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EFFECT OF PROBLEM BASED LEARNING ON MOTIVATION OF NURSING STUDENTS

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ABSTRACT

Abstract body: Motivation is critical for students to achieve successful learning outcomes. Among the various teaching – learning strategies, PBL is one such approach that fosters motivation to learn.

Objective: To determine the effect of problem-based learning among undergraduate nursing students in terms of motivation to learn, in comparison with the traditional teaching, in the Indian context.

Methods: A quasi-experimental study using a pre- test post- test control group design was adopted. The PBL on antenatal care was used for the experimental group and the traditional lecture-based teaching was used for the control group. Using convenience sampling, 90 students were assigned to the experimental group while 73 were assigned to the control group. They were BSc Nursing students who were undergoing the Obstetrical and Gynecological Nursing in India. The Motivation to Learn Scale (MLS) developed by the author was used to collect data prior to the intervention and after the intervention.

Results: There was a statistically significant difference between the PBL group and the traditional teaching group in the mean gain score on motivation for learning, with the PBL group having a higher mean gain.

Conclusion: PBL was shown to be more effective than the traditional teaching in improving the motivation of the undergraduate nursing students.

Key Words: Problem based learning, motivation, Nursing students, Evaluation, Teaching method

INTRODUCTION

Motivation is one of the significant psychological concepts that is related to the successful outcome of education ⁽¹⁾. A wide range of motivators that inspire students to direct their learning to the desired end exists. Motivating students in the classroom and providing them with opportunities for clinical practice are critical factors in the teaching-learning process. Learning is most effective while solving a problem hands-on which is of immense value to the needs of the learner. Student-centered approaches to teaching and learning are increasingly being adopted to motivate students to learn better. Students must primarily consider education as personally relevant to their interests and goals for being motivated to learn. Problem-based learning (PBL) is one such approach that has enhanced motivation of the students as they are made to work on ill-defined, complex real-world problems that have no single right answer. PBL has many advantages. It enables the students to develop essential skills like problem-solving and self-directed life-long,

and above all it fosters motivation to learn ⁽²⁻³⁾. Researchers have reiterated the fact that one of the most widely accepted merits of PBL is the ability to motivate or re-motivate students by freeing them from rote learning ⁽⁴⁾. Other studies have also shown that PBL results in higher motivation and better attitudes towards learning ⁽⁵⁾.

Literature abounds with various explanations on the complex subject of motivation that is viewed from a variety of theoretical perspectives. Some of the theories are Hierarchy of Needs Theory ⁽⁶⁾, Social Cognitive Theory ⁽⁷⁻⁸⁾, Goal Theory ⁽⁹⁾ and Self-Determination Theory ⁽¹⁰⁾. Motivation is considered being either intrinsic or extrinsic. When students enjoy learning for its own sake, they are considered being intrinsically motivated. Such students have the driving force to perform well, and they will succeed. On the other hand, extrinsically motivated students only aim is to attain a desired grade to get a job or to acquire academic qualification for their perceived benefit. It was evident from the results of the study on self-efficacy, intrinsic motivation and extrinsic motivation as predictors of cognitive engagement. This study

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reported that self-efficacy and intrinsic motivation had a correlation with academic identification, and they were also predictors of meaningful cognitive engagement. On the other hand, extrinsic motivation was predictor to shallow engagement in learning tasks. Motivational beliefs is a well-documented determinant for the quality of learning achievement⁽¹¹⁾. Other researchers have arrived at the conclusion that instructional materials that are challenging give student choices and promote autonomy and self-determination that will have a positive effect on students' motivation^(10, 12).

A study on problem-based learning among 36 first-year students reported that during their first exposure to PBL, the achievement and motivation of students improved. Besides there was a noticeable change in their learning preference⁽¹³⁾. It was also evident in another investigation done on the medical students' motivation to commit themselves to studying in PBL health sciences curriculum on the basis of their attendance at tutorial meetings. Commitment to study in the PBL was a potent determinant of achievement⁽¹⁴⁾. The effects of problem-based learning as compared to the traditional lecture method was reported in the Cardiorespiratory Nursing Section of the Adult Health Nursing Course. The students in the PBL group had higher motivation towards learning as compared to students in the lecture group. Besides, they gained much more knowledge than those in the traditional lecture method. However, there was no significant difference in the attitudes towards learning between the two groups⁽¹⁵⁾.

