

Perception of Evidence-Based Dentistry (EBD) among Dental Professionals in Saudi Arabia during COVID-19 Pandemic

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Abstract

Background: The application of evidence-based dentistry in both the dental and medical fields is crucial for sustainable health care services. Many changes have occurred during the COVID-19 pandemic. This study aimed to assess knowledge about evidence-based dentistry (EBD) during the COVID-19-pandemic among dental professionals in Saudi Arabia.

Method: A total of 407 dental professionals were surveyed using a self-reported questionnaire with five questions. The questionnaire was distributed to designated participants through social media. SPSS was used for data analysis, and a p-value of 0.05 was used for the significance level.

Results: Out of the total participants, 72.48% were aware of the definition of EBD, 70.76% were aware of the process and steps involved in EBD, 69.53% agreed that EBD improves the quality of health care, and 71.74% were aware that EBD improves dental professionals' knowledge and clinical skills. However, only 28.99% could identify that not all published articles can be used in EBD. Dentists and participants with more experience were significantly found to be more knowledgeable about EBD than dental students and participants with less experience ($p < 0.05$).

Conclusion: A high percentage of dental students and dentists in Saudi Arabia knew about EBD dentistry; however, many of them have problems applying EBD in their practices. COVID-19 seems to have had a positive impact on dental professionals' awareness of EBD and its importance in the dentistry field.

Keywords: Evidence-Based Dentistry; Dental Professionals; Saudi Arabia; Covid-19; Perception; Knowledge

Introduction

Despite expectations of a relationship between experiences of health care and the increasing quality of health care, a contradictory relationship has been found [1]. The American Dental Association defined evidence-based dentistry (EBD) as "an approach to oral health care 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]. The appli-

cation of EBD in both the dental and medical fields is not newly introduced to the world [3]. Recently, due to updated methods that have simplified and facilitated the process of chasing down and collecting information, involving the patient in deciding about the delivered treatment has become effective and more efficient. Studies found that the best treatments had been provided by dentists who used EBD, and this boosted patient satisfaction as well [4]. Pride and high levels of self-esteem are noticeable among dental personnel who provide treatments based on EBD [5]. Nevertheless, there are many barriers to the application of EBD, such as time limitations, inappropriate or unavailable continuing education, financial limitations, resistance to change, and the impact of media on patients, creating demand or certain beliefs [4]. Several studies have investigated EBD in different countries around the world. For example, a study conducted in Kuwait revealed that more than half of dentists reported they generally base their practice on EBD, but the overall appreciation of EBD was quite low [6]. The results from a study in Malaysia showed that around 45% of the clinical practitioners who had participated in learning EBD noticed that the completed therapy was based on their knowledge, despite any feelings of uncertainty [7]. In Iran, one published study stated that specialists and dental practitioners were not sufficiently familiar with EBD, and as a result, they preferred to use conventional methods [8]. That was on par with another study showing that 62.08% of dentists across India were unaware of EBD [9]. A recent study conducted in Riyadh, Saudi Arabia, found high levels of awareness and knowledge about EBD but also found that dentists preferred to refer patients to a skilled doctor rather than have to learn from scientific journals [5].

The worldwide spread of the novel coronavirus disease 2019 (COVID-19) has worried all health professionals [10]. Due to its high virulence and transmission routes through saliva aerosols, there is growing concern, especially in dentistry [10]. The virus stays viable in the air for at least 3 hours and up to 72 hours on plastic and stainless-steel surfaces [10]. In this context, dental offices, both in the public and private sectors, are high-risk cross-infection settings for patients, dentists, and health professionals in the clinical community (including dental intensive care facilities at hospitals) [10]. Infection control measures are necessary to prevent the virus from spreading further and to help control the epidemic [11].

Over the past several decades, a range of events and initiatives have been implemented to improve dental education and clinical practice [12], so this study aimed to assess the knowledge about EBD among dental professionals in Saudi Arabia during the COVID-19-pandemic.

