Evaluating the effect of logbook as viewed by the juniors and seniors at Shiraz school of dentistry

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Background & Objective: Evaluation is a process that identifies and describes the effectiveness of all aspects of education. The use of logbooks as an aid in education and assessment might provide the possibility for a more uniform training. The aim of this study was to evaluate the effect of logbook on students' perspective in each of the 10 departments of dental school.

Methods: In this cross-sectional survey, a questionnaire consisting of 16 standardized items, each scored on a 5-point Likert scale (0 to 4), was used. From among the collected forms, 50 completely filled questionnaires were entered into the study. The validity of the questionnaire was approved by a group of 10 experts and its reliability was confirmed using Cronbach's α (0.94). Tukey's test and one-way ANOVA were used for data analysis.

Results: In all departments, there was agreement between the students' logbook scores and final grades. In addition, the ability to find learning weaknesses via logbooks had the lowest score, whereas clear statement of learning objectives for each subject and requirement obtained the highest score. Usefulness of written clinical procedures in logbooks had the highest score in the Departments of Endodontics, Removable Prosthodontics, Fixed Prosthodontics, and Pediatrics.

Conclusion: The logbook is a practical and useful assessment tool for evaluating students and achieving learning objectives. It clearly states the educational objectives and clarifies the minimum requirements for each department. However, there is a need for the mutual cooperation and commitment of both the students and educators, which requires time and the better establishment of this method.

Key Words: Education, Assessment, Logbook

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Introduction

Changing the training pattern, providing students with a new insight, encouraging their participation in the field of self-education, and implementing the best methods in achieving these goals have been considered as essential objectives in all areas of dental training. Efforts have been made to improve the efficacy of dental education through new methods (1). The use of clinical practice guidelines (2) and logbooks (3, 4) is among the recommended methods for achieving the mentioned goals.

Evaluation is considered as one of the most efficient methods of assessing the quality of education (5). There are a number of advantages associated with this method, of which improvement in morale, activity of the participants, and better justification of financial and educational facilities can be mentioned (6). Evaluation is a process that identifies, describes, and estimates the effectiveness and usefulness of all aspects of education (7). There are various assessment tools for achieving these goals, including written tests aimed at evaluating educational objectives, clinical and practical assessments, and functional tests. Functional tests and related feedbacks are used to assess educational goals and learning efficiency in psychomotor and cognitive fields. These functional tests include logbook, portfolio, and diagnostic-therapeutic techniques workbook. The feedback process not only enables the students to discover the flaws in their knowledge and qualification, but also gives them the opportunity to identify and document their strengths, knowledge, and skills (8, 9).

Based on previous studies, logbook is a tool which provides students with the chance to receive face-to-face feedback from clinical educators, regarding the accuracy of practical measures. It also guides and informs students about the objectives of practical education. The student, who enters the field of education and clinical setting, has the right to be accurately informed of exactly what skills he/she has to obtain, by what means he/she is going to acquire these skills, and through which method he/she is going to be evaluated. Through the use of logbook, the student will be provided with a list of educational objectives and required clinical skills, and he/she will become aware of the criteria for case selection. Thus, organization in and concentration on the fields of education and evaluation will be provided in a real practical context. Despite the existing differences among various educational environments, the use of logbooks as an aid in education and assessment will provide the possibility for a more uniform training (10, 11).

The logbook is a simple time-saving tool providing the learners with a framework for organizing and recording their educational activities (12). In this student-based assessment document, in addition to the list of cases observed, there is a report of official educational experiences (13). Although the students' and the teachers' learning experiences may differ, the main objectives are the same, and the purpose of the logbook is to evaluate these main objectives and familiarize the students with their educational needs (14).

Various studies have been performed in order to assess the advantages of using logbooks (15-17). In a study at the University of Nottingham, England, problems associated with using logbooks were investigated (17).

Cornwall and Doubtfire did not approve the use of logbooks as a self-assessment tool and for employment, believing that most of the logbooks are not updated (13). They concluded that logbooks should not be used in comprehensive assessments and other instances (13). Der Beek also evaluated students' perspective on logbooks (18). In a study performed at the School of Nursing of Tarbiat Moallem University, Tehran, Iran, the effect of feedback provided in logbooks on student was assessed (19). Previous studies have demonstrated that a combination of

clinical study guidelines and logbooks is extremely effective in increasing student feedback (20), rethinking, and teacher-student interactions (21) and improving the evaluation process (22), which are the principle elements of learning development.

