



Original Contribution

LEARNING BEHAVIOUR OF STUDENTS IN AN INNOVATIVE PROBLEM-BASED LEARNING AND TRADITIONAL CURRICULUM

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ABSTRACT

The aim of the present study was to compare the learning behaviour of undergraduate medical students in an innovative problem-based learning (PBL) and traditional curriculum. The results show that ¾ of the students in the innovative PBL track and less than the half of the students in the traditional curriculum prepare regularly for PBL tutorials and practicals (71,28% / 44,13%) ($p = 0,001$). Only 1/8 of the students in the PBL curriculum and half of the traditionally instructed students do not study regularly but only for colloquiums (12,87% / 49,39%) ($p = 0,001$). No significant difference was found in regard to the consistent sitting for colloquiums (75,25% / 77,33%) and lecture attendance (56,43% / 61,13%).

Key words: problem-based learning, traditional curriculum, undergraduate medical students, learning behaviour

INTRODUCTION

Crucial for the academic achievements of the students are cognition, metacognition, motivation and self-discipline, which are basic components of the self-regulated learning [3, 5]. Under Problem-based learning (PBL) conditions the students have shared responsibility for their own learning with the teachers and are the active, leading part in the process of learning [1, 2, 4, 6]. Two generally adopted definitions of the learning exist, based on “changes in behavior or experience” and “cognitive or integrative oriented definitions” [3].

In 2000/2001 academic year the University of Medicine in Pleven, implemented for the first time in Bulgaria a new interdisciplinary PBL curriculum in parallel to a traditional track of students during the first 2 years of a 6-year medical education program [7]. The implementation of the PBL curriculum provokes interest how the learning behavior of the students in the innovative track is changed

in comparison with the traditional track of students.

OBJECTIVE

The aim of the study is to compare the results for the learning behavior of undergraduate medical students in an innovative problem-based learning and traditional curriculum in terms of preparation for tutorials/practical exercises, attendance of lectures and preparation and sitting for colloquiums.

MATERIAL AND METHODS

A total of 348 medical students, divided into two groups – experimental group and control group participated in the study. The experimental group comprised 101 students in the problem-based learning curriculum (**innovative track**) – 37 of them were male (36,63%) and 64 female (63,37%), aged 17-28; 80 (79,21%) were Bulgarian students, and 21 (20,79%) foreign students. The control group consisted of 247 students in the traditional curriculum (**traditional track**) – 78 of them were male (31,58%) and 169 female (68,42%), aged 18-30; 146 (59,11%) were Bulgarian students, and 101 (40,89%) were foreign students.

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Information for the study was collected through individual anonymous inquiry, observing the requirements for unbiased approach to the inquired persons. Originally developed and adapted questions from similar studies were used in the questionnaires. A standard questionnaire with close-ended questions and open-ended questions was used. Likert format of five-answer scale was applied for the close-ended questions. The scale was as follows: Response 1 – I definitely disagree, 2 – I'd rather disagree, 3 – I have no opinion, 4 – I'd rather agree, 5 – I fully agree.

All students were approached to participate in the survey. Questionnaires were handed out and students were given adequate time to complete the questionnaire in suitable for them time, then collected in an urn at accessible spot in the main building of the University of Medicine – Pleven. The response rates were 97,12% for the students in the PBL curriculum and 73,51% for the students in the traditional track.

The data of the study were processed by the means of statistic computer software STATGRAPHICS Plus for WINDOWS and were given in percentage, in proportions. The chi-square test of Pirson was used to determine the statistical significance of categorical variables and the *t*-test of Student was applied to compare means of normally distributed

variables with $p < 0,05$ defining statistical significance for comparison of the results in both groups.

RESULTS AND DISCUSSION

The performed comparative analysis of the learning behavior of the students in both groups displays a significant difference ($\chi^2 = 21,03$; $p < 0,001$) in terms of their consistent preparation for problem-based learning sessions and practical exercises (Figure 1). 71,28% of the students in the innovative curriculum prepare regularly for PBL tutorials, compared to less than half (44,13%) of the students in the traditional track preparing for practicals. Only 18,81% of the students in the PBL and 42,51% in the traditional curriculum do not prepare regularly for PBL tutorials or practicals.

Significant difference between the two groups of students was found in terms of their preparation for colloquiums ($\chi^2 = 42,36$; $p < 0,001$). 1/8 (12,87%) of the students in the innovative PBL curriculum and half (49,39%) of the traditionally instructed students prepare for colloquiums only. 4/5 (78,21%) of the students in the experimental group and 41,7% of the students in the control group prepare not only for colloquiums but for all tutorials/practicals, regularly (Figure 1).

