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Perception of nursing students and faculty on problem based learning

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Abstract

Introduction: Problem-based learning (PBL) is an active learning technique where learning takes place through solving real-problems that facilitates lifelong learning. Nursing as well as medical students have considered PBL method to be more interesting as compared to conventional teaching. Implementation of problem based method of learning in nursing curriculum is new and the first of its kind in context of Nepal. Thus, this study aimed to find out the perception on PBL among nursing students and faculty.

Method: A cross-sectional analytical study was conducted in May-Jun 2023 to assess the perception on PBL among 143 bachelor of nursing students and 20 nursing faculty who were involved in PBL sessions of PAHS, School of Nursing and Midwifery. A convenience sampling was employed through online Google form. The Statistical Package for Social Sciences (SPSS) was used to analyze data.

Result: Out of 143 students, 65(45.45%) were first year students and 78(54.55%) were second year students. Regarding perception on PBL, 137(95.80%) of students and 19(95.00%) faculty had positive perception. The highest mean score for the student (3.32 ± 0.68) was found on the statement "PBL promotes students' self-directed learning on the topic". Likewise, the highest mean score (3.55 ± 0.51) for the faculty perception was on the statement "PBL promotes students' participation in the learning process".

Conclusion: This study shows the students and faculty had positive perception on PBL as a teaching learning methods in bachelor level nursing program.

Keywords: Faculty; Nursing Students; Perception; Problem-Based Learning



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Introduction

Problem-based learning (PBL) is an active learning technique where learning takes place through solving real-problems. Thus, this approach exposes students to challenge through problems that elicits their active problem solver role which thereby facilitates lifelong learning.¹

PBL also motivates nursing students to seek new information by relying more on problem solving skills.² It has been found that nursing students who were taught by PBL method has higher knowledge, positive attitude and perception towards patients' safety than the students who were taught by traditional method.³ Furthermore, in a study finding conducted in Pakistan, both faculty (96%) and students (73.2%) considered PBL more interesting as compared to conventional teaching.⁴ Similarly, in Nepal, nursing students and faculties felt that PBL promoted students' participation in learning along with critical thinking, reasoning skill, self-directed learning, and exploring resources on their own.⁵

Patan Academy of Health Sciences (PAHS) has introduced PBL method in medical education in order to inculcate the active life long learner among its graduates.⁶ Medical students reflected that PBL provided contextual learning and imparted long term retention of knowledge through students' active participation in a small group.⁷ Similar perception was found from students and faculty regarding PBL implementation in certificate level nursing program in our institute.⁵ Therefore, PAHS implemented PBL in a new curriculum of bachelor in nursing courses since 2021 AD which indeed was for the first time in Nepal. However, its effect is unknown. So, this study aims to measure the perception on the PBL from students and faculty in Bachelor of nursing.

Method

A cross-sectional analytical study was conducted during May 2023 to Jun 2023 among nursing students of Bachelor of Nursing Science (BNS), Bachelor of Science in Nursing (BSc. Nursing), Bachelor in Midwifery Science (BMS) and nursing faculty who were involved as a tutor in PBL of PAHS, School of Nursing and Midwifery, Lalitpur Nursing Campus (LNC), Nepal. A convenience sampling technique was used to collect data. Sample size was calculated by taking the reference of mean value of disagreement of students on PBL session's benefit 8.70% which was 122.²² However, we recruited all students and faculty who were involved in PBL sessions. Of the total population 184 (students-162 and faculty-22), the final responses we received for analysis was 163.

The study was approved by the Institutional Review Committee (IRC) (Ref: nrs2303281709) of PAHS, Lalitpur, Nepal.

