

Review Article

Attitude of dental students toward evidence-based dentistry in Iran: A systematic review

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ABSTRACT

Background: Dentistry practice has become more complex and challenging in the recent years. The clinical decision-making process has experienced many problems due to changing socioeconomic patterns, knowledgeable patients, rapid technological advances, and information explosion. The present study reviewed the status of the attitude toward evidence-based dentistry (EBD) among dental students of Iran Universities. The effect of the educational intervention was also assessed.

Materials and Methods: This systematic review was conducted according to the Preferred Reporting Items for Systematic review and Meta-Analysis checklist. Search strategy was developed by Medical Subject Headings terms and keywords surfing electronic available databases including Medline/PubMed and Google Scholar and local databases such as Scientific Information Database (SID) and Magiran. Two reviewers read the abstracts of all eligible papers and excluded the duplicates. They extracted the information of the full-text of the studies included in the review and assessed the quality by Joanna Briggs Institute critical appraisal checklist.

Results: Ten studies including 8 cross-sectional and 2 interventional studies met the criteria. The assessment of the attitude of 937 dental students from a different region of the country toward EBD showed moderate to acceptable status using 3 different tools. In regard to educational interventions, 2 studies were successful to improve their attitude.

Conclusion: Although the researchers presented good scores on the attitude questionnaires, the quality of the study tools, the eligible criteria for recruiting the participants and the method of evaluating the construct of attitude should be investigated in future studies.

Key Words: Attitude, dental students, evidence-based dentistry, Iran

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INTRODUCTION

Evidence-based dentistry (EBD) is defined by the American Dental Association (ADA) as an approach to oral health care that requires the integration of systematic assessments of clinically relevant scientific evidence, relating the patient's medical history and

oral condition, with the dentist's clinical expertise and the patient's treatment needs. As it is clearly seen, the ADA points out three main areas in EBD: (1) relevant scientific evidence, (2) patient needs and preferences, and (3) dentists' clinical expertise.^[1]

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EBD helps to minimize personal faults, reassures the best clinical decision making for the patient, and uses available sources more effectively. Dentists need to make daily decisions regarding patient care. These decisions should essentially be scientifically sound. EBD is meant to empower clinicians to provide the best contemporary treatment.^[2]

EBD is a means of lifelong learning in which clinicians base their decisions on evidence rather than opinions and are able to continuously monitor and develop their clinical skills and performance. EBD provides some advantages in which dentists can pursue more secure, effective, and cost-effective treatment.^[3]

General dental students can attend EBD courses to learn the required dentistry skills based on evidence.^[4] Previous studies in Tehran Iran show that despite good attitudes about EBD, there was a deficiency in students' knowledge and awareness.^[5] Dental faculty members were also investigated in this matter indicating a moderate level of actual knowledge about the basic principles of EBD.^[6]

EBD is a mutual responsibility for both researchers and therapists. As we expect a dentist to apply the most contemporary evidence in the clinic and to choose the best treatment method and applied materials accordingly, we should also expect a researcher to design and implement studies accurately without bias. On the other hand, scholars should evaluate and criticize these trials through systematic reviews to manage high-volume information. Researchers should rank data within clinical studies and academic papers to prevent any bias in the validity of academic researches and papers. In this case, designed studies like systematic reviews can be generalized clinically by removing the gap between research and clinical study.^[7]

Reforms and changes in dentistry courses are implemented to educate many dentists to provide oral health cares for patients whilst having academic capacity and skills for the management of clinical trials. Some changes also have other advantages, including a deeper understanding of the association between medical sciences and dentistry, society needs-based courses, academic-critical thinking skills, creating continuous education, and evidence-based trials for dental students.^[8]

Dentistry faculties also should pave the way for the education of thoughtful graduates who can solve

problems and use research findings to be lifelong learners.^[9]

Since 2010 EBD practice has been included in the new dentistry curriculum of the Iranian Dental Schools. In line with other countries, different content and methods have been applied for training this course in all dental schools. Several researchers conducted studies on EBD in Iran by different perspectives including knowledge, attitude, and application. Since this is a new approach in the curriculum; it should be evaluated and discussed based on scientific principles. The purpose of this study was to collect and compare the available evidence regarding the attitude of Iranian dental students about EBD and the effects of EBD dental courses on their attitude. This systematic review can help designers of dental curriculums in Iran and other regions to find the gap in EBD courses.

