KNOWLEDGE AND PRACTICE OF EVIDENCE-BASED DENTISTRY AMONG DENTAL PROFESSIONALS: AN APPRAISAL OF THREE DENTAL COLLEGES FROM LAHORE — PAKISTAN

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ABSTRACT

Evidence-based Dentistry (EBD) is a common approach in Dentistry particularly in developed nations. However, there is scarcity of data about the knowledge and practice of EBD among dental professionals in Pakistan.

The objective was explore the knowledge and practice of EBD by evaluating awareness, attitudes and barriers to its implementation by interns and faculty members from various dental colleges in Pakistan.

The study was a cross sectional survey. Self-administrated questionnaires were distributed among 120 male and female interns and faculty members working at three dental colleges in Lahore, Pakistan. Ethical approval was obtained from respective institutes. Informed consents were obtained from the participants before administering questionnaires among them. SPSS 20.0 was used for data analysis. Descriptive statistics included frequency distribution of various responses. Cross tabulation performed to determine odds ratio. Logistic regression analysis was performed to assess the association between practice of EBD and various factors. A 95% confidence interval was used to determined statistical significance.

Ninety one subjects completed questionnaires with a response rate of 76%. Sixty five percent of participants were females, and age ranged from 22 to 55 years. The 52.7% of the respondents reported that they applied EBD in ordering tests or treatment, 24.2% attended EBD course or workshop, and 48.4% regularly read journals. Regarding the components of EBD, only one respondent correctly identified three components. About 26.4% responded that systematic review provides the strongest evidence and 54% identified no access to EBD resources a major barrier to using EBD in clinical practice. EBD not applicable to culture was judged by 39.6% of the respondents, 49.5% agreed that patients were willing to get involved in clinical decision making, and 34.1% reported that only 10% of their patients were capable of participating in clinical decision making. Multivariate logistic regression final model showed that year since graduation was strongly associated with practice of EBD (OR=4.68 CI=1.83-11.97).

Almost half of the respondents claimed to practice EBD; only one of them was aware of three components of EBD. There is need to incorporate concepts of EBD in undergraduate dental curriculum and EBD workshops and seminars should be organized for dental professionals on regular bases.

Key Words: Evidence-based Dentistry, dental professionals, knowledge, practice, developing country.

INTRODUCTION

Evidence Based Dentistry (EBD) requires the integration of scientific evidence into clinical practice considering the circumstances, preferences and desires of patients about the treatment options available to them. Various measures and initiatives have been taken during the last several decades to improve dental education and clinical practice, however, recent years have seen increased use of EBD in Dentistry which is aimed at providing optimal care to the patients.
Accrediting agencies require dental schools to incorporate evidence-based practice in their curricula. The concepts of EBD are increasingly employed in dental education curricula to provide lifelong and self-directed learning experience for students. Students can acquire more knowledge about evidence base treatments and effectively apply them in dental practice through proper education and training of EBD.

Financial constraints, easy access to online information resources, and advertisements in Dentistry can influence patients’ preferences and choices. The inclusion of patients’ preferences in clinical decision making process though critical to the practice of EBD; however can be challenging because these may contradict established clinical guidelines. Nevertheless, proper communications between health care providers and patients, and use of visual aids have been shown to improve communication, understanding and satisfaction among patients.

It has been found that teaching evidence-based approaches to dental students can result in heightened importance and greater application of evidence in clinical practice, and improvement in communication skills. Role of faculty in promoting EBD in dental curriculum is critical, and it has been found that about 79% of faculty members incorporate EBD in class room teaching and 47% of them incorporate EBD concepts in clinical practice. There is growing need that future dental graduates should be equipped with the skill set of EBD to meet the future challenges in Dentistry.

EBD is based on the ability of health care professionals to retrieve the evidence, evaluate its validity and quality, and apply it in diagnosis and treatment considering patient values and choices. Four-step EBD model has been proposed in dental practice. The model begins with defining a research question using PICO format (Patient, Intervention, Comparison and outcome). Second step is the searching and choosing the relevant evidence. Third step involves evaluating and critically appraising the evidence using checklists such as CONSORT and QUOROM. Fourth step of the model consists of applying the evidence to treat dental problem of patients. It has also been suggested that treatment options, techniques, or procedures used in clinical practice should be evaluated. Strongest evidence should be used in EBD and the strength of the evidence can be evaluated using the rules which have been established.