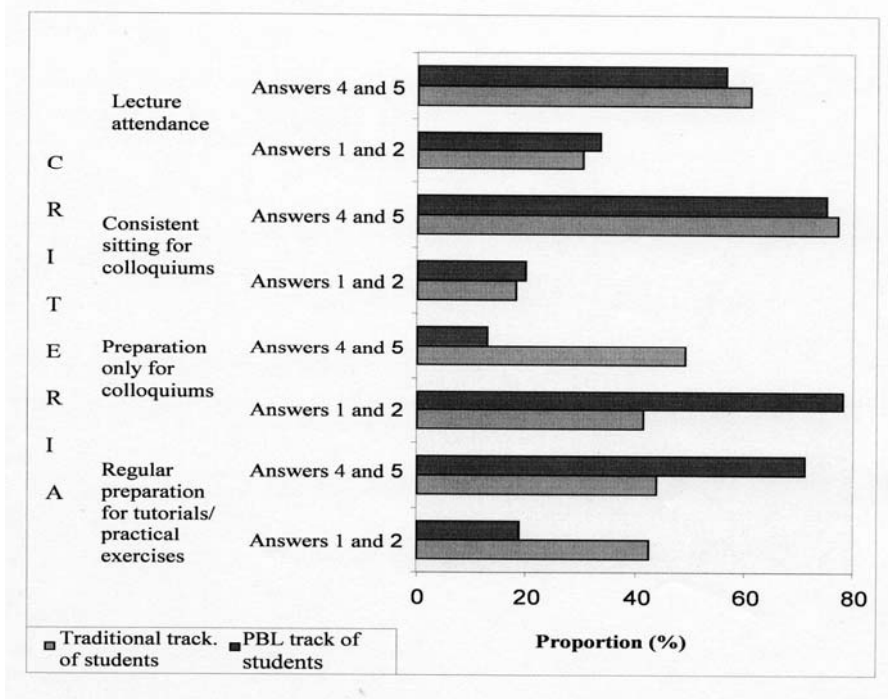


Figure1. Comparative analysis of learning behavior of students in an innovative problem-based learning and traditional curriculum

No significant difference ($p > 0,05$) was found between both investigated groups in terms of regular colloquium sitting and lecture attendance (Figure 1). Most of the students in both groups sit regularly for colloquiums (75,25% / 77,33%). Although the difference is not significant, relatively more students in the innovative PBL curriculum do not sit regularly for the scheduled colloquiums, compared to students in the traditional curriculum (19,8% / 18,22%). The same trend can be observed in terms of lecture attendance. Comparatively less students in the innovative curriculum (56,43%) attend lectures, in comparison with 61,13% of the students in the traditional curriculum, but statistical importance is not detected. There are limitations to this survey that must be kept in mind when interpreting the data, because all data were self-reported and subject to reporting bias. However, despite these limitations, it is likely that the overall findings are reasonably close to the truth. The difference between both groups in regard to the last two criteria, although insignificant, is most likely due to the fact that the students in the innovative track are more self-critical and honest in their answers in comparison with the traditionally instructed students. As known from the literature [1, 6], the accent in the PBL curricula is on the students' independent self-study, and the conventional lectures are reduced or transformed into lectures with discussions. Insufficient time for self-study is probably one of the reasons that about 1/3 (33,66% / 30,37%) of the students from both groups do not attend lectures.

CONCLUSIONS

In conclusion, data obtained by the comparative investigation of the learning behavior of students in an innovative problem-based learning and traditional curriculum showed a significant difference between the

two groups of students in terms of regular preparation for problem-based learning tutorials and practical exercises – two times less students in the innovative curriculum, compared to the students in the traditional curriculum do not prepare regularly for tutorials and practicals. As for the preparation for colloquiums, 1/8 of the students in the PBL curriculum and half of the students in the traditional track prepare for colloquiums only and do not prepare regularly for PBL sessions and practicals ($p < 0,001$).

No significant difference was found ($p > 0,05$) between the two groups of students in terms of: Consistent sitting for colloquiums – an equal proportion of students from both groups (about 1/5) do not sit regularly for colloquiums; Lecture attendance – an equal proportion of students (about 1/3) in both groups do not attend lectures.

The conducted scientific study is part of a more extensive comparative analysis of both investigated groups of students for the general assessment of the teaching/learning process. Data analysis of the investigation will be used for decision making for improvement of the PBL curriculum and its future development.

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