Cross-sectional Study

Knowledge, attitudes and practices towards Evidence-Based-Dentistry regarding dental practitioner: A cross-sectional study

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ABSTRACT

Introduction: Dental practice experienced two important evolutions: the development of the concept of evidence-based dentistry (EBD) and the changes in the relationship between dentists and patients. Thus, the practitioner is invited nowadays to give a treatment that reflects the best available evidence. The purpose of this study is to explore knowledge, attitudes, and practices of dentists toward the concept of EBD.

Methods: This is a cross sectional study that was conducted among dentists in public and private sector in Morocco. A self-administered questionnaire with 27 questions was delivered to practitioners. The comparison was carried out using the Khi2 test or Fisher’s exact test, t-test or the Mann-Whitney. Logistic regression was performed to assess factors associated with the application of EBD. Linear regression was also performed to identify factors that impact knowledge, attitude and practice score.

Results: A total of 209 responses was received. 58% of the participants were in the private sector, and 32.7% were academics. The main reported obstacles were the lack of time 44% and lack of training on critical appraisal 60.3%. Knowledge of PICO question formulation and previous EBD training was significantly related to the implementation of EBD in multivariate analysis in logistic regression (OR = 8.163; CI95%: 2.095–31.80 and OR = 12.79; CI95%: 2.868–57 respectively). The total score of surveyed dentists was affected by the knowledge of PICO question formulation and the knowledge of relevant information sources (PubMed/Medline, the Cochrane library) (β = 3.04; CI95%: 0.411–5.66, β = 6.29; CI95%: 2.92–9.66 and β = 8.35; CI95%: 5.89–10.81 respectively).

Conclusion: Based on the findings of this study, application of EBD was associated with knowledge of PICO question formulation and previous EBD training. The lack of time was the most common obstacles identified by the participants applying EBD. Therefore, EBD educational programs should be developed for dental practitioners to enhance their knowledge and skills.

1. Introduction

EBM refers to the use of the best available evidence in clinical decision-making to increase the quality and predictability of treatment [1]. The American Dental Association defines Evidence-Based-Dentistry (EBD) as “an approach to oral healthcare that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences [2].” This lead, to consider in addition of specific patient information, relevant data from the literature, and then translating these data into clinical decisions [3]. The two main goals of EBD are to find best evidence and to transfer this to everyday practice [4,5]. Dentists who make evidence-based clinical decisions have shown ability to continuously improve their clinical skills and performance [6,7]. They can improve the quality and outcomes of the treatment by making decisions based on the best evidence [6,8,9]. The patients, who are aware that they’ll be treated on the basis of EBD may have more confidence in their dentist [1,10,11]. The dental team, the staff confidence, the trust and the personal satisfaction can be increased by the

Abbreviations: KAP, knowledge, attitudes and practices; EBD, evidence-based dentistry; PICO, population, intervention, comparison, outcomes; β, Estimate; OR, odds ratio; CI, confidence interval.

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implementation of EBD. Thus, clinicians can provide interventions that are scientific [12] EBD involves five main steps: 1. clinical problem description, specific and clear question; 2. conducting literature research to select relevant and appropriate articles related to the questions being asked; 3. a critical analysis of the validity and relevance of information from the literature; 4. the application of the results according to the patient and the clinical experience of the practitioner; 5. Practitioner self-assessment [2,13–15].

The concept of EBD helps clinical judgment and allows the practitioners to update and improve their knowledge, it is indeed a positive approach. However, its application by practitioners is still insufficient [16,17]. Studies have been carried out previously about EBD [16–20]. But they didn’t cover all aspects of EBD in terms of knowledge, attitudes and practices.

The purpose of this study was to explore knowledge, attitudes, and practices of dentists in the private and public sector toward the concept of EBD. Also, to identify the factors associated with this knowledge, attitudes and practices. Finally, to identify obstacles that influence the implementation of EBD on daily practice.

2. Methods

2.1. Type of the study and ethical considerations

This is a cross-sectional study, KAP type (knowledge, attitudes and practices) that was conducted among Moroccan dentists. Approval for conducting the study was obtained from the Research Ethics Committee for Biomedical Research under number C672020. All participants were informed about the purpose of the study. This cross-sectional study, has been reported in line with the STROCSS criteria [21].

2.2. Studied sample

The questionnaires were completed anonymously to ensure the confidentiality of the information provided. All Moroccan dentists working in the public and private sectors, regardless of their age and years of experience, were included in the study.

