

## Knowledge, Attitude and Barriers Perceived by Dentists Regarding Evidence-Based Practice

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### Abstract

Evidence-based practice (EBP) dates back to early 1900s, yet its implementation into clinical practice adoption remains ineffective even today. This study assesses knowledge, attitude, and barriers perceived by dental practitioners (non-academicians) regarding EBP.

A cross-sectional semi-structured online questionnaire survey was deployed among 250 practicing dentists. Data were analyzed using Statistical Package for Social Sciences version 17 software program (IBM Corp., Armonk, NY, USA). The chi-squared test was applied and all statistical tests were conducted at a 95% confidence interval; p-values of less than 0.05 were considered as statistically significant.

Most (80%) dentists were aware of EBP. When faced with uncertainty in clinical practice, 16.4% and 9.6% referred to colleagues and Internet, respectively. Only 6.4% reported having training in EBP, while 83.2% felt the need to be trained in EBP and 89.6% agreed that EBP should be an integral part of dental school curriculum. Despite most dentists were aware of EBP, it is still adopted in limited fashion, with most stating a lack of training as a barrier.

Many dentists rely on their own judgment but do refer to colleagues for clinical queries. EBP in dentistry can be governed and implemented by national and international dental organizations with standard professional training.

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### Introduction

Dentistry is a field that functions based on scientific evidence and the clinical observations of dentists. Information is loaded to practitioners, a good deal of which is conflicting, inaccurate, or unproven. Even when the dentist tries to update themselves regarding the current scientific trends, applying them to daily practice seems next to impossible since, most of the times, we are wary of new treatments and products and instead continue to follow the same old traditional method of treatment. The need for credible information has generated a transformation in health care delivery. With that being said, EBP in dentistry is the current need of the hour, providing the finest possible treatment solidly

based on the best possible clinical evidence showing that these procedures are safe, efficient, and also cost-effective. David Sackett defined EBP as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients".<sup>1</sup>

EBP helps professionals to bridge the gap in the expertise and find out more about the problem, which, in turn, will increase the need to conduct more research thereby gathering solid evidence for many more queries in the field. The profession of dentistry has advanced by leaps and bounds in recent years and dentists must work hard to keep up with all the advancements in the field.

Dental graduates are up-to-date with the knowledge in the field while graduating from dental college but, as time progress, they fail to keep themselves informed despite having access to ample information that can help with patient care decisions. This study sought to assess the knowledge and attitudes of dental practitioners (non-academicians) and the barriers perceived by them in practicing EBP in dentistry. This study stands out from other studies that surveyed different groups such as general

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practitioners,<sup>2,3</sup> dentists both in the private and public sectors,<sup>4-7</sup> medical students, undergraduate students, postgraduate dental students, and dental interns by assessing the knowledge, attitude and barriers of dentists in non academic section working only as practitioners.

### Materials and methods

A cross-sectional, semi-structured questionnaire survey was conducted among practicing dentists in Coimbatore, India from March to June 2019. This was planned to be an online questionnaire survey and hence participants who reverted back with a filled questionnaire were considered as given consent to the study. Ethical clearance was obtained from the Institutional Review Board of Coorg Institute of Dental Sciences, Virajpet (IRBCIDS2332019).

The list of dentists practicing in Coimbatore was obtained from the Tamilnadu State Dental Council and Indian Dental Association, Coimbatore branch. A total of 300 dentists were randomly selected and the questionnaires were e-mailed to them. Of these, 260 dentists responded back with the completed questionnaire for a response rate of 86.6%. Ten of these were excluded owing to the reason of working in dental institutions as academicians.

The questionnaire was constructed after a thorough literature reading and content validated by 10 practicing dentists. The questionnaire was presented in the English language. The first section of the questionnaire assessed personal and professional characteristics such as age, gender, qualification, years of practice, field of practice, and workplace. The second section consisted of 23 questions, including 12 knowledge-based questions, 10 attitude-based questions and one question about barriers. All practitioners were advised not to refer to books or mobile devices while answering the questionnaire.