METHODS

Search strategy

The core search strategy was developed based on the Medical Subject Heading and the keywords of the article. A single reviewer performed the search in June 2021 on Medline (PubMed based) and Google scholar as international databases and Magiran, Scientific Information Database (SID) and Islamic World Science Citation (ISC) as local resources. English and Persian articles with publication years after 2010 by three main concepts "evidence-based dentistry," "attitude," "dental students," and equivalent Persian phrases were applied for searching. The search strategy is explained in detail in Table 1.

Eligibility criteria

Inclusion criteria included English and Persian studies between 2010 and June 15, 2021, at any dental university or institute in Iran. The participants were dental students at any age or semester either undergraduate or postgraduate. The qualitative, cross-sectional, and interventional methods of research were considered. The articles which included dentists or faculty members were excluded.

Study selection and data extraction

At first, duplicates were removed by hand-searching. Two reviewers independently screened titles and abstracts for eligibility. If the articles were about the knowledge, awareness, and skills of the students and there was not any outcome about their attitude or perception they were deleted from the list. Specific studies such as epidemiology, Internet or computer

Table 1: Search strategy

Database	Search query	Article retrieved
Medline via PubMed	#1) "Evidence-Based Dentistry"[Mesh] AND "Attitude"[Mesh] AND "Dental Students"[Mesh] NOT "Knowledge"[Mesh]	29
	#2) limited by year 2010-2021	26
	#3) AND "Iran"	1
	#4) "Attitude" AND "evidence-based dentistry" AND "dental students"	33
	#5) AND "Iran"	3
Scholar Google	"Attitude" AND "evidence-based dentistry" AND "dental students" AND Iran (customized between 2010 and 2021)	173
SID	Evidence-based dentistry and attitude and students (in Persian)	3
Magiran	Evidence-based dentistry and attitude and students (in Persian)	4

Mesh: Medical subject heading; Scientific Information database (SID)

usage, and searching which were assessed as a field of EBD were excluded because the content did not cover our concept. Then, full texts of relevant articles were identified and read and the main parts were extracted as evidence presented in two different tables. The items for preparing and evaluating the formats of descriptive studies included the first author's name, year of publication, number of participants, place of the study, the items or statements related to the attitude, main outcome, or findings regarding the status of the attitude [Table 2]. For the interventional studies, the formats for assessment included first author's name, year of publication, number of participants, and place of the study, the items used for assessing the attitude, main outcome, or finding about the change of the attitude [Table 3].

Quality appraisal

The Joanna Briggs Institute (JBI) critical appraisal checklist for analytical cross-sectional studies with 8 items^[20] and the critical appraisal checklist for articles on educational studies with 13 items^[21] were used for assessing the risk of bias by each of the 2 reviewers independently. They reported the results as articles included, excluded, or articles that seek further information. At the case of disagreement, they tried to reach a consensus or sought the opinion of a third reviewer. As this review intended to provide an overview of the evidence about EBD in dental education in Iran, we did not consider strict quality exclusions due to the limited amount of related studies. Therefore, all related articles regardless of quality level were included.

RESULTS

One hundred and eighty-three records were identified in the international and local databases. The flow diagram of the process is explained as recommended by Preferred Reporting Items for Systematic review

and Meta-Analysis [Figure 1]. The abstracts were screened using the eligibility criteria. Finally, 10 English and Persian language articles were included in the review. A complete review of the articles was conducted and the results were summarized as two separate tables for descriptive and interventional studies as stated previously [Table 2].