PBL has various forms. Researchers studied the effect of these forms, in comparison with conventional teaching. One such study is the Taiwanese experimental study, where a comparison of the learning-effectiveness was made between a peer-tutored PBL and conventional teaching of nursing ethics. A sample of 142 senior nursing students was randomly assigned to the two groups. It resulted in a significant difference between the two groups in satisfaction with self-motivated learning and critical thinking⁽¹⁶⁾.

In India, no investigations of this kind in nursing have been reported so far. Therefore, as part of a larger study, this study aimed at determining whether PBL was effective in improving motivation for learning in the context of the Indian setting particularly among the undergraduate nursing students.

MATERIAL AND METHODS

The study aimed at determining the effectiveness of a problem-based learning package on antenatal care developed for training of undergraduate nursing students in colleges in South India. A quasi-experimental pre-test

post-test control group design was used. The study was conducted in three selected nursing colleges using non-probability convenient sampling. Students who were available during the data collection were selected for the study. The experimental group consisted of 90 subjects while the control group had 73 subjects, who were in the third year B.Sc. Nursing program, and had Obstetrics and Gynecological Nursing as one of their courses.

The Motivation for Learning Scale (MLS) was developed by the researcher and was used for collecting data on motivation for learning. The evidence of content validity was based on the judgement of six educational experts, calculated in terms of percentage of agreement on content adequacy, relevance and appropriateness of the items. Each item had three alternatives, for which experts assigned ranks 1,2 and 3 to each of the alternatives, from least motivation to highest motivation. On the basis of expert opinion, three items were dropped from the 58-item draft scale. The 55-item scale was validated a second time and was pretested on 20 undergraduate nursing students. The average time they took to complete the scale was 40 minutes. This scale was to be found clear and hence no modification was considered necessary.

The construct validity of the scale was based empirically on the data obtained from 574 nursing students drawn from all the four years of the BSc nursing program, using a factor analysis approach. Items with factor loadings of less than 0.30 were omitted, which resulted in retaining 35 items under six components/ factors. These six factors were 'mastery' (19 items), 'resource management strategies: effort regulation'(3 items), 'self-regulation' (4 items), 'goal-oriented commitment'(3 items), 'self-determination/autonomy'(3 items) and 'task value'(3 items).

The construct validity of the 35 item MLS was also determined by correlating the scores obtained on the MLS with that of the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich (1991)⁽¹⁷⁾. The Pearson Correlation Coefficient computed was 0.784 on a sample of 89 nursing students. The Cronbach alpha computed from a sample of 132 subjects was 0.708, indicating that the MLS was reliable.

The MLS had items with three alternatives, with the scores ranging from 1 to 3. An example of an item from the scale is given below:

I learn better by:

- a. Gathering factual information
- b. In-Depth analysis of the subject
- c. Rote (memorization)

The option 'b' was rated as 3, while 'a' was rated as 2, and 'c' was rated as 1. The scores for the MLS was devised by summing up the ratings on all items, resulting in a

minimum possible score of 35 and a maximum possible score of 105.

Ethical Consideration: Prior to data collection, administrative permission was sought from the Heads of the Colleges of Nursing. After that, the researcher explained the purpose of the research, to the course coordinators. Later, the purpose of the study was explained to the students, and they were assured confidentiality and anonymity of the data that would be collected. The consent was taken for participating in the study.

A pilot study was conducted in two nursing colleges; one for the experimental group and the other for the control group. No modification was made in the design, as it was found to be feasible. For data collection, the MLS was administered to the students during a scheduled lecture hour, on the first day prior to the intervention. The experimental group underwent the PBL approach for the learning unit on antenatal care, which was integrated into the existing traditional approach. The control group, however, underwent the traditional approach of teaching which was predominantly lecture-based. The students in the experimental group, to start with, were introduced to training by PBL approach, because they had no previous experience of PBL. After the initial training, the PBL package was adopted for the students. The five problems/ situations that were utilized for the PBL approach was conducted over a period of one month, using the seven-step approach. Where in the first session was the brainstorming session and the second session was the re-grouping sessions. The post-test was conducted at the end of the intervention on the 30th day.

RESULTS

The data were analyzed using the statistical package for social sciences (SPSS) version 21.0. The mean, median, range and standard deviation was computed to describe the motivation for learning scores while inferential statistics was used for comparison of the motivation scores between the experimental and the control group. Whether or not there was a significant difference between the pre-test and the post – test was determined by computing the independent *t* test.

