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Research Article

Evaluation of Problem-Based Learning in College of Medicine: An Indicator of Quality Education in a Hybrid Curriculum

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Background. A culture of quality is believed to drive institutes toward excellence through feedback. Multiple surveys at educational institute help to get a deeper insight into institutional performance and curricular execution. Since problem-based learning (PBL) is an important component of the hybrid curriculum, thus stakeholders' opinion on PBL satisfaction is worth discussing. This study intended to determine the trends in students' satisfaction with PBL over the years and to report on the importance of curricular changes that can be incorporated based on students' needs. *Methods.* This is a descriptive cross-sectional study that was conducted at the College of Medicine (COM), King Saud Bin Abdul Aziz University for Health Sciences (KSAU-HS), Jeddah, Saudi Arabia. All male and female medical students, using consecutive sampling technique, were included in the study. End-of-course evaluation reports for the academic years ranging from 2013 to 2019 on PBL satisfaction, with a response rate of ≥60%, were included in this study. *Results.* Overall, students at the COM, Jeddah were satisfied with PBL. A declining but satisfactory trend followed by a sharp rise in satisfaction was observed in this study. Pearson correlation reported a positive relationship between PBL problems, tutors, and PBL sessions ($r = 0.82$, $p < 0.001$). *Conclusions.* Transition from three sessions to two sessions per PBL case can be considered as an effective and efficient way of curricular execution. We found that the tutor, the case, and session dynamics were positively correlated after the incorporation of the feedback. Thus, highlighting the facts that inculcating a culture of responding to feedback can lead to innovations in medical teaching and can help to improve the curricular execution and students' satisfaction.

1. Introduction

Learning and teaching methodology in medical education has evolved over the years, with more emphasis on self-directed learning (SDL) where the learner is actively involved in the learning process. problem-based learning (PBL) is one of the well-recognized modalities of teaching that promotes SDL in many medical programs worldwide [1].

PBL originated at the medical school of McMaster University in the 1960s [2]. It is a form of small group activity where the students are responsible for the process of learning. It is currently used in many fields of higher education apart from medical schools and has been proved to enhance students' problem-solving, team-building, interpersonal skills, and critical thinking [3–6].

PBL is a process where students are given a problem or trigger either in a form of a video, image, statement, or a case, and allow them to work together to solve it. Problem construction and execution are vital for the success of PBL session. It must match the learning objectives, should be stimulating, and can generate appropriate activities. During PBL session, a problem or trigger acts as a stimulus to motivate students to think critically and analyze the problem. The tutor role, however, is limited to being as a facilitator and a guide. Apparently, PBL is a resource hungry process with emphasis on understanding rather than memorizing [4]. The entire process of PBL is expected to result in long-lasting in-depth knowledge of the subject and enhances students' communication skills and the spirit of teamwork [3–7].

College of Medicine–Jeddah, King Saud bin Abdul-Aziz University for Health Sciences (COM-J, KSAU-HS) has an integrated problem-based medical curriculum. Problem-based sessions remain as the nucleus of the curriculum where all the teaching sessions revolve around weekly themes. Apart from medical electives and longitudinally executed two medical research courses, there used to be a total of eighteen PBL-integrated courses running over the entire 4 years of the curriculum: 10 courses during the two preclinical years and eight courses during the last two clinical years. However, from the academic year (AY) 2019–2020, the preclinical courses have been reduced to eight bringing the total number to 16. This decision was taken in view of changing institutional needs and keeping in view stakeholder's feedback. Due to the increasing number of students, it was deemed necessary to restructure the block distribution to ensure equal credit hour allocation for each course. Equal credit hour distribution helped in dividing the class into two halves and executing the block twice per year to accommodate the increasing number of students, specifically in the hospital setting and clinical simulation lab. Initially, until AY 2016–2017, the preclinical PBL was covered in three sessions each spanned 1.5 hr. Then in AY 2017–2018, it shifted to first and third sessions with reduced time of 1 hr while the second session remained as spanning over 1.5 hr.