Materials and Methods

This study was conducted as a quantitative cross-sectional design using convenience sampling techniques was used in this study. To keep social distancing, the questionnaire will be distributed online through various social media applications, targeting different levels of dental practitioners and students from both genders. Data were collected from September to October 2020 for a large study. Participants were required to give their consent to participate in the study before answering the questionnaire, which took approximately three to five minutes to complete. All data were anonymized. The inclusion criteria were: 1) male or female dental students or practitioners who 2) live in Saudi Arabia. The exclusion criteria were anyone who did not want to be a part of the dental program or who would not sign the informed consent. The structured self-reported questionnaire designed in Google Forms was divided into two simple sections composed of questions adapted from similar previous studies in the literature [6,8,9,13,14]. Section one gathered demographic data about the participants, including age, years of experience, gender, qualifications, workplace city, and university or workplace name. Section two assessed the respondent's general knowledge about EBD through five statements with three multiple-choice answers: True, False, or "I don't know". The statements were as follows: 1) EBD is a process of making decisions based on scientifically proven evidence. 2) EBD involves a series of steps, from identifying the clinical question to finding the answer/evidence, assessing the validity of that evidence, and finally applying it, if clinically suitable. 3) Evidence from all published articles in scientific journals can be used in EBD. 4) EBD benefits patients

by improving the quality and effectiveness of clinical treatments. 5) EBD allows dentists to improve their knowledge and clinical skills. The correct answer was “true” for all of the questions except statement 3, where the correct choice was “false”.

The questionnaire as a whole was tested in a pilot study to uncover any mistakes and assure comprehensibility. Data analysis was conducted using SPSS version 23 (IBM Corp., Armonk, NY, USA). Data summaries were conducted using count and percentage, standard deviation, and mean and chi-square. A value of less than 0.05 was considered significant. The study was approved by the Umm Al-Qura University ethical approval committee from the faculty of dentistry.

Results

A total of 407 participants were involved in this study, which was part of a larger research project. The mean age was 27.71 with a standard deviation of 7.53 years. The mean of years of experience was 4.82 with a standard deviation of 5.94 years. There were 136 (33.42%) males and 271 (66.58%) females. Dental students/interns made up 48.65% (n = 189), and dentists made up 51.35% (n = 209). A total of 112 participants (27.52%) worked in a governmental clinic, 71 (17.44%) worked in a private clinic, while 55 (13.51%) were not working, and 169 (41.52%) were dental students. There were 287 (70.52%) participants from Jeddah, 45 (11.06%) from Riyadh, and 32 (7.86%) from Makkah. The rest of the participants were from Alqurayat, Hail, Almadinah Almunwarah, Yanbu, Alqunfudah, Alkhuber, Albaha, As-ser, Alahsa, Najran, Skakah, Tabuk, Abha, Alkharj, Taif, and Dammam.

Participant answers for EBD knowledge questions are shown in table 1 and figure 1. The relationship between knowledge and gender is shown in table 2 and figure 2. The relationship between EBD knowledge and qualifications is shown in table 3 and figure 3. The relationship between EBD knowledge and workplace is shown in table 4 and figure 4. Finally, the relationship between EBD knowledge and years of clinical experience is shown in table 5 and figure 5.

| Statement | Answer | N | % |
|--|---------------|-----|-------|
| EBD is a process of making decisions based on scientifically proven evidence. | True* | 295 | 72.48 |
| | False | 19 | 4.67 |
| | I do not know | 93 | 22.85 |
| EBD involves a series of steps, from identifying the clinical question to finding the answer/evidence, assessing the validity of the evidence, and applying it if clinically suitable. | True* | 288 | 70.76 |
| | False | 36 | 8.85 |
| | I do not know | 83 | 20.39 |
| Evidence from all published articles in scientific journals can be used in EBD. | True | 177 | 43.49 |
| | False* | 118 | 28.99 |
| | I do not know | 112 | 27.52 |
| EBD benefits patients by improving the quality and effectiveness of clinical treatments. | True* | 283 | 69.53 |
| | False | 41 | 10.07 |
| | I do not know | 83 | 20.39 |
| EBD allows dentists to improve their knowledge and clinical skills. | True* | 292 | 71.74 |
| | False | 38 | 9.34 |
| | I do not know | 77 | 18.92 |

Table 1: Knowledge about evidence-based dentistry (EBD).