A semi-structured questionnaire was used in Google form to collect the data. There were two parts in data. Part one consisted of questions related to socio-demographic variables. Part two consisted the semi-structured validated questionnaire to measure the perception of nursing students and faculties on PBL. The questionnaire was in English. It had been already used to measure the perception of Bachelor of Medicine and Bachelor of Surgery (MBBS) students at PAHS which was validated through series of discussions with experts in PBL.⁷ Furthermore, it has been previously used among Proficiency Certificate Level (PCL) nursing students and faculty.⁵

The questionnaire consisted of 14 questions with four-point Likert scale (1-strongly disagree, 2-disagree, 3-agree and 4-strongly agree). Total score ranged from 14 to 56. The total obtained score of perception was converted into percentage score which was used to categorize the level of perception i.e. positive perception (score >50%) and negative perception (score ≤50%).⁸ The questionnaire also consisted of two open-ended questions to comment on the PBL process and contents and suggestions for improvement.

Detailed information regarding the study process including use of Google form was given to students in their respective class room by the principal investigator and for faculty, information was given personally. Participants' information sheet was prepared before the questionnaire in the Google form and students and faculties could move/directed to the questionnaire after giving written consent.

Data collection period was two weeks. The first reminder email was sent after one week after first email and a second reminder email was sent on 10th day of the first email. Those who returned filled questionnaire within two weeks were considered that they have participated after voluntary informed consent for the study. The approximate time to fill the questionnaire was 15-20 minutes.

The data were kept anonymous to respect privacy as participants were not required to mention their names in the Google form. Confidentiality was maintained by using the study findings for research purposes only.

Data were retrieved in Microsoft excel and cleaned and final analysis was done using Statistical Package for the Social Science (SPSS) using descriptive statistics.

Result

Among 184 students and faculty, 163(88.58%) responses were received for final analysis of data, where 143(87.73%) students and 20(90.91%) faculties responded. Out of 143 students, 107(74.82%) students were age between 15-24 years. Likewise, 65(45.45%) were studying bachelor first year and 78(54.54%) students were in bachelor second year. Among them, 71(49.65%) were BNS, 64(44.75%) were BSc. and eight (5.59%) were BMS students. Among 20 faculty, eight (40.00%) had one year and eight (40.00%) had two year experience in PBL tutorial, Table 1.

Table 1. Demographic variables of students and faculty responding perception of problem based learning (N=163)

Demographic variables	N(%)
Age of the students (in completed year) (n=143)	
15-24 years	107(74.82%)
25-34 years	34(23.77%)
> 34 years	2(1.39%)
Year of study (n=143)	
First year	65(45.55%)
Second year	78(54.54%)
Educational Stream (n=143)	
BNS	71(49.65%)
BSc. Nursing	64(44.75%)
BMS	8(5.59%)
Experience in PBL tutorial of faculty (n=20)	
Less than one year	2(10.00%)
One year	8(40.00%)
Two year	8(40.00%)
Three to four year	2(10.00%)

Regarding level of perception on PBL, 137(95.80%) of students and 19(95.00%) faculty had positive perception. Only 5(3.49%) students and 1(5.00%) faculty had negative perception, Table 2.

Table 2. Level of perception of students and faculty on problem based learning (N=163)

Level of perception	Students (n=143) N(%)	Faculty (n=20) N(%)
Positive perception (Score >50%)	137(96.80%)	19(95.00%)
Negative perception (Score ≤50%)	5(3.49%)	1(5.00%)

When analyzing the total perception score of respondents, the mean score of total perception was similar between faculty and students; 44.30±6.61 and 44.18±7.37 respectively. The highest mean score for the student (3.32±0.68) was found on the statement "PBL promotes students' self-directed learning on the topic". Likewise, the highest mean score (3.55±0.51) for the faculty' perception was on the statement

"PBL promotes students' participation in the learning process", Table 3.

In this study, 123(75.46%) participants agreed that PBL is more effective in fulfilling the learning objectives of the topic. Similarly, 122(74.84%) participants agreed that PBL imparts better content knowledge of the topic. Likewise, 89(54.60%) participants agreed that PBL promotes students' self-directed learning on the topic and 93(57.05%) agreed that PBL promotes students' communication skill. Furthermore, 109(66.87%) agreed and 28(17.17%) participants strongly agreed for more PBL sessions on learning of the nursing course, Table 3.