Seven studies were cross-sectional^[5,10-16] and two were experimental or quasi-experimental by pre-post interventional design.^[17,18] In one study which was about the effectiveness of the education, the design was analytically cross-sectional, so it was included in the descriptive studies.^[12]

The selected reports dated from 2012 to 2019 from the universities of Tehran, Isfahan, Tabriz, Mashhad, Kerman, Gilan, and Kermanshah. Study characteristics are presented in Table 2. In this table name of the first author, date of the publication, description of participants, the setting of the study, the variables related to the EBD attitude and the main findings were extracted.

In the descriptive group, four studies used the same questionnaire which was developed previously by Khami *et al.*^[5] for the assessment of the attitude of dental students toward EBD. Two studies did not explain properly about their data collection tools, however, as they used a 12-item questionnaire it is expected to be the one developed by Khavid *et al.*,^[14] and Sarani *et al.*^[15] In one study, the questionnaire was the translated form of Hendricson *et al.*^[13] A tool which was an assessment instrument designed to measure the outcomes of training in evidence-based practice (EBP) in the context of dentistry. Four EBP dimensions such as understanding of EBP concepts, attitudes about EBP, evidence-accessing methods, and confidence in the critical appraisal were considered by this instrument [Table 2].

Table 2: Evidence table of the descriptive studies

Study	Place/ Setting	Participant, Sample Size	Variables or exact item in questionnaire	Findings and main recommendation
Dehghani <i>et al.</i> ^[10]	School of dentistry, Mashhad University of Medical of Sciences, Iran	101 senior dental (5 th and 6 th years) students of Mashhad Dental School	Khami <i>et al.</i> , 2012 questionnaire ^[5]	The evaluated students had a relatively good attitude toward EBD In total more than half of the participants reported a positive attitude toward the proposed concepts, and only 12% of the respondents were against/strongly disagree. 81% of the students agreed with the need to update their knowledge Positive attitude indicates that they understand the need to learn and use EBD, fortunately, there is no need to change people's views, but should try to smooth the obstacles in this direction The most important obstacles reported in the use of EBD are lack of adequate training, lack of time, and lack of access to evidence-based care clinical guidelines. Furthermore, providing a simpler method for finding the best available evidence and not requiring complex knowledge to ask a clinical question are effective ways to increase the use of EBD
Taramsari <i>et al.</i> ^[11]	School of dentistry, Gilan University of Medical Sciences, Rasht, Iran	95 dental students of 6 th , 8 th , 10 th and 11 th semesters	Khami <i>et al.</i> , 2012 questionnaire ^[5] was applied for assessing the individual's point of view and opinion toward the necessity of using the EBD and the degree of trust in the results of the reports	Most students (46) had a moderate attitude level (46 56.1%) 35 students had a favorable attitude (42.7%), 1 student had an unfavorable level of attitude (1.2%) Participants generally had a favorable attitude toward the application of EBD in their work According to this evidence, given the favorable attitude but unfavorable knowledge, what needs to be considered most in the field of applying EBD is to focus on comprehensive and practical training as well as removing barriers such as Internet access in clinical settings
Marvei Milan <i>et al.</i> ^[12]	School of dentistry, Islamic Azad University of Tehran, Tehran, Iran	Among 250 dental students in the 11 th , 9 th , 7 th and 5 th semesters	Hendricson <i>et al.</i> , 2011 ^[13] questionnaire after translation was used as follows 1. I now believe that evidence-based performance in my future performance as a dentist is more valuable than what I did a year ago 2. I personally acknowledge the benefits of evidence-based patient treatment (EBP) 3. EBP should be an integral part of the dental education curriculum 4. I have supported the principles of EBP for more than a year 5. EBP is a routine part of my career as a dentist Evidence-based dentistry has changed the course of my learning 6. It has been difficult for me to operate on evidence-based dentistry in the past year 7. EBP is a dental treatment "cookbook" that ignores clinical experience in providing the best treatment for patients 8. Routine use of EBP is easy when a treatment plan is given to patients in a dental school clinic 9. EBP increases the quality of treatment of dental patients The responses ranged between 10 and 50. <25 was weak, between 25 and 40 was average and >40 was good	Overall student's attitude toward EBD was moderate. The distribution of student's choice of options is as follows 2.8% strongly disagree, 10.6% disagree, 53.8% uncertain, 29.1% agree and 3.7% strongly agree About 55% of students reported that they were not sure that EBD should be an integral part of the curriculum, while 38% of students agreed or strongly agreed with it 55% said they were not sure that EBD increases quality of treatment for dental patients. While 36% of students agreed or strongly agreed with the same issue 30% of the students agreed or strongly agreed that EBD changed the way I learned, while 57% of the students were not sure

Contd...

