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KNOWLEDGE, ATTITUDE AND PERCEIVED BARRIERS TOWARDS EVIDENCE BASED PRACTICE AMONG DENTAL ACADEMICIANS AND PRIVATE PRACTITIONERS IN PUNE, INDIA.

Dental Science

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ABSTRACT

Background: The dental professionals are required to continuously update their knowledge and skills with respect to new diagnostic and treatment modalities to provide the patients with the optimum treatment needed. To overcome the gap between best practice and actual care, professional organisations worldwide encourage Evidence-Based Practice (EBP), **Objective:** To assess and compare the Knowledge, Attitude and perceived barriers towards evidence based practice (EBP) among dental academicians and private practitioners in Pune city. **Methodology:** A cross-sectional study was conducted amongst dental- academicians (n=150) and private practitioners (n=150) in Pune city. Data was collected using self-administered, pretested, validated, close ended, structured questionnaire. Apart from the demographic profile the questionnaire consisted of eleven questions on knowledge, five on attitude and seven questions on perceived barriers. Data was analysed using descriptive statistics, Chi-square test and unpaired t-test. **Results:** Among the dental academicians, 56 (37.3), 91 (60.7%), 3 (2%) showed poor, fair and good knowledge respectively regarding EBP and for private practitioners, 113 (75.3%) and 37 (24.7%) showed poor and fair knowledge regarding EBP, respectively. A statistically significant difference between the mean knowledge score of dental academicians (4.94+1.58) and private practitioners (3.033+1.99) was seen, ($p<0.05$). The attitude of the dental academicians 112 (74.6%) and private practitioners 100 (66.3%) towards EBP was positive. Barriers to its use included lack of access to full text articles and lack of available time. **Conclusion:** It was found that significant proportion of professionals had inadequate knowledge of EBP but showed a positive attitude towards it, therefore, a formal training and reinforcement is required.

KEYWORDS:

Academicians, Evidence Based Practice, Private practitioners

Background:

Dentistry is currently undergoing dramatic shift in healthcare technology making the practice of dentistry more complex and challenging. Changing socio-demographic patterns, knowledgeable healthcare consumers, rapid technical advances and the information 'explosion' all place greater demands on clinical decision making.[1] The dental professionals are required to continuously update their knowledge and skills with respect to new diagnostic and treatment modalities to provide the patients with the optimum treatment needed.[2]

Evidence based practice (EBP) is said to be the current best approach to provide interventions, the advantages of which are scientifically proven to be safe, efficient and cost effective.[3] EBP is a process of lifelong, self-directed learning in which providing health care creates the need for important information about diagnosis, prognosis, treatment, and other clinical and health care issues.[4]

Dentistry can benefit from EBP in several ways. First and foremost, it is a means of lifelong learning in which dentists who based their decisions on evidence rather than opinions have been shown to be able to continuously monitor and develop their clinical skills and performance.[5] By basing treatment decisions on the best evidence for clinical outcomes and cost-effectiveness, dentists can improve the quality and outcomes of treatment provided to patients after taking into account their values and preferences.[6] As for the patients, knowing that they will be cared for in a consistent evidence-based approach empowers them to be more accountable for their health and helps build their confidence in dental services.[7]

EBP requires the integration of the best evidence with clinical expertise and patient preferences and therefore it informs, but never replaces, clinical judgement.[1] Principles and methods of evidence–based practice give dentists an opportunity to apply relevant research findings to the care of their patients. Evidence based dentistry may ultimately protect dental practitioners from litigation as practitioners who take an evidence-based approach to care will be able to provide evidence trails for their clinical decision making.[8]

Dental education and dental care delivery systems are greatly improved in India due to increased dental health workforce and development in field of dental research, however dental graduation and post-graduation training program in India is mainly targeted towards preventive and curative dental procedures, there is a lack of emphasis on the application of evidence based dentistry in clinical practice. On the other hand, the term evidence based practice is widely used, but not widely understood among dental professionals due to lack of in depth training to distinguish good science from poor science. Most of the dental professionals' clinical questions and problems are solved by training which relies heavily on clinical experience and information learned in dental school, seminars or from colleagues which may or may not be based on scientific evidence leading to inappropriate treatment outcomes experience.[9]

There is a lack of evidence from dental literature regarding knowledge, attitude and perceived barriers towards evidence based practice among the dental professionals. Hence the study was conducted to assess and compare the knowledge, attitude and perceived barriers towards evidence based practice among dental academicians and private practitioners in Pune, India.