On question "What went well in PBL?" 51(35.66%) students and 9(45.00%) faculty answered that PBL improved self-directed learning. Most of the students 49(34.26%) and nine (45.00%) faculty mentioned that PBL increased students' group dynamics or group participation. Likewise, 49(34.26%) students and three (15.00%) faculty answered that it improved communication/presentation skill, Table 4.

Regarding the response to the question, "What could be improved?" 53(37.06%) students and four (20.00%) faculty stated that students need more self-study time to fulfil the PBL learning objectives. Likewise, six (4.19%) students felt need of more PBL sessions in the course. Moreover, the need of balance in the content of different subjects was also mentioned by five (25.00%) faculty. Both the students 18(12.58%) and faculty five (25.00%) stated the need of adequate learning resources and PBL infrastructure, Table 5.

Discussion

This study found that 137(95.80%) students and 19(95.00%) faculty had positive perception on PBL. Other studies also revealed similar findings among nursing students medical students and among faculty.^{5,9,10,11} These studies showed that both the nursing students and faculty perceived that PBL as an effective method of teaching and learning.

The findings that have similar mean score of total perception of faculty and students explains that both faculty and students had similar positive perception on the PBL. The highest mean score 3.32±0.68 for the student was on the statement "PBL promotes students' self-directed learning on the topic". Likewise, the highest mean score 3.55±0.51 for the faculty was on the statement "PBL promotes students' participation in the learning process". Similar findings also revealed in a study done in Philippines where both the students (mean score 4.87) and faculty (mean score 4.15) agreed that PBL promotes active participation.¹²

Table 3. Perception of students and faculty on problem based learning (N=163)

Statements	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Students	Faculty
	N(%)	N(%)	N(%)	N(%)	Mean±SD	Mean±SD
PBL is more effective in fulfilling the learning objectives of the topic.	5(3.06%)	10(6.13%)	123(75.46%)	25(15.33%)	3.01±0.59	3.15±0.49
PBL imparts better content knowledge of the topic.	5(3.06%)	6(3.36%)	122(74.84%)	30(18.40%)	3.10± 0.59	3.00±0.45
PBL encourages students' to learn in context.	8(4.90%)	7(4.29%)	93(57.05%)	55(33.74%)	3.20±0.72	3.20±0.83
PBL promotes the retention of knowledge.	12(7.36%)	5(3.06%)	103(63.19%)	43(26.38%)	3.08±0.77	3.15±0.67
PBL promotes students' participation in the learning process.	6(3.36%)	2(1.22%)	90(55.21%)	65(39.87%)	3.28±0.69	3.55±0.51
PBL promotes students' critical thinking skill of the topic.	7(4.29%)	2(1.22%)	91(55.82%)	63(38.65%)	3.27±0.69	3.40±0.75
PBL promotes students' reasoning skill of the topic.	5(3.06%)	3(1.84%)	103(63.19%)	52(31.90%)	3.24±0.65	3.25±0.55
PBL promotes students' self-directed learning on the topic.	7(4.29%)	-	89(54.60%)	67(41.10%)	3.32±0.68	3.35±0.74
PBL promotes students' group skills	6(3.68%)	12(7.36%)	104(63.80%)	41(25.15%)	3.10±0.66	3.10±0.78
PBL promotes students' communication skill.	9(5.52%)	7(4.29%)	93(57.05%)	54(33.12%)	3.18±0.75	3.15±0.74
PBL helps students to identify their strength and weaknesses.	7(4.29%)	4(2.45%)	102(62.57%)	50(30.67%)	3.18± 0.70	3.30±0.47
PBL makes the topic more interesting and fun learning.	8(4.90%)	19(11.65%)	113(69.25%)	23(14.11%)	2.94±0.66	2.85±0.74
PBL promotes to explore different resource materials.	5(3.06%)	3(1.84%)	108(66.25%)	47(28.83%)	3.22±0.62	3.10±0.64
I prefer more PBL sessions on learning of the nursing course.	7(4.29%)	19(11.65%)	109(66.87%)	28(17.17%)	3.00±0.67	2.75±0.71
Total Perception (minimum to max score 14-56)					44.18 ±7.37	44.30 ±6.61

