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RESEARCH ARTICLE

The view point of dentistry students to achievement of educational objectives: comparison of teacher-oriented and problem-based learning methods

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Abstract

Introduction: This study was aimed to compare viewpoint of Dentistry students in order to educational objectives achievements in oral pathology course using two methodologies; teacher-oriented instruction (TOI) & problem-based learning (PBL).

Materials and Methods: The present study was carried out on 24 third-year students of general dentistry in Dental Faculty of Shahed University. The non-randomized interventional census sampling and Willcoxon statistical method were used. After the instruction, a questionnaire were designed for each method to measure the view point of Dentistry students to achievement of educational objectives.

Results: The participants' average score obtained from the questionnaires were 48 ± 15.82 and 42.75 ± 12.23 For TOI and PBL methods, respectively. However, there was not a significant difference between these results. (P = 0.166) The questionnaires' analyses showed that the extent of fulfillment was mentioned as desirable by 6; acceptable by 16 and unacceptable by 2 participants in teacher-oriented group. Though, in PBL group, it was reported to be desirable by 6, acceptable by 14, and unacceptable by 4 informants.

Conclusion: In the present study, there was not any significant difference between PBL method and TOI in students' viewpoint to achievements of educational objectives in two topics of oral pathology course.

Key Words: Problem based Learning; dentistry students; educational; teacher oriented instruction.

Introduction

Effective teaching is very essential in professional majors such as dentistry [1]. As a health profession, this major should move on toward society health needs [2]. At present, Teacher-Oriented Instruction (TOI) is the traditional method in teaching dentistry courses. This method is the commonest used method of teaching & transferring knowledge at different learners' levels. Although a lot of scientific issues are transferred from the teacher to the learners, the learning to solve problems is not facilitated by TOI. Thus, there is not the possibility to investigate the quality of learners' progress. It is pointed out that TOI is less efficient than other teaching methods in order to upgrade learners' thought & to change their attitudes [3]. Whereas, Problem-Based Learning (PBL) has a high efficacy & position in top educational levels [4].

PBL was introduced for the first time in McMaster Medical Faculty in Hamilton, Canada in 1960 [5]. It is a method through which, students determine the related facts about a posed problem. Then, on the basis of the facts & through applying the critical stage of thought along with brain storming, they start generating ideas about the essence of the problem. The ideas clarify that the group has thought about the problem. Also, the ideas contribute to find out the weaknesses & information needs of the group members to understand the matter. Through group discussion, students dominate the learning needs & develop their individual knowledge. Actually, the learning needs are used as the content of educational planning [6]. Moreover, thinking in order to solve the posed problem is considered as the starting point of learning process. Through PBL, the knowledge would be structured in clinical status, the motivation for learning is reinforced, & skills in clinical inferences would be developed [7]. It also encourages the development of clinical skills & facilitates the performance of theoretical topics in practice [8]. Recent studies in the assessment of teaching curriculum have shown the efficacy of this method in comparison to other teaching methods. This educational procedure has caused the most possible changes in medical education & to a lower extent & range in dentistry education. Using this educational method in devising new minimal

dentistry education has had desirable results in some countries such as Ireland, Singapore, Sweden, Finland & Holland [9 to 13]. There is little information upon the extent & aspects of education on the basis of PBL in dentistry.

The present study has been done due to limited present information upon using the innovative methods of instruction in dentistry courses, the necessity of active involvement of these students with theoretical issues to sustain their learning deeper & to use the theoretical issues practically. Hence, this study is an attempt to compare PBL & TOI in order to measure students' achievements of educational objectives in oral pathology course.

Methods

The present study has been carried out on 24 students of third year of dentistry in Dentistry Faculty of Shahed University. It should be clarified that for teaching with both methods, the same 24 students took part in the study but in two separate sessions. The non-randomized interventional census sampling method was used to fulfill the research project. Two topics of teaching in oral and maxillofacial pathology course were chosen, namely pre-malignant lesions & pigmented ones. In order to teach each topic, the teacher could allocate a 2-hour class session. The usual TOI was chosen for teaching pre-malignant lesions. While PBL was used for teaching pigmented lesions. Before the commencement of the instruction, the educational objective lists were devised for each topic separately. Moreover, a questionnaire containing 16 questions was prepared to evaluate the extent of fulfilment of educational objectives from students' viewpoints. The question items had five options: I agree.; I somehow agree; I don't have any ideas about it.; I somehow disagree. I disagree; respectively [14]. The topic of pre-malignant lesions of oral cavity was taught by the teachers' lecturing. The course syllabus & related educational objective lists were given to the 24 students. At the end of the instruction, the questionnaires was given to each student. They were asked to fill in the questionnaires carefully.

The procedure to teach the pigmented lesions on the basis of PBL was as follows: There were two files containing clinical information perspectives & patients' backgrounds. Both were presented to the students. Meanwhile, some questions based on steps of PBL method were presented to the students. The questions included: 1- statement of the problem, 2- presenting different diagnoses, 3- presenting the therapeutic solutions. Before the teaching session, the bibliography, course syllabus & pedagogical objective list were given to the students. They were asked to read the specified related sources. After observing the given cases information, they were asked to answer the enclosed questions. On the due time of teaching session, the cases were reported & the students were asked to read their responses & discuss upon their answers. At the end of the session, similar to TOI teaching session, the related questionnaire in relation with teaching objectives & also the multiple-choice written exam- this time about the pigmented lesions- were distributed among the same participants in order to be answered carefully.