Table 2: Contd...

Study	Place/ Setting	Participant, Sample Size	Variables or exact item in questionnaire	Findings and main recommendation
Khavid <i>et al.</i> ^[14]	Faculty of dentistry, Kermanshah University of Medical Science, Kermanshah, Iran	All 82 junior (70.7%) and senior (29.3%) students	12 questions were presented about the attitude toward EBD in 5 modes (strongly disagree to agree strongly) As a result, the possible range is the sum of scores of each question (12-60)	The mean attitude score was 48.04±3.35 (good) The level of attitude of female subjects was higher than male students, ($P=0.012$) The levels of attitude were not statistically higher in senior students than in junior students The results were not statistically significant among different age groups and variables of attitude
Sarani <i>et al.</i> ^[15]	Kerman University of Medical Sciences, Kerman, Iran	All dentistry students who were studying in their 6th semester and higher ($n=73$)	The part of dentistry student's attitudes included 12 questions that were scored based on a Likert scale as "strongly agree, agree, no idea, disagree, and totally disagree" In this part, the minimum score was 12 and the maximum score was 60. A score between 12 and 28 indicated a negative attitude, between 29 and 45 indicated a neutral attitude, and higher than 45 indicated a positive attitude	The means scores of attitude of the students were 44.5±5.3 (neutral) No significant difference in the means of student's attitude scores between females and males ($P=0.51$) was seen No significant difference toward attitude about EBD among dentistry students within different academic semesters This study showed a neutral attitude toward EBD in dental students It was suggested that researchers in these fields investigate the effect of training workshops and provide conditions required to receive the trainings in dentistry schools
Pourkazemi <i>et al.</i> ^[16]	School of dentistry, Tabriz University of Medical Sciences, Tabriz, Iran	All residents of Tabriz dentistry faculty (100 in total) were enrolled in the study	A questionnaire including four sections with closed questions was used for data collection. The third part contained 12 questions on attitudes toward evidence-based dentistry. The questionnaire was the same as Khami <i>et al.</i> , 2012 ^[6] A five-point Likert scale ranging from strongly disagree to strongly agree was used to answer the questions on attitude toward evidence-based dentistry. Attitude scores ranged from 12 to 60 The attitude scores were ranked on the basis of a negative attitude (scores less than 36) and a positive attitude (scores 36-60)	The results showed that the mean attitude of the residents on evidence-based dentistry among the study residents was 42.69 (34-53). (positive attitude) The type of attitude review showed that 5.6% of residents had a negative attitude toward evidence-based dentistry and 94.4% had a positive attitude No significant difference in the attitude of male and female residents and both had a positive attitude toward evidence-based dentistry No significant differences in the mean attitude based on the year of graduation, undergraduate, and residency background (95% CI: 42.06-43.32; $P<0.01$)
Eslamipour and Ghaiour ^[17]	School of dentistry, Isfahan University of Medical Sciences, Isfahan, Iran	168 students in the last 3 years of dentistry school who had been advocated in the clinical departments of dental school were recruited	The questionnaire developed by Sabounchi <i>et al.</i> , 2013 ^[6] Student's attitudes were assessed over eight questions with 5-point Likert scale (1=very good, 5=very disagreed). The total score of attitude ranged from 0 to 36 was allocated to each one; the scores were classified as the following: 0-9: Poor attitude, 9-18: Average attitude, 18-27: Good attitude, 27-36: Excellent attitude The students were asked to rate interest for passing EBD courses as VAS criteria from 0 to 10	Based on the results, the mean score of student's attitudes toward EBD was reported as 24±8.3 (range: 36-0), which is categorized in a good level of attitude. The lowest attitude scores were 15 and the highest score was 33; 61% were above the average. About 87% considered themselves as requiring achievement of skills to evaluate their evidence Based on independent <i>t</i> -test analysis, there is no significant difference between gender and the mean score of attitude ($P=0.2$) About research work experience, the results showed a significant relationship between research experience and all 4 areas subdomains, attitude ($P=0.016$) The results of this study indicated that all dentistry students were reluctant to use the evidence-based approach and tended to use the experiences and lessons of their own mentors