2.3. Questionnaire and studied variables

The questionnaire was developed and modified from the ones used in previous studies [16–18]. A self-administered questionnaire with 27 questions divided in 3 sections was delivered via emails and groups on social media:

1. first section: demographics data (age, sex, professional status, number of years of experience, place of practice, country and degree-granting institution);
2. second section: concerned the knowledge of Moroccan about the EBD. Eight questions, mostly total questions, focused on the knowledge of the EBD concept, the formulation of the PICO (population, intervention, comparison, outcomes) question, the search for medical evidence, the evaluation of literature data, the knowledge of EBD tools, and information sources;
3. third section: focused on the attitudes and practices of Moroccan dentists in EBD (seven questions), about the frequency of the application (always, frequently, sometimes, rarely and never) of EBD by the Moroccan dentist, the difficulty of its application, whether or not the practitioner intends to integrate it into daily practice and assessment of EBD limitations in difficult clinical situations. A dentist has been considered to use the concept of EBD when it is always applied, frequently or sometimes EBD.

2.4. Statistical analysis

A pilot study was carried out with a sample of 35 practitioners to adjust the questions and assess the internal consistency of the questionnaire by calculating the Cronbach alpha coefficient. A value of at least 0.70 was considered acceptable. Based on the pilot study, the Cronbach alpha coefficient of the questionnaire was estimated at 0.744.

The self-administered, finalized questionnaire was available online on Google Forms. It was sent to practitioners using email addresses and through social media’s groups with large number of dentists. This method was used to reach the maximum number of practitioners. Dentists could only answer the questionnaire once.

The knowledge, attitudes, and practices of dentists were compared to the EBD principles recommended in reference publications [18,21], and were described as ‘correct’ “inadequate” or “incorrect”. A maximum score was calculated for each KAP section by adding the scores for each item and a total score by adding the sum of the 3 sections. The maximum score was estimated at 24, 6 and 8 for “Knowledge”, “Attitudes” and “Practices” questions respectively. The maximum total score that a practitioner could obtain was 38.

The sample size was calculated based on the frequency of EBD use reported in our pilot study, which was 77.1%. This prevalence was also close to the prevalence of the Al Ansari et al. study (69%) [18]. We used formula $N = \frac{Z^2pq}{E^2}$ to calculate the sample size. Z: 1st species error (1.96), p: theoretical prevalence (0.77), q = 1-p (23%), P: Accuracy (0.05). The sample size was initially estimated to 243.

The data collected were expressed as variables and analyzed using statistical software (jamovi 1.6.15.0). Quantitative variables (scores obtained by each practitioner) were expressed as mean and standard deviation if the distribution was symmetrical, and median and quartiles if the distribution was asymmetrical. Qualitative variables (such as the response to each item in the KAP sections) were expressed in terms of number and percentage. For the different items in the questionnaire, the comparison was carried out using the Chi2 test or Fisher’s exact test, t-test or the Mann-Whitney. A p < 0.05 was considered statistically significant. Logistic regression was performed to assess factors associated with the application of EBD. Linear regression was also performed to identify factors that impact knowledge, attitude and practice score. A p < 0.2 has been selected to include the variable from univariate to the multivariate model.

3. Results

3.1. Descriptive statistics

Our study was conducted among 209 Moroccan dentists between January and March 2021. Nine regions of Morocco were represented. 119 (58%) participants were in the private sector, 68 (32.7%) was academic and 112 (53.8%) with <5 years of clinical experience. 152 (72.7%) of the surveyed participants had previously participated in continuous training programs, but only 50 (26.0%) had previous training on EBD (Table 1).

EBD was a familiar concept for 108 (52.2%) of the respondents. 73 (34.9%) of the study population reported using it frequently on a daily practice. 158 (75.6%) consulted databases in a difficult situation. As for the application of EBD, 149 (71.3%) used it (always, frequently, sometimes) and 60 (28.7%) did not (rarely, never) (Fig. 1). (Table 2)

Out of the total respondents, 104 (49.8%) of the surveyed dentists defined EBD such as a series of steps: from identifying the clinical question, finding the answer/evidence, assessing the validity of the evidence and applying it, if it is clinically appropriate (Table 3).