Currently from AY 2018 to 2019 based on stakeholders' feedback through specially designed survey. Each problem is covered under two session strategy. Initially, it was implemented with 2 hr for session 1 and 1.5 hr for session 2; but subsequently it was modified to 2 hr for each session totaling 4 hr for each case. This decision helped with reliable execution of the curriculum with highest time efficiency. Taking decisions based on students' feedback is meant to enhance students' learning experience through addressing and responding to their needs. Regarding PBL sessions in clinical phase which span over two sessions, no changes have been made since the inception of the college.

PBL is the pivotal backbone on which the COM-J curriculum is based, thus special emphasis and efforts are put to ensure proper execution of each PBL session. The execution plan encompasses a series of pre-PBL orientations, specialized lectures, hands-on trainings, and tailor-made workshops conducted repeatedly for both facilitators and students [3]. PBL contents and processes however are subject to improvement, based on the continuous evaluation obtained from the stakeholders (i.e., students and tutors) at the end of each course. COM-J believes in the principle of check and balance to maintain the quality standards in the medical education. Thus, the stakeholders' evaluation is considered as an essential component for quality improvement and serves as a basis to address the ever-changing institutional needs.

Before starting our study, we had the following questions in mind:

(1) Are the students satisfied with the execution of problem-based learning?
(2) Is there any difference in satisfaction level between genders or study levels?
(3) Is there any correlation between the PBL problem (case scenario), the session itself and the tutor?
(4) What would be the impact on students' evaluations after responding to their needs?
(5) Keeping in view the importance of PBL in medical education, this study primarily intended.
(6) To assess students' satisfaction with PBL over the years.
(7) To determine any changing trends and association of students' satisfaction with the tutor, the case, and the session dynamics.
(8) To sensitize the audience on the importance of striving toward excellence through feedbacks.

2. Methods

2.1. Study Design and Sampling. It is a descriptive cross-sectional study conducted at the College of Medicine, King Saud Bin Abdul Aziz University for Health Sciences, Jeddah, Saudi Arabia. The study population was all the male and female students from preclinical and clinical years at COM-J. Data was taken from the evaluation units. Which is working under the banner of department of medical education; it is responsible to collect, analyze, and disseminate evaluation feedbacks. Record was retrieved and analyzed from the AY 2013–2014 till 2018–2019, where consecutive sampling technique was used. All the responses from end-of-course evaluation reports on the PBL from medical students were included, provided the questionnaire was filled completely, and the response rate was above 60%.

2.2. Estimated Sample Size. Sample size was calculated by using the Raosoft® software (http://www.raosoft.com/samplesize.html). Courses that were conducted on male section were 96, while on female side only 29 courses were executed. The required sample size was estimated at the 95% confidence level (CI) with an estimated 50% response distribution and a margin of error of ±5%. The required minimum sample size was determined to be 95. However, as our sample size was small, we included all courses executed in COMJ with a response rate of 60%. Hence, a total of 101 courses were included in this study.

2.3. Questionnaire Development. The study questionnaire was designed after the discussion among important stakeholders in conjunction with relevant available literature. Questionnaire was subjected to a pilot test before execution and re-edited and modified as per the feedback from stakeholders. The value for Cronbach's α for reliability of the questionnaire was calculated as 0.971.

The questionnaire contained two sections: one for demographic data and the other one for PBL sessions. Section 2 had three domains pertaining to PBL under the following themes: (1) the problem itself, (2) the sessions, and (3) the tutors. In the first domain PBL problems, questions were related to satisfaction of learning if the problem stimulated the student's learning instinct and whether the case was relevant to clinical practice. The questions in second domain were regarding the PBL sessions, it inquired about the level of group rapport, cooperation, depth of critical thinking, analysis, and balance of participation. Questions in the third domain were about the tutors who conducted the sessions; the questions were focused on facilitators ability to offer support, constructive feedback, and well-balanced facilitation. All the questions were assessed on a five-point Likert scale from 1 to 5, where 1 meant poor and 5 meant excellent. When taking a mean of rating, anything between 3 and 3.5 was rated as low satisfactory, mean between 3.5 and 3.9 was considered as satisfactory while 4 and above as highly satisfactory.