In order to evaluate quantitatively & compare the statistical results, five scores were used which ranged from four to zero which were related to the five options of the questionnaire: I agree; I somehow agree; I don't have any ideas about it.; I somehow disagree; I disagree, respectively. There were 16 items. Therefore, the scores ranged from zero to 64. The ones ranging from zero to 32 were regarded as unacceptable. The ones ranging from 33 to 53 were considered as acceptable. The scores ranging from 54 to 64 were regarded as desirable.

Finally, based on the lesson plan, if the raw data was in accord with normal distribution, the Paired Sample T was used. Otherwise, the non-parametric equation was carried out.

Results

The Evaluation of the Questionnaires:

For the participation of each case in this study, the number of responses for the answers were multiplied by 4,3,2,1 & zero respectively. The sums were shown out of 64 in the sum column. After teaching the pre-malignant lesions by TOI method, the participants' average score obtained from the questionnaires were 48 ± 15.82. Also, after teaching the pigmented lesions by PBL method, the mean score gained from the questionnaires was 42.75 ± 12.23. However, there was not a significant difference between these results through paired t-test analyzing. (P = 0.166)

In accord with it, as [Table 1] shows, the participants' taught with TOI method, answered the questionnaires in the following way: 6 participants considered the extent of achievement of the educational objectives to be as desirable, 16 considered it as acceptable & 2 participants regarded it as unacceptable. Whereas, when asking the same participants about PBL, the extent of reaching the objectives was evaluated desirable by 6, acceptable by 14, and unacceptable by 4 participants.

Table 1: The qualitative evaluation of 24 participants' scores obtained from the questionnaires upon TOI & PBL instruction, dentistry faculty, Shahed University,

Unacceptable-range of scores 0-32 from the questionnaires	Acceptable- range of scores 33-53 from the questionnaires	Desirable-range of scores 54-64 from the questionnaires	Name of Teaching Method
2	16	6	TOI
4	14	6	PBL

Discussion

The present study showed that there was not any significant difference in the average scores obtained through students' responses to the questionnaires in using the TOI & PBL methods. Thus, the results showed that there was not a significant difference between the average scores using different teaching methodologies.

In Fattahi, et al. study, some questionnaires were devised in order to investigate upon the extent of access to educational objectives. In their questionnaires, five options were used. Hence, they concluded that in students' viewpoints, their capabilities in achieving the educational objectives in orthodontics courses is desirable [14]. In Dr. Jafari & colleagues' study, they taught their students in workshops & based on PBL method in community-oriented dentistry courses. Then, they compared the method with TOI .They reached to the conclusion that attitude improvement in PBL method of teaching was remarkable in spite of the group that received the traditional TOI. The average scores in the written test & in attitude evaluation was higher in the group that participated in the workshop & PBL method. Nevertheless, the difference was not significant compared to the group that received the traditional TOI method [15]. In Sandra K. Rich et al. study, PBL method was compared with the traditional instruction in periodontics major in pre-clinical & clinical wards. The T-test analysis of the group that was taught based on PBL, showed that they were significantly more successful in mid and final term exams than the group that received TOI method. However, ANOVA analysis didn't show any significant difference in the clinical part. Also, in the clinical part, for non-surgical therapies of periodontal patients, there wasn't any difference between the two groups [16].

Some studies around comparing two methods of TOI and PBL in medical education, did not show any differences between the cases. For instance, the researchers of a cross-sectional study, [17] compared TOI and PBL methods in the field of basic science courses of general medicine & general dentistry. They concluded that there was no significant difference between the test results of the two groups. However, the students who received the PBL method had higher scores. These researchers believed that remembering and recalling the basic science courses didn't show any significant difference between the participants of the two groups.

A survey study was also done by Colliver (2000) on effects of PBL instruction. Analyzing medical education articles published from 1992 to 1998.It was concluded that there was not any convincing evidence indicating the efficacy of PBL upon the theoretical knowledge & clinical functioning [18]. Furthermore, the article named "International Dental Problem-Based Learning Network "proposes that few educational institutes can adapt themselves with PBL instruction. Nevertheless, others have proposed that when a learner seeks in search of finding a new learning procedure, the PBL method can be efficient [19].

As a whole, it seems that beside positive points found in PBL method, it should be taken into consideration that it needs more facilities such as educational space, educational aids & human resources in comparison to the traditional teacher-lecturing method. Besides that, the successful performance of this educational method requires careful planning & programming & sufficient time advocated by the educational staff. and other issue that should be considered is the need for its long-run assessment & the comparison of the capabilities of educated students trained with each of the two methods in real job conditions that recommended to be investigated in future studies.

On the other hand, many learners tend to preserve their previous method of learning & resist against any change of learning/teaching procedures. Hence, it might be difficult for an educational institute to put aside their previous experiences & substitute them with the new methods. Faculties' staff usually tend to feel more comfort with the traditional method of teaching & do not feel the necessity for the change. Perhaps this may be one of the reasons that there is not enough concern & attention for change of teaching methods in faculties.

Conclusion

In the present study, there was not any significant difference between PBL method and TOI in students' viewpoint to achievements of educational objectives in two topics of oral pathology course.

Conflicts of Interest

There are no conflicts to declare.

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