* = The correct answer.

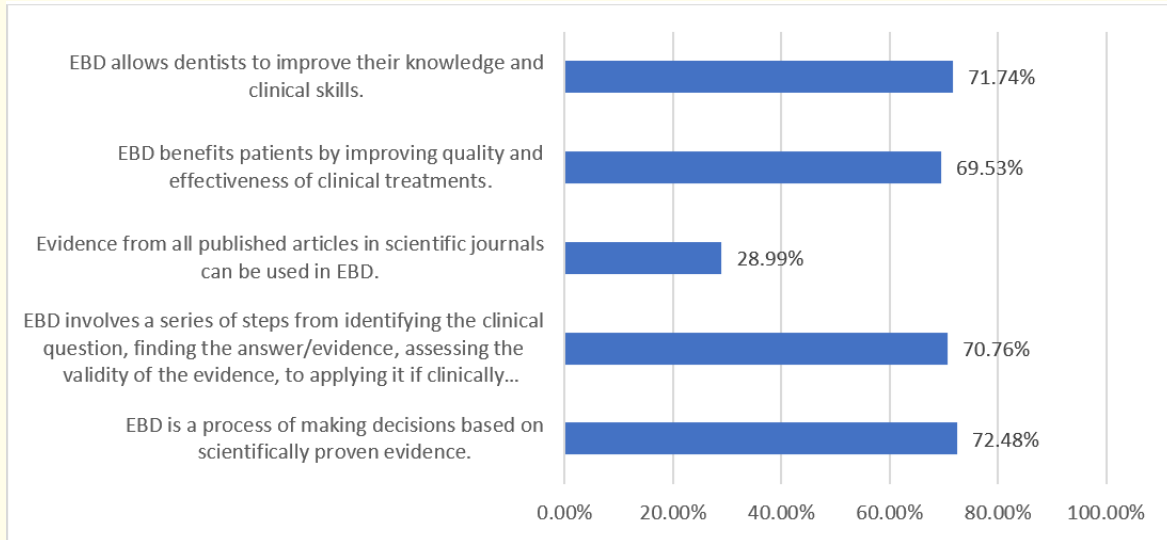


Figure 1: The correct answers to the questions measuring knowledge about evidence-based dentistry (EBD).

| Statement | Answer | Gender | | P-value |
|---|---------|-------------|-------------|---------|
| | | Male | Female | |
| | | n (%) | n (%) | |
| EBD is a process of making decisions based on scientifically proven evidence. | Wrong | 45 (33.09) | 67 (24.72) | 0.193 |
| | Correct | 91 (66.91) | 204 (75.28) | |
| EBD involves a series of steps, from identifying the clinical question, to finding the answer/evidence, assessing the validity of the evidence, and applying it if clinically suitable. | Wrong | 42 (30.88) | 77 (28.41) | 0.753 |
| | Correct | 94 (69.12) | 194 (71.59) | |
| Evidence from all published articles in scientific journals can be used in EBD. | Wrong | 100 (73.53) | 189 (69.74) | 0.102 |
| | Correct | 36 (26.47) | 82 (30.26) | |
| EBD benefits patients by improving the quality and effectiveness of clinical treatments (reverse question). | Wrong | 50 (36.76) | 74 (27.31) | 0.073 |
| | Correct | 86 (63.24) | 197 (72.69) | |
| EBD allows dentists to improve their knowledge and clinical skills. | Wrong | 49 (36.03) | 66 (24.35) | 0.009 |
| | Correct | 87 (63.97) | 205 (75.65) | |

Table 2: The relationship between knowledge and gender.

