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Research Article

Perception and Satisfaction of Medical Students towards Problem-Based Learning in Omdurman Islamic University-Sudan

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Abstract

Background: Problem-based learning is an innovative approach to learning in medical education, which has many advantages, including increasing knowledge retention, a better understanding of basic sciences topics, integration of basic and clinical sciences, and improvement of problem-solving skills.

Aim: To determine medical students' perception towards implementing Problem-Based Learning as an instructional method in the medical curriculum in the College of Medicine at Omdurman Islamic University, 2021.

Methods: This was a descriptive cross-sectional study. The study was taken place at Omdurman Islamic University, Faculty of Medicine and Health Sciences, male and the female campus in Alfetihab, Omdurman. 188 second and third-year students participated in the study using an open-ended questionnaire.

Results: Most of the students reported that PBL sessions helped them to understand basic science concepts. In addition, they agreed that PBL sessions increased their knowledge of basic sciences. Most students reported that PBL sessions encouraged self-directed learning, collaborative learning, and improved decision-making skills. Most students used the internet (26.1%), lecture notes (11.2%), and books (52.7%) as learning resources.

Conclusion: the study highlighted the perception of medical students toward PBL sessions. The study highlighted the significant role of PBL in a medical curriculum and helped students improve their knowledge and different learning skills. Student and tutor training is an important component before introducing PBL.

Keywords: perception, satisfaction, problem-based learning

Introduction

The transformation of the medical curriculum from traditional teacher-centered to integrated student-centered problem-based learning (PBL), has been adopted by many medical colleges around the globe [1] Problem-based learning is an innovative approach to learning in medical education, which has many advantages, including increasing knowledge retention, a better understanding of basic sciences topics, integration of basic and clinical sciences, and improvement of problem-solving skills [2,3]. In addition, it contributes to the development of interpersonal and communication skills, and presentation skills, promotes self-directed learning (SDL), enhances students' enthusiasm, and motivation. However, a few studies reported that PBL as an instructional method is time-consuming, and does not impact knowledge acquisition [4].

Many previous studies investigated the perception of students toward the PBL method, emphasizing the importance of students' feedback on adapting and advancing educational approaches and in turn improving the learning process [5-9].

Problem statement:

Omdurman Islamic University (OIU) faculty of medicine introduced a hybrid curriculum model in 2010. This model combines the PBL sessions with lectures, seminars, and tutorials in the second and third year on each block by dividing the students into small groups. Since the adoption of this model, no study explored the perception of the students toward PBL sessions. Furthermore, some previous studies are controversial in this regard [10]. Problem-based learning by evidence will not work alone; other educational methods are used parallel PBL. Some evidence in literature secured such type of curriculum. Others are talking about the hybrid type such as the one used in this college. How the students think about this problem is the issue of this study.

Justification:

The result of this study will help the faculty administration to enhance their PBLs session quality in order to improve the learning outcomes. In addition, other medical schools should perform similar studies to make use of their students' feedback in developing their educational tools.

Research objectives:

General objective:

To study second and third-year medical students' perception regarding problem-based learning (PBL) in the Faculty of Medicine at Omdurman Islamic University, 2021.

Specific objectives:

To determine students' perception toward the benefits of problem-based learning (PBL) sessions.

To compare students' perception toward the conduction and processes of problem-based learning (PBL) in the faculty of Medicine according to gender (males to females).

To evaluate students' perception toward tutors' facilitation of the problem-based learning (PBL) sessions

To determine students' self-directed learning.

Materials and Methods:

Study design and setting:

This was a descriptive cross-sectional study. The study was taken place at Omdurman Islamic University, Faculty of Medicine and Health Science male and female campus in Alfetihab, Omdurman.

The faculty of medicine OIU was established in 1989 and now 26 batches graduated of total number of 6365 doctor. Now faculty admit about 250-300 students per year.

The curriculum model in faculty of medicine OIU is competency-based curriculum, it comprised of organ system, community oriented, integrated syllabus. the curriculum applies the strategies of student-centered learning such as PBL, seminars, small group discussion and task-based learning.

Study population:

Inclusion criteria

Only second and third-year medical students
All students who attended 15 or more PBL session were included

Exclusion criteria

Those who attended less than 15 PBL sessions

Sample size and sampling technique: 188 students participated in this study. They were selected conveniently.

Data management:

Data collection tool:

Data was collected using a self-administered questionnaire. The questionnaire was designed from previous literature and reviewed by experts in the field. It collects information about the demographic characteristics of the participants (Gender, Academic level and GPA), and a set of items to determine the students' perception toward PBL sessions in regards to its benefit, conduction and process, and tutor facilitation. Another domain assessed by the questionnaire is the students' self-directed learning resources, duration and preferred places. These items were answered on a 5-point Likert scale as strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The questions representing the self-directed learning (SDL) resources, duration (hours) was included as yes/no answers.

