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Perception of First Year Students of Medicine and Dentistry about Problem Based Learning Session Conducted At Universal College Of Medicine, Nepal

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ABSTRACT

Introduction: Problem-based learning (PBL) is widely accepted as a student centered instructional strategy. Universal College of Medical Sciences Nepal partly introduced PBL in June 2019. This study explored the perceptions of undergraduate students of first year MBBS and BDS who participated in first PBL session.

Methods: This was a cross-sectional questionnaire-based study on perceptions of the participants. The validated questionnaire was used for collection of data at the end of first PBL session. The questionnaire comprised of four parts; Overall satisfaction of the students with PBL; Satisfaction with self-motivated learning and small group activity; Satisfaction with tutor and composition of PBL package and students' perceptions about process for performing problem-solving in PBL. Data were analyzed using SPSS version 21. The frequency, mean and standard deviation were computed and t test was used for the comparison of responses on statements of MBBS and BDS groups of students.

Results: The mean scores on all statements for overall satisfaction of students with PBL are higher than four at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree, 1=strongly disagree). The mean scores on all statements are higher than four with regard to improvement in satisfaction with self-motivated learning and small group activity. The mean scores on all statements regarding satisfaction with tutor and composition of PBL package are higher than four. The mean scores on all statements on perceptions about process for performing problem-solving in PBL are higher than 3.6. The mean scores of both MBBS and BDS groups of students on all statements were compared; the significant differences were obtained only on 2 statements out of 30.

Conclusion: This study reflected positive perceptions of participant students almost on all the statements.

Keywords: BDS students, MBBS students, PBL, Perceptions

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INTRODUCTION

In 1960s problem-based learning (PBL) was first included in medical curriculum of McMaster University, Canada. Since then, it has been adopted as a method of teaching learning by many medical and dental schools in the world. PBL has transformed the traditional curriculum into students centered and system based integrated curriculum.[1-3]

PBL has been a fundamental constituent of medical as well as dental curricula globally, but it is partially implemented in Nepal. PBL was first introduced in Nepal in Integrated Basic Medical Sciences curriculum of Institute of Medicine (IOM), Tribhuvan University (TU) early in 1980s, later on it was extracted. BP Koirala Institute of Health Sciences (BPKIHS) introduced PBL in 1998 followed by Kathmandu University School of Medical Sciences (KUSMS) and its affiliated colleges in 2011, and Patan Academy of Heath Sciences (PAHS) in 2011. [3-5]

In TU affiliated medical colleges PBL was first experimented at KIST Medical College (KISTMC) Lalitpur, so the current practice at KISTMC is to conduct one PBL session per year to be completed in one week. [3, 5] Chitwan Medical College Bharatpur (CMC) was the second among the TU-IOM-affiliated colleges introduced PBL with one PBL case in both first and second year MBBS course conducted in 2014-2015 academic year and since then the process is continued. [3]

Universal College of Medical Sciences (UCMS) Bhairahawa Nepal, a third TU affiliated medical college planned in May 2019 to introduce PBL from academic year 2019 both for undergraduate medical and dental students. For this purpose, Health Professions Training Committee (HPTC) of UCMS constituted PBL implementation committee. The tutor and tutoring are among the very critical elements shaping the PBL approach, as tutors play a key role in facilitating PBL tutorials and help students to achieve their learning objectives.[6] Considering this aspect in mind, HPTC of UCMS organized one day “Training Workshop on PBL for tutor” prior to conducting PBL session for students. The PBL session for first year MBBS and BDS students was conducted in June 2019.

The purpose of this study was to take feedback from the participant students of first year MBBS and BDS and explore their perceptions regarding learning outcomes of PBL and sought their views about the role of tutors and qualities of effective tutors.

METHODS

Universal College of Medical Sciences (UCMS) Bhairahawa, Nepal is established in 1998 affiliated with Tribhuvan University Institute of Medicine (TU-IOM) Kathmandu, Nepal. It conducts undergraduate and postgraduate courses in medicine, dentistry, nursing and allied sciences.[7]It implements undergraduate curriculum for medicine (MBBS) revised in 2008 and undergraduate curriculum for dentistry (BDS) revised in 1999. [3, 8, 9] The curriculum is systemic, horizontally integrated, community oriented, and more towards teacher centered. So, the Health Professions Training Committee (HPTC) of UCMS constituted PBL implementation committee on May 14, 2019 with the purpose to introduce PBL in UCMS.