Lack of continuing education programs precludes participation in EBD educational activities. Similarly, limited financial resources, difficulty in accessing appropriate information sources, cultural beliefs, and increased demands of patients for high quality care are barriers to practicing EBD. The barriers to implementing evidence in clinical practice include resistance to change current clinical practice model, negative response and criticisms from dentists who resist the application of EBD, difficulty in getting clear answers to clinical situations, non-availability of latest evidence, and conflicting literature on a certain topic.

Several studies observed the use of EBD among dentists in different parts of the world. A recent study involving 850 dentists from six European countries reported that vast majority of dentists (89.1%) believed that EBD is beneficial; however, about 60% of them experienced difficulty in implementing EBD. Only few studies investigated the practice of EBD among dental interns and faculty. EBD is probably a common approach in Dentistry particularly in developed nations; however, application of EBD in developing countries remains largely unexplored. There is scarcity of data about the knowledge and practice of EBD in Pakistan. Therefore, the objective of the study was to explore the knowledge and practice of EBD by evaluating awareness, attitudes, and barriers to its implementation by interns (house officers) and faculty members from three dental colleges in Lahore, Pakistan.

METHODOLOGY

The study was a cross-sectional survey. The questionnaire already used in a previous study carried out by Fedorowicz et al. was selected to obtain responses from the participants. The questionnaire included questions which enquired demographic information of the respondents. Respondents were asked about their attendance in EBD courses, practicing of EBD, awareness about three components of EBD, and selection of best evidence. In addition, the instrument also included questions regarding the barriers to practicing EBD, role of culture in implementing EBD, and willingness and capability of patients in clinical decision making process.

Convenience sampling technique was employed to collect data. Ethical approval was obtained from respective institutes. Self-administrated questionnaire was distributed among 120 male and female interns and faculty members working at three dental institutes, one in public and two in private sector. The respondents were personally contacted to respond questionnaires. The purpose and objectives of the study were discussed with the participants and their informed consent was obtained. The respondents were assured about their confidentially during collection, analysis and reporting of research findings. They were contacted twice to ensure better participation of the respondents in the study and to improve data collection. They were also aware that their participation in the study was voluntary. The distribution and collection of questionnaires were carried out during the months of June and July 2014.
Statistical Package for the Social Sciences (SPSS version 20.0) was used for data analysis. Descriptive statistics included frequency distribution for categorical variables. Odds ratios were calculated for association between practice of EBD and various factors. Chi-square tests were used to determine difference between male and female respondents about various variables of the study. Logistic regression analyses were performed to investigate the association of independent variables such as gender, age, years since graduation, workshop attendance on EBD, reading journal, with dependent variable like practice of EBD. A 95% confidence interval was used to determined statistical significance.

RESULTS

Ninety one subjects completed questionnaires with a response rate of 76%. Sixty five percent of participants were females and thirty five percent were males. Age of the respondents ranged from 20 to 50 years with mean 27.31 (SD ± 6.89). Similarly, mean year since graduation was 4.37 (SD ± 6.07).

Of 91 respondents, 22 (24.2%) attended EBD course or workshop while 69 (75.8%) did not attend such activities. Approximately 48.4% regularly read scientific journals of which 19.8% read one journal and 16.5% read three journals. About half (52.7%) of the respondents reported that they applied EBD in ordering tests or treatment (Table 1).

Regarding the components of EBD, only 1 respondent correctly identified three components. In response to the question about what provides the strongest evidence, almost one quarter (26.4%) stated systematic review, 19.8% identified controlled clinical trials, and 9.8% chose cross sectional study as the source of the evidence (Table 2).