Table 4. Response to question "What went well in PBL?" (N=163)

Identified attributes of PBL	Students (N=143) N(%)	Faculty (N=20) N(%)
Improved self-directed learning	51(35.66%)	9(45.00%)
Increased group dynamics/participation	49(34.26%)	9(45.00%)
Improved communication/presentation skill	31(21.67%)	3(15.00%)
Increased critical thinking	26(18.18%)	4(20.00%)
Effective learning	25(17.48%)	-
Better knowledge retain in mind	14(9.79)	-
Learned to search different references	10(6.93%)	-
Insight of own strength and weakness	9(6.29%)	-
Increased self-confident	8(5.59%)	-
Increased knowledge	8(5.59%)	-
Fun and interesting learning through PBL	4(2.79%)	-
Enhanced creative thinking	-	2(10.00%)
Feel responsible to meet learning objectives	-	2(10.00%)
Completion of course in time	-	2(10.00%)
Standard teaching method	-	1(5.00%)

Note: the responses were on multiple response

Table 5. Response to question "What could be improved?" (N=163)

Needs improvement	Students (N=143) N(%)	Faculty (N=20) N(%)
Need of more self-study time	53(37.06%)	4(20.00%)
Need of more learning resources	18(12.58%)	5(25.00%)
Proving the students in correct way	17(11.88%)	3(15.00%)
Content should be decreased in each PBL	10(6.93%)	3(15.00%)
Balance the subject contents	-	5(25.00%)
Difficult topic should be avoided	8(5.59%)	1(5.00%)
Need more clear specific objectives	8(5.59%)	-
PBL rooms	-	2(10.00%)
Trigger defect	-	2(10.00%)
Evaluation of PBL Process	-	1(5.00%)
Depth of learning	7(4.89%)	-
Need of more PBL sessions	6(4.19%)	-
Note should be provided	4(2.79%)	-
Basic science teacher should be in the session	2(1.39%)	-
Should be curriculum based	2(1.39%)	-
One problem in one PBL	2(1.39%)	-
One PBL in one block	1(0.69%)	-
Nothing to improve	10(6.93%)	-

Note: the responses were on multiple response

More than half, 93(57.05%) agreed and 55(33.74%) strongly agreed that PBL encourages students for contextual learning. This is in line with the previous study done in Patan Academy of Health Sciences, Nepal.¹³ Similarly, 91(55.82%) participants agreed and 63(38.65%) strongly agreed that PBL promotes students' critical thinking skill. This is similar with a study done in Saudi Arabia.¹⁴ Likewise, a significant increase in the overall critical thinking score ($p < 0.01$) was observed after implementing the PBL method among nursing students of Iran.¹⁵ Such changes was not observed among students in the lecture method.¹⁶ Similar findings were also revealed in a study done in Indonesia and Philippines.^{12,16} This consistency highlights the key advantages of PBL teaching-learning method.

In this study, out of 163 participants, 122(74.84%) agreed that PBL imparts better content knowledge on the topic. But the study done in Saudi Arabia among medical students revealed only 34.2% of students felt that they learnt better through PBL and 28.9% of the students felt that they gained more knowledge through PBL than lectures.^{10,17,18} Likewise, in South Africa, students educated in the PBL context are good in theory but unable to apply what was taught in the practical situation.¹⁹ Also, the finding of the study done among nursing students in Ethiopia revealed that the lecture method has a better statistically significant effect on immediate knowledge retention as compared to PBL.²⁰ This might be because lecturing inclines to encourage surface learning, which enables the students to recall what was covered in the session.