The problem package including clinical scenario, triggers and tutor guide for PBL session for first year undergraduate of medicine and dentistry students was developed in a one-day workshop held on June 11, 2019. Subsequently the "Tutorial Evaluation Report for students" and "Feedback Questionnaire for feedback from the students" accessed from google. [10]

After workshop, plan for the implementation of one PBL session for students of first year MBBS and BDS was developed. The session was conducted in third week of June 16- 21, 2019. Total number of students in first year MBBS/BDS was 140. They were divided into 10 groups randomly and informed to the students. Each group comprised of 14 students,10 from MBBS and 4 from BDS. Places for 10 tutorial rooms with adequate number of seats and teaching learning aids (Logistics like flip board, white board etc. and stationary like flip chart papers, markers etc) were identified and arranged.

Students were oriented on first day in one-hour interactive session covering what is PBL, why PBL, what is process of PBL, what is scenario, what is trigger, what are cues, learning needs, and learning objectives, what is role of tutor, how students have to participate in tutorial, what is self-directed learning (SDL), what are learning resources, how learning resources can be used, about small group work discussion etc. Tutorials were arranged for two hours 11.00-13.00 for first five days June 16- 20, 2019 with supervised SDL for 2 hours in the afternoon 14.00-16.00 hours with SDL continued at hostel. The seminar was held on last day of session i.e. June 21, 2019. The tutorial evaluation done by tutor for the communication skills, about knowledge, problem solving and analytical thinking skills and personal and interpersonal development and shared with students after seminar in a group.

Students consented to provide feedback on PBL session. The feedback from the students was obtained on validated structured questionnaire. The feedback questionnaire comprised of four parts; I. Overall satisfaction of the students with PBL (8 statements); II. The satisfaction with self-motivated learning and small group activity (7 statements); III. The satisfaction with tutor and composition of PBL package (15 statements) and IV. students' perceptions about process for performing problem-solving in PBL (5 statements). Ethical approval of the study was taken from ethical review committee of UCMS. All statements were assessed at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree. 1=strongly disagree).

The data collected was checked for completeness, accuracy and consistency. It was entered in IBM SPSS version 21 for analysis. Descriptive analysis was done; the frequency, mean and standard deviation were computed and t test was used for the comparison of responses on statements of MBBS and BDS groups of students

RESULTS

The findings are mentioned in tables; first four tables contain mean scores of all students on all statements and next four tables incorporate comparison of mean scores of all statements of MBBS and BDS group of students.

The mean age of the First year MBBS/BDS students were 19.56±1.17 (range 17-26 years). The mean age of MBBS student is 19.73±1.22, and BDS 19.15±0.92 (p-value 0.008)

I.A. Overall satisfaction of the students with PBL

Statement	Mean with standard deviation
I regard the process of PBL lesson (scenario) was appropriate	4.10±0.66
I regard the goal of PBL session was achieved.	4.24±0.66
I regard PBL an effective method of learning than traditional lecture.	4.43±0.70
I regard it is better to extend the PBL class.	4.22±0.76
I am more motivated to learn.	4.66±0.56
The problem in the tutorial process w of more interest and seemed to be real clinic problem.	4.37±0.67
The ability to evaluate myself improved.	4.38±0.60
I am satisfied with the assessment methods (attendance, tutorial evaluation and discussion.)	4.23+0.67

II.A. Satisfaction with self-motivated learning and small group activity

Statement	Mean with standard deviation
I participated actively, including presentations and discussions in class.	4.22±0.72
I accepted the challenge related to self-directed learning using appropriate learning resources.	4.22±0.72
Students were engaged in cooperative/collaborative learning for problem solving	4.42±0.55
The presentation of other students was conducive to learning.	4.14±0.68
Students dealt with the adequate learning task.	4.25±0.60
Student led the class initiatively as writer and modulator.	4.34±0.72
Students decided learning goal on their own.	4.41±0.77