The aim of the present study was the evaluation of the effect of logbooks on students' perspective in each of the 10 departments of the School of Dentistry, Shiraz University of Medical Sciences, Iran.

Methods

This study was conducted as a cross-sectional survey. All junior and senior students of the School of Dentistry were invited to complete the questionnaires. Ethical approval was obtained from the Ethics Committee of Shiraz University of Medical Sciences. This study was performed on 63 fifth and sixth year dentistry students, who agreed to participate in

the research, in 2013-2014 academic years. The questionnaire consists of 16 standardized items assessing students' attitude toward and satisfaction with the effect of logbooks on their learning. Of the collected forms, 50 completely filled questionnaires were entered into our study for evaluation. Demographic information included the students' year in dental education and their total average grade. The validity of the questionnaire was confirmed by a group of 10 experts and its reliability was approved using Cronbach's α (Cronbach's α = 0.945). Data were analyzed using Tukey's test and one-way ANOVA.

Results

The Department of Radiology obtained the highest score in terms of general satisfaction with logbooks (Figure 1, Table 1).
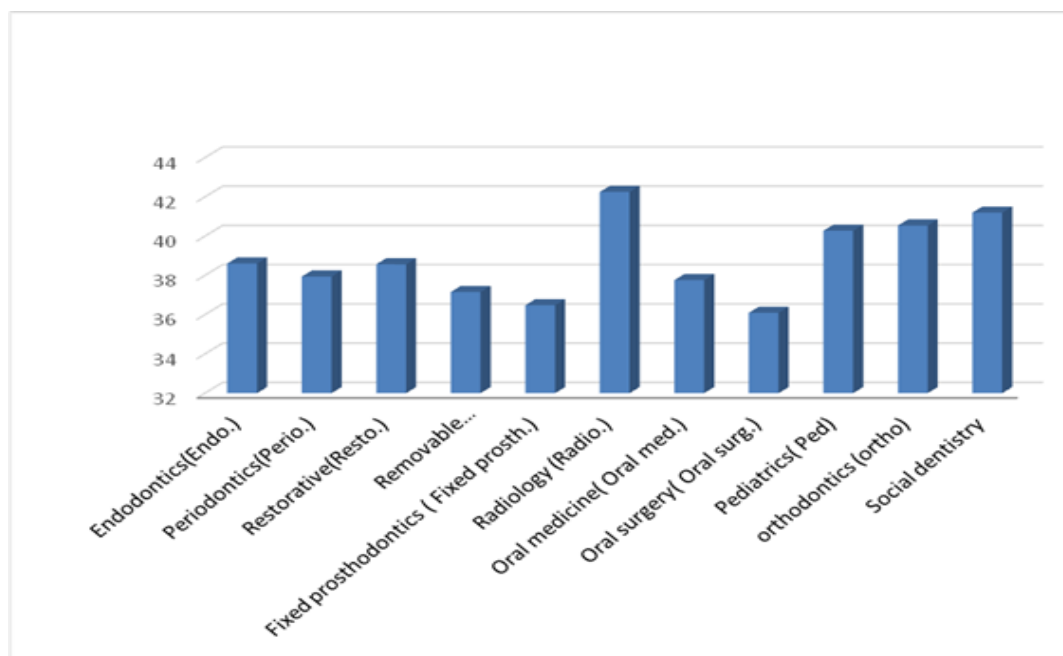

Figure 1- Mean score of satisfaction with logbooks in different clinical departments

Table 1- Mean score of satisfaction with logbook in different clinical departments

Departments	Mean score	Standard deviation (± SD)	Minimum	Maximum
Social Dentistry	41.20	14.74	16	64
Orthodontics	40.54	12.43	16	64
Pediatrics	40.27	13.53	16	64
Oral Surgery	36.09	12.18	16	64
Oral Medicine	37.76	11.77	16	64
Radiology	42.25	12.62	16	64
Fixed Prosthodontics	36.48	11.28	16	61
Removable Prosthodontics	37.15	12.00	16	61
Restorative Dentistry	38.56	11.86	16	64
Periodontics	37.94	11.70	16	63
Endodontics	38.60	12.20	16	64

In all departments, there was agreement between the students' scores in the logbooks and their final grades. Moreover, the ability to find learning weaknesses via logbooks had the lowest score, whereas clear statement of learning objectives for each subject and requirement obtained the highest score.