If you discover that recent evidence contradicts your clinical judgment, what would you do?
- Discard the Evidence: 11 (12.1)
- Follow the Evidence: 16 (17.6)
- Evaluate the Evidence: 64 (70.3)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency &amp; Percentage N (%)</th>
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<tbody>
<tr>
<td>Attended EBD:</td>
<td></td>
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<tr>
<td>Yes</td>
<td>22 (24.2)</td>
</tr>
<tr>
<td>No</td>
<td>69 (75.8)</td>
</tr>
<tr>
<td>Regularly Read Journal</td>
<td></td>
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<tr>
<td>Do not read journal</td>
<td>47 (51.6)</td>
</tr>
<tr>
<td>Read one journal</td>
<td>18 (19.8)</td>
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<tr>
<td>Read two journals</td>
<td>11 (12.1)</td>
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<tr>
<td>Read three journals</td>
<td>15 (16.5)</td>
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<tr>
<td>Use EBD in Ordering Tests/ Treatments</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>48 (52.7)</td>
</tr>
<tr>
<td>No</td>
<td>43 (47.3)</td>
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<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency &amp; Percentage N (%)</th>
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<tr>
<td>Correctly Identified Three Components of EBD</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>No</td>
<td>90 (98.9)</td>
</tr>
<tr>
<td>In “Hierarchy of Evidence”, What Provides the Strongest Evidence?</td>
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<tr>
<td>Cross-sectional Study</td>
<td>9 (9.8)</td>
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<tr>
<td>Case Control Study</td>
<td>8 (8.8)</td>
</tr>
<tr>
<td>Systematic Review</td>
<td>24 (26.4)</td>
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<tr>
<td>Cohort Study</td>
<td>11 (12.1)</td>
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<td>Longitudinal Study</td>
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<tr>
<td>Randomized Controlled Trials</td>
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<table>
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<tr>
<th>Factors</th>
<th>Odds Ratio (OR)</th>
<th>95% CI for OR</th>
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<tbody>
<tr>
<td>Age</td>
<td>2.09</td>
<td>0.89 - 4.88</td>
</tr>
<tr>
<td>Male Gender</td>
<td>0.80</td>
<td>0.34 - 1.91</td>
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<tr>
<td>Attended EBD Course</td>
<td>3.14</td>
<td>1.13 - 8.68*</td>
</tr>
<tr>
<td>Read Journal</td>
<td>2.12</td>
<td>0.91 - 4.90</td>
</tr>
<tr>
<td>AGREE to “EBD is applicable to my culture”</td>
<td>2.58</td>
<td>1.08 - 6.19*</td>
</tr>
<tr>
<td>AGREE to “Patients are willing to participate in clinical decision making”</td>
<td>2.33</td>
<td>1.01 - 5.42*</td>
</tr>
<tr>
<td>BELIEVE &gt;50% patients capable of participating in clinical decision making process</td>
<td>3.78</td>
<td>1.10 - 12.95*</td>
</tr>
<tr>
<td>Years Since Graduation</td>
<td>4.80</td>
<td>1.91 - 12.05*</td>
</tr>
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*Statistically significant
Knowledge and practice of evidence-based dentistry

strongest evidence (Table 2). In case recent evidence contradicts clinical judgement, about 70.3% of the respondents said that they evaluate the evidence, 17.6% reported they follow the evidence and 12.1% mentioned that they discard the evidence (Table 2).

Fig 1 shows the most important barriers to using EBD in clinical practice. No access to EBD sources was the most common barrier as reported by 54% of the respondents, followed by EBD a threat to clinical freedom or judgement, and difficulty in understanding EBD was the least common barrier. Time was not a big barrier as only 6% identified it a barrier. A considerable number of participants (39.6%) disagreed that EBD is applicable to their culture (Fig 2). About 49.5% agreed that patients were willing to get involved in clinical decision making (Fig 3). Almost one third (34%) judged that only 10% of their patients were capable of participating in clinical decision making (Fig 4).

Chi-square analyses found no statistically significant differences between male and female respondents regarding various variables of the study such as attending a course or workshop, using EBD approach in ordering tests or treatments etc. On univariate analysis, factors statistically significant related to practicing EBD included but not limited to having attended EBD course (OR=3.14, CI= 1.13 - 8.68), agreeing that EBD is applicable to respondents’ culture (OR= 2.58, CI=1.08-6.19), and having more than three years of clinical experience since graduation (OR=4.80, CI= 1.91 - 12.05) (Table 3). Multivariate logistic regression final model showed that year since graduation was strongly associated with the practice of EBD (Table 4).

DISCUSSION

The study evaluated the perceptions and knowledge of dental interns and faculty about the concepts and application of EBD in Dentistry. Almost half of the respondents regularly read journal and claimed to use EBD in ordering tests or treatment. It is interesting to observe a substantial number of the respondents in the present study practicing EBD and these findings are quite encouraging from a developing country.

Our study reported one quarter (26.4%) of the participants judging systematic review as the strongest evidence and this was in agreement with the results of a study of final year students and interns in Riyadh, Saudi Arabia. Nevertheless, systematic review was considered the strongest evidence by almost 58.9% of the participants in another Saudi study conducted by Bahammam & Linjawi. About 54% of the respondents in the present research identified lack of access to EBD resources as the most common barrier to the practice of EBD, a finding similar to the results shown by Fedorowicz et al. Threat to clinical judgement was the
second most common barrier in the present study and perceived by only 17% of the respondents. On the other hand, lack of time and financial constraints were the most frequently reported barriers to the practice of EBD among dental practitioners in UK\textsuperscript{15} and Malaysia.\textsuperscript{16} It was surprising to see about half of the respondents practicing EBD in ordering tests and treatments in dental practice; however, only one participant was able to correctly identify three components of EBD in our study. This is in accordance with the findings observed by Fedorowicz and colleagues.\textsuperscript{20} On the contrary, a recent study of final year dental students and interns reported 85% of the respondents not using EBD in prescribing tests and providing dental treatments.\textsuperscript{22} Our results illustrated that the majority of participants (75.8%) never attended a course or workshop on EBD. This could be possibly because of lack of EBD courses or seminars in the country. In addition, there could be lack of continuing education opportunities for the faculty members and non-existence of EBD courses in undergraduate dental curricula for students.