III.A. The satisfaction with tutor and composition of PBL package

Statement	Mean with standard deviation
Tutor facilitated the discussion by questions related to the topic.	4.57±062
Tutor had a sufficient knowledge on the subject.	4.50±065
Tutor had close contact with the students to discuss the progress in free atmosphere.	4.63+0.67
Tutor handled the data (triggers) appropriately.	3.65±1.25
Tutor had affection toward students and guided students to participate in discussion more evenly.	4.70±0.59
The contents and composition of PBL package (scenario, triggers) were suitable to students' level.	4.31±0.64
Lab data provided were useful to problem solving.	4.28±0.68
I was able to learn how to access and assess the clinical problem.	4.31±0.70
I was able to learn how to build a hypothesis (clinical reasoning) about the clinical problem.	4.28±0.68
I learnt to properly connect the knowledge of basic medicine and clinical medicine.	4/48±0.72

IV.A. Students perceptions about process for performing problem-solving

Statement	Mean with standard deviation
The process of recognizing the clues of the problem (core recognition, problem listing)	3.61±1.07
The process to build a clinical reasoning logically by combining clues	3.78±0.91
The process of setting up learning tasks (learning goal/objectives)	3.72±1.54
The process of establishing a hypothesis (hypothesis generation)	3.68±1.01
Self-directed learning	3.70±1.27

Comparison of mean score on statements of MBBS and BDS group of students.

The mean age of MBBS students was 19.73±1.22, and BDS 19.15±0.92 (p-value 0.008)

I.B. Overall satisfaction of the students with PBL

Statement	MBBS	BDS	p-value
I regard the process of PBL lesson (scenario) was appropriate	4.04±0.69	4.22±0.53	0.143
I regard the goal of PBL session was achieved.	4.24±0.56	4.22±0.84	0.851
I regard PBL an effective method of learning than traditional lecture.	4.39±0.74	4.50±0.60	0.421
I regard it is better to extend the PBL class.	4.21±0.79	4.23±0.70	0.932
I am more motivated to learn.	4.60±0.61	4.80±0.40	0.054
The problem in the tutorial process w of more interest and seemed to be real clinic problem.	4.36±0.67	4.38±0.67	0.916
The ability to evaluate myself improved.	4.38±0.59	4.38±0.63	0.944
I am satisfied with the assessment methods (attendance, tutorial evaluation and discussion.)	4.22±0.66	4.25±0.70	0.835

II.B. Satisfaction with self-motivated learning and small group activity

Statement	MBBS	BDS	p-value
I participated actively, including presentations and discussions in class.	4.33±0.72	3.98±066	0.009
I accepted the challenge related to self-directed learning using appropriate learning resources.	4.30±0.65	4.03±0.83	0.044
Students were engaged in cooperative/collaborative learning for problem solving	4.38±0.55	4.50±0.55	0.263
The presentation of other students was conducive to learning.	4.17±0.67	4.05±0.71	0.531
Students dealt with the adequate learning task.	4.28±0.58	4.20±0.65	0.499
Student led the class initiatively as writer and modulator.	4.39±071	4.20±0.76	0.158
Students decided learning goal on their own.	4.43±0.73	4.38±0.89	0.729

III.B. The satisfaction with tutor and composition of PBL package

Statement	MBBS	BDS	p-value
Tutor facilitated the discussion by questions related to the topic.	4.57±0.58	4.55±071	0.835
Tutor had a sufficient knowledge on the subject.	4.54±0.60	4.40±0.74	0.244
Tutor had close contact with the students to discuss the progress in free atmosphere.	4.62±0.67	4.68±0.66	0.647
Tutor handled the data (triggers) appropriately.	3.71±12.3	3.50±1.30	0.370
Tutor had affection toward students and guided students to participate in discussion more evenly.	4.69±0.64	4.73±045	0.764
The contents and composition of PBL package (scenario, triggers) were suitable to students' level.	4.29±067	4.38±059	0.471
Lab data provided were useful to problem solving.	4.27±0.67	4.30±0.69	0.791
I was able to learn how to access and assess the clinical problem.	4.34±0.68	4.23±0.73	0.369
I was able to learn how to build a hypothesis (clinical reasoning) about the clinical problem.	4.31±0.70	4.23±0.62	0.516
I learnt to properly connect the knowledge of basic medicine and clinical medicine.	4.42±0.73	4.60±0.71	0.201