2.4. Data Collection and Data Analysis. Data were retrieved from evaluation units' records and was transferred to SPSS for analysis. For descriptive analysis, mean and standard deviation were estimated for quantitative variables like mean satisfaction score regarding PBL problems, sessions, the tutors, etc. Frequency and percentage were computed for categorical variables like batch no, course names, etc. Line graphs were used to show the pattern of mean for different domains over the years or phases. For inferential statistics, independent *t*-test and ANOVA were used for the comparison of two or more variables. Correlation's test was used to display the association between numerical variables. p-value <0.05 was taken as significant. Data were analyzed on SPSS version 20.0 (IBM Corp., released 2011, IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

2.5. Ethical Approval. Institutional review board (IRB) approval was taken from King Abdullah International Medical Research Center (KAIMRC), IRBC/1552/18. To assure confidentiality, no names or identifiers were collected, and the data was stored in password-protected encrypted file.

3. Results

3.1. Demographic Characteristics. A data for total of 101 blocks/courses were analyzed, out of those 85 (84.2%) were conducted at COMJ-males while the rest of 16 (15.8%) courses were executed at COM-J female. More than half of the courses at male colleges with sufficient response rate in this study were from batch 2, 3, and 4 (55.6%) while 62.5% of the courses at female's side were from batch 1 students.

Table 1: Demographic characteristic of the respondents.

		***n	%
Gender	*Courses at COMJ-male	85	84.2
	**Courses at COMJ-female	16	15.8
	Total	101	100.0
Batches		n	%
Male	Batch 1	13	14.9
	Batch 2	15	18.0
	Batch 3	17	20.0
	Batch 4	15	17.6
	Batch 5	12	14.1
	Batch 6	8	9.4
	Batch 7	5	5.9
	Total	85	100.0
Female	Batch 1	10	62.5
	Batch 2	6	37.5
	Total	16	100.0
Phase			
Male	Phase II	49	57.6
	Phase III	36	42.4
	Total	85	100.0
Female	Phase II	14	87.5
	Phase III	2	12.5
	Total	16	100.0
Academic years			
Male	2013–2014	10	11.8
	2014–2015	11	12.9
	2015–2016	15	17.6
	2016–2017	16	18.8
	2017–2018	15	17.6
	2018–2019	18	21.2
	Total	85	100.0
Female	2016–2017	5	31.3
	2017–2018	8	50.0
	2018–2019	3	18.8
	Total	16	100.0

*Number of courses at COMJ-male. **Number of courses at COMJ-female. ***n = Number of courses.

About 57.6% male courses belonged to phase II (preclinical) while 42.4% were from phase III (clinical years). Further demographic details can be found in Table 1.

3.2. Association of PBL Domains with Gender and Phases. On applying *t*-test, no difference was found between the satisfaction of male and female students in all three domains. Significant difference was found between preclinical (phase 2) and clinical years (phase 3) where clinical students were more satisfied with the problem scenarios and tutors, whereas no difference in satisfaction was found over the satisfaction on execution of sessions (Table 2).

3.3. Overall Satisfaction and Co-Relation. In the early years of the inception of this college, there were limited number of only-male students. The students were highly satisfied with

Table 2: Association of PBL domains with gender and phases.

		n	Mean ± SD	95% CI		p-Value
			Gender association			
*PBL problem	Male	80	4.31 ± 0.47	−.152	.053	0.342
	Female	16	4.36 ± 0.29			
**PBL session	Male	80	4.38 ± 0.44	−.153	.067	0.439
	Female	16	4.42 ± 0.33			
***PBL tutors	Male	80	4.31 ± 0.50	−.020	.184	0.113
	Female	16	4.23 ± 0.28			
			Phase association			
*PBL problem	Phase II	60	4.24 ± 0.40	−.316	−.109	<0.001
	Phase III	36	4.45 ± 0.49			
**PBL session	Phase II	60	4.31 ± 0.37	−.294	−.081	0.001
	Phase III	36	4.50 ± 0.48			
***PBL tutors	Phase II	60	4.19 ± 0.42	−.403	−.189	<0.001
	Phase III	36	4.49 ± 0.49			

n = Number of blocks/courses independent t-test. *PBL problem, i.e., case scenario. **PBL session, i.e., session dynamics. ***PBL tutor, i.e., tutor's facilitation skills.