Usefulness of written clinical procedures in logbooks had the highest score in the Departments of Endodontics, Removable Prosthodontics, Fixed Prosthodontics, and Pediatrics. In the Department of Radiology, adequate case variation based on requirements in the logbook received the highest score (Table 2).

Table 2- A comparison of scores in different departments for each items

	Items	Orthodontics	Pediatrics	Oral surgery	Oral medicine	Radiology	Fixed Prosthodontics	Removable Prosthodontics	Restorative Dentistry	Periodontics	Endodontics
1	Listing all steps of each procedure	2.77	2.94	2.51	2.50	2.78	2.71	2.71	2.64	2.64	2.84
2	Case variety is sufficient according to the requirements in the logbook.	2.74	2.80	2.41	2.38	2.86	2.26	2.55	2.47	2.41	2.46
3	The required knowledge and skills mentioned in the logbook are in accordance with my future occupation.	2.71	2.74	2.49	2.45	2.69	2.48	2.53	2.63	2.27	2.64
4	Related references for each subject meet the students' needs.	2.47	2.62	2.51	2.32	2.60	2.36	2.33	2.25	2.39	2.56

5	Educational objectives for each subject are mentioned on the first pages of the logbook.	2.94	2.76	2.52	2.62	2.86	2.63	2.58	2.74	2.68	2.76
6	Minimum requirements for each subject are clearly stated in the logbooks.	2.87	2.93	2.52	2.66	2.76	2.68	2.67	2.70	2.74	2.66
7	In my opinion, the logbook is efficient and applicable in the departments.	2.69	2.80	2.39	2.46	2.65	2.37	2.25	2.50	2.27	2.35
8	The number of patients is in accordance with the minimum requirement stated in the logbook.	2.57	2.50	2.38	2.46	2.80	2.29	2.41	2.42	2.33	2.26
9	I fill my logbook on a daily basis.	2.49	2.57	2.24	2.58	2.65	2.34	2.22	2.54	2.43	2.64
10	Logbooks are checked and signed by tutors on a daily basis.	2.46	2.80	2.25	2.32	2.76	2.36	2.18	2.60	2.45	2.51
11	With the aid of the logbook, I have been able to identify my weaknesses in learning.	2.17	2.17	١2.12	2.14	2.35	1.94	1.98	2.17	2.11	2.33
12	The logbook is an aid in clarifying educational objectives and documenting learning experiences.	2.31	2.30	2.00	2.08	2.38	2.14	2.25	2.17	2.29	2.30
13	The logbook is a tool that aids tutors in assessing and supervising my performance.	2.48	2.48	2.04	2.12	2.55	2.08	2.10	2.31	2.11	2.24
14	I receive constructive feedback from tutors via the logbook.	2.33	2.33	2.02	2.18	2.69	2.04	2.16	2.33	2.25	2.39
15	Grading policies and assessment methods are clearly stated in logbooks.	2.27	2.27	1.88	2.14	2.37	1.92	1.98	2.07	2.12	2.16
16	Clinical lessons are in line with educational objectives and minimum requirements in the logbooks	2.48	2.37	2.04	2.40	2.65	2.16	2.44	2.31	2.54	2.34

Discussion

Logbooks are widely used in medical schools as an evaluation tool to assess students' progress toward certain objectives. The aim of this study was the evaluation of the effect of this assessment method on students' clinical education through questionnaires completed by fifth and sixth year dental students.

Our findings showed that the use of logbooks could be an aid in providing the student with an appropriate feedback from tutors. It could be effective in clarifying educational objectives and minimum requirements in each department.

The findings of the current study are in accordance with results of the study conducted by Mohammadi et al. at the School of Nursing of Tarbiat Modares University (19). They showed that logbooks could help both the tutors and students in achieving their educational and clinical goals by being a link between theoretical knowledge and clinical practice. It was also concluded that it could provide the chance for students to obtain feedback from their educators (19).

In a study by Wimmers et al. evaluating the importance of supervision on student learning, the quality of supervision was found to be crucially important because it directly impacted student learning and also positively influenced the number of patient encounters (23).