IV.B. Students perceptions about process for performing problem-solving

Statement	MBBS	BDS	p-value
The process of recognizing the clues of the problem (core recognition, problem listing)	3.62±1.06	3.60±1.10	0.933
The process to build a clinical reasoning logically by combining clues	3.73±0.92	3.88±0.91	0.416
The process of setting up learning tasks (learning goal/ objectives)	3.66±1.20	3.85±1.05	0.384
The process of establishing a hypothesis (hypothesis generation)	3.63±0.96	3.80±1.11	0.367
Self-directed learning	3.76±1.28	3.58±1.26	0.456

DISCUSSION

This study explored the perceptions of participant students of first year MBBS and BDS (Basic Sciences) who participated in PBL session conducted at Universal College of Medical Sciences, Bhairahawa, Nepal. Students' positive perceptions after participation in PBL session is crucial for PBL success among the medical and dental students of medical and dental schools of universities. Niwa M et al in their study mentioned that PBL has equally better learning outcome in basic sciences medical education.[11]

This study revealed overall satisfaction of the students regarding PBL at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree. 1=strongly disagree); the process of PBL session was appropriate (4.10±0.66); goal of PBL session was achieved (4.24±0.66); PBL an effective method of learning than traditional lecture (4.43±0.70); better to extend the PBL class (4.22±0.76); more motivated to learn (4.66±0.56); the problem in the tutorial process was of more interest and seemed to be real clinic problem (4.37±0.67); the ability to evaluate myself improved (4.38±0.60); and satisfied with the assessment methods (4.23+0.67), The mean scores

on all statements are higher than four; this means that students perceived most statements on overall satisfaction with PBL positively.

Yadav R M et al in their study revealed that PBL was interesting for most of the students; students mentioned group discussion in tutorial was stimulus for leaning and determined what they wish to learn.[3] Khan N et al in their study documented that design of PBL session enables leaners to achieve their learning goals.[12] Bhattacharya N et al in their study mentioned students expressed a keenness to participate in PBL session; majority of the students found PBL more interesting than traditional lecture; students desired to have more such PBL sessions and most of the students found tutorial useful.[13] Students favored the PBL mode of learning and motivated and felt that this mode of teaching enhances their interest in learning the medical subjects. These findings are documented in the study conducted by Anita Devi K et al. [14]

This study documented the improvement in satisfaction with self-motivated learning and small group activity at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree. 1=strongly disagree); I participated actively (4.22±0.72); I accepted the challenges related to SDL using appropriate learning resources (4.22±0.72); students were engaged in cooperative/collaborative learning for problem solving (4.42±0.55); presentation of other students was conducive to learning (4.14±0.68); students dealt with the adequate learning tasks (4.25±0.60); student led the class as modulator 4.34±0.72; and students decided learning goal on their own (4.41±0.77). The mean scores on all statements are higher than four with regard to the improvement in satisfaction with self-motivated learning and small group activity; this is again a positive sign.

Khan N et al in their study mentioned that PBL boosts individual student's participation and transforms student from passive listener to active lifelong learner; improves SDL and fosters confidence in SDL, [12] Bhattacharya N et al in their study documented that students felt more confident of their ability to learn on their own and found greater and better participation of students in group discussion.[13] Al-Drees et al in their study cited that PBL sessions promote and enhance students 'knowledge, enthusiasm and motivation and students reported PBL session encourages collaborative learning.[15] Abdulghani HM et al documented in their study deep learning can occur when students work together in small groups and using SDL approach, where independent thinking is encouraged. [17]