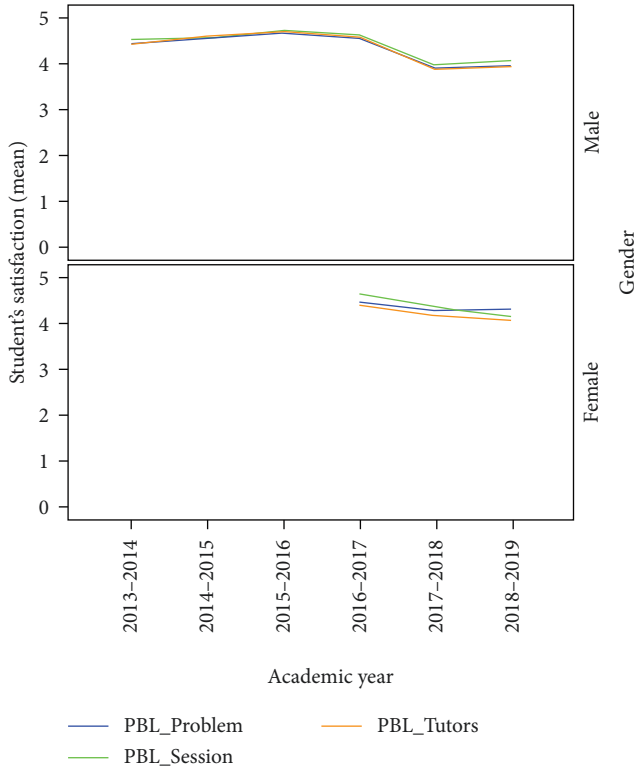

Figure 1: Student's satisfaction regarding different factors of the PBLs based on gender from different academic years.

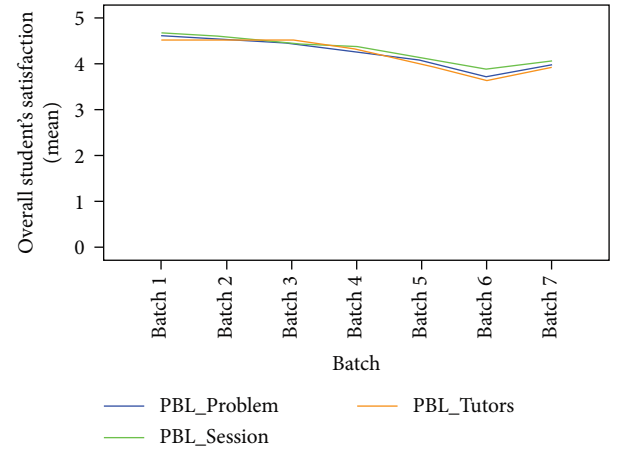

Figure 2: Overall student's satisfaction on different factors of the PBLs from different batches.

the PBL process ranging from 4.40 to ~4.70 on five-point Likert scale with a sharp ascending peak in AY 2015–2016 followed by a decline in AY 2016–2017 and a gradual slight improvement in satisfaction in AY 2018–2019 (Figure 1).

On segregating the data for male and female students, male student results supported the findings mentioned earlier while in the female students, there has been some rise in students' satisfaction only on the problem itself (Figure 2). While PBL satisfaction comparison between preclinical and clinical years shows an improvement in satisfaction in preclinical, at clinical years, there is a dip but still satisfactory as it is above 3.75 on a five-point Likert scale (Figure 3). On comparing different batches, it is seen that the students were highly satisfied in the first batch followed by a gradual but steady dip that picked up in Batch 7.