The results showed that 60% of the students were satisfied with the logbook. This finding is in line with the pilot study conducted at the Royal College of Psychiatrists in order to introduce logbooks to 4 educational centers in England (13). The results showed that 80% of the educators believed that logbooks were helpful in improving education, whereas only 60% of the students had the same opinion (13). The study of Paice et al. showed that logbooks can be helpful only when they are easy to use and when there is a mutual agreement between the students and educators regarding its usage (15, 16).

The present study indicated that for logbooks to be satisfying, mutual cooperation and attention from the educators and students is required.

Murray et al., in their survey, asked a number of students about the advantages of learning in a clinical environment (11). The majority of the students believed that the most important advantage was that educators spend time and effort to try to interact with students and educate them. The educators also try to obtain feedback from the students during the clinical experience. As a result, the individual interaction between each student and his/her educator and also the overall interaction between the students and educators in group discussions are improved (11). The results of the present study indicated that students do not show enough commitment to using logbooks. This could be due to heavy clinical workload and lack of educators' emphasis on using logbooks. These findings are in line with the results of the study on logbooks at the University of Nottingham (17). They showed that despite improvement in the general trend, there are still students and educators who are not familiar enough with the importance and objectives associated with logbooks. This has caused students to face problems in getting the educators to sign the logbook in order to confirm the accuracy of their performances. There are also some students who do not show interest in getting their work signed and

recorded (17). This is in line with the results of the study conducted by Raghoebar-Kreiger et al. at the University Hospital of Groningen, Netherlands. In this survey, completed logbooks were collected from both doctors and students. The comparison of the two groups (doctors and students) illustrated that logbook data were not fully consistent. In fact, diseases were under-reported by students. It was finally concluded that supervision and feedback are important mechanisms in optimizing the students' use of the logbook (18, 24).

In an article by Denton et al. published in 2006, it was stated that the logbook does not have the required reliability and validity for changing educational programs and verifying educational objectives (3). Nevertheless, an ideal logbook in addition to being cost-effective, practical, and approved by the students, also provides the chance of rapid and correct collection of data related to educational objectives in order to analyze the data and give students accurate feedback (3). In another study it was concluded that the use of clinical study guidelines increases the students' scores in the fields of cognition and skill learning (20). Piercey evaluated logbooks completed by nursing students and reported that with the aid of logbooks it is possible to gain a higher level of awareness regarding students' thoughts, feelings, concerns, and difficulties during clinical practice (9). It has been shown that students who avoid participation in open group discussions show less interest in using logbooks. Cognitive skills for creating a connection between theoretical knowledge and practice are less developed in these students; thus, the use of logbooks could facilitate self-reflection (9). The results of our study showed that students were not able to identify their weaknesses in learning through the use of logbooks. Moreover, there was no coordination between course performance scores in the logbooks and final term grades. These findings could probably be related to the fact that more experienced educators show less commitment toward using logbooks,

indicating the need for the better establishment of this self-assessment tool in the school of dentistry. In a study by Mogaddasian and Kafi on 26 nursing students in the department of surgery, there was a significant difference between the two experimental and control group participants who had, respectively, passed the course using logbooks and conventional methods (21). Posttest scores were higher in the experimental group (21). In another investigation at the School of Nursing and Midwifery of Qazvin University of Medical Sciences, Iran, on senior nursing students, two methods of checklists and logbooks were compared (22). The findings revealed that using logbooks is associated with higher level of student satisfaction and it also provides the possibility of objective assessment (22). The study by Watters et al. evaluated the efficacy of logbooks, and showed that using logbooks could be considered as a useful method for student assessment and it could aid in achieving learning objectives. This finding was in agreement with the results of the present study. The findings revealed that the logbook could provide the opportunity for both the students

and educators to increase their awareness about their weaknesses and strengths in the education process. It also permits the educator to give more constructive feedbacks in order to assist students in their efforts to improve (20). Cornwall and Doubtfire reported that despite their two year experience of using the logbook, still educators and students are not familiar enough with its correct usage (13).

Conclusion

With regard to the results of this study, the logbook is a practical and useful assessment tool for evaluating students and achieving learning objectives. It clearly states the educational objectives and clarifies the minimum requirements for each department. There is also an increased chance for the students to receive better face-to-face feedback from their educators. However, there is a need for the mutual cooperation and commitment of both the students and educators, which requires time and the better establishment of this method.

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