

Impact of Remedial Teaching for Low Achievers in Pharmacology to Improve their Academic Performance

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ABSTRACT

Introduction: Remedial teaching helps in finding specific learning difficulties and provides suitable remedial measures and support to prevent them in future; thus resolving learning difficulties in low achievers.

Aim: To identify the reasons for low achievement of the students in pharmacology and also to assess the effectiveness of remedial teaching.

Materials and Methods: It was a quasi experimental study (Pre-test Post-test design) conducted in the Department of Pharmacology, SMIMS among fifth semester-low achieving students of the additional batch, for a period of three months. Eleven students whose score were <60% in the fourth semester exam were selected and administered a questionnaire format

which contained 20 statements regarding the curricular and non-curricular causes for their low performance. The responses were analysed on a 5 point Likert scale. Pre-test, Remedial teaching (using class assignments) and Post-test were conducted and finally statistical analysis was done using SPSS version 16.

Results: Poor performance in low achievers in Pharmacology was found to be mainly due to curricular causes. There was statistically significant difference (p-value <0.05) between Pre-test and post-test for assignments. There was also significant difference between fourth sessional and send up marks after remedial teaching.

Conclusion: Remedial teaching helps low achievers to score better. Implementing this program right from the beginning will help low achievers to improve their academic performance.

Keywords: Medical education, Pre-test, Post-test

INTRODUCTION

Remedial teaching is designed to cater to the needs of children unable to keep pace with the teaching-learning process in a normal classroom. It is one of the acceptable solutions for low achievement [1]. The reasons identified for low academic achievement were non-curricular and the implemented remedial program proved to be effective [1]. Remedial teaching identifies specific learning difficulties and provides suitable remedial measures and support to prevent them in future [2]. According to Ananthakrishnan N, the main causes of slow learning in medical students can be summarised as learning problems and extracurricular problems [2]. The extra-curricular problems outweigh curricular problems. In the study institution, low achievers of fifth semester lack the basic concepts of Pharmacology. Many measures like tutorials and group discussion had been conducted regularly to improve their performance. However, significant improvement was not seen in them in semester examinations. Proper guidance would help them overcome their problems and bring them back into the main stream as far as possible. Hence remedial teaching was given as in-class assignments in must-know areas of selected topics in Pharmacology. This study was conducted to identify the reasons for low achievement of the students in Pharmacology and assess the effectiveness of remedial teaching.

MATERIALS AND METHODS

It was a Quasi Experimental study (Pre-test Post-test design) conducted for a period of three months from September to November 2016, in the Department of Pharmacology. Eleven additional batch students of the fifth semester (students 20) who scored <60% in fourth semester theory exam were selected and written informed consent was obtained. Approval to conduct the study was obtained from Institutional Ethics Committee (IEC 2/25/SMIMS/2015). They were administered a questionnaire format [3] with Likert type scale with 20 statements on curricular (statements

9, 10, 16, 17, 18, 19, 20) and extracurricular (statements 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15) causes. The reliability of the questionnaire was assessed using cronbach's alpha. Cronbach's alpha reliability coefficient was 0.8. Based on the scale of score ranging from 1-5 in order for strongly disagree, disagree, neutral, agree and strongly agree with individual statement, the average score was calculated. After analysing the responses, one to one interview was conducted to know their problem in detail. As part of remedial program, enrichment classes to assist learning were conducted and proper counselling were given.

In-class assignments on must know topics in endocrinology, respiratory system, cardiovascular system and general pharmacology on which lectures had already been delivered, were administered. There was no re-teaching. The topics for assignment were informed one week earlier. Short answer questions and problem-based questions were prepared every week on above topics and the students were instructed to answer them in a separate notebook in the class itself. Answers were discussed on the same day. Each session was of 2 hours duration. Total 20 hours were utilised for in-class assignments. Sessions were conducted after routine class hours. Certain topics were chosen, on which a pre-test was done. Followed this assignments were given and post-test scores were recorded. At the end of each class, feedback was given to them. After three months the send up exam marks was compared with fourth sessional marks.