Contd...

Table 2: Contd...

Study	Place/ Setting	Participant, Sample Size	Variables or exact item in questionnaire	Findings and main recommendation
Khami <i>et al.</i> ^[5]	School of dentistry, Tehran University of Medical Sciences	65 dental students from 9 th semester of Tehran and Shahid Beheshti dental schools	The questionnaire about attitude toward EBD was developed after a qualitative validity and reliability assessment by 12 items as follows 1. The opinion of professors and specialists in any field, which is expressed based on work experience, can not necessarily be the basis for diagnosis and treatment 2. To do dental work with the desired quality, you can trust what is stated in the latest articles 3. To cite a source, whether an article or a book for dental work, you must first ensure the quality of that source 4. One criterion for measuring the quality of articles is the type of study 5. The results of cohort studies have more validity than the results of case-control studies 6. The highest level of evidence validity is obtained from systematic review studies 7. The most important criterion for evaluating a clinical trial study is randomization 8. Blinding is not performed in a clinical trial study that study is not valid for citation 9. To define a specific and clear question in the field of clinical work, the type of problem, patient, desired intervention, alternative solutions (if any) and the outcome of the study should be clear 10 The contents of scientific internet sites, due to their novelty, have the necessary validity for citation 11. It is necessary for dentists to seek the latest information and evidence related to their field after graduation 12. Dentists must have the ability to learn lifelong learning	The results of this study are indicative of student's positive attitudes toward achieving EBD skills and their interest in participating in training workshops. These results are consistent with those of previous studies in Iran and studies conducted in other countries It seems that students more familiar with the use of EBD in their educational curriculum can be effective in enhancing knowledge, attitude and EBP In general, students have a relatively good attitude toward EBD The mean score of attitude was 43.1±2.6 among them 80% of dental students had a correct perception about EBD steps

EBD: Evidence-based dentistry; EBP: Evidence-based practices

Totally, 934 dental students were evaluated regarding their attitude toward EBD all around the country. The participants of 4 studies were in the 3rd year and above,^[11,12,15,17] two studies at the 5th or 6th year of their education,^[5,10] however, one study was among the postgraduate students^[16] and one study in all of the senior and junior dental students^[14] [Table 2].

Although different frequencies were reported for the responses to the questions of EBD attitude, the overall score was explained as positive/neutral/negative or good/moderate/poor. Relatively, all of the authors of these articles were satisfied by the status of dental students' perceptions or point of view. While the

mean scores of attitude were near the median, some varieties in expressing the finding were related to the cut-points for transforming the quantitative numbers to a qualitative status such as low, moderate, high or favorable and unfavorable, positive or negative, and so on. Overall, 5 studies reported a good and positive attitude and 3 studies reported a moderate and neutral attitude [Table 2].

In two studies, the effectiveness of an educational program for changing the attitude of dental students was targeted. In one study, the short-term evaluation showed successful change between pre- and post-scores as well as intervention versus control group.^[18] In