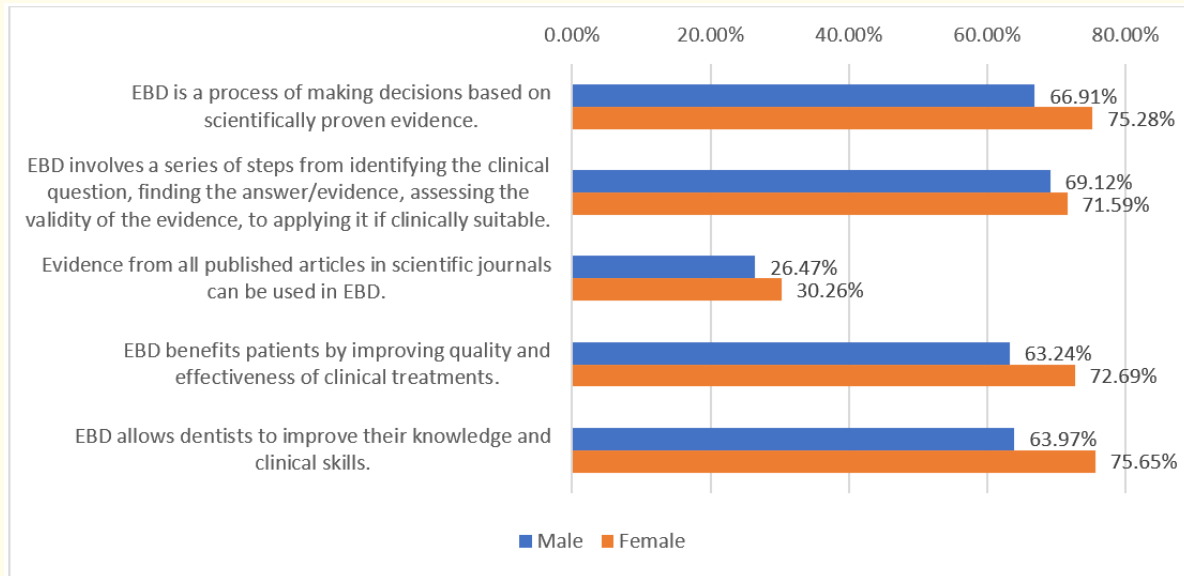


Figure 2: The relationship between knowledge and gender.

| Statement | Answer | Qualification | | P-value |
|--|---------|----------------|-------------|---------|
| | | Dental student | Dentist | |
| | | n (%) | n (%) | |
| EBD is a process of making decisions based on scientifically proven evidence. | Wrong | 75 (37.88) | 37 (17.7) | <0.001 |
| | Correct | 123 (62.12) | 172 (82.3) | |
| EBD involves a series of steps, from identifying the clinical question to finding the answer/evidence, assessing the validity of the evidence, and applying it if clinically suitable. | Wrong | 74 (37.37) | 45 (21.53) | <0.001 |
| | Correct | 124 (62.63) | 164 (78.47) | |
| Evidence from all published articles in scientific journals can be used in EBD. | Wrong | 158 (79.8) | 131 (62.68) | <0.001 |
| | Correct | 40 (20.2) | 78 (37.32) | |
| EBD benefits patients by improving the quality and effectiveness of clinical treatments (reverse question). | Wrong | 83 (41.92) | 41 (19.62) | <0.001 |
| | Correct | 115 (58.08) | 168 (80.38) | |
| EBD allows dentists to improve their knowledge and clinical skills. | Wrong | 70 (35.35) | 45 (21.53) | <0.001 |
| | Correct | 128 (64.65) | 164 (78.47) | |

Table 3: The relationship between evidence-based dentistry (EBD) and knowledge and qualifications.

