Association between presence in lectures and student knowledge gain in problem based learning: experience in Neuropsychiatry module, FMUI, International Program

Jeanne A. Pawitan, Dewi Sukmawati

Department of Histology, Faculty of Medicine, University of Indonesia

Abstrak

Tujuan *Penelitian ini dilakukan untuk melihat asosiasi antara kehadiran dalam kuliah dan nilai ujian.*

Metode *Penelitian ini adalah penelitian potong lintang yang dilakukan di FKUI, kelas khusus Internasional, mulai November 2007 sampai Mei 2008. Kriteria inklusi subyek adalah semua mahasiswa FKUI kelas khusus Internasional yang sedang mengikuti Modul Neuropsikiatri tahun ajaran 2007/2008, sedangkan kriteria eksklusi adalah mahasiswa yang tidak hadir pada ujian yaitu: ujian pilihan ganda ke 1(MCQ1), ke 2 (MCQ2) atau esai. Data yang diambil adalah kehadiran dalam kuliah dan nilai ujian. Data dianalisis menggunakan program SPSS regresi linear untuk melihat korelasi antara kehadiran dalam kuliah dan nilai ujian.*

Hasil *Hasil penelitian menunjukkan bahwa R dan P dari asosiasi antara kehadiran dalam kuliah dan ujian adalah (R= 0.121, P= 0.413), (R= 0.212, P= 0.148), (R= 0.260, P= 0.075), dan (R= 0.280, P= 0.054) untuk MCQ1, MCQ2, esai, dan rerata nilai.*

Kesimpulan *Pada modul Neuropsikiatri, ternyata tidak ada asosiasi antara kehadiran pada kuliah dan nilai ujian. Hal ini mungkin disebabkan oleh berbagai faktor yang telah dibahas, tetapi tidak dianalisis.* **(Med J Indones 2008; 18: 131-4)**

Abstract

Aim This study was conducted to determine the association between presence in lecture and examination scores.

Methods This was a cross sectional study, conducted in the Faculty of Medicine University of Indonesia, International Class Program, from November 2007 to May 2008. The subject's inclusion criterion was FMUI International class students enrolled in the Neuropsychiatry module in 2007/2008. we excluded students who did not attend the examinations i.e. multiple choice questions (MCQ)-1, -2, or essay. The data collected were presence in lecture and examination scores. Data analysis was done using SPSS linear regression to see the association between presence in lectures and exam scores.

Results The results showed that the R and P of the association between presence in lectures and exam scores were (R= 0.121, P= 0.413), (R= 0.212, P= 0.148), (R= 0.260, P= 0.075), and (R= 0.280, P= 0.054) for MCQ1, MCQ2, essay, and mean exam scores respectively.

Conclusion We failed to show the association between presence in lectures and student knowledge gain. This result might be due to the many factors discussed that were not analyzed in this study. **(Med J Indones 2008; 18: 131-4)**

Key words: *exam, MCQ, essay*

Since 2005, the Faculty of Medicine University of Indonesia (FMUI) adopted problem based learning as one of the many teaching and learning methods.[1] In every module there are always discussion sessions, and the lecture hours are greatly reduced. In the Neuropsychiatry module, for each topic, only 1-2 hours were allocated (total 30 hours). Extreme opinion even claimed that lectures were inferior to self directed learning, so the time allocated for lectures should be further reduced. However, we observed that many students were not serious in gathering information, preferred to end the discussion session earlier than the time allocated if not prevented by facilitators, and easily satisfied with superficial information.

In a teaching and learning method using extensively the problem based learning approach student seriousness is very important,[2] as students should assume responsibility for their own learning and gain the most of knowledge by self and active learning.[3]

Further, in the Neuropsychiatry module, presence in lectures was not compulsory, while group discussions and lab activity were given scores that played a role in computing the final score determining whether the students could pass or not.[4] In this regard, unserious students will skip the lectures, that will further impair their knowledge, and thus their success in exams. Therefore we supposed that when students are not serious, lectures may be still necessary, and the hours allocated should not be reduced.

Therefore, to know whether lectures still play a significant role in students' knowledge gain, and thus should be made compulsory, this study was conducted. The objective was to know whether there was an association between student's presence in lectures and student knowledge gain that were represented by exam scores.

METHODS

This is a cross sectional study, done at the Faculty of Medicine University of Indonesia (FMUI), International Program, from November 2007 through May 2008.

The subjects were all FMUI International Program students enrolled in the Neuropsychiatry module that took place from November 3rd, 2007 to January 18th, 2008. Exclusion criteria: students who did not attend the exams (MCQ1, MCQ 2, or Essay).

Before every lecture, the students were asked to sign the attendance list and the data collected were lecture attendance, MCQ1, MCQ2, and essay scores of the students included in this study.

In this module, there were 22 lectures, and the duration of lectures was 1-2 hour(s), with a total of 30 hours. For each student, the total hour of attendance was noted, and together with the data of MCQ1, MCQ2, and essay scores, were tabulated. The MCQ1, MCQ2, and essay consisted of 50, 75 and 25 questions, respectively.

Further, the questions in MCQ1 and 2 were item-analyzed in term of discrimination index and difficulty factors.[5] The results of the item analysis were computed for the percentage of question with difficulty factor < 0.3, 0.3-0.69, and 0.7-1, and discrimination index negative, 0-3, and >3 and was tabulated

The data were analyzed by univariate analysis using SPSS 13.0 for Windows linear regression analysis to see the associations between lecture attendance and exam (MCQ1, MCQ2, essay, and mean) scores. In this analysis, the lecture attendance was regarded as independent variable, and the MCQ1, MCQ2 and essay scores were regarded as dependent variables.

