitely can augment the learning process and the communication skills of students. In Problem based learning, pedagogy is restricted to a handful of students among the group and it does not provide an opportunity to all students for expression of their ideas. Moreover, PBL gives an idea neither regarding the whole topic, nor regarding its salient points; hence it is less preferred by students to Structured group discussion [4]. The response result of this study also proves this point.

Medical Interns were selected for this study because a basic level of clinical knowledge for understanding various Case scenarios and to self learn various Clinical conditions based on salient points cannot be expected from an under graduate medical student.

Conclusions

All six Sessions of Structured Group Discussion could produce better Mean post session Scores with statistical significance (p value<0.001965). The distribution of responses in Likert's chart was also found statistically significant for structured group discussion with p value <0.00001. Hence it is concluded that Structured Group Discussion is a better way of teaching Medical Interns/Graduates, the basic concepts of Physical Medicine and Rehabilitation, in comparison to Problem based Learning.

Limitations of the study

Due to time constraints, we could conduct only six sessions, in each of SGD and PBL, for interns; that too, focusing on selected topics of Physical Medicine and Rehabilitation.

A-V aids were used for Structured discussion group only and this might have caused some bias.

As Interns are obligatory part of Clinical service, their attendance throughout the sessions was also an issue.

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