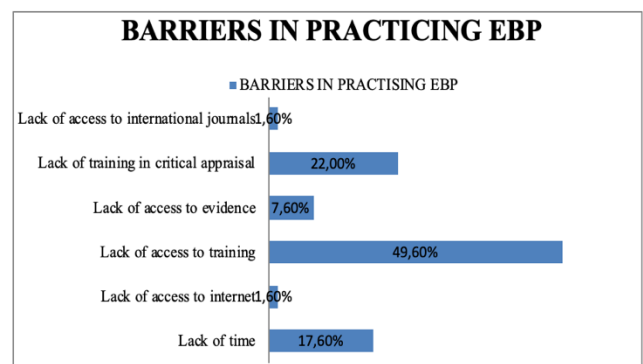
The data obtained were coded and entered into Microsoft Excel, 2007 version (Microsoft Corp., Redmond, WA, USA). Then, the coded data obtained were fed into the Statistical Package for the Social Sciences version 17 software program (IBM Corp., Armonk, NY, USA) for analysis. Categorical data are presented as numbers and percentages by using contingency tables and continuous data are

presented as means and standard deviations. Data were analyzed using the chi-squared test and all statistical tests were performed at a 95% confidence interval. A p-value of less than 0.05 was considered to be statistically significant.

### Results

Among 250 subjects 113 (45.2%) were male and 137 (54.8%) were female, 111 (44.4%) were of BDS graduates and 139 (55.6%) were MDS graduates. Table 2 shows, 80% of dentists are aware of the term EBP, 47.6% are aware of Evidence based pyramid, 69.6% critically evaluate the evidence obtained, 83.2% dentists feel that they needed to be trained in EBP since 93.6% dentists never had a training in EBP before, 89.6% dentists feel that EBP should be an integral part of dental school curriculum.

Table 3 shows the comparison of responses based on qualification 97.8% of M.D.S graduated were aware of the term EBP. Only 45% of BDS graduates critically evaluate the evidence obtained and 89.2% of BDS graduates feel that they need to be trained in EBP further.



**Figure 1.** Distribution of practitioners' responses regarding barriers to practicing EBP in day-to-day practice.

Table 4 shows the comparison of responses based on experience divided as 0-10 years, 11-20 years and 21 and more years. Dentists in the experience group of 0-10 years came across the term EBP from internet while 27.7% dentists in the experience group of 11-20 years knew the term from colleagues, 46.5% dentists in the experience group of 0-10 years knew about evidence based pyramid while 59.6% dentists in group 11-20 years and 23.5% dentists in group greater than 21 years were aware of evidence based pyramid, 49.6% dentists

perceived 'lack of training' as a barrier in practising EBP (Figure 1). Text books were considered as preferred printed source and free web was considered preferred electronic source when faced with clinical uncertainties (Figure 2 and Figure 3).

Characteristics		Frequency	Percentage
Gender	Male	113	45.2%
	Female	137	54.8%
Qualification	BDS	111	44.4%
	MDS	139	55.6%
Field of Practice	General[B.D.S]	106	42.4%
	Oral Medicine and Radiology	12	4.8%
	Prosthodontics	21	8.4%
	Conservative and Endodontics	25	10.0%
	Orthodontics	30	12.0%
	Pedodontics	14	5.6%
	Periodontics	17	6.8%
	Oral and Maxillofacial Surgery	18	7.2%
	Oral Pathology	7	2.8%

**Table 1.** Distribution of participants based on gender, qualification, and field of practice.

Questions	Responses	Frequency	Percentage
Are you aware of the term EBP	Yes	200	80.0%
	No	50	20.0%
Are you aware of the evidence-based pyramid	Yes	119	47.6%
	No	130	52.2%
Do you critically evaluate the evidence obtained	Yes	174	69.6%
	No	76	30.4%
Do you feel the need to be trained for EBP	Yes	208	83.2%
	No	42	16.8%
Have you had any EBP training before	Yes	16	6.4%
	No	234	93.6%
EBP should be included as part of the dental school curriculum	Strongly disagree	8	3.2%
	Disagree	7	2.8%
	Neutral	11	4.4%
	Agree	194	77.6%
	Strongly agree	30	12.0%

**Table 2.** Distribution of responses to questions.

Questions		Qualification		Chi-Squared	p-Value
		BDS	MDS		
Are you aware of the term EBP	Yes	64 57.7%	136 97.8%	62.285	0.000 HS
	No	47 42.3%	3 2.2%		
Do you critically evaluate the evidence obtained	Yes	50 45.0%	124 89.2%	56.891	0.000 HS
	No	61 55.0%	15 10.8%		
Do you feel the need to be trained for EBP	Yes	99 89.2%	109 78.4%	5.123	0.027 S
	No	12 10.8%	30 21.6%		

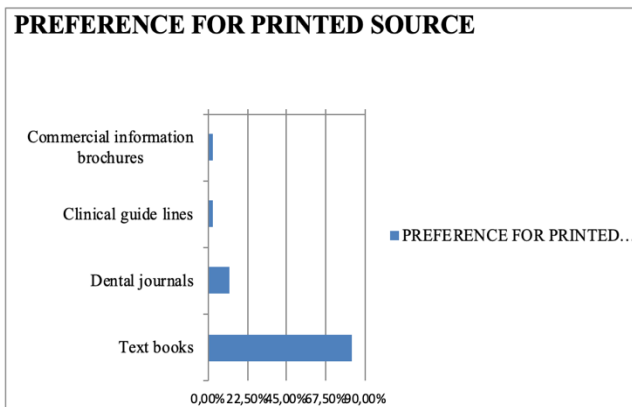
**Table 3.** Comparison of responses based on qualification.