Concerning the use of the PICO question, 66 dentists (31.6%) are aware of how to formulate a PICO question. 60 (28.7%) knew how to find medical and scientific evidence but only 8 (19.5%) had the right technique, conduct good research on relevant information sources and critical assessment of data before the application to patients. Regarding the sources of information, PubMed/Medline and the Cochrane Library were considered the most relevant, according to the surveyed dentists (Table 4).
Table 1
Characteristics of the surveyed dentists.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Sex             |                  |
| Female          | 138 (66.3%)      |
| Male            | 70 (33.7%)       |
| Age             |                  |
| < 30 years      | 124 (59.9%)      |
| Between 30 and 45 years | 62 (30.0%) |
| > 45 years      | 21 (10.1%)       |
| Specialty       |                  |
| Specialist      | 64 (31.1%)       |
| General practitioner | 142 (68.9%) |
| Sector          |                  |
| Public          | 86 (42.0%)       |
| Private         | 119 (58.0%)      |
| Kind of practice|                  |
| Individual      | 81 (38.9%)       |
| In a group      | 59 (28.4%)       |
| Academic        | 68 (32.7%)       |

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Years of practice |                  |
| < 5 years       | 112 (53.8%)      |
| Between 5 and 15 years | 70 (33.7%) |
| > 15 years      | 26 (12.5%)       |
| Participation on continuing training | 152 (72.7%) |
| Previous EBD training | 50 (26.0%) |

* Number and percentage/EBD: Evidence-based dentistry.

![Application of EBD](image)

Fig. 1. Application of EBD by surveyed dentists.

Table 2
Knowledge, attitudes and practices towards EBD among dentists.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| EBD a beneficial tool | 200 (96.7%) |
| Recipient of EBD according to the surveyed dentists |                  |
| Dentists        | 138 (66%)        |
| Patients        | 126 (60.3%)      |
| Dental profession | 125 (59.8%) |
| Knowledge of «the difference between Evidence VS Empiricism» | 58 (27.8%) |

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Application of EBD |                  |
| Yes             | 149 (71.3%)      |
| No              | 60 (28.7%)       |

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Application of EBD |                  |
| Always          | 16 (7.7%)        |
| Frequently      | 73 (34.9%)       |
| Sometimes       | 57 (27.3%)       |
| Rarely          | 22 (10.5%)       |
| Never           | 33 (15.8%)       |

| Practice dealing with difficult situation | Values (N = 209) |
|------------------------------------------|------------------|
| Consult a colleague                      | 164 (78.5%)     |
| Consult a books                          | 102 (48.8%)     |
| Consult a databases                      | 158 (75.6%)     |
| The experience of the practitioner        | 78 (37.7%)      |
| Patient preferences                      | 18 (8.6%)       |

* Number and percentage/EBD: Evidence-based dentistry.

Table 3
Definition of EBD by surveyed dentists.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| EBD             |                  |
| Is a decision-making process based on scientifically proven data | 135 (64.6%) |
| A series of steps from the identification of the clinical question to the application of scientific evidence | 104 (49.8%) |
| Any information found in an article | 19 (9.1%) |
| Following consultation of books and colleagues | 10 (4.8%) |
| Improves quality and effectiveness of treatments | 121 (57.9%) |
| Improves knowledge and skills | 133 (63.6%) |

* Number and percentage/EBD: Evidence-based dentistry.

Table 4
Dentists’ knowledge and practices in relation to the science evidence strategy.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Knowledge of the formulation of the PICO question | 66 (31.6%) |
| Use of the PICO question | 51 (24.4%) |
| Search for medical evidence | 60 (28.7%) |
| Research technique (N = 49) |                  |
| Incorrect       | 6 (14.6%)        |
| Insufficient    | 26 (63.4%)       |
| Correct         | 8 (19.5%)        |
| Data evaluation | 123 (58.9%)      |
| Knowledge of EBD tools | 62 (29.7%) |
| Sources of relevant information |                  |
| Google/Google Scholar | 26 (12.4%) |
| Wikipedia       | 11 (5.3%)        |
| PubMed/Medline  | 175 (83.7%)      |
| Cochrane library | 104 (49.8%)     |
| Others sources  | 19 (9.09%)       |

* Number and percentage/EBD: Evidence-based dentistry; PICO: population, intervention, comparison, outcomes.