Materials and Methods:

A cross-sectional questionnaire based study was conducted to assess and compare knowledge, attitude and perceived barriers towards Evidence Based Practice among dental academicians and private practitioners in Pune city, India for a period of 3 months. The reporting of the study is in accordance to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. The study protocol was reviewed by the Ethical Committee of institutional review board, and ethical clearance was granted. The necessary permission were also obtained from the authorities of the 3 dental colleges in Pune city.

A pilot study was conducted to check for the face and content validity of the developed questionnaire as well as to test its reliability and to derive the sample size. The questions were framed after thorough review of the literature and with the help of four experts the questions were reviewed for content validity. Cronbach's coefficient was found to be 0.78, which showed a good internal reliability of the questionnaire. The external reliability was established by test - retest method, among forty dental interns selected for pilot study who were not included in the main study.

The sample size was determined by using single proportion formula ($n = [Z \alpha / 2]^2 p [1-p] / d^2$) at 95% confidence interval, where, $Z \alpha / 2 =$

1.96, p= 10% prevalence of knowledge of EBP from the pilot survey and d = 5% of marginal error was taken. By substituting the values in the formula, minimum sample size obtained was 138 which was rounded off as 150 study participants in each group i.e. 150 dental academicians and 150 private practitioners. Therefore, the total sample size was 300 study participants. Further each group was stratified into male and female consisting of 75 each.

All dental academicians and private practitioners with minimum of Bachelor of Dental Surgery degree and willing to participate in the study were included. Dental academicians working in dental colleges with or without private practice were included. The private practitioners registered in Indian Dental Association Pune branch practicing only private practice were selected. The dental academicians and private practitioners who were absent or clinics were closed on three consecutive visits were excluded. Systematic random sampling technique was used to obtain required sample size from the list of persons from whom informed consent was obtained.

The data was collected using self-administered, close ended, structured questionnaire. Apart from the demographic profile the questionnaire consisted of three sections with eleven questions on knowledge, five on attitude and seven questions on perceived barriers. It also included questions on pervious training in EBP and willingness to attend the training.

The questions on knowledge were based on multiple choice questions. Each correct answer was awarded 1 mark while incorrect answer was awarded 0 marks. Scores were based on the number of correct answers given for the knowledge questions. The inference was drawn as: Poor: 0-3, Fair: 4-7 and Good: 8-11.

The five questions on attitude were based on Likert scale. Strongly agree and agree was awarded 1 mark while uncertain, disagree and strongly disagree was awarded 0 mark for all attitude based questions except for 2 questions based on practicality of EBP and on devaluation of clinical experience due to EBP in the section which were reverse scored with strongly disagree and disagree having 1 mark and uncertain, agree and strongly agree having 0 mark. Scores were based on the number of answers indicating positive attitude of the students. Those who scored more than 60% ($\geq$ 3 correct answers out of 10) were considered as having positive attitude while score less than 60% (< 3 correct answers) corresponded to negative attitude.[10]

Statistical analysis was performed using IBM Statistical Package for Social Sciences (Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). The descriptive summary statistics included percentages, means and standard deviations. Chi- Square test for proportion was used to compare the proportion of correct and incorrect answers. Unpaired t- test was used to compare the means of knowledge and attitude scores between the academicians and private practitioners. A $p \leq 0.05$ was considered as significant for all statistical analyses.

Results:

A total of 300 questionnaires that were completely filled were analysed corresponding to a response rate of 100%. Of those received 150 (50%) were from dental academicians and 150 (50%) from private practitioners. Majority of dental professionals were in the age range of 35-45 years with 5-10 years of experience. Only 36 (24%) of dental academicians and 23 (15.3%) of private practitioners claimed to have attended EBP workshops or courses but almost 80% of dental academicians and private practitioners are willing to undergo training in EBP in the form of workshop of 5-8 hours.