Problem Based Learning mainly focuses on self-directed learning to achieve objectives. In present study, 89(54.60%) participant agreed and 67(41.10%) strongly agreed that students' self-directed learning improves because of PBL method in their course. This is similar with a study done in Saudi Arabia which showed 103(67.8%) participants stated that PBL encourages self-directed lifelong learning.¹⁰ Also, 85(75.2%) Nepalese medical students also agreed on it.¹³

Most of the participants, 104(63.80%) agreed and 41(25.15%) strongly agreed that PBL promotes students' group participation skills. But working in groups emerged as a challenge for nursing student during PBL due to poor participation of some of the group members.²¹ In this study, 93(57.05%) agreed and 54(33.12%) strongly agreed that PBL promotes students' communication skill. This finding is consistent with a study done in Indonesia, where, 50.00% teachers agreed and 38.89% strongly agreed that PBL improves students' communication skills more than traditional method.¹¹

In this study, 113(69.25%) participants agreed that PBL makes the topic more interesting and fun learning. It shows students have participated in PBL with interest and concentration. This finding is similar to the study of Nepal and Pakistan.^{4,13} Similarly, 102(62.57%) participants of this study stated the PBL method helped to identify students' strength and weakness. This finding is consistent with a study done in Saudi Arabia.^{10,21}

More than half of participants, 90(55.21%) agreed on the statement “PBL promotes students’ participation in the learning process”. The mean scores for students and faculty were 3.28 ± 0.69 and 3.55 ± 0.51 respectively. In contrast, 113(41.1%) participants disagreed that students contribute equally in PBL with mean score of 2.77 ± 1.06 in a study conducted in Saudi Arabia.²²

Most of the participants, 108(66.25%), agreed that PBL promotes students to explore different resource materials. This is needed to fulfill learning objectives of PBL. But, this finding is inconsistent with a study done in South Africa as students perceived challenge for looking for information.²¹ It might be due to new experience of students in PBL teaching learning method.

Similarly, majority of participants (both students and faculty), 137(84.04%) preferred more PBL sessions on learning in the nursing course in present study. Similar finding was revealed in a study done in Nigeria where 238(76.8%) students thought it suitable for all medical students.²³ However, in another study, 24(63.2%) of nursing students preferred lecture method and only 14(36.6%) preferred PBL.²¹ This could be due to the retention bias as the test has been conducted immediately after the lecture or PBL session. Lecture could be highly structured to meet the learning objectives while during PBL learning objectives might not have been covered comprehensively as self-directed learning is not yet done.

Most of the students, 53(37.06%) and four (20.00%) faculty mentioned that students need more self-study time to fulfill the objectives of PBL session. This finding is consistent with a qualitative study done among bachelor nursing students in South Africa and Lebanon.^{20,24} Similarly, 18(12.58%) students and five (25.00%) faculty reported that students need more learning resources for self-study. These feedbacks should be addressed to make students more interested in and have positive perception towards PBL.

The findings of this study is obtained only from two batches of nursing students and faculty as only these two batches have undergone PBL process in new nursing undergraduate program. These positive perception of students indeed shows that the implementation of PBL in undergraduate nursing program has been received well by both the students and faculty. Furthermore, the positive perception on attributes such as self-directed learning, critical thinking skill, communication skill and team work that could be imparted among the graduates through PBL,

could help them to be a better nurse. However further study on the impact of PBL in students learning and its utility in clinical nursing practice will enable to gather more evidence on the importance of PBL in nursing education that can encourage other nursing education institute can implement PBL as a teaching learning method.

Conclusion

The study shows that both the students and faculty had positive perception on PBL as a teaching-learning methods in bachelor level nursing program and has provided a basic evidence on the applicability of PBL in nursing undergraduate education.

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Conflict of interests

None

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Author Contribution

All authors contributed substantially to concept, and design. SA wrote the draft. All authors read and approved final version of the manuscript.

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