A Pearson correlation examined the relationship between consistency of PBL problems and PBL sessions. Scale scores were computed by adding responses to the four questions in each scale resulting in a minimum possible score of zero and maximum of five. The mean for PBL problems was 4.32 (SD = 0.44), and mean for consistency in PBL sessions was 4.39 (SD = 0.42). The relationship was positive, strong in strength, and statistically significant ($r223$) = 0.91, $p < 0.001$) (Table 1). Furthermore, we examined the relationship between the consistency of PBL problems and PBL sessions. Scale scores were computed by adding responses to the four questions in each

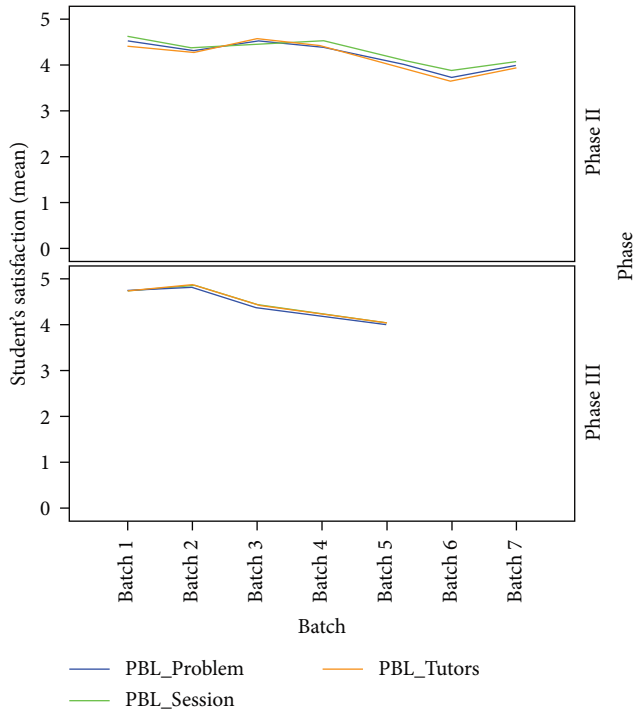

Figure 3: Student's satisfaction regarding different factors of the PBLs based on level of study, i.e., from phase 2 and 3.

scale resulting in a minimum possible score of zero and maximum of five. Table 2 shows the association of the outcome variables.

For AY 2013–2014 the relationship between problem and session and problem and tutor was positive. For AY 2014–2015 and 2016–2017, the relationship between all the three factors was statistically significant. Similarly, a positive relationship between all the three factors was found for AY 2017–2018 and 2018–2019 (Tables 3 and 4).

4. Discussion

This study intended to measure students' satisfaction on PBL over the years and to determine correlating factors. Students' satisfaction can be used as a guide to assess the effectiveness of a program and to be used as a guide to ensure quality enhancement [8]. Students' feedback can lead to innovations in teaching. Though PBL is quite a resource-hungry tool [3], at COM-J KSAU-HS, the students recommended to shift to two sessions instead of three per case to save precious resources in terms of time and manpower. PBL has long been discussed as a constructivist approach to teaching; however, with constant evolution in science and technology, it is high time to think about innovations and creativity to enhance learning in formal problem-based learning [5].

In this study, students were satisfied with PBL over the years. They found it to be stimulating and relevant to clinical practice. This is supported by a study by Hernando et al. [9] who found PBL effective to motivate students to learn, where the students were responsible for their learning. They also found the students' satisfaction with problem-based learning, the tutor, and the tutorial process [9]. It is an in-depth motivating and interesting approach to learning, as compared with surface learning where the aim is just to pass the exams [9]. Nandi [10] concluded that combining PBL with the conventional teaching can train undergraduate medical students effectively. Our students in this study also considered PBL as a teaching modality that led to satisfactory learning as supported by a study in Azerbaijan where the students and faculty regarded it as an effective learning strategy [11].

In our study females were more satisfied on the problem and the session as compared with males but this was not statistically significant which is in contradiction to another study in Saudi Arabia where females' satisfaction on problem-based learning was higher where they discussed the implications of teaching at different facilitators and different campuses [12]. Here in our study we could not determine any gender-based difference, thus we assume that we have been able to provide equal learning experience to both our male and female students.