Table 5
The knowledge of surveyed dentists about the types of studies.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Distinction between primary literature VS secondary literature | 75 (35.9%) |
| Distinction between systematic review VS literature review | 145 (69.4%) |
| Distinction between meta-analysis VS individual study | 121 (57.6%) |
| Distinction between clinical trial VS cohort study | 119 (56.9%) |
| Distinction between randomized controlled trial VS non-randomized controlled trial | 110 (52.6%) |
| Distinction between cohort study VS case series | 117 (56%) |
| Distinction between qualitative research VS quantitative Research | 145 (69.4%) |
| Distinction entre gray literature VS published literature | 89 (42.6%) |

* Number and percentage/EBD: Evidence-based dentistry.

About the distinction between different types of studies, 145 (69.4%) made the difference between a systematic review and a narrative review. 110 (52.6%) were able to distinguish randomized controlled trials from non-randomized trials (Table 5).

Furthermore, among 163 dentists who applied EBD, 103 (63.2%) found it difficult to apply on a daily basis, 181 (86.6%) had the intention to incorporate it into their practice. The study also looked at the barriers found it difficult to apply on a daily basis, 181 (86.6%) had the intention to implement the EBD on practice for 104 (49.8%) of the surveyed dentists. (Table 6).

The median of the “Knowledge” score obtained by the surveyed dentists was 21 (14–27) out of a maximum score of 24. The median of the “Attitude” score obtained by the participants was 3 (2–4) out of a maximum score of 6. The median of “Practice” score of the was 1 (0–2) out of a maximum score of 8. A deviation from the average of the total
Applying EBD considered lack time as the first barrier to its application among practitioners. EBD scored higher than those who didn’t apply EBD in terms of duration. However, there was a link in knowledge score (p < 0.001) (Table 7).

### 3.2. Comparative statistics

Based on socio-demographic characteristics, the comparison between surveyed practitioners applying EBD and those not, showed the following results. There was no statistically significant difference between those who applied and those who not in age, sex and exercise duration. However, there was a link (p = 0.005) with the type of practice. There were more academic practitioners among those who applied EBD (39.9%) VS those who did not apply EBD (15%). 35.3% of dentists who used EBD on daily practice had training on EBD comparatively to practitioners who didn’t use it (p < 0.001) (Table 8).

There was a link (p = 0.021) between the application of EBD and practitioners’ perception of EBD difficulties. 73 (49.0%) of practitioners applying EBD considered lack time as the first barrier to its application (Table 10).

### 3.3. Regression analysis

After adjusting all the factors (Knowledge of PICO question formulation, previous EBD training, knowledge of relevant information and type of practice), knowledge of PICO question formulation and previous EBD training still affect the application of EBD in multivariate analysis (logistic regression) (OR = 8.163- CI95%: 2.095–31.80 and OR = 12.79- CI95%: 6.60–24.90 respectively) (Table 11).

After adjusting all the factors, knowledge of relevant information (PubMed/Medline, the Cochrane library) and kind of practice (academic) were statistically associated with an increase of knowledge score in multivariate analysis (Linear regression) (β = 4.67- CI95%: 3.2–6.1).

### Table 6

The application limits of EBD according to the surveyed dentists.

| Characteristics | Values (N = 209) |
|-----------------|------------------|
| Difficulty in applying EBD by practitioners using EBD (N = 163) | 103 (63.2%) |
| Obstacles to EBD | |
| Lack of time | 92 (44%) |
| Limited access to sources | 104 (49.8%) |
| No computer/internet | 23 (11%) |
| Lack of training on critical reading | 126 (60.3%) |
| The intention to integrate EBD | 181 (86.6%) |

a Number and percentage/EBD: Evidence-based dentistry.

### Table 7

Scores obtained by surveyed dentists.

| Scores | Values (N = 209) |
|--------|------------------|
| Knowledge score a | 21 (14-27) |
| Attitude score | 3 (2-4) |
| Practice score a | 1 (0-2) |
| Total Score b | 17.7 ± 6.60 |

a M (IQ): median and interquartile range.

b M ± SD: (mean ± standard deviation).