Table 3: Evidence table of interventional studies

Study	Place/ setting	Participants, sample size	Intervention	Variables or exact item in questionnaire	Findings and main recommendation
Khami <i>et al.</i> ^[18]	School of dentistry, TUMS, Iran	65 dental students from two dental schools in Tehran; 43 dental students from TUMS as intervention group and 22 dental students from SBUMS as a control group	4-day course on EBD including 6 h theoretical and 10-h teamwork by students. The EBD process was trained in small groups	The score of attitude questionnaire developed by Khami <i>et al.</i> , 2012 ^[5] was used The responses were scored from 1 to 5 and were summed up to calculate final attitude score with possible ranges from 12 to 60 Comparison of the scores at baseline at the beginning of the course and posttest at the end of the course in intervention and control groups	Before the training, in both control and intervention groups, the majority of students indicated that using a book or a paper as a resource for a specific dental procedure should be first based on ensuring the quality of the source. After the training in the control group, the most respondents selected the same item as pretest; in the intervention group, most students indicated that to define a clear specific question in clinical practice, the problem, the particular intervention, the alternatives, and the outcomes should be determined. After course implementation, the highest favorable change was regarding student's viewpoint on the level of evidence of systematic review The mean score of attitude toward EBD among intervention ($n=43$) and control ($n=22$) students before and after conducting a course on EBD is shown below Intervention group: (Pretest= 43.42 ± 2.64); (posttest= 49.17 ± 4.68) Control group: (Pretest= 42.55 ± 2.58); (posttest= 42.5 ± 3.87) Dental student's positive attitude toward the issue of EBD should be viewed as an opportunity for dental curriculum designers. Meanwhile, establishing EBD courses in dental schools and holding seminars in this field is also important. It should be noted that EBD should be integrated into the whole educational curriculum and not just limited to teaching the concepts
Najafi and Asgari ^[19]	School of dentistry, Azad University of Khorasgan, Isfahan, Iran	64 senior dental students	Theoretical and practical education in the form of teamwork in small groups with emphasis on history, importance, principles, and processes of EBD, formulating questions and writing PICO, searching the evidences, appraising, and summarizing the results	A questionnaire consisting of 10 questions in the attitude part was developed by literature review and expert panel opinions The attitude questionnaire was scored as completely disagree to strongly agree (0-4). The scores of attitude ranged from 0 to 36. The items of questionnaire are as follows 1. EBD helps me to make a clinical decision more simply 2. In my opinion, EBD ignores the relationship with patients and their ideas 3. I think that reference books are the best clinical guidelines for dental activities 4. I assume that it is possible to provide perfect dental care without using the EBD approach 5. Regarding the limited area of clinical care in dentistry, EBD is not useful for me 6. EBD improves the quality of dental services	The comparison of the student's scores in each field before and after education was performed by paired <i>t</i> -test within two groups. As it can be obtained from this comparison. The least increase was observed in the field of attitude with 8.9 of score difference out of 100

Contd...

Table 3: Contd...

Study	Place/ setting	Participants, sample size	Intervention	Variables or exact item in questionnaire	Findings and main recommendation
				7. In my opinion, limited access to information and databases is the most critical barrier to the EBD approach in Iran 8. I think that patient referral is more practical than EBD 9. Besides the continuous teachings for dentists and their interest in the use of state-of-the-art technologies, dentists can also learn EBD 10. Please rate your tendency to use EBD ranging from 0 to 10	The comparison demonstrated the magnitude of the change in attitude by the educational intervention. Regarding the Cohen's thresholds, the size of effect was medium (>0.5) at the field of attitude

TUMS: Tehran University of Medical Sciences; SBUMS: Shahid Beheshti University of Medical Sciences; EBD: Evidence-based dentistry; PICO: Population, intervention, control, and outcomes