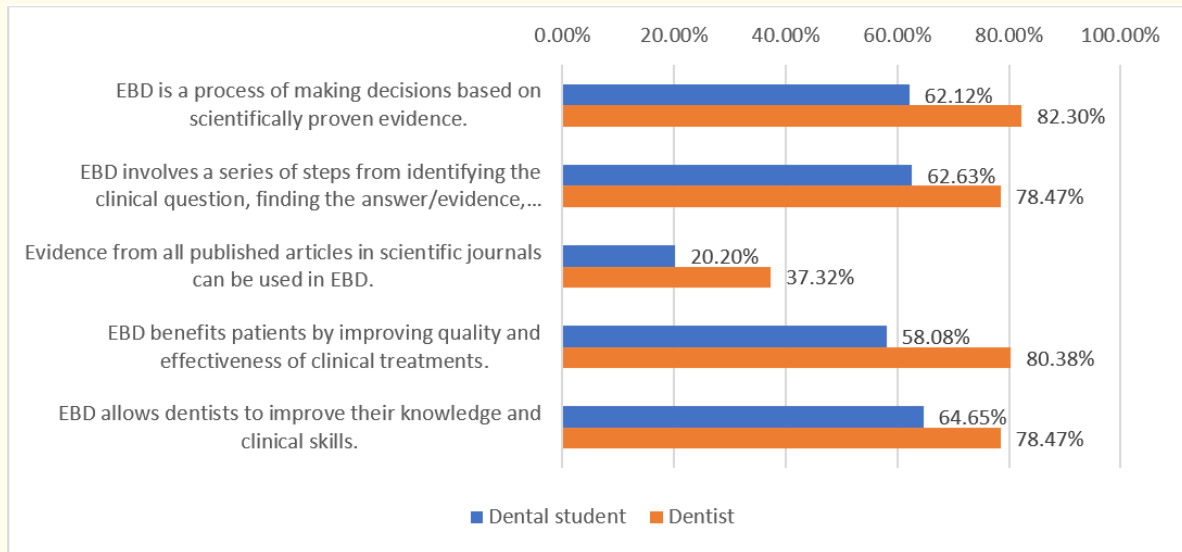


Figure 3: The relationship between evidence-based dentistry (EBD) knowledge and qualification.

| Statement | | Working place | | | | P-value |
|--|---------|---------------|------------|-------------|-------------|---------|
| | | Governmental | Private | Not working | Student | |
| | | n (%) | n (%) | n (%) | n (%) | |
| EBD is a process of making decisions based on scientifically proven evidence. | Wrong | 14 (12.5) | 16 (22.54) | 11 (20) | 71 (42.01) | <0.001 |
| | Correct | 98 (87.5) | 55 (77.46) | 44 (80) | 98 (57.99) | |
| EBD involves a series of steps, from identifying the clinical question to finding the answer/evidence, assessing the validity of the evidence, and applying it if clinically suitable. | Wrong | 18 (16.07) | 20 (28.17) | 16 (29.09) | 65 (38.46) | 0.003 |
| | Correct | 94 (83.93) | 51 (71.83) | 39 (70.91) | 104 (61.54) | |
| Evidence from all published articles in scientific journals can be used in EBD. | Wrong | 70 (62.5) | 45 (63.38) | 36 (65.45) | 138 (81.66) | <0.001 |
| | Correct | 42 (37.5) | 26 (36.62) | 19 (34.55) | 31 (18.34) | |
| EBD benefits patients by improving the quality and effectiveness of clinical treatments (reverse question). | Wrong | 19 (16.96) | 17 (23.94) | 16 (29.09) | 72 (42.6) | <0.001 |
| | Correct | 93 (83.04) | 54 (76.06) | 39 (70.91) | 97 (57.4) | |
| EBD allows dentists to improve their knowledge and clinical skills. | Wrong | 18 (16.07) | 20 (28.17) | 14 (25.45) | 63 (37.28) | <0.001 |
| | Correct | 94 (83.93) | 51 (71.83) | 41 (74.55) | 106 (62.72) | |

Table 4: The relationship between evidence-based dentistry (EBD) knowledge and working place.