### Table 8

Comparison of socio-demographic characteristics between practitioners.

| Variables | Application of EBD n = 149 | Non application of EBD n = 60 | P |
|-----------|-----------------------------|-----------------------------|---|
| Knowledge of PICO question formulation | |
| yes | 63 (42.3%) | 39 (50.0%) | |
| No | 86 (57.7%) | 57 (50.0%) | |
| Knowledge sources of relevant information | |
| PubMed/Medline | 131 (87.9%) | 44 (77.3%) | 0.010 |
| The Cochrane library | 87 (58.4%) | 17 (28.3%) | <.001 |
| Knowledge Score (M(IQ) | 23(18; 29) | 14(7; 20.5) | <.001 |
| Total score (M±SD) | 27.9 ± 8.29 | 17.2 ± 10.1 | <.001 |

EBD: evidence-based dentistry.

### Table 9

Comparison of Dentists Applying and Not Applying EBD for EBD Knowledge and KAP total score.

| Variables | Application of EBD n = 149 | Non application of EBD n = 60 | P |
|-----------|-----------------------------|-----------------------------|---|
| Knowledge of PICO question formulation | |
| yes | 63 (42.3%) | 39 (50.0%) | |
| No | 86 (57.7%) | 57 (50.0%) | |
| Knowledge sources of relevant information | |
| PubMed/Medline | 131 (87.9%) | 44 (77.3%) | 0.010 |
| The Cochrane library | 87 (58.4%) | 17 (28.3%) | <.001 |
| Knowledge Score (M(IQ) | 23(18; 29) | 14(7; 20.5) | <.001 |
| Total score (M±SD) | 27.9 ± 8.29 | 17.2 ± 10.1 | <.001 |

EBD: evidence-based dentistry/PICO: population, intervention, comparison, outcomes.

### Table 10

Comparison of obstacles between dentists applying and not applying EBD.

| Obstacles to EBD | Application of EBD n = 149 | Non application of EBD n = 60 | P |
|------------------|-----------------------------|-----------------------------|---|
| Lack of time | 73 (49.0%) | 19 (31.7%) | 0.022 |
| Limited access to sources | 78 (52.7%) | 26 (43.3%) | 0.221 |
| No computer/internet | 18 (12.1%) | 5 (8.3%) | 0.434 |
| Lack of training on critical reading | 91 (61.1%) | 35 (58.3%) | 0.714 |

EBD: evidence-based dentistry.
Factors impacting the attitude score.

Table 11

| Characteristics                                           | Application of EBD n = 149 | Univariate analysis | Multivariate analysis |
|-----------------------------------------------------------|----------------------------|---------------------|-----------------------|
|                                                           | OR (95%CI)                 | P                   | OR (95%CI)            | P                   |
| Previous EBD training                                    | 14.73                      | <.001               | 12.79                 | <.001               |
| Knowledge of PICO question formulation                   | 2.65                       | 0.012               | 2.018                 | 0.155               |
| Knowledge of relevant information sources                | 3.55                       | <.01                | 1.880                 | 0.118               |
| PubMed/Medline                                           | Individual                 | 1                   | 1                     |                     |
| The Cochrane Library                                     | Academic                   | 1.21                | 0.596                 | 0.946               | 0.386-2.32         |
| Kind of practice                                          |                            |                      | 0.906                 | 0.646               | 0.581              |
|                                                           | 4.06                       | 0.001               | 1.100                 | 0.863               |

EBD: evidence-based dentistry/ PICO: population, intervention, comparison, outcomes/ CI: confidence interval.

Factors impacting the Knowledge score.

Table 12

| Characteristics                                           | Category | Univariate analysis | Multivariate analysis |
|-----------------------------------------------------------|----------|---------------------|-----------------------|
|                                                           | β        | (95% CI)            | P                     |                      |
| Previous EBD training                                    | YES      | 3.77                | [0.981-6.55]          | 0.008               |
| Knowledge of PICO question formulation                   | YES      | 8.39                | [6.10-10.7]           | <.001               |
| Knowledge of relevant information sources                | YES      | 9.72                | [6.72-12.7]           | <.001               |
| PubMed/Medline                                           | Individual | 3.38                | [0.720-6.04]          | 0.013               |
| The Cochrane Library                                     | Academic | 9.14                | [6.589-11.70]         | <.001               |
| Kind of practice                                          | Individual | 1                   | 1                     |                     |
|                                                           | In a group | 1.308               | [1.072-1.54]          | <.001               |
|                                                           | Academic | 0.93                | [0.686-1.17]          | <.001               |

EBD: evidence-based dentistry/ PICO: population, intervention, comparison, outcomes/CI: confidence interval.

Factors impacting the practice score.