The present research identified practice of EBD associated with respondents' years of experience since graduation. The respondents with more than three years of clinical experience since graduation were 4.7 times more likely to incorporate EBD in their practice than those with less than three years of experience. To our knowledge, this is the first study to observe an association between the practice of EBD and clinical experience in Pakistan. This emphasizes the integration of EBD in undergraduate syllabi so that introductory exposure of EBD to the students can result in its greater application in their future clinical practice. Similarly, those who attended workshop on EBD and read journal regularly were more likely to practice EBD. Again, this highlights the need to organize EBD workshops, courses, and seminars, and to improve the availability of scientific journals and resources.

The significance of culture in the application of evidence-based practice cannot be overlooked as awareness of cultural norms and dynamics are important for clinical expertise. If cultural practices of a given society do not allow innovative treatment approaches to be introduced, then acceptability of such measures cannot be easily applied.\textsuperscript{24} Interestingly, our study found only one third of the respondents (39.6%) in believing that EBD was not applicable to their culture. On the other hand, a similar study showed that about 74.9% of respondents disagreed with the applicability of EBD to their culture.\textsuperscript{22} It is suggested that having increased applicability of EBD in one's culture will allow greater acquaintance with the latest concepts of EBD which will inevitably change current clinical dental practices.

EBD is aimed at reducing the gap between the emergence of new research findings and their application in clinical practice because sometimes it took about more than 10 years before latest evidence about an improved clinical intervention got accepted and produced positive patient outcomes.\textsuperscript{25} It was encouraging to know that 99% of the respondents perceived EBD knowledge and concept easy to understand. Likewise, about half of the respondents reported that patients were enthusiastic to participate in clinical decision making process. Interestingly, the results of a similar survey revealed that 90.4% of dental students believed in patients' willingness in clinical decisions during EBD practice.\textsuperscript{22} The inclusion of patients' choices and preferences are central to the application of EBD.\textsuperscript{5} The results showed that there is greater potential for acceptability and applicability of EBD both by dental professionals as well as patients.

The questionnaire administered in this study was already used by Fedorowicz et al.\textsuperscript{20} which allowed meaningful comparison of the findings, and this would further enhance the reliability and validity of the instrument. This is the first study that investigated the knowledge and practice of EBD among interns and faculty in three dental colleges in Lahore, Pakistan. Nevertheless, some other similar studies collected data only from one dental institute.\textsuperscript{20,22,26}

The study participants were personally contacted which resulted in high participation rate and improved data collection. The response rate (76%) was satisfactory.\textsuperscript{27} Non-response was because some respondents declined to fill out the questionnaires due to lack of time, not having personal interest in the study, and hesitation to express their knowledge about EBD. In addition, considerable number of faculty members was on summer vacation; hence less faculty members participated in the study. There is also possibility of some bias in the study as participants can give responses to please the researchers.\textsuperscript{28} Major limitations of the study include small sample size and convenient sampling technique. Large sample size and random sampling could allow better generalizability of the study findings.

**CONCLUSION**

The study clearly showed that about half of respondents practiced EBD and most of them were willing to incorporate EBD in dental practice. However, no access to EBD resources was the greatest barrier to the practice of EBD. Following initiatives will increase the application of EBD to ensure state of the art clinical practice, and will allow greater patient participation in clinical decisions and high quality patient care.

- There is crucial need to integrate the concepts of EBD in undergraduate dental curricula because...
early exposure to EBD is likely to result in increased application in dental practice.

• EBD sources should be provided to faculty, students and dental interns to encourage the adoption of new approaches of EBD.

• EBD learning avenues should be provided through the availability of continuing education EBD courses, workshops and seminars.

REFERENCES


CONTRIBUTION BY AUTHORS

1 Muhammad Ashraf Nazir: Distributed and collected survey forms, entered data and analysis, he also worked partially on write up.

2 Khalid Almas: He selected and modified survey instrument from his previous study. He designed the project and helped in final writing of results and discussion of the paper.