Tutors play an important but comparatively passive role in PBL sessions. Effective tutor is one which stimulates situated collaborative active learning [13]. Overall, students were satisfied with the tutor's facilitation skills who provided constructive feedback and intervened when needed as supported by another study in Saudi Arabia [12]. They were satisfied with the tutors' enthusiasm, support, and respect for the learning process. The tutor is considered as a director expected to give guidance and keep the group on track. This helps students achieve the curricular objectives and prevents them from going astray or being lost in the sea of knowledge [13, 14]. Students' reflection into their performance and holistic support from a well-prepared and trained tutor can help to improve the session [15].

At COM-J a blend of tutors is involved in facilitating PBL sessions currently in preclinical phase (phase 2) and most of the tutors are basic scientists while in clinical phase (phase 3), all the tutors are clinicians. There has been a discussion on whether the facilitator should be a subject expert or not [16]. Subject experts can broaden the discussion and make it interesting by throwing out their ideas to encourage further group discussion by the students, unless they do not shift to lecturing during PBL. Students having subject experts as their tutor are found to spend more time in self-directed learning [18]. Studies found that subject experts would concentrate more on the subject matter while others would emphasize on the process in a conducive and supportive environment to keep the group on track [13, 16]. Both skills are necessary to run PBL effectively supported with careful curriculum planning and execution with emphasis on strong faculty enhancement activities [13]. The results of our study are consistent with the previously mentioned study that stressed on both skills required for the effective implementation of PBL sessions [16]. Present study reported the students' satisfaction with their tutors regardless they were subject experts or not. Apart from tutors' knowledge, impact of tutors' behavior has also been studied, and it has been found that a tutor with good social skills and friendly behavior encourages the students to learn in a stress-free and friendly environment [16]. Schmidt described

Table 3: Overall correlation outcome of PBL problem, session, and tutors.

PBL problem	PBL session	PBL tutors	n	r	p-Value	Remarks
$4.32 \pm .44$	$4.39 \pm .42$		96	0.908	<0.001	Positive, strong in strength, and statistically significant
$4.32 \pm .44$		$4.30 \pm .47$	96	0.883	<0.001	Positive, strong in strength and statistically significant
	$4.39 \pm .42$	$4.30 \pm .47$	96	0.882	<0.001	Positive, strong in strength, and statistically significant

Correlation test.

Table 4: Year-wise correlation of PBL outcome.

	PBL problem	PBL session	PBL tutors	n	r	p-Value	Remarks
	$4.44 \pm .27$	$4.53 \pm .21$		7	0.44	0.048	Positive, moderate in strength, and statistically significant
2013–2014	$4.44 \pm .27$		$4.41 \pm .09$	7	0.63	0.002	Positive, moderate in strength, and statistically significant
		$4.53 \pm .21$	$4.41 \pm .09$	7	0.38	0.087	Positive, moderate in strength, and statistically not significant
	$4.57 \pm .25$	$4.53 \pm .22$		9	0.57	0.002	Positive, moderate in strength, and statistically significant
2014–2015	$4.57 \pm .25$		$4.60 \pm .19$	9	0.69	$p<0.001$	Positive, moderate in strength, and statistically significant
		$4.53 \pm .22$	$4.60 \pm .19$	9	0.52	0.005	Positive, moderate in strength, and statistically significant
	$4.67 \pm .26$	$4.73 \pm .22$		15	0.87	$p<0.001$	Positive, strong in strength, and statistically significant
2015–2016	$4.67 \pm .26$		$4.70 \pm .25$	15	0.91	$p<0.001$	Positive, strong in strength, and statistically significant
		$4.73 \pm .22$	$4.70 \pm .25$	15	0.83	$p<0.001$	Positive, strong in strength, and statistically significant
	$4.53 \pm .25$	$4.63 \pm .20$		21	0.77	$p<0.001$	Positive, strong in strength, and statistically significant
2016–2017	$4.53 \pm .25$		$4.53 \pm .22$	21	0.54	$p<0.001$	Positive, moderate in strength, and statistically significant
		$4.63 \pm .20$	$4.53 \pm .22$	21	0.43	$p<0.001$	Positive, moderate in strength, and statistically significant
	$4.04 \pm .41$	$4.11 \pm .41$		23	0.97	$p<0.001$	Positive, strong in strength, and statistically significant
2017–2018	$4.04 \pm .41$		$4.0 \pm .47$	23	0.83	$p<0.001$	Positive, strong in strength, and statistically significant
		$4.11 \pm .41$	$4.0 \pm .47$	23	0.87	$p<0.001$	Positive, strong in strength, and statistically significant
	$4.01 \pm .47$	$4.10 \pm .43$		21	0.88	$p<0.001$	Positive, strong in strength, and statistically significant
2018–2019	$4.01 \pm .47$		$4.06 \pm .46$	21	0.88	$p<0.001$	Positive, strong in strength, and statistically significant
		$4.10 \pm .43$	$4.06 \pm .46$	21	0.87	$p<0.001$	Positive, strong in strength, and statistically significant