Table 13

| Characteristics                                           | Category | Univariate analysis | Multivariate analysis |
|-----------------------------------------------------------|----------|---------------------|-----------------------|
|                                                           | β        | (95% CI)            | P                     |                      |
| Previous EBD training                                    | YES      | 0.896               | [0.602-1.19]          | <.001               |
| Knowledge of PICO question formulation                   | YES      | 1.308               | [1.072-1.54]          | <.001               |
| Knowledge of relevant information sources                | YES      | 0.586               | [0.221-0.95]          | 0.002               |
| The Cochrane Library                                     | Individual | 0.179               | [0.143-0.501]         | 0.275               |
| Kind of practice                                          | Academic | 0.788               | [0.478-1.097]         | <.001               |
|                                                           | Individual | 0.0147              | [-0.407-0.378]        | 0.941               |
|                                                           | Academic | 0.257               | [-0.096-0.610]        | 0.153               |
|                                                           | Individual | 0.487               | [-0.014-0.988]        | 0.057               |
| The Cochrane Library                                     | Individual | 0.334               | [-0.01-0.678]         | 0.057               |
| Kind of practice                                          | Individual | 0.07                | [-0.37-0.511]         | 0.752               |
|                                                           | Academic | 0.258               | [-0.153-0.669]        | 0.216               |

EBD: evidence-based dentistry/ PICO: population, intervention, comparison, outcomes/CI: confidence interval.

4. Discussion

In the present study, 71.3% of the surveyed dentist applied EBD on daily practice. Mostly they were academics and having previous EBD training. This rate was higher than the study conducting by Haron et al. [22].

Based on a comparative analysis of the application or not of EBD, we didn’t find statistically significant difference between those who apply or not EBD in terms of years of practice, contrary to the study conducted...
by Rajagopalachari et al. [23]. However, the comparison showed that
more academic practitioners used EBD in daily practice. This finding
was similar to the results reported by Haron et al. [22] and in contrast
to Yusof et al. [24] and Nader et al. [25]. This finding suggests that
dentists involved in academics had easy access to resources.

In the present study, it appears that the formulation of the PICO
question was more common among practitioners applying EBD. This can
be explained by the fact that the EBD approach involves the formulation
of the PICO question. These results were similar to a study conducted
by Al Ansari et al. (2014) [18]. Dentists applying EBD were aware about the
source of relevant information, the Pubmed/Medline database and the
Cochrane library. So more than half of the practitioners involved in the
study knew where to look for the information, which is positive and can
be considered as the first step of integration on a daily practice.

The lack of time was the most common obstacles identified by the
participants applying EBD. These results were similar to a study carried
out by Qadhi et al., in which the lack of time and lack of investment were
the main perceived barriers to EBM among physicians practicing in
general governmental hospitals [26]. The lack of training on critical
reading of scientific papers hampered the implementation of the EBD for
both studies conducted by Gonçalves et al. (2018) and Yusof et al.
(2008) [24,27]. Therefore, the introduction of EBD skills in the initial
training is important to be part of the habits of dentists in their practice.

Knowledge of PICO question formulation and previous EBD training
was significantly related to the implementation of EBP in bivariate and
multivariate analysis (simple logistic regression). In bivariate and
multivariate analysis (linear regression), knowledge score was affected
by Knowledge of relevant information sources (PubMed/Medline,
Cochrane library) and the kind of practice (academic). Practice score
was impacted by knowledge of PICO question formulation, previous
EBD training and the knowledge of relevant information sources such as
the Cochrane library in multivariate analysis in linear regression. In
multivariate analysis (linear regression) none of the factors affected the
attitude score. Finally, the total score was affected by the knowledge
of PICO question formulation and the knowledge of relevant information
sources (PubMed/Medline, Cochrane library) in multivariate analysis.

Most participants believed that ‘EBD is beneficial’. This finding is
inconsistent with previous studies [3,24,28], and is important because it
might reflect the high demands from modern-day dentists for best
practice and clinical decision making.

Against difficult clinical situation, some practitioners consulted
books or databases. However, the majority was looking for the easiest
and oldest method of obtaining information that is “a colleague’s
opinion or experience” instead of evaluating research results. The three
most frequent actions chosen by the respondents in the study of Yusof
et al. when faced with clinical uncertainties were “ask friends and col-
leagues,” “refer the patient,” and “consult textbooks” [24].

