

Exploration of Problem-Based Learning in Hadramout University College of Medicine (HUCOM)

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Summary:

Background: Problem-based learning is becoming increasingly adopted in universities of higher education throughout the world.

Objective: This study is carried out to evaluate the application of this innovative approach in teaching in Hadramout University College of Medicine (HUCOM) in Yemen.

Methods: A cross-sectional study was designed to collect data from students through a well structured questionnaire. Students were classified into two groups: students in preclinical phase (1-3 levels) and students in clinical phase (4-6 level).

Results: Out of 372 students participated in the study; 19% in the preclinical phase know about PBL before joining the college while only 16% of students in clinical phase. About 44% students in preclinical phase and 46% of students in clinical phase used all methods for explanation of their learning objectives. A higher percentage of students in preclinical phase (72%) reported that they use library as a source for self-directed learning (SDL) while only 60% of students in clinical phase did.

Conclusion: Increased awareness and satisfaction of students toward PBL over time.

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Introduction:

Problem-based learning (PBL) was introduced first in McMaster in Canada in 1969 (1). Nowadays, it has gained more acceptance and has become an integral component of medical curriculum around the world (2). "PBL is the learning of the results from the process of working toward the understanding or resolution of a problem. The problem is encountered first in the process" (3). Students work in small group discussion, analyze the educational problem, identify their learning needs and objectives in the first discussion (brain storming session) then go for collection of information relevant to the problem of the week through different educational activities (seminars, practical lab,

skill lab, audio-visuals sessions, self-directed learning, very limited number of lectures), share and synthesize the information acquired, apply it to the problem and assess their work in the second discussion of the group (debriefing session). "The principals of PBL is to put the learners in a particular situation, and then to give them a task or challenge as a source for learning, and arrange it to be a kind similar to work with which they will be conformed in their professional future" (4).

In Yemen, HUCOM was the first medical college which adopted PBL in 1997 while other medical schools used a classical approach of teaching where the hallmark of learning process is teachers teach and students listen.

Although variations in PBL among various schools exist, the emphasis remains on clinical relevance of the problems requiring integration and application of knowledge, an active role of

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students in the process of learning, small group discussions and searching for answers from different sources of learning. Since the learning styles in PBL are different from those of traditional medical schools, we need to know the feedback of students in PBL about this system of education. Mc Gaghie defined feedback as "information that gives learners knowledge of the results of their study and clinical work" (5). Through feedback people can recognize their weakness points in their knowledge, skill and attitude and seek to rectify them. Review of the literature have shown that feedback can lead to an improvement in the performance of students (6, 7, 8).

Medicine has become a lifelong learning process, to meet the challenges posed by external growth of knowledge. It has become imperative to inculcate self-learning habits in medical students during the undergraduate years of study (9). Unless students develop their interest in what they are learning they would be faced with difficulty in trying to solve patient problems when confronted in real practice.

This study is carried out to evaluate the application of this innovative approach in teaching in Hadramout University College of Medicine (HUCOM) in Yemen from the student's views and their interest and prior knowledge about PBL.

Methods:

A cross-sectional study was designed to collect data from students through a well-structured questionnaire. Students were classified into two groups: students in the preclinical phase (1-3 levels) and students in clinical phase (4-6 level). The study period extended from November 2004 to May 2005; all students in all the six levels were included in the study. Data were coded, entered and analyzed using EPI info version 6 (2002); statistical methods used were: frequency, percentage, chi square test. Alpha level of 0.05 was chosen for statistical analysis.

Results:

Out of 402 students participated in the study; 372 students returned completed questionnaires giving a response rate of 92%. Of the 372 students participated in the study;

about 19% in the preclinical phase know about PBL before joining the college while only 16% of students in clinical phase. Most students (87%) reported that small group discussion is important and effective learning method while only 54% of them consider writing the weekly report by the students about the educational activities is important. About 55% of students were satisfied with PBL approach with no significant variations between students in pre-clinical or clinical phases ($P>0.05$). Students in preclinical phase reported that there are integration between basic and clinical phases either full integrated (23%) or partially integrated (70%); those opinions were significantly different from opinions of students in the clinical phase ($P<0.02$). A higher percentage of students in preclinical phase (72%) reported that they used library as a source of self-directed learning (SDL) while only 60% of students in clinical phase did ($P<0.02$), while students in clinical phase used skill lab more than students in pre-clinical phase ($P<0.03$). Students used different educational material to explain their learning objectives in the debriefing session (modules, atlases and drawing illustrations) but students in preclinical phase used atlases more frequently than students in clinical phase ($P<0.001$). The weekly scientific meeting is the preferable place by most students to search for answers about the unexplained questions asked in the debriefing session (43%).