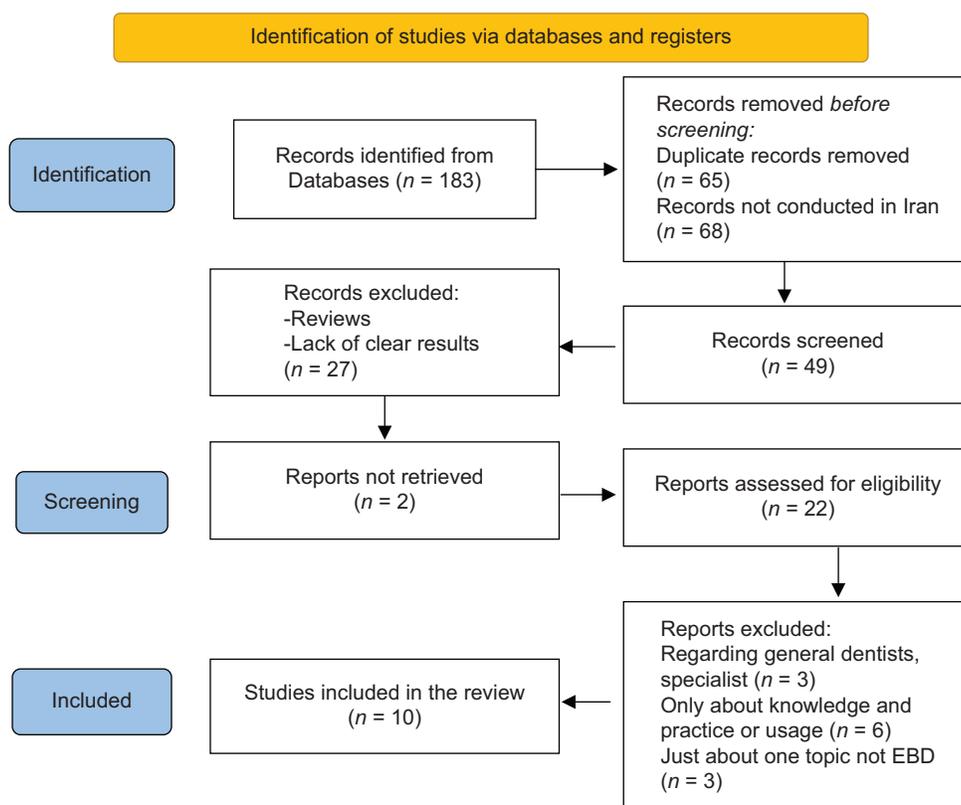


Figure 1: PRISMA flow chart of reports. PRISMA: Preferred Reporting Items for Systematic review and Meta-Analysis.

another study, the changes in attitude score were less in comparison to the knowledge scores. They obtained a medium size effect in their analysis^[19] [Table 3].

Critical appraisal

The methodology of the included articles was assessed basically. With regard to the eight items of the JBI

checklist among the cross-sectional studies, 6 articles were at the medium level of quality and the quality of two articles was low. Regarding the interventional studies, the checklist developed by the University of Glasgow was applied. Both of the studies had good quality [Tables 4 and 5].

DISCUSSION AND CONCLUSION

In the recent years, dentists are expected to keep up with the advancements in dental therapies, materials, and research. There is an overflow of research-based and even unreliable evidence supporting various aspects of dentistry on the internet. The gap between research and clinical dental practice needs to be filled and the information available to clinicians needs to be optimized. This can somewhat be met by formulating evidence-based clinical guidelines for best practices that the dentists can refer to with simple chairside and even patient-friendly versions.^[1]

Despite the good attitude toward the application of EBP in dental work, the real work setting would be more challenging for new general dentists. As Neuppmann Feres *et al.* classified the barriers involved in the application of EBD into four categories: self-related, evidence-related, context-related, and patient-related barriers. Shortage of time and financial constraints were the barriers most frequently studied.^[22] A study was conducted on self-assessment of students about their awareness, knowledge, and attitude at Tehran University in 2011, and results indicated that despite good attitudes about EBD there was a deficiency in students' knowledge and awareness. Accordingly, students were interested in the EBD course, while they had poor knowledge and awareness.^[5] This is also true for the dental faculty, who are well-trained dentists and researchers; Sabounchi *et al.*^[6] carried out a study on the knowledge and attitude of dental faculty

members toward EBD. In this study, a total of 377 dental instructors indicated a moderate level of actual knowledge of the basic principles of EBD. Reference books, reviews, and core papers were used more, while the Cochrane library was used less.

The inconsistency between the self-reported status and real performance is presented in Ciancio *et al.*'s^[23] study. 69% of dental practitioners transitioning to dental educators rated themselves better than satisfactory in their knowledge, skills, and attitudes regarding EBD skills application. However, only 33%–42% of them indicated that they frequently used the evidence pyramid and systematically, objectively, and critically appraised the evidence.