Just 24.4% declared to use the PICO question on daily practice, this
rate was similar to study of Straub-Morarend et al. [29]. Although, lower
percentage of respondents in the present study reported being able to
formulate a PICO question and to appraise literature than to search for
evidence, these percentages were higher than those in other studies [3,
30].

The interviewed practitioners demonstrated a positive attitude to-
wards the concept of EBD and confirmed that it is a beneficial approach
for the clinician, for patients and finally, for the dental profession.
Almost all of the interviewed dentists intended to integrate it into their
daily practice. This is in accordance with the study done by Ashri et al.
[31] and Rajagopalachari et al. [23]. This suggests that they believe the
use of EBP is necessary and patient care is better when evidence is used.

In this study, the sample was convenience type and some regions of
Morocco were not included. However, this study has took an interest in
the concept of EBD entirely. It emphasizes many of knowledges, atti-
tudes and practices in EBD. It was also able to reveal some obstacles
that oppose its implementation by Moroccan practitioners.

It differs from other studies by several points, such as the sample size
calculation, the inclusion of Moroccan practitioners from different sec-
tors and kind of practice. This provided a large information and allowed
comparisons to explain certain clinical attitudes and practices. In the
study conducted by Gonçalves et al. [26], the students were included.
This choice may not reflect reality because dental students usually refer
to the experience of their teachers. In the studies of Rajagopalachari
et al. [23] and Yusof et al. [24] specific cities were included in the study,
therefore the results were limited. There was also a large gap between
the estimated sample size and the number of participants in the study of
Rajagopalachari et al. [23].

Furthermore, the present KAP study emphasizes some knowledges,
attitudes and practices in EBD. It was also able to reveal some obstacles
that oppose its implementation by Moroccan practitioners. It is possible
that these data may be a helpful tool for decision-makers, educators and
members of organized dentistry who plan to further improvements the
implementation of EBD into daily practice.

5. Conclusion

This study has assessed the knowledge, attitudes and practices of
EBD, and identified obstacles that dentists had in the implementation
of EBD on daily practice. Based on the findings of this study, application
of EBD was associated with knowledge of PICO question formulation
and previous EBD training. The total score of surveyed dentists was affected
by the knowledge of PICO question formulation and the knowledge of
relevant information sources (PubMed/Medline and the Cochrane li-
brary). The lack of time was the most common obstacles identified by
the participants applying EBD.

Ethical approval

Approval for conducting the study was obtained from the Research
Ethics Committee for Biomedical Research under number C672020.

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Table 15
Factors impacting the total score.

| Characteristics | Category | Univariate analysis | Multivariate analysis |
|----------------|----------|---------------------|----------------------|
|                |          | β                  | (95% CI) P          | β                  | (95% CI) P |
| Previous EBD training | YES      | 3.01 [-0.999-6.12] | 0.058               | 1.49 [-0.805-3.78] | 0.202 |
| Knowledge of PICO question formulation | YES      | 8.74 [6.17-11.3]   | <.001               | 3.04 [0.411-5.66]  | 0.024 |
| Knowledge of relevant information sources | PubMed/Medline | YES | 9.98 [6.12-13.8] | <.001 | 6.29 [2.92-9.66] | <.001 |
|                | The Cochrane Library | YES | 11.8 [9.58-14]    | <.001               | 8.35 [5.89-10.81] | <.001 |
| Kind of practice | Individual | 1                  | -                   | 1                  | -            |
|                | In a group | 2.03 [-1.29-5.35] | 0.229               | 1.16 [-1.756-4.08] | 0.433 |
|                | Academic  | 8.41 [5.31-11.51] | <.001               | 1.9 [-1.005-4.81] | 0.198 |
Author contributions
Kadri Ghita: Conceiving and designing the study, data collection, data analysis and interpretation, and drafting the manuscript.
Enejjari Zahra: Conceiving and designing the study, data collection.
Amal Bouziane: Supervised the design and conduct of the study, analyzed and interpreted the data, and critically revised the manuscript.
The manuscript has been read and approved by all authors.

Registration of research studies
Name of the registry: Unique Identifying number or registration ID:
Hyperlink to your specific registration (must be publicly accessible and will be checked):

Consent
No consent was required as this research project is a KAP study that was conducted among dentists.

Guarantor
Pr Amal Bouziane.

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No potential conflict of interest relevant to this article was reported.

Appendix A. Supplementary data
Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2022.104289.

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