RESULTS

All students (48) were included in this study. The means and standard deviations for total hour of lecture attendance, MCQ1, MCQ2 and essay scores can be seen in Table 1, and the result of item analysis in Table 2. The results of linear regression analysis showed that lecture attendance had insignificant and low association to essay and mean exam score. The association (r) and significance (P) can be seen in Table 3.

Table 1. Means and standard deviations of presence in lectures, MCQ-1, MCQ-2, essay and mean of exam scores.

	Lecture attendance (total hours)	MCQ-1 score	MCQ-2 score	Essay score	Mean score
Mean	28.42	48.87	54.19	55.42	52.81
Standard deviation	2.80	10.10	7.55	12.89	7.42

Table 2. Item analysis result of MCQ-1 and MCQ-2

	Difficulty factor			Discrimination index			
	< 0.3	0.3-0.69	0.7-1	Negative	0-0.20	0.21-0.29	≥3
MCQ-1	12	25	13	8	20	13	9
MCQ-2	22	21	32	8	29	23	15

Table 3. Association between presence in lectures and exam scores

Exam / Lecture attendance	MCQ-1	MCQ-2	Essay	Mean of exam scores
Association (R)	0.121	0.212	0.260	0.280
Significance (P)	0.413	0.148	0.075	0.054

Some students had low total hour of lecture attendance, and the exam results of the students with more than 4 times absence can be seen in table 4.

Table 4. Exam results of the students with more than 4 times absence

Student code number	Lecture attendance (total hours)	MCQ-1 score	MCQ-2 score	Essay score	Mean score
1	13	46	55	43	48
2	11	42	37	30	36.33
3	8	52	53	42	49
4	5	50	52	43	48.33

DISCUSSION

Exams are intended to measure knowledge gain and comprehension. In the module we used MCQ questions and essay/open ended questions to asses whether the students mastered the learning objectives.[4] Table 1 shows the means of MCQ-1, MCQ-2 and essay scores before remedial exam that are all below 60 (poor). Therefore it can be simplified that poor exam score shows poor knowledge gain; and poor knowledge gain might be due to failure in the learning process. However, this will be true if the questions in the exam fulfill a certain criteria and really measure the objectives. Therefore we performed item analysis for the questions used in MCQ-1 and MCQ-2. Result of item analysis in Table 2 shows that the questions with negative discrimination index are 8 out of 50 questions and 8 out of 75 questions in MCQ-1 and MCQ-1 respectively. After checking, all the questions with negative discrimination index had the correct key, and were not omitted, as we supposed that the negative discrimination index might result from guessing that could happen in MCQ questions. Therefore, we still regard the MCQs as valid, and we hope that in the overall, the essay questions contributing for the final score might balance the disadvantages of the MCQ. Table 4 shows that most students with high absence got much lower essay scores compared to mean essay score, as there are no guessing factor is essay.

Our experience showed that though the exam scores were not satisfying, all the students could pass the module after remedial exams. This fact was due to the fact that most of the questions in the remedial exam were repetitions of the questions in MCQ1 and MCQ-2, and the role of written exams in determining the final score that is only 40% (MCQ-1= 15%, MCQ-2= 15%, and essay= 10%).[4] It is hoped that the lack in knowledge gain can be substituted later by self learning, as for most students activity scores showed good results. In Neuropsychiatry module, student activities in group discussion and also lab activity were assessed,[4] because in problem based learning, assessment of students' activities is recommended.[6]

Problem based learning is student centered and requires active learning to become independent, self directed and lifelong learners.[7,8] For active learning, maturity and seriousness of the students are very important.[2] If the students are not serious, they are easily satisfied and show lack of motivation to search for more information, with the result that they do not get enough knowledge as stated in the objective.

In Neuropsychiatry module, lectures only took a small part in the whole learning process. However, the unseriousness of the students in discussions that was identified in a previous module 9 leads us to hope that presence in lectures can cope for this unseriousness.

The study was done on the students of the International Program. This is a special class with high admission and tuition fee. Some students entered the class due to their parents will and therefore were not so interested to learn medicine. This back ground might contribute to the unseriousness of some of the students.

Further, the success of problem based learning also depends on the commitments of the faculty and the administrators to materialize the supporting need, and the readiness of the facilitators and tutors. Otherwise, the result will be disappointing. The experience of a colleague showed that the knowledge in basic biology underlying the illnesses of the patient were disappointing. In addition, the students were not interested in basic science.[10] The problem in Neuropsychiatry module was that one of the process score i.e. discussion note book score was given by the facilitators who were not subject expert. Therefore, the scoring is only for completeness (if all the PBL steps are done, they will get a maximum score), and not for the content of the note book.[4] This fact might contribute to the un-seriousness as what ever information they got and thus wrote in the note book was not important in scoring. They would get maximum score, though the information was superficial.

In a moderate size class like in this study, we believe that lectures still play a role in student knowledge gain, at least for a part of the students, as every student has a certain preference for the mode of learning, some students understand easier when they read the textbook, some others prefer to attend and listen to lectures, and

another group might need both. Therefore, lectures might have a substantial impact on student's knowledge, especially for the groups that need listening to be able to understand. Therefore, making the lectures compulsory may have an impact on student knowledge gain.

However, our experience that showed a low and insignificant role of the presence in lectures in determining exam results might indicate that lectures are indeed not superior compared to other mode of learning, and other factors might contribute to students' success.

In conclusion, we failed to show the association between presence in lectures and student knowledge gain. This result might be due to the many factors discussed that were not analyzed in this study.

Suggestions: including student preference in the mode of learning into the learning process, excluding questions with negative discrimination index, scoring student discussion note book by subject expert, and developing methods to measure student's seriousness.

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