Discussion:

Although HUCOM is a newly established medical college, increasing awareness of students about PBL before their entrance to the college facilitate the satisfaction of students and reducing difficulties facing students, that was reflected in the answers of students. Satisfaction of students to PBL approach is good (55%) although many students select this college because of other reasons rather than the learning approach of the college then afterwards they felt comfortable and being cope with PBL approach. A lot of theories on group learning tend to emphasize either motivational or cognitive aspects of cooperative learning (2). Motivational explanation concentrates on how the person can achieve his objectives indirectly via group's optimal work. Other motivational theories emphasize on the importance of the role of the social relationship which through

the team work spirit, the individual will take care about the group (10). These motivational explanations of learning in groups are in parallel with the results of this study.

Using different educational materials will facilitate learning and searching answers for unexplained questions by students are the core dynamics of PBL that change the learning process to be student centered. Extensive research in cognitive science has revealed that adults learn best if they find knowledge is relevant, appropriate to their level and built on day to day experience. If they do, then students develop interest, derive pleasure in learning and spend more time in deep life-long learning (11).

In HUCOM, as in other medical schools; still there are considerable resistance and apprehension among educators in accepting PBL, but since students show satisfaction towards dealing with PBL, we think with more time this attitude will be changed towards accepting PBL adoption.

Increased awareness and satisfaction of students toward PBL over time give an evidence of the importance PBL as an approach for students to learn how to learn and to be independent life-long learner. Future carrier of medical students as doctors needs life-long learning to practice adequate and updated medicine.

Conclusion:

Table No. 1: Student’s Background and Opinions about PBL

	Students of pre-clinical phase (1-3 levels) n=215 No. (%)	Students of the clinical phase (4-6 levels) n=157 No. (%)	Total N=372 No (%)	P-value
Prior knowledge about PBL before joining the college:				
Yes	41 (19%)	25 (16%)	66 (18%)	0.433
No	174 (81%)	132 (84%)	306 (82%)	
Importance of small group discussion:				
Important	191 (89%)	132 (84%)	323 (87%)	0.180
Not Important	24 (11%)	25 (16%)	49 (13%)	
Importance of reporting:				
Important	118 (55%)	84 (54%)	202 (54%)	0.792
Not Important	97 (45%)	73 (46%)	170 (46%)	
Satisfaction with PBL				

approach:				
Satisfied	123 (57%)	81 (52%)	204 (55%)	0.282
Not satisfied	92 (43%)	76 (48%)	168 (45%)	
Integration between basic and clinical science:				0.013*
Full Integration	50 (23%)	33 (21%)	83 (22%)	
Partial Integration	151 (70%)	99 (63%)	250 (67%)	
No Integration	14 (7%)	25 (16%)	39 (11%)	

* Significant: Chi square = 8.57 DF=2

Table No.2: Practice of Students regarding the learning process

	Students of pre-clinical phase (1-3 levels) n=215 No. (%)	Students of the clinical phase (4-6 levels) n=157 No. (%)	Total N=372 No (%)	P-value
Places where students spent the time of SDL:				
Library	155 (72%)	94 (60%)	249 (67%)	0.013*
Internet	12 (6%)	13 (8%)	25 (7%)	0.305
Hospital	5 (2%)	13 (8%)	18 (5%)	0.008*
Skill Lab	2 (1%)	7 (5%)	9 (2%)	0.028*
Others	41 (19%)	30 (19%)	71 (19%)	N.A
Educational materials used by students to explain their learning objectives in session 2:				
Models	16 (7%)	33 (21%)	49 (13%)	0.132
Atlases	17 (8%)	1 (0.6%)	18 (5%)	0.000*
Drawing Illustrations	53 (25%)	33 (21%)	86 (23%)	0.412
All of the above materials	94 (44%)	72 (46%)	166 (45%)	0.682
Not using any material	35 (16%)	18 (11.4%)	53 (14%)	N.A
Ways that students used to get answers of the unexplained questions asked in session 2:				
Asked in the weekly scientific meeting	97 (45%)	61 (39%)	158 (43%)	0.228
To look for answer in references	49 (23%)	46 (29%)	95 (25%)	0.155
Discuss with students in other groups	26 (12%)	23 (15%)	49 (13%)	0.472
All the above ways were used	43 (20%)	27 (17%)	70 (19%)	0.495

NA: Not Applicable

* Significant

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