Correlation test n^* number of blocks/courses.

cognitive congruence as the ability to describe and communicate at the level of the students and it includes subject expertise and social congruence [16]. A tutor having these characteristics would be able to create a learning conducive environment not only through his subject knowledge but through his social skills [17].

At COM-J, the students were satisfied with the tutors; there was a decline in level of satisfaction but still it was well above the satisfactory cut-off level. The students of clinical years were more satisfied with their tutors as compared with those of preclinical years. The clinical years' tutors though not necessarily subject experts are trained clinicians, with in-depth knowledge of the subject. Thus, having sound pedagogical knowledge of the content can be considered as one of the factors that might have led to higher student satisfaction. These are the people who know how to steer the group

effectively; they can stimulate their critical thinking and enhance their learning by throwing questions and directing students to explore the unknown possible avenues for the learning hidden in the given case [18, 19]. A statistically significant difference in satisfaction of clinical and preclinical years can be taken as evidence to the importance of tutors in running the show [20]. Tutors in PBL are facilitators but cannot be considered as someone passive or inactive [21]. PBL tutor's role is vital in enhancing students' experience and satisfaction [22].

Here at COM-J KSAU-HS, we reuse the problems as it has been shown that reusing cases has no negative impact on the quality of discussion. While the institute continued to use the same clinical scenarios. It is worth mentioning here that we have a meticulous continuous process of reviewing and updating the problems regularly based on feedback, changing trends, and need. Here in this study, a strongly positive correlation between the PBL problem (case scenario) and PBL session can be taken as evidence that a well-written scenario can lead to successful conduction of the session. In addition, we can reiterate that a well-written case or problem has a positive impact on students learning a well written tutor guide could help the nonsubject expert tutor understand the case to facilitate the students effectively [11]. A well-written case can be considered as a strong foundation for the whole curriculum. A good case is the one that not only integrates the basic and clinical sciences but also stimulates critical thinking and problem-solving through effective team dynamics, covering all the objectives. A good case needs strong teamwork with multidisciplinary input [23]. Case writing by students has been tried and found to be an effective way of in-depth learning [24, 25].

In our study, a strong positive correlation between the PBL problems (case scenario), PBL sessions, and the PBL tutors (facilitation skills) was found. This study can be taken as evidence to the complex interrelationship of these three factors interlinked to the success of PBL. The session's success depends on many factors including group harmony and teamwork [4, 25] and this study found the students to be satisfied with the group harmony and cooperation. If the group is dysfunctional, it can hamper the process of learning adversely. Group dynamics can be damaged most because of dominant students, personality clashes, lack of commitments, or late coming. While a silent student or psychosocial factors are considered as the ones having least negative impact on the group dynamics [26].

