

Brief Communication

The Effect of Combined Approach on Teaching Medical Parasitology Course

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Abstract

The aim of this study was to compare three approaches of teaching medical a parasitological course. This cross-sectional study was carried out on 94 medical and pharmacy students. Lecture-based approach, problem-based approach and combined approach were applied to teach the parasitology course. Kappa and SPSS16 were used to analyze the obtained data. 82.9% of students were interested in lecture-based learning, 64.9% were attracted by problem-based learning and 91.5% opted for combined approach. 96.8% and 62.8% of the students preferred final examination be administered as multiple choice questions and case history tests, respectively. 97.9% of them indicated that the lecturer's behavior affected the learning outcome and 67% did not believe in the impact of papers on teaching and learning parasitology course. Further, students were interested in using logbooks in practical laboratory (P<0.005). Combined approach should be initiated and directed toward harmonization of the curriculum to enhance learning.

Keywords: Medical parasitology, Problem-based Learning, Lecture-based Learning

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Introduction

Some universities have been able to promote healthcare in their countries through parasitological education in medical schools and application of appropriate changes. The intestinal and non-intestinal parasitic infection can cause morbidity and mortality in Human Immunodeficiency Viruses (HIV) positive individuals worldwide. Tehran and Kermanshah have the greatest number of registered cases of HIV infections in Iran (1). It is necessary to design an indigenous medical curriculum which is able to train medical students who are able to serve the society in terms of the health needs like old and new parasitic diseases. European Community Education program recommended that at least 20 hours of lectures be allocated to basic parasitology modern methods, such as CD-ROM programs and clinical slides (2, 3). In France, Germany, Italy and Poland the decrease of parasitology departments has been observed in many faculties, and this discipline has also been seen in

independent courses when the European situation is compared to North and South America, China and Southeast Asia (4). In some faculties, changes in the undergraduate curriculum have led to drastic reduction of teaching hours devoted to the parasitology course. Teaching veterinary parasitology could be improved by inventing new approaches of teaching (5).

Lecture Based Learning (LBL) using unilateral lecturing has been used to teach parasitology for many years in most of the universities around the world. Problem Based Learning (PBL) has been recommended as an educational method worldwide (6, 7). Shahid Beheshti University of Medical Sciences (2007) initiated a comprehensive study using integrated curriculum of undergraduate medical education. Problem-based educational development and student-centered educational technique are required to incorporate basic science into clinical curriculum (8).

Some lecturers have compared three approaches and have also increased the number of lecture hours devoted to medical and veterinary parasitology course. Therefore, it seems logical to pay more attention to combined approaches of Teaching or Learning (TOL) parasitology in medical school and to allocate more lecture hours. The purpose of this study was to compare three teaching techniques: LBL, PBL and combined approach.

Methods

This study was a cross-sectional study which was carried out in medical and pharmacy schools at Kermanshah University of Medical Sciences (KUMS) on teaching parasitology course to both majors. The LBL approach curriculum has been taught since 1980. Fifty hours of lecture is allocated to the theoretical sections and 16 hours to the practical laboratory. The semi-final and final examinations were designed in three types of tests: Multiple-Choice Questions (MCQ), short descriptive notes and clinical case history. A total of 94 students participated in this study, (55 medical students and 39 pharmacy students) from whom 49 students were male (52.1%).

The students evaluated these approaches previously been experienced. At the end of the course, students carried out a self evaluation of the three approaches. All of them were committed to participate in the study. In addition, they filled out different questionnaires about different approaches regarding the experience and impact of the lecturer's behavior. Also, they provided a logbook in practical laboratory. The questionnaires were administrated at the end of class time and practical laboratory, and the end of semester. Data were analyzed by SPSS 16.0 software. Kappa measure was calculated for agreement on using the LBL and PBL approaches.

Results

The results showed various frequencies for the respondents' attitude towards different approaches. Most of the students (91.5%) agreed with the combined approach (Table 1). Regarding the impact of lecturer's behavior, the results showed that 92 (97.9%) students believed that lecturer's behavior affected TOL. 31 (33%) students believed that the lecturer's paper has an impact on TOL. The students' enthusiasm level in different types of final examination was determined. 91 students (96.8%) were interested in MCQ examination, 20 (21%) liked short answer descriptive test and 59 (62%) opted for clinical case history test. 75 (79.8%) students believed that making logbook in practical laboratory course is very useful for learners. These results confirmed that the combined approach, lecturer's behavior, MCQ in the final

tests, and logbooks in the practical laboratory parasitology course affected TOL ($P < 0.005$). The results of of Kappa showed a slight agreement to using LBL and PBL approaches (Kappa=0.04). 91.5% of students agreed with the combined approach. There was a significant correlation between the lecturer's behavior and students' motivation ($P < 0.05$). Both medical and pharmacy students were interested in MCQ tests for final examination; however, there was no significant difference between them in this regard ($P > 0.05$) (Table 2).

Table 1. Students' participation frequency in three approaches of teaching medical parasitology course

Approach	Yes	No	Total
LBL	78(82.9%)	16(17.1%)	94(100%)
PBL	61(64.9%)	33(35.1%)	94(100%)
Combined	86(91.5%)	8(8.5%)	94(100%)

Table 2. Effect of some factors on TOL medical parasitology

Impact on TOL	Yes	No
Lecturer's social behavior	92(97.9%)	2(2.1%)
Publication of articles	31(33%)	63(67%)
Examination:		
MCQ	91(97%)	3(3%)
Descriptive tests	20(21.3%)	74(78.7%)
Clinical case history Logbook (laboratory)	59(62.8%)	35(37.2%)
Efficacy of logbook in laboratory sessions	75(79.8%)	19(20.2%)

Discussion

The present study showed that students had different viewpoints in terms of the three teaching approaches. The students preferred the LBL to PBL approach but, the combined approach was reported to be more successful. The students preferred LBL approach over PBL, because the students were familiar with LBL. The previous studies performed in other countries about TOL methods are not consistent, although they have been performed diversely in private and state medical schools. The use of methods like PBL needs to be considered in universities (2).