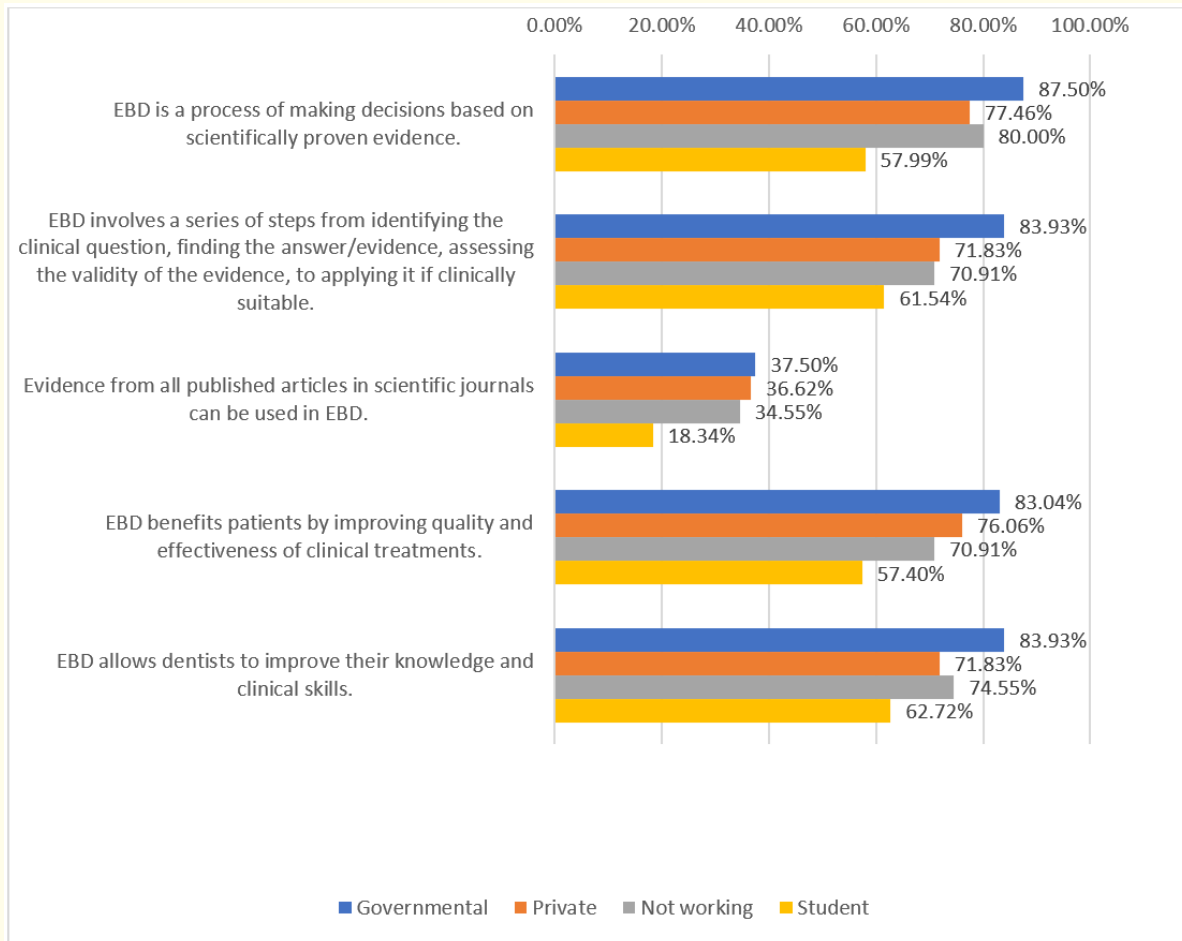


Figure 4: The relationship of evidence-based dentistry (EBD) knowledge with workplace type.