Team forming is a tedious process which needs time to develop and nurture, team formation and team spirit in PBL can later be used as a skill in practical life [27]. Active interactive learning through cooperation teamwork and harmony remains the main essence of PBL. The more the students are actively involved, the better would be their level of understanding. To improve in-depth learning, there are some institutes which have made the students responsible to construct cases and are found to be very effective [24]. Our students believed PBL lead to in-depth analysis and enhanced critical thinking with a balance division of work. This was also in line with our previous published studies on the educational environment using DREEM tool [28] and the student's feedback on choosing effective course coordinator [29]. In this study there's a clear improvement in satisfaction for all the three domains by the male students while the female's satisfaction improved only for the problems. It was found that satisfaction of male students has clearly improved in preclinical years where we have made an intervention by shifting to two sessions. Most of our female students are in preclinical years thus that comparison would be better in the years to come. While the batch-wise analysis of data revealed higher satisfaction in the earlier years followed by a dip and rising trend. This higher satisfaction in the earlier years could be interpreted as being associated with multiple factors, e.g., early years at college might be associated with higher motivation and ownership by the administrative stakeholders or maybe greater faculty–student bonding due to the limited number of students. Involvement of physicians instead of basic scientists during the early years could have an impact on higher satisfaction; hence further studies could provide deeper and objective insights [30].

Despite criticism and resistance over adopting PBL, it had the strength to prove its effectiveness as an effective learning strategy. In China, it was found that most of the schools though willing to adopt or increase hours devoted to PBL, consider limitations of resources as a hurdle to its full implementation [22]. Though the perception on being resource-hungry process remains, it can be implemented efficiently with limited resources with proper and careful planning [31, 32]. There were some controversies regarding PBL's efficacy and effectiveness to impart basic theoretical knowledge as compared with lectures, which led to extensive research. Many advocate problem-based learning as an effective strategy to teach undergraduate medical students [32, 33], but the success of PBL depends on many factors and needs intensive planning. Problems need to be constructed keeping in view the latest evidence-based medical practice guidelines. Getting feedback from the stakeholders including the students could help improve execution of curriculum.

4.1. Limitations of the Study. This study is limited to a single-center experience in Saudi Arabia thus the results are not generalizable. A universal format/questionnaire could allow global comparison and can be used as objective evidence. Further follow-up of trends in satisfaction over the years would give a better insight.

5. Conclusion

Overall, the students at COM-J KSAU-HS are satisfied with problem-based learning, though a declining but satisfactory trend has been seen followed by a sharp rise in satisfaction for preclinical years after responding to stakeholders' needs, i.e., shifting to two sessions instead of three per problem. This shifting can be considered as an effective and efficient way of curricular execution. The relationship of problem case scenario, the tutor's facilitation skills, and the session dynamics are vitally linked to each other.

5.1. Recommendations. Inculcating a culture of responding to feedbacks can help improve curricular execution and student's satisfaction. Institutions striving toward improvement must consider stakeholder's feedback as a guide which could lead to improvements and innovations in teaching as per students' needs. A well-written case, though considered as the backbone to the success of PBL, cannot be separated from other factors like the tutor and the group dynamics. A balance between multiple factors could enhance students' satisfaction and learning. Further qualitative research would answer many unanswered questions and give a deeper insight to improve curricular execution using PBL as an integral tool for curricular execution. Further targeted research including students specifically from clinical years could give us a deeper insight into students' opinions on clinical PBL execution.

Data Availability

Raw data are available from the corresponding author for scrutiny.

Ethical Approval

A proper ethical approval as per Helsinki protocol was taken prior to carrying out this study via Institutional Research Board. This study was approved by the Institutional Review Board of King Abdullah International Medical Research Centre (KAIMRC), a research wing of KSAU-HS, Jeddah.

Consent

A due informed consent was taken from every participant during the execution of end-of course evaluation.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

All authors have critically reviewed and approved the final draft. All authors confirm the authenticity of the data and the study thereof. SA and MM conceptualized and reviewed the manuscript. SNA designed the study, performed literature search, and wrote the initial draft manuscript. MAK performed the statistical analysis. PNM and SWS collected the retrospective data. SSA performed literature search and wrote and revised the manuscript in the final form.

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