HS, highly significant; S, significant; NS, non significant.

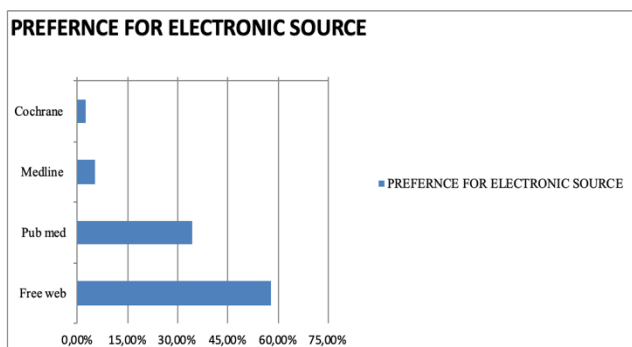
Questions		Experience			Chi-Squared	p-Value
		0-10	11-20	≥21		
Where did you come across the word EBP	Textbooks	39 21.0%	4 8.5%	5 29.4%	65.942	0.00086 S
		Internet	69 37.1%	2 4.3%		
	Colleagues	54 29.0%	13 27.7%	1 5.9%		
No response		24 12.9%	28 59.6%	10 58.8%		
	Are you aware of the evidence-based pyramid	Yes	86 46.5%	28 59.6%	4 23.5%	11.564
No	99 53.5%	18 38.3%	13 76.5%			
Do you critically evaluate the evidence obtained	Yes	120 64.5%	40 85.1%	14 82.4%	8.290	0.012 S
	No	66 35.5%	7 14.9%	3 17.6%		
Do you feel the need to be trained for EBP	Yes	166 89.2%	32 68.1%	10 58.8%	19.775	0.000 HS
	No	20 10.8%	15 31.9%	7 41.2%		
Do you practice EBP in your clinical decision-making	Yes	108 58.0%	35 74.5%	10 58.8%	15.028	0.020 S
	No	78 41.1%	12 25.6%	7 41.2%		

**Table 4.** Comparison of responses based on experience.

HS, highly significant; S, significant; NS, nonsignificant.



**Figure 2.** Dental practitioners' preferences for printed source to answer clinical queries in dental practice.



**Figure 3.** Dental practitioners' preference for electronic source to answer clinical queries in dental practice.

### Discussion

EBP in dentistry involves making use of current best possible evidence in the treatment of every individual patient. Carrying out this practice requires an immense amount of information, which needs to be properly validated and assessed.<sup>4</sup> This also means that dentists must be able to form a clinical question<sup>5</sup>, search through the literature and critically evaluate the results to answer their queries, then apply the lesson to practice for a greater benefit. Currently, the number of dentists able to do this on a regular basis is questionable. This study evaluated the knowledge and attitudes of and the barriers perceived by practicing dentists regarding EBP.

In the present study, most dentists (80%) were aware of the term EBP, in contrast with studies conducted by Yosuf et al.<sup>6</sup> and Iqbal et al.<sup>7</sup> wherein only 50.3% and 29% of participants

were aware of EBP. This reflects the fact that clinicians are aware of the high demands for optimal clinical practice and keep themselves abreast of updates in the field.

Qualification-wise, participants with a postgraduate degree (68%) were more aware of the term EBP. This could be due to the fact that specialists attend more CDE [Continuing Dental Education] than general practitioners, which had also been reported by Bhate et al.<sup>10</sup>. However, though most are aware of the term EBP, only 47.6% knew about the hierarchy of the evidence-based pyramid. This is in accordance with the study conducted by Yosuf et al.<sup>6</sup>, where 43% of participants were not aware of the levels of evidence in EBP. In the hierarchy of evidence, systematic reviews and randomized controlled trials represent the best levels of evidence, whereas case reports and expert opinions are the lowest.<sup>3</sup>

Analyzing the studies requires the ability to conduct a critical evaluation<sup>11</sup>. Questions like how was the study done, status of the control and experimental groups, whether the allocation of patients to study groups was random, did the aims and study design yield to the understanding of the particular clinical result, and whether the methods and the results were valid need to be answered. Despite 69.6% of dentists in this study stating that they critically evaluate the evidence obtained, only 47.6% knew about the level of strength in the evidence-based pyramid. Not knowing about the level of evidence may eventually lead them to think that all evidence that they obtain is acceptable.

