

## THE EFFECTS OF PROBLEM-BASED LEARNING AND LECTURING ON THE DEVELOPMENT OF IRANIAN NURSING STUDENTS' CRITICAL THINKING

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### ABSTRACT

**Objective:** The present study aimed to consider the effects of problem-based learning (PBL) and lecturing approaches on the development of students' critical thinking.

**Methodology:** A total of 40 second-year nursing students participated: 20 students in the PBL group and 20 students in the traditional lecture (control) group. The students underwent a one-semester course using the two methods of education. The California Critical Thinking Disposition Inventory (CCTDI) was used to measure the students' critical thinking.

**Results:** Compared with lecture students, PBL students showed significantly greater improvement in overall CCTDI. In terms of critical thinking, a significant relationship was found among the PBL and lecture groups.

**Conclusion:** The present study suggests a significant difference between PBL and traditional lecture groups so that a positive learning attitude was observed in the PBL group and learning motivation is higher in the PBL than in the traditional-based method of learning.

**KEYWORDS:** Problem-based learning (PBL), Lecture, Nursing, Critical thinking.

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## INTRODUCTION

With its global social, economic, educational, environmental and health challenges, the 21 century does not demand the teaching of soon-to-be obsolete facts, but, rather, the fostering of critical thinking at all levels of education.<sup>1</sup> The need for documentation and evidence of critical thinking development in the accreditation of nursing programmes have been affirmed by the USA's National League for Nursing.<sup>2</sup> The promotion of critical thinking as a major educational outcome of the nursing curriculum is also stipulated by the Council of Europe.<sup>3</sup> No thoughtful person can be appeared in a society in which educational system accepts the problems uncritically.<sup>4</sup>

An efficient nurse requires some skill in order to overcome some practical difficulties.<sup>5</sup>

Most universities in the world are trying to find some educational approaches by which practical decision capacities, continuous and self-confidence educations to be enhanced in students.<sup>6</sup> Nurses have found that there is a gap between theory and practice. They are usually unable to do medical performances.<sup>7</sup> Education with an active learning will result in significant increase between the education and medical practice.<sup>8</sup>

There is consensus about the importance of critical thinking. Some investigator insist that there is no standard approach to facilitating critical thinking<sup>9</sup> while others advocate the use of specific strategies.<sup>6</sup> Among educational strategies, problem-based learning (PBL) is thought to promote critical thinking.

While delivering education through the traditional lecture format is criticised for its emphasis on the learner's passive receipt of knowledge rather than learning to think critically<sup>11,12</sup> but the existence of empirical evidence support the positive effects of PBL on students' critical thinking.<sup>13,14</sup> In Asian countries including Iran most investigations have been done by medical and basic sciences and rarely by nursing. This study therefore, aimed to investigate the effects of PBL and lecturing on the development of Iranian nursing students' critical thinking.

## METHODOLOGY

The experimental design was a quasi-experimental with a control group, pretest-posttest design. The subjects were 40 second-year nursing students of medical Faculty of Shahrekord University, Shahrekord, Iran during Internal Surgery Course (ISC) in 2007. They were randomly assigned to either the PBL or lecture groups of 20 individuals each. The students were not previously exposed to the PBL method, even though all students had had some experience on lecture method. During a one-semester course (Internal Surgery) students were taught Hydroecelctrolyte and Renal courses as the two methods of education. These courses were considered to teach using the two methods of education. The traditional method

of education, i.e. the lecture was assigned as the control group and the PBL as the case group. Students in the PBL group were guided by a tutor for the issues generated by them. Afterwards, they were addressed to the sources of information with no limitations. In the next session, after introducing the problem by each student, different aspects of the problem were debated. The California Critical Thinking Disposition Inventory (CCTDI)<sup>15</sup> was used to measure the students' critical thinking. Data were analyzed using SPSS and the level of significance was set at 0.05 for all tests. T-test and Man-Whitney tests were used to compare the measurements of characteristics and dependent variables between the two groups. The average age of the students was  $22.4 \pm 1.0$  yr. For the experimental group, GPA (out of 20.00) averaged 12.40 -17.50 for the control group and for the control group 12.28 -19.48

## RESULTS

The results showed that the overall CCTDI scores for the PBL group significantly different for both groups. All seven subscales of the CCTDI, i.e. Truthseeking, Open-mindedness, Analyticity, Systematicity, Critical Thinking Self-confidence, Inquisitiveness and Cognitive Maturity showed significantly greater scores in the PBL.