STATISTICAL ANALYSIS

Pre-test and Post-test performances were compared at the end of each class by using paired t-test. Performances of students in the fourth semester sessional exam (before remedial teaching) was compared to performances in send up exam (fifth semester model examination after remedial teaching) by applying paired t-test. Statistical analysis was done using SPSS version 16. The p-value <0.05 was considered as statistically significant.

RESULTS

Reasons for Low Achievement

Based on the collected data of the reasons for the low achievement, poor performance of each student was found to be due to curricular causes. [Table/Fig-1] shows the reasons and statement wise score. The maximum positive score (36.36%) was for statement 10 and maximum negative score (90.91%) was for statements 6 and 8. The highest average score was also for statement 10 (4.27) whereas the lowest average score (1.64) was for statement 11 and 14.

Item No.	Statements	Individual score percentage					Average score
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
1	I have problem in understanding the language	27.27	18.18	0.00	36.36	18.18	3.00
2	I have no interest in doing Medicine	45.45	18.18	18.18	18.18	0.00	2.09
3	I have come here as my parents forced me	45.45	18.18	9.09	18.18	9.09	2.27
4	I am anxious	0.00	0.00	27.27	45.45	27.27	4.00
5	I am not accustomed to the food that is provided	0.00	9.09	27.27	45.45	18.18	3.73
6	I have problems due to my seniors	90.91	0.00	9.09	0.00	0.00	1.18
7	I am afraid of failing in the exams	0.00	0.00	9.09	54.55	0.00	2.45
8	I have problems with my classmates/room mates	90.91	0.00	9.09	0.00	0.00	1.18
9	I don't understand what is taught in class	0.00	9.09	9.09	54.55	27.27	4.00
10	I am not able to take notes	0.00	0.00	9.09	54.55	36.36	4.27
11	I don't find the environment conducive to study	54.55	27.27	18.18	0.00	0.00	1.64
12	I feel sick often	27.27	0.00	27.27	45.45	0.00	2.91
13	I feel unhappy	54.55	18.18	9.09	18.18	0.00	1.91
14	I feel threatened	45.45	18.18	27.27	0.00	0.00	1.64
15	I feel that I don't belong to the group	36.36	36.36	27.27	0.00	0.00	1.91
16	I am not able to study on my own	0.00	18.18	18.18	54.55	18.18	4.00
17	I need additional help in learning	0.00	9.09	0.00	72.73	18.18	4.00
18	I am not confident regarding the subject	0.00	0.00	9.09	72.73	18.18	4.09
19	I don't understand what is read	0.00	0.00	9.09	63.64	27.27	4.18
20	I feel frustrated as I can't study	0.00	0.00	18.18	63.64	18.18	4.00
Total average score:							2.92

[Table/Fig-1]: Reasons for low achievement.

Topics	Pre-test Mean±SD	Post-test (mean±SD)	p-value <0.05
Endocrine system	3.46±1.5	4.46±2.5	0.11
Cardiovascular system	3.15±2.79	5.07±3.45	0.0049
Respiratory system	3.76±3	5.84±3.41	0.0039
General pharmacology	5.38±2.32	7.15±3.02	0.01

[Table/Fig-2]: Assessment of low achievers before and after giving assignment. N=11 in each, significant at p<0.05

Student No.	IV th Sessional (%)	Send up (%)
1	43	44.5
2	39.75	47
3	47	56.5
4	20	23.5
5	52.5	59.5
6	19.5	22
7	60.75	60.5
8	60.75	59.5
9	45.25	45
10	24.25	31
11	36.5	41
Mean±SD	40.84±14.75	44.54±14.13*

[Table/Fig-3]: Comparison of internal assessment marks before and after remedial teaching in low achievers.

Mean±SD was calculated after converting the marks for 100. *p=0.006

Statements 2, 3, 6, 7, 8, 11, 12, 13, 14 and 15 had a negative average score of below total average score 2.92.