The results of the study conducted by Yadegarnia indicated a significant difference between PBL and LBL in terms of TOL efficacy and showed that PBL approach is more successful in TOL of the selected topics of immunology course (7). In this study, the students preferred disciplinary approach to PBL approach. It seemed there was more concentration on lecturing than empowering students. Moreover, some lecturers have recommended that case study teaching method represents a feasible and resource-conservative pedagogical format to promote critical thinking and to integrate basic science principles into the preclinical curriculum (9). In this

study, the combined approach was the preferred approach for TOL. Researchers believe PBL teaching approach has several advantages for example the stimulation of self learning in students and training team work (5). In our opinion, the combined approach is the best method to achieve the teaching objectives of medical parasitology course. The educational experts argue that students have enough time to access computer-based and interactive learning facilities for self learning. In the clinical part of curriculum, human cases should be presented in an organ focused manner. The focus of teaching parasitology course to the medical students in Japan is on clinical aspects (3).

Also, some others have described several factors influencing the performance and motivation of the students, including test type, focus on clinical case history tests, description tests, providing log book and even lecturer's social behavior. In France, Poland and Spain examinations are administered in the written manner with short questions, and in Italy the exam is usually oral. Some researchers have given MCQs in Romania, but oral and written in Croatia (4). Others have mentioned motivation of students as the most relevant factor for learning, the same as feedback and participatory activities (10).

Researchers have suggested that lecturers can provide special learning experiences to promote the self-empowerment of the culturally diverse students and all other students in their classrooms. The self-empowerment experience includes experiences that facilitate self-praise, adaptive skills and behaviors resulting in social, academic, and life success (11). On the other hand, scientists recommend a combined disciplinary or LBL approach; however, PBL approach will offer the best chance for fulfilling the teaching requirements in the future (5). A combination of disciplinary and interactive teaching methods can result in a high level of attention among students. Lecturers exert a potent influence over the achievement of all students. Some authors have found that a lecturer's sense of efficacy is positively related to both improvement of students' outcomes and the percentage of project goals achieved (11).

In most universities, the MCQ tests are widely used to measure the knowledge, comprehension and the application of learning outcomes (10); however, in Bonn University, teaching parasitology is mostly concentrated on clinical aspects and tropical medicine. Modern TOL methods in Medical Parasitology, which use an integration of CD-ROM programs, clinical case-oriented slide collections, examples of epidemic situations, discussion groups and small laboratory research groups, may play a substantial role in promoting self-learning in undergraduate students (3). The findings of this study

direct us toward a new curriculum approach of medical parasitology relying on the needs of students in order to enhance the skills and knowledge required for application in their future carrier. The combined approach is the most successful method; lecturer's behavior and suitable MCQs with clinical case history are recommended to motivate the students.

Conclusion

The findings indicated that TOL medical parasitology to students can be interesting if we use a combination of the disciplinary and organ-focused PBL approach in learning. Also, the lecturer's positive behavior can greatly inspire them for more learning. MCQs, clinical case and log book inspire students to prompt their self-efficacy. In addition, the number of lecturer's papers has a little impact on TOL.

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References

- Zali MR, Mehr AJ, Rezaian M, Meamar AR, Vaziri S, Mohraz M. Prevalence of intestinal parasitic pathogens among HIV-positive individuals in Iran. *Jpn J Infect Dis*. 2004; 57(6): 268-270.
- Mehraj V, Saleem T, Lalani S, Sani N, Khan I, Afridi F, Irfan H, Asim Beg M. Trends in undergraduate teaching of parasitology in medical school of Pakistan. *J Pak Med Assoc*, 2010; 60(8): 613-617.
- Pawlowski ZS, Goullier Fleuret A, Bruschi F. Undergraduate teaching of medical parasitology. *Parasitology Today*, 1998; 14(4): 127-128.
- Bruschi F. How parasitology is taught in medical faculties in Europe? *Parasitology, lost? Parasitol Res*, 2009; 105(6): 1759-1762.
- Eckert J. WAAVP/Pfizer award for excellence in teaching veterinary parasitology: teaching of veterinary parasitology--quo vadis?. *Vet Parasitol*. 2000; 88(1-2): 117-125.
- Vercruyssen J, Eckert J. Teaching of undergraduate veterinary parasitology in some European countries. *Vet Parasitol*. 2002; 108(4): 309-315.

7. Yadegarinia D. The effect of problem based learning on education and recall of medical students in a course of basic immunology in comparison with lecture based learning. *The Journal of Medical Education*, 2002; 1(4): 165-168.
8. Azizi F. Medical education in the Islamic Republic of Iran: Three decades of success. *Iranian Journal Public Health*, 2009; 38(Suppl 1): 19-26.
9. Bowe CM, Voss J, Aretz H. Case method teaching: An effective approach to integrate the basic and clinical sciences in the preclinical curriculum. *Med Teach*, 2009; 31(9): 834-841.
10. Ramirez BU. Effect of self assessment on test scores: Student perceptions. *Adv Physio Educ*, 2010; 34: 134-136.
11. Chakravarthi S, Haleagrahara N, Judson JP. Enhancing the effect of lecturers in educating student cohorts consisting of culturally diverse groups in a medical University. *International Education Studies*. 2010; 3(2): 161-166.