When facing clinical uncertainty, (16.4%) turned to their friends and colleagues. This is in accordance with studies conducted by Iqbal et al. (60%)<sup>5</sup> and Yosuf et al. (91.1%)<sup>4</sup>, Nader et al (77.2%)<sup>12</sup>, where participants preferred asking their friends and colleagues for answers to their clinical queries. Among the printed sources, 82.4% reported that they refer to textbooks as their source of evidence. Nevertheless, the flipside with textbooks as a source of evidence is that the information may be out of date<sup>6</sup>. Literature searches conducted a decade ago required going through pages of journals to find the appropriate evidence. The present era of technology has given us access to a plethora of

online research articles. Among the electronic sources, only 34.4% reported accessing PubMed for evidence, which indicates the need to train professionals about various online sources available for exploring the evidence.

One of the main concerns clinicians have is the challenge of keeping up with a constantly expanding knowledge base in the field. It is not practical for private practitioners to even consider analyzing vast volume of research and hence most rely on systematic reviews. In a commentary article by Roger P. Levin, a different perspective was put forward that some practice consultants even view sales representatives as the key providers of information about advances in dental services, products and technology<sup>13</sup>. In the present study also, 2.4% dentists reported that they refer commercial information brochures for any clinical advice.

In the present study, when dentists were asked about the need to be trained for EBP, (83.2%) reported positively, which indicates that dentists are willing to participate and educate themselves regarding EBP. This is in accordance with the research conducted by Iqbal et al.<sup>7</sup> (80%) and Bhate et al.<sup>10</sup>.

In the present study, (93.6%) reported that they have not received any formal training in EBP and 89.6% felt that EBP should be an integral part of the dental school curriculum. This is in accordance with the study conducted by Ashri et al.,<sup>14</sup> where less than half of the respondents reported not receiving any training in EBP. The dental school curriculum should include EBP courses, which will help dentists to be more knowledgeable, improve the services they provide to the patients, and monitor the effectiveness of the treatment they provide.<sup>6</sup> Another point to be noted is that 49.6% reported a lack of access to training as a barrier in implementing EBP in day-to-day practice.

Dentists with master degrees (89.2%) reported a propensity for evaluating the evidence critically which was higher (45%) than that reported by practitioners with undergraduate degrees (BDS), indicating that specialists may obtain training during their postgraduate years. This is in accordance with study by Naziret al., where 70.3% dentists evaluated the evidence obtained, which was attributed to qualification of master's degree.<sup>15</sup>

This furthermore implies the fact that EBP should be included in the undergraduate dental school curriculum as a way to train young minds to integrate evidence and clinical knowledge. These kinds of measures should be taken in India also. Specifically, measures should be adopted for the development of a syllabus that will include EBP that can be effectively taught to dental students during the undergraduate course and also to practicing dentists through continuing dental education.

In this present study, 49.6% reported lack of access to training as a barrier in implementing EBP in day to day practice. Several barriers to implement EBP have been reported in various studies such as lack of training, time and facilities<sup>16</sup>, and lack of time and access to resources<sup>7</sup>. In the study by Yusof et al.<sup>6</sup> 22% reported lack of necessary skills. Similar results have been reported by Rabe et al.<sup>17</sup> and Upton<sup>18</sup> from Sweden, who reported that the most common barrier toward EBD was lack of time.

An extensive systematic review was conducted by Ubbink et al. on knowledge, attitude and awareness of the health professionals towards EBP in an attempt to draw a conclusive framework for EBP implementation for policy makers. The framework included proposed structural plans at micro and macro levels of organizations and stakeholders. Educational institutes are considered the backbone for the success of EBP implementation within that proposed framework.

This study was based on convenience sampling among dentists working in only one district of the state of Tamil Nadu in India. The knowledge, attitudes, and awareness may vary in other regions and further research is required in this field among dentists worldwide. Such will help in implementing EBP in clinical dentistry in the future.

EBP can and should be incorporated in undergraduate curricula, which will help students to learn and adopt research findings in day-to-day clinical practice.

## Conclusions

Awareness about the term EBP is increasing among practitioners and they are keen to learn more about implementing such in clinical practice. Implementing an educational program targeted at educating general dental practitioners

and also including such in the undergraduate curriculum will help these individuals to enhance their clinical practice, improve patient satisfaction, and enhance treatment outcomes.

### Declaration of Interest

The authors report no conflict of interest.

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