In terms of critical thinking, there were no significant differences in the pretest analysis, inference and evaluations scores between the two groups. In the posttest however, as shown in Table-I, students in the scores of the PBL group had significantly higher scores (e.g. in the analysis;  $M = 6.15$ ,  $SD = 2.10$ ) after PBL implementation, compared to the control group ( $M = 3.64$ ,  $SD = 1.63$ ;  $t = 14.416$ ,  $p = 0.004$ ).

## DISCUSSION

The results of the present study show that there were differences in the development of critical thinking between the PBL and lecturing groups of students. This is consistent with Tiwari et al.,<sup>16</sup> in which the PBL students had

Table-I: T-test results for research variables in terms of critical thinking.

Variables	Pretest		Posttest			
	PBL (M ± SD)	Lecture (M ± SD)	PBL (M ± SD)	Lecture (M ± SD)	t	P
Analysis	3.22 ± 1.20	3.44 ± 1.35	6.15 ± 2.10	3.64 ± 1.63	14.416	0.004
Inference	3.21 ± 1.42	3.33 ± 1.15	5.65 ± 1.90	3.65 ± 2.00	15.324	0.001
Evaluation	3.14 ± 1.64	3.20 ± 1.90	6.15 ± 1.45	3.70 ± 1.30	14.403	<0.0001

significantly higher overall critical thinking scores on completion of the course compared with the lecture students, and they continued to have higher scores than the lecture students for 2 years afterwards.

Problem-based learning (PBL) as constructive learning environment has been selected as a useful instructional alternative to conventional (lecturing) teaching.<sup>17</sup> It is designed to help students construct an extensive and flexible knowledge base, develop self-directed learning skills, and become intrinsically motivated to learn.<sup>18</sup> The PBL in fact, establishes a format through which students learn.<sup>19</sup>

The PBL students usually express significantly greater levels of motivation toward learning than their traditional counterparts<sup>20</sup>. This method i.e. PBL assists students to acquire and retain relevant information by integrating basic and clinical sciences.<sup>21</sup> Learning by the PBL method also improved clinical reasoning skills, clinical knowledge, learning motivation and learning autonomy.<sup>22</sup> In addition, PBL is more student-centered and focuses on comprehensive learning of nursing concepts without regard to specialties of nursing courses.<sup>23</sup> The results of this study are consistent with those of previous studies e.g.<sup>25,26</sup> that reported improved learning and self-confidence among PBL students than lecture ones. Similarly Koleini et al.,<sup>26</sup> showed that there was a significant difference between the traditional-based learning and PBL so that the PBL may lead to better learning than to the lecture method.

Between the two groups of students in the current study, there were significant differences in the appearance of critical thinking

disposition. In addition, PBL students demonstrated significantly greater improvement scores in all 7 dimensions of CCTDI. The findings of the present study are consistent with those of previous studies<sup>27-29</sup> in which the PBL students had significantly higher overall critical thinking disposition scores on completion of the course compared with the lecture students.

This study found a significant difference between PBL and traditional lecture groups so that a positive learning attitude was observed in the PBL group. This finding is in parallel with the previous study findings that PBL students had significantly higher scores in the learning attitude than those of traditional lecture students.<sup>30,31</sup>

## CONCLUSIONS

The PBL students had significantly higher overall scores on the completion of the semester compared with the lecture students. A positive learning attitude was observed in the PBL group and learning motivation is higher in the PBL than in the traditional-based method of learning.

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