| Statement | Answer | Workplace | | | P-value |
|--|---------|-------------------|--------------|-------------------|---------|
| | | Less than 3 years | 3 to 6 years | More than 6 years | |
| | | n (%) | n (%) | n (%) | |
| EBD is a process of making decisions based on scientifically proven evidence. | Wrong | 47 (31.33) | 52 (28.57) | 13 (17.33) | 0.077 |
| | Correct | 103 (68.67) | 130 (71.43) | 62 (82.67) | |
| EBD involves a series of steps, from identifying the clinical question to finding the answer/evidence, assessing the validity of the evidence, and applying it if clinically suitable. | Wrong | 41 (27.33) | 59 (32.42) | 19 (25.33) | 0.131 |
| | Correct | 109 (72.67) | 123 (67.58) | 56 (74.67) | |
| Evidence from all published articles in scientific journals can be used in EBD. | Wrong | 102 (68) | 138 (75.82) | 49 (65.33) | 0.007 |
| | Correct | 48 (32) | 44 (24.18) | 26 (34.67) | |
| EBD benefits patients by improving the quality and effectiveness of clinical treatments (reverse question). | Wrong | 41 (27.33) | 59 (32.42) | 24 (32) | 0.532 |
| | Correct | 109 (72.67) | 123 (67.58) | 51 (68) | |
| EBD allows dentists to improve their knowledge and clinical skills. | Wrong | 42 (28) | 56 (30.77) | 17 (22.67) | 0.162 |
| | Correct | 108 (72) | 126 (69.23) | 58 (77.33) | |

Table 5: The relationship between evidence-based dentistry (EBD) knowledge and years of clinical experience.

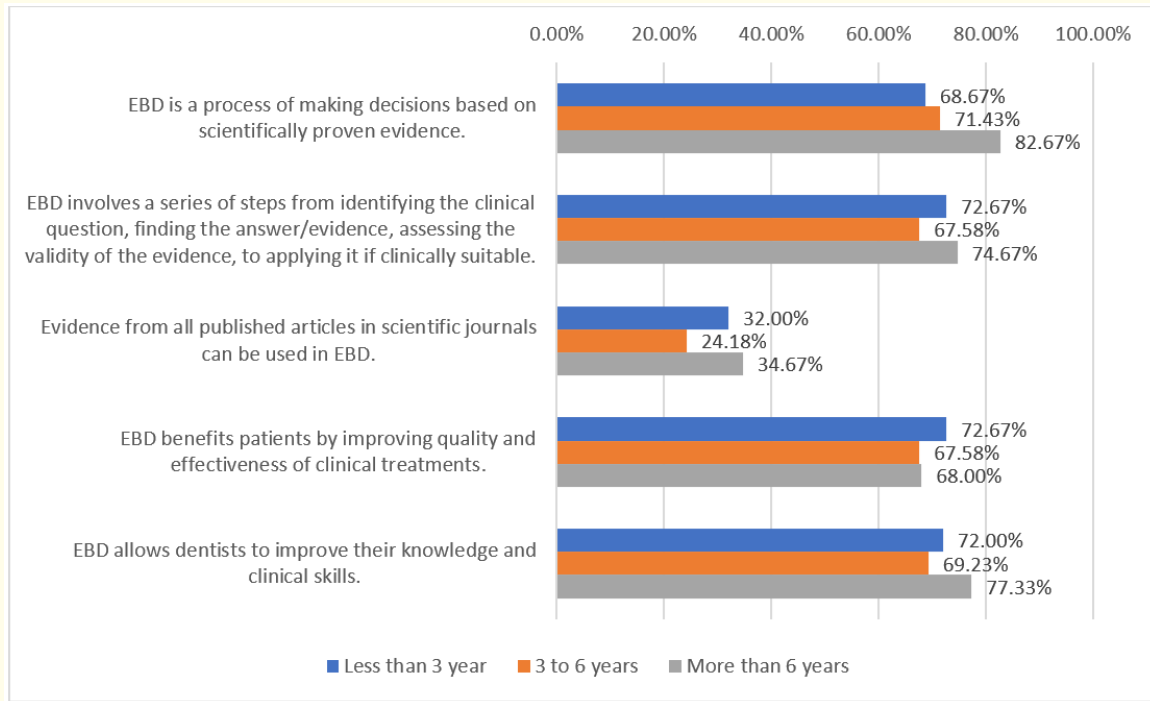


Figure 5: The relationship between evidence-based dentistry (EBD) knowledge and years of clinical experience.