Data analysis:

Data entry and analysis were carried out using the Statistical Package for Social Science (SPSS) version 18. The 5-point Likert scale responses were combined into 3 different categorical variables 'agree' (strongly agree plus agree), 'neutral', and 'disagree' (strongly disagree plus disagree). Descriptive statistics were used to describe students' demographic characteristics, perception and self-directed learning and variables were displayed using Mean ± SD and percentages. Chi-square test (X^2) was used to explore associations between demographic characteristics (Gender, Academic level and GPA) and students' perception and self-learning.

Ethical considerations:

The integration department in the faculty of medicine, faculty dean, and research unit were informed by the study. The study and its purpose were explained to all students and verbal informed consent from those who accepted to participate was obtained.

Results:

Population characteristics:

188 students participated in the study. Of all study participants, 78 (41.5%) were males and 110 (58.5%) were females (Figure 1), 88 (46.8%) were second year and 100 (53.2%) were third year students (Figure 2). Regarding students GPA scores 7 (3.7 %) scored less than 2, 85 (45.2%) scored 2 and 96 (51.1%) scored more than 2 (Figure 3).

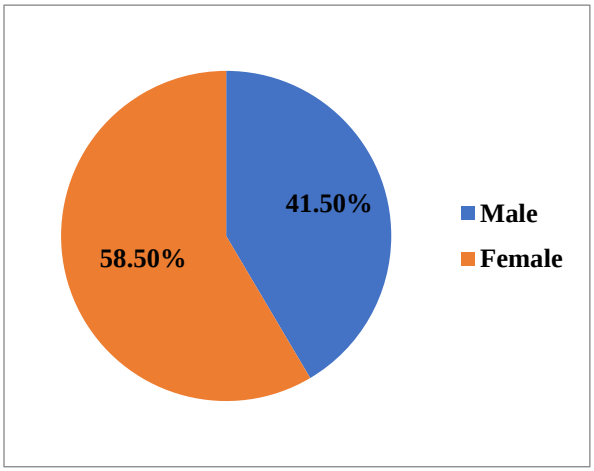

Figure 1: Gender distribution of a cohort of students from Omdurman Islamic University, Faculty of Medicine, 2021.

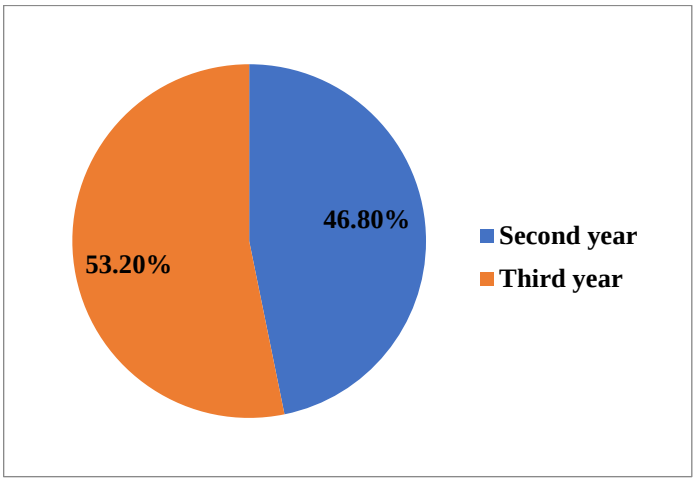

Figure 2: Academic level of a cohort of students from Omdurman Islamic University, Faculty of Medicine, 2021

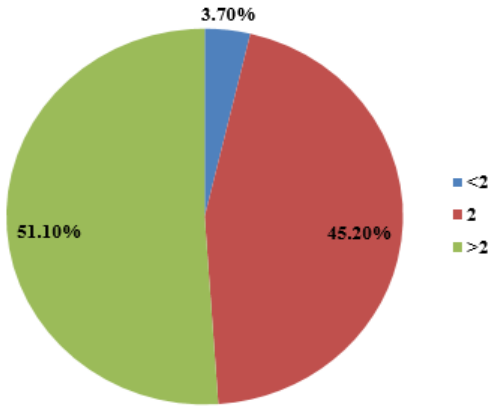

Figure 3*:* GPA scores of a cohort of students from Omdurman Islamic University, Faculty of Medicine, 2021.

Students' perception toward PBL sessions benefits according to gender:

A higher percentage of males in comparison to females agreed that the PBL method helps develop their leadership skills (67.9%, n=53. P<0.05), help them identify their strengths and weaknesses (80.8%, n=63, P<0.05) and made them more satisfied about their academic progression (82.1%, n=64, P<0.05). A higher percentage o those with a GPA of more than 2 think that PBL helps them develop their problem-solving skills (88.5%, n=85, P<0.05) and identify their strengths and weaknesses. Table 1 shows students' perceptions.