Effectiveness of Remedial Teaching

The performance of the students in pre and Post-tests as well as in fourth sessional and send up exams were compared by paired t test using SPSS version 16. Results are shown in [Table/Fig-2,3], respectively. There was statistically significant difference (p-value <0.05) between Pre-test and Post-test. There was also significant difference between fourth sessional and send up marks after remedial teaching.

DISCUSSION

The main objective of remedial teaching is analysis of student's performance and identifying the difficult topic areas [4,5-7]. Eleven additional batch students, who scored <60% were selected after fourth sessional theory examination. Poor performance of student was found to be due to curricular causes which were different from the study by Ananthakrishnan N and Vinutha S, where non-curricular causes were identified as causes of poor performance [2,3]. According to them, non-curricular causes like lack of motivation, language and food preferences had a significant impact on the academic performance of students.

The maximum positive score (36.36%) and highest average score (4.27) was for statement 10 where 36% strongly agreed about their inability to take notes. This is attributed to fast changing of powerpoint slides by the faculty and lack of clarity in explanation of concepts. It is interesting to note that 55% agreed with statement 16 regarding inability to study on their own, 73% agreed with statements 17 and 18 that they required additional help and lacked confidence regarding the subject. A 64% agreed with statements 19 and 20 about their inability to understand what is read and felt frustrated for not able to study. Other studies identified more of non-curricular causes [1,8-9]. The above curricular causes were not considered [1,2]. Proper training should be imparted to faculty on T/L methods and effective use of powerpoint presentation. As part of remedial program enrichment classes for students to assist learning were conducted and proper counselling were given.

The maximum negative score (90.91%) was for statements 6 and 8 which indicated that there were no problems with seniors, classmates and roommates. This reflects that environment is conducive to learning.

The lowest average score (1.64) was for statement 11 where 54.5% of the study group strongly disagreed indicating that environment was conducive to learning. A study by Almuammria M performed a study on the impact of the environment in enhancing the academic achievement of the students. He found that there are a range of factors affecting academic achievement such as: learner factors, family factors and institution factors [4].

Statements 2, 3, 6, 7, 8, 11, 12, 13, 14 and 15 had a negative average score of below 2.92 because 36-55% of the study group strongly disagreed the above statements indicating that the students joined the course on their own interest, did not feel sick or threatened and had feeling of belonging to the group. Thus non-curricular causes did not relatively have a significant impact on the performance of students in this study. Statement 1 was the only non-curricular cause where 36% had problem in understanding the language.

In the present study, the Post-test performance had significantly improved in topics like cardiovascular system, respiratory system and general Pharmacology. In endocrine system, Post-test marks was better than pre-test marks. However, it was not statistically significant [Table/Fig-2]. The significantly higher post-test marks indicated that in-class assignments and timely feedback had definitely improved their knowledge in the subject.

The marks obtained by the students in the send up exams were higher and statistically significant compared to the fourth semester sessional exam [Table/Fig-3]. A study by Vinutha S also showed significantly improved post-test performance and statistically significant higher send up marks [3]. Thus remedial teaching helped low achievers to score better.

One to one interaction with the students revealed that in-class assignments were helpful to understand the subject better and they appeared for the model examination with more confidence. Based

on the findings from data collection and analysis, continuation and expansion of the program to junior batches and continuous capacity building of teachers on concept and skills of remedial teaching are recommended.

LIMITATION

Low sample size is a limitation, as only the additional batch students were selected. To implement remedial teaching, faculties must be adequately motivated otherwise the outcome would be less than expected.

CONCLUSION

Remedial teaching is effective in improving academic performance of low achievers and bringing them back to the mainstream as early as possible. If found beneficial in few batches, remedial program can be recommended to other paraclinical and clinical subjects and in all batches. Based on the findings from data collection and analysis, continuation and expansion of the program to junior batches and continuous capacity building of teachers on concept and skills of remedial teaching are recommended.

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