This shows the importance of research in regard to the attitude and practice next to the knowledge about EBD in dental students.^[24]

As Chiappelli concluded the most urgent and important of these is undoubtedly to craft and validate novel didactic and practical methodologies to teach EBD-both research and practice-to the next generation of dental researchers and clinical dentists and to optimize the integration of EBD in the dental curriculum.^[25] A change in attitudes from negative to positive were found in Najafi's and Asgari's^[19] study after intervention. Spallek *et al.*,^[7] introduced the lack of students' desire to use EBD in clinical practice as the reason for such negative attitudes. They also believe that EBD should be incorporated into clinical practice to achieve a positive attitude in this context.

This systematic review showed that in all descriptive studies reported in Iran, dental students were involved only in a self-administered questionnaire survey for assessing the attitude toward EBD. Moreover, nearly all studies explained the status of Iranian dental students as satisfactory or acceptable. However, the quality assessment especially for the descriptive studies was mostly medium and poor.

As the review showed, most of the studies had applied the questionnaire tool which was developed by Khami *et al.*,^[5] Since, in this questionnaire the researcher had drafted the questions and received the comments from a number of students, there was not any quantitative score of the validity or reliability for the finalized tool. From a critical view, it seems that some questions are more due to the awareness and knowledge of the persons about evidence-based process (statements 5, 6, 7, 8, 9) rather than their

Table 4: Quality assessment for descriptive studies

Study	Study design	JBI checklist score	Quality
Dehghani <i>et al.</i> ^[10]	Cross-sectional	4/8	Medium
Taramsari <i>et al.</i> ^[11]	Cross-sectional	4/8	Medium
Marvei Milan <i>et al.</i> ^[12]	Cross-sectional	5/8	Medium
Khavid <i>et al.</i> ^[14]	Cross-sectional	3/8	Low
Sarani <i>et al.</i> ^[15]	Cross-sectional	2/8	Low
Pourkazemi <i>et al.</i> ^[16]	Cross-sectional	5/8	Medium
Eslamipour <i>et al.</i> ^[17]	Cross-sectional	6/8	Medium
Khami <i>et al.</i> ^[5]	Cross-sectional	5/8	Medium

Table 5: Quality assessment for interventional studies

Study	Study design	Critical appraisal checklist	Quality
Khami <i>et al.</i> ^[18]	Interventional	9/13	Good
Najafi <i>et al.</i> ^[19]	Interventional	10/13	Good

perspective of the evidence-based practice in dentistry. Regarding the importance of a precise tool and method to measuring the attitude, it would be suggested to use more qualified assessment tools for future studies. Furthermore, the need for a robust designing in descriptive studies exists. Moreover, other forms of educational program or intervention which is reflective of the real setting work should be examined in future studies.

Furthermore, the assessment of the students in the studies reflected in this review doubted to be problematic for several reasons. First, a close-ended sole questionnaire tool could not reflect the real belief and ideas of dental students of the importance, necessity, and practice of the evidence-based principles and process. Although it is common to apply a predesigned questionnaire to assess the knowledge, attitude, and practice (KAP) as KAP studies do, we should be more sensitive about the measurement of the attitude by a valid tool or method. Second, we have not seen a well-designed questionnaire tool in most studies. The items had not been gathered from a qualitative study among the target group or expert panel opinion. Furthermore, the details of the validation process were not explained properly. Thirdly, despite the good sample size and distribution in the country, a significant percentage of the subjects did not involve students who were involved with real patients and clinical settings. Hence, they had no insight into the best use of evidence for decision-making of treatments [Tables 2 and 3].

In conclusion, this review showed that the attitude of dental students regarding EBD in Iran is fairly good. However, the validity of the studies is questionable. Therefore, well-designed future studies, using reliable tools of assessment, with greater sample size and more accurate selection of subjects are still needed to assess EBD in Iranian dental students and future dentists.

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Conflicts of interest

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