		Males	Females	P value
PBL helps me to understand basic knowledge	Disagree	3	4	0.87
PBL helps me to understand basic knowledge PBL helps me to increase my basic sciences knowledge	Neutral	8	14	
	Agree	67	92	
	Disagree	10	12	0.918
PBL helps me to increase my basic sciences knowledge The knowledge gained is more thorough PBL than lectures.	Neutral	8	12	
	Agree	60	86	
	Disagree	13	21	0.508
The knowledge gained is more thorough PBL than lectures. I feel that I learn better in PBL than lectures.	Neutral	18	18	
	Agree	47	71	
	Disagree	11	23	0.438
I feel that I learn better in PBL than lectures. PBL motivates me to learn	Neutral	20	23	
	Agree	47	64	
	Disagree	3	5	0.693
PBL motivates me to learn PBL provides better integration between basic and clinical sciences	Neutral	7	14	
	Agree	68	91	
	Disagree	2	5	0.363
PBL provides better integration between basic and clinical sciences PBL tutorials makes me discuss information in a professional way	Neutral	3	9	
	Agree	73	96	
	Disagree	7	15	0.228
	Neutral	9	20	

PBL tutorials makes me discuss information in a professional way PBL encourages self-directed lifelong learning	Agree	62	75	
	Disagree	5	8	0..514
PBL encourages self-directed lifelong learning PBL method helps me improve my decision-making skills	Neutral	6	14	
	Agree	67	88	
	Disagree	4	10	0.532
PBL method helps me improve my decision-making skills PBL method helps to develop my problem-solving skills.	Neutral	10	11	
	Agree	64	89	
	Disagree	3	8	0.255
PBL method helps to develop my problem-solving skills. PBL method helps to develop my communication skills	Neutral	5	13	
	Agree	70	89	
	Disagree	3	10	0.377
PBL method helps to develop my communication skills PBL method helps to develop my leadership skills	Neutral	18	25	
	Agree	57	76	
	Disagree	2	16	0.021
PBL method helps to develop my leadership skills PBL method helps me to identify my strengths and weaknesses	Neutral	23	26	
	Agree	53	68	
	Disagree	2	15	0.033
PBL method helps me to identify my strengths and weaknesses PBL made me more satisfied about my academic progression	Neutral	13	17	
	Agree	63	78	
	Disagree	3	18	0.019
PBL made me more satisfied about my academic progression	Neutral	11	18	
	Agree	64	74	

Table 1: Students' perception toward Problem Based Learning (PBL) sessions benefit.

Students' perception toward the problem-based learning (PBL) conduction and processes:

Table 2 shows students' perception toward Problem based Learning (PBL) conduction and process. A higher percentage of males agreed that PBL has an acceptable level of difficulty (88.5%, n=69, P<0.05). More students who score a GPA of more than 2 feel comfortable with PBL tutorial (81.3%, n=78, P<0.05) and think it has an acceptable level of difficulty (83.3%, n=80, P<0.05).

		Males	Females	P value	>2	2	3-4	P value
There is proper students' training before starting the PBL session.	Disagree	12	25	0.266	2	14	21	0.738
	Neutral	21	34		1	26	28	
	Agree	45	51		4	45	47	
PBL is effective without having lecture of same topic (i.e. PBL can substitute lectures)	Disagree	30	44	0.396	3	29	42	0.445
	Neutral	18	17		1	14	20	
	Agree	30	49		3	42	34	
There is repetition between PBL and lectures.	Disagree	11	16	0.981	1	13	13	0.867
	Neutral	23	31		2	21	31	
	Agree	44	63		4	51	52	
I feel comfortable with PBL tutorials	Disagree	8	13	0.765	1	9	11	0.039
	Neutral	9	16		3	15	7	
	Agree	61	81		3	61	78	
I usually contribute actively in group discussion	Disagree	10	22	0.288	3	15	14	0.239
	Neutral	15	25		2	20	18	
	Agree	53	63		2	50	64	
Members of PBL know their roles Students contribute equally in PBL session.	Disagree	10	26	0.105	2	16	18	0.909
	Neutral	19	30		1	24	24	
	Agree	49	54		4	45	54	
I usually attend PBL sessions on time.	Disagree	4	12	0.315	1	8	7	0.549
	Neutral	9	15		2	12	10	
	Agree	65	83		4	65	79	
	Disagree	15	35	0.094	2	22	26	0.256