The results in Table 1 indicate that the mean scores in both, the pre-test (88) and the post-test (87.8) were apparently higher in the control group in comparison to that of the experimental group. The mean score for the experimental group was 84.14 and 85.37 respectively.

Comparison Between Experimental and Control Groups

The independent sample *t*-test computed between the mean pre-test MLS scores of the experimental and control groups revealed that the two groups differed signifi-

cantly, prior to the intervention $t(161)=3.58, p<.001$. Therefore, the mean gain score was computed for both the groups. The hypothesis that was tested was; the mean gain score on motivation for learning in the experimental group will be significantly higher than that of the control group.

It is apparent from Table 2 that the mean gain motivation for learning score in the experimental group was significantly higher than that of the control group. It indicates that the mean difference between the two groups was not by chance at .05 level of significance. These results suggest that PBL is effective in improving the motivation for learning, in comparison with the traditional approach.

DISCUSSION

In this study, problem-based learning approach was integrated with the already existing traditional teaching. A PBL package on antenatal care was integrated with the Obstetrical and Gynecological Nursing course. The results of this study, indicate that PBL students expressed higher level of motivation towards learning than did their counterparts. This could be attributed to the level of independence and choices the students had in their learning process, as the PBL involved brainstorming and self-directed learning.

The findings of this study are in line with the results of other similar studies. A Korean study that compared the effectiveness of PBL packages on respiratory and cardiac system showed a significantly higher motivation in the PBL students, in comparison with the conventional teaching. It was also true in the case of Taiwanese nursing students. They had significantly higher motivation scores after undergoing a peer-tutored PBL course in Nursing Ethics, in comparison with those who had undergone the conventional teaching⁽¹⁶⁾. An increase in the motivation for learning as a result of undergoing PBL has been reported in nursing widely in nursing⁽¹⁸⁾.

An investigation of Dutch college students' motivation to commit themselves to study in a PBL health sciences curriculum revealed that the time spent in individual study, academic achievement and increased interest. It indicates that commitment significantly determined achievement⁽¹⁴⁾. Contrary to the findings of these studies is the one reported by Galand et al. (2003) on the impact of PBL curriculum on the motivation and the cognitive engagement of undergraduate engineering students⁽¹⁹⁾. The results indicated no significant difference between the cohorts in their motivational beliefs (goal, orientation and perceived ability). Even then, the PBL students reported more adaptive self-regulated strategies than the traditional.

To compare these findings in the Indian scenario is not possible as literature on the subject is scarce. However, a pilot study conducted by the researcher on acceptability of the PBL reports that a majority of the nursing students felt that PBL motivated them to do self-study. They also reported that it gave them confidence in managing self-directed learning ⁽²⁰⁾.

A wide range of factors motivate students towards self-directed learning such as good lectures and group work. Instructional materials that are challenging give students choices and promote autonomy and self-determination. It can have a positive effect on students' motivation ⁽¹²⁾. The PBL approach involves brainstorming sessions where students work in groups and formulate hypotheses; the self-directed learning sessions are challenging as they provide autonomy for the students in their learning process, thereby increasing their motivation for learning.

The main strength of the current study is that a control group was used, thereby, decreasing the threat to internal validity. The design of the study being well conceived the generalizability of the findings will have greater value.

CONCLUSION

The purpose of this study was to investigate the effect of PBL on nursing students' motivation for learning. The results showed that the students in the PBL group were motivated for learning in comparison with the traditionally taught group. The findings of the study provide empirical support that PBL improves the motivation of the students for learning even in the Indian context. Further studies may be undertaken to determine the effectiveness of PBL in various courses of the undergraduate curriculum.

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Table 1: Mean, Median, Range and Standard Deviation of Pre-test and Post-test Motivation for Learning Scores

	Experimental Group (n =90)		Control Group (n =73)	
	Pre-test	Post-test	Pre-test	Post-test
Mean				
Median	84 .14	85.37	88.00	87.34
Range	85.00	87.00	89.00	89.00
SD	64 – 100 ±7.30	66 – 101 ±8.10	68 – 99 ±6.22	63 - 98 ±7.01

Note: Maximum possible score=105

Table 2: Mean Gain, Mean Difference, Standard Deviation of Mean Difference and t Value of Motivation for Learning Scores in Experimental and Control Groups

Group	Mean gain	Mean D	SD MD	t Value
Experimental (n=90)	1.22	1.88	0.87	2.16*
Control (n = 73)	- 0.66			

Note: t(161), p< .05 Significant