Discussion

This cross-sectional study aimed to assess the basic knowledge of dentists and dental students during the COVID-19 pandemic in Saudi Arabia. The results indicate that around 70% of participants knew the definition of EBD, its process, and that EBD can improve treatment quality and dentists’ clinical skills. However, around one-fourth of the participants identified that not all published articles can be used as evidenced-based material. Graduated dentists were significantly more knowledgeable than dental students about EBD on all items. Participants who work in governmental clinics were significantly more knowledgeable than those in private clinics, those not working, and dental students. In terms of gender, females were more knowledgeable than males on only one item, and participants who had more than 6 years of experience were found to be more knowledgeable on only one item.

When we compared our study with previous studies, we found that our results regarding familiarity with EBD were similar to studies conducted in India [15] and Malaysia [7]. However, we found less familiarity than that found in a similar Saudi study, in Riyadh city, where 95% of the participants were aware of EBD [5]. The reason for this difference might be due to the nature of questions being asked in the different studies. For example, in our study, we asked participants about the meaning and process of EBD, while in the previous study, the author asked only if they were familiar with the term. Moreover, the data in our study were taken from different cities across Saudi Arabia, while the previous study had data from only one city, Riyadh.

Our results indicated that 71.74% of the participants were aware that EBD helps to improve clinical skills. This is lower than in previous studies in Malaysia (59%) [16] and Saudi Arabia (52%) [5], but the difference is not very large. One reason might be the differences from one country or city to another. One of the explanations is that there is a major trend toward evidence-based medicine influenced by the COVID-19 pandemic [17]. Thus, this change might have been occurring in this transitional time. In fact, it should be highlighted that many changes might appear in both patients and health care practitioners during and after the COVID-19 pandemic.

Similarly, our results found that around 69.53% were aware that EBD can improve the quality of clinical care. This is similar to a previous study in India [15]. However, it is higher than the previous Saudi study [5], which found that 50% believed that EBD can improve the quality of care. The reason for this within-country variation can be attributed to the same reasons as previously stated, but it was also noted from previous studies that evidence-based health care organizations have been heavily involved during the pandemic [18] in other countries. However, we cannot be sure that this is the case in Saudi Arabia. Further research is needed to confirm this explanation.

One interesting point is that our results are similar to a previous Indian study [15] in finding a relationship between levels of knowledge about EBD and the practitioner's current position and years of clinical experience, while this difference was not observed in the previous Saudi study [5]. There is no clear justification for this point. However, it might be that our sample size was larger and more diverse, and this might indicate that there are differences in Saudi Arabia according to the city. We could not confirm this because there was an unequal distribution of the sample in our study, so it is recommended that a stratified sampling method be used in future studies to validate this explanation.

This study has some strengths, including a relatively large sample size, diversity of cities, and the investigation being conducted during the COVID-19 pandemic. Some of the limitations encountered were the convenience sampling method, self-reported questionnaire, and unequal distribution of the sample from different strata. Also, the questionnaire was very simple, and more points are needed for a better investigation into components of EBD, barriers, and attitudes toward EBD. In all cases, future studies are needed to investigate EBD in more depth, especially during the global pandemic, to track the changes that occur in dental professionals' perceptions so that better training courses can be designed regarding EBD in Saudi Arabia.

Conclusion

A good percentage of dental students and dentists in Saudi Arabia know about EBD dentistry; however, many of them have problems applying EBD in their practice. Dentists and participants with more experience were found to be more knowledgeable about EBD than dental students and participants with less experience. Ultimately, COVID-19 seems to have had a positive impact on professional awareness about EBD among dentists, as well as the importance of EBD for the dentistry field.

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