Duration of the PBL session is enough to get the benefits that I need	Neutral	10	17		3	11	13	
	Agree	53	58		2	52	57	
PBL cases are well written and understandable	Disagree	5	5	0.831	1	5	4	0.767
	Neutral	7	9		1	7	8	
	Agree	66	96		5	73	84	
PBL cases have a realistic and interesting clinical trigger.	Disagree	2	2	0.274	0	3	1	0.685
	Neutral	3	11		1	7	6	
	Agree	73	97		6	75	89	
PBL cases have an appropriate level of difficulty/challenge	Disagree	3	10	0.045	3	4	6	0.001
	Neutral	6	19		2	13	10	
	Agree	69	81		2	68	80	

Table 2: students' perception toward Problem based Learning (PBL) conduction and process

Students' perception toward tutors' facilitation of the problem-based learning (PBL) sessions and their fairness on students' evaluation:

Table 3 shows students' perception towards tutors' facilitation of the problem-based learning (PBL) sessions and their fairness on students' evaluation. Male gender is significantly associated with the students' belief that tutors are prepared and qualified to run the session.

		Males	Females	P value
Tutors are prepared and qualified to run the session	Disagree	2	9	0.006
	Neutral	10	31	
	Agree	66	70	
Tutors evaluate students in fair way.	Disagree	8	24	0.097
	Neutral	20	21	
	Agree	50	56	
Tutor feedbacks were helpful to improve students' performance	Disagree	1	7	0.227
	Neutral	8	21	
	Agree	69	91	

Table 3: Students' perception toward tutors' facilitation of the problem-based learning (PBL) sessions and their fairness on students' evaluation:

Student self-directed learning

Table 4 shows students' self-directed learning resources, duration, and preferred places. Gender and GPA scores have no significant effect on these domains.

		Male	Female	P value	<2	2	3-4	P value
Learning resources	Internet	17	32	0.781	2	24	23	0.307
	Books	44	55		2	45	52	
	Lecture notes	8	13		2	11	8	
	Medical journals	3	4		1	2	4	
	Others	6	6		0	3	9	
Duration	Less than 1 hour	18	22	0.871	2	15	23	0.831
	2 hours	30	43		2	35	36	
	More than 3 hours	30	45		3	35	37	
Preferred place	Library	8	13	0.420	1	10	10	0.224
	Home	23	42		1	26	38	
	Library and home	40	50		3	44	43	
	Others	7	5		2	5	5	

Table 4: Students' self-directed learning resources, duration and preferred places.

Discussion

Medical education in Sudan requires ongoing improvement to keep cadence with the changing demands of the 21st century, especially in medical practice. Many medical colleges worldwide adopted PBL into their curriculum after conducting some research in their own environment. This study aimed at studying student's perception toward Problem based learning (PBL) method in a trial to incorporate students' feedback in the evaluation of the educational approaches for continuous advancement and improvement.

Most of the students in our study reported that PBL is better than lectures and perceived it as a useful tool in acquiring basic science and clinical knowledge and developing their decision making, problem solving, communication and leadership skills. This result is supported by other studies which showed that PBL leads substantial increase in students' knowledge and skills [10,11]. Contrarily, it has been reported that the PBL does not have an impact on the acquisition of knowledge [12].

Students reported a proper students' training before starting PBL session, a result which contradict a similar study that reported lack of proper orientation and training before starting the PBL sessions. The PBL literature states that students need proper initial training before running the PBL sessions [13]. Most of the students contribute actively and equally in PBL group discussion.

Tutors play an important role in facilitating learning in PBL sessions. It has been documented in the literature that proper tutor training is an essential step for the success of PBL sessions [14]. Inadequate tutor skills have been reported as a barrier to effective feedback. In addition, tutor feedback is an essential element in the process of student's learning and development [15]. In the present study, majority of students agreed that the tutor feedback was

helpful in improving their performance and they fairly evaluated them in the PBL session. Therefore, these findings indicate that further tutor training is required. The tutor training should include introduction to the PBL process, role of students and tutor with emphasis on methods of encouraging the students to contribute during the PBL sessions, giving effective feedback, and objective evaluation. Similarly, Al-Shawwa recommended the same tutor training program.

Regarding self-directed learning, our study showed that students mostly use books and internet as the sources of their knowledge. The majority spends more than 3 hours studying and prefers both home and library as a place for learning. Student training before starting PBL should include information on utilizing the different available resources for seeking information, prioritizing, planning their approach, making decisions, assessing, interpreting, evaluating, comparing, weighing evidence, and using resources [16].

Conclusions:

Students reported better acquisition of basic science and clinical knowledge improving problem solving, communication, leadership, and decision-making skills. Student and tutor training is an important component before introducing PBL. Students generally perceive positively and express high level of satisfaction to PBL.

Study limitations:

No generalization can be done from these study results, as the sample was taken conveniently and is not representative of the population. In addition, sample size was not calculated properly. Despite those limitations our study provides a basis for making use of students' feedback in educational systems evaluation. It provides a clue on how students perceive their learning approaches and how this perception could affect the whole learning process.

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