In this study students acknowledged their satisfaction with tutor and composition of PBL package (scenario and triggers) at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree. 1=strongly disagree); tutor facilitated the discussion by questions related to the topic (4.57±062); tutor had a sufficient knowledge on the subject (4.50±065); tutor had close contact with the students to discuss the progress in free atmosphere (4.63+0.67); tutor handled the data (triggers) appropriately (3.65±1.25); tutor had affection toward students and guided them to participate in discussion more evenly (4.70±0.59); the contents and composition of PBL package (scenario, triggers) were suitable to students' level (4.31±0.64); lab data provided were useful to problem solving (4.28±0.68); able to learn how to access and assess the clinical problem (4.31±0.70); able to learn how to build a hypothesis (clinical reasoning) about the clinical problem (4.28±0.68) and learn to properly connect the knowledge of basic sciences and clinical medicine (4/48±0.72). The mean scores on all statements regarding satisfaction with tutor and composition of PBL package are higher than four; this means that students notice constructive role of tutor and understand the composition of PBL package and process.

Students in a study conducted by Yadav R M et al reported that tutors were acting like facilitator during discussion; played very decisive roles in preserving the group dynamics and coherence; helped in finding the learning issues in a very constructive way and acted as guide; stimulated students for SDL to search for links between hypothesis generated in discussion and to understand underlying mechanisms/theories.[3] In the study conducted by Anita Devi K et al, students mentioned the intervention of facilitator was adequate.[14] Othman SY et al documented in their study the key role of tutor is to facilitate PBL process by keeping the group focused on objectives/tasks and guiding the students to achieve their goals.[16] The results of study conducted by Niwa M et al suggested that a PBL approach improve knowledge acquisition in both genders and PBL may also improve clinical knowledge acquisition in a different cultural context.[11]

Al-Drees et al reported that PBL students were better in applying basic sciences knowledge to a clinical case scenario. [15]

This study also documented the students' perceptions about process for performing problem-solving in PBL at Likert scale 1-5 (5=strongly agree, 4=agree, 3=to some extent agree, 2=disagree. 1=strongly disagree); the process of recognizing the clues of the problem (3.61±1.07); the process to build a clinical reasoning logically by combining clues 3.78±0.91; the process of setting up learning tasks/goal/objectives (3.72±1.54); the process of establishing a hypothesis (3.68±1.01); and SDL (3.70±1.27). The mean scores on all statements on perceptions about process for performing problem-solving in PBL are higher than 3.6; this means that students perceptions were also notable.

Al-Drees et al in their study documented that the students reported a positive role of the PBL sessions in the students' learning process. Furthermore, PBL demonstrated greater skills in the areas of hypothesis generation and PBL sessions help in the development of decision making and analytical skills. [15]

The mean scores of both MBBS and BDS groups of students on all statements were compared; the significant differences were obtained only on 2 statements I participated actively, including presentations and discussions in class (MBBS 4.33±0.72, BDS 3.98±066, p- 0.009) and I accepted the challenge related to SDL using appropriate learning resources. (MBBS 4.30±0.65, BDS 4.03±0.83, p-0.044) and also in age (MBBS 19.73±1.22, BDS 19.15±0.92 p-0.008).

CONCLUSION

This study reflected positive perceptions of participant students almost on all the statements. Students were satisfied with problem package, process of PBL, participation in PBL process, role played by tutors, small group activity, self-directed and self-motivated learning and participatory, cooperative and collaborative approach.

Limitations of the study

This was a cross-sectional study with convenient sampling, conducted in one institute, self-reported information provided by the participant students and all the participants were new for this sort of teaching learning methodology.

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Pre- operative diagnosis with USG is difficult. It needs a high level of suspicion and expertise, but USG can rule out other abdominal causes. CT scan of abdomen is more specific for diagnosis of stump appendicitis. The CT scan findings are similar to acute appendicitis, like in our case. Laparoscopy is another method to make diagnosis in case of confusion with radiological diagnosis. Completion appendectomy either open or laparoscopy is necessary to treat stump appendicitis.

CONCLUSION

Stump appendicitis is a rare and delayed complication of appendectomy. It presents with a similar symptoms and signs of acute appendicitis. Being a rare entity, it is very difficult to diagnose. Diagnosis is based on strong clinical suspicion in post appendectomy patient with radiological evidence. Intra-operative clear-cut dissection and visualization of appendix base and leaving less than 5mm of stump can prevent the incidence of stump appendicitis.

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