The majority of dental academicians and private practitioners incorrectly selected the responses to each question on knowledge, [Table 1]. A significant number of dental academicians 84 (56%) and private practitioners 93 (62%) were unaware of the definition of EBP. Also, almost 97% and more than 70% of the dental academicians as well as the private practitioners were unaware of the definition of systematic review and components of EBP, respectively. Based on the pre described grading for knowledge score, among the dental academicians, 56 (37.3) showed poor knowledge, 91 (60.7%) had fair whereas only 3 (2%) had good knowledge regarding EBP and for private practitioners, 113 (75.3%) and 37 (24.7%) showed poor and fair knowledge regarding EBP, respectively. The mean knowledge score of dental academicians) and private practitioners was 4.13+1.90 and 3.59+1.82, respectively. A statistically significant difference between the mean knowledge score (0.54) of dental academicians and private practitioners was seen, (p-0.014).

The attitude of the dental academicians and private practitioners towards EBP was positive with 112 (74.6%) and 100 (66.3%) respectively in agreement with the benefits of application of EBP procedures and concepts. Almost 90% of the dental professionals "agree" and "strongly agree" to EBP important in decision making easy [Table 2]. The mean attitude score of dental academicians and private practitioners was 3.21+1.22 and 2.83+1.25.

Even though a positive attitude was seen among the dental professionals in practice of evidence based practice, there exist certain barriers in its practice as depicted in Table 3. Lack of time, access to full text articles, skills to appraise scientific journals, and difficulties in application into routine clinical practice were considered as the potential barriers towards evidence based practice.

Discussion:

Recommended health care is often not delivered and lack of evidence in general has negative impact on health outcomes, which ultimately result in a costly, fragmented and ineffective care.[11] Evidence-based practice is a fairly new approach in dentistry and thus may not be a concept well known to every dental faculty member.[12] Evidence based dentistry is said to be the current best approach to provide interventions as it improves dentist's skills and knowledge as well as quality of treatment provided to the patients.[2] In this study, only 44% of dental academicians and 38% of dental private practitioners knew about EBP which is in contrast to the study conducted by Sabounchi SS *et al* [12] among dental academicians in Iran and by Iqbal A and Glenny AM[1] among general dental practitioners practicing in North-west of England wherein only 8% and 29% respectively were aware of EBP. The lack of knowledge about definition of Evidence based practice may be because majority of them were unaware that even patient's opinion forms one of the important component of EBP.

The key tool in the evidence based approach is the systematic literature review for their explicit, well documented, scientific methodology in order to reduce errors or biases and to provide a more, objective, comprehensive view of the research literature.[13] The definition of systematic review was answered correctly by only 2.7% of dental academicians and 0.7% of dental private practitioners. The results were in contrast to the study conducted by Iqbal A and Glenny AM[1] among general dental practitioners in North-west England where 49% answered correctly.

The dental professionals had some understanding of the technical terms used in EBP. However, a large proportion were unaware of the components of evidence based practice that integrates evidence, clinical experience and patient preference which was similar to studies conducted by Sabounchi SS *et al* [12] among dental academicians in Iran and by Iqbal A and Glenny AM[1] among general dental practitioners practicing in North-west of England. The low level of knowledge about the systematic review and components of EBP may be because majority of the practitioners relied on clinical expertise rather than on reading systematic reviews and unawareness that even patient's opinion forms one of the important component of EBP. Majority of the academicians had fair knowledge scores as compared to private practitioners who had poor knowledge scores. Also, a statistically significant difference between the mean knowledge score of dental academicians and private practitioners was seen, ($p<0.05$). The difference may be attributed to more exposure of theoretical knowledge among dental academician as they are recruited from institutes which have post graduate courses as compared to the private practitioners.

The attitude of the dental academicians and private practitioners towards EBP was positive with 74.6% and 66.3% respectively who agreed to the fact that evidence based dental practice brings quick knowledge update, helps in clinical decision making, improves patient care, reduce health care costs and evidence based dentistry should be a part of dental school curriculum, the findings are in accordance with the study by Rajasekaran S *et al*[9], Zamros YF *et al*[5] and Prabhu S *et al*[2]. A statistically significant difference between the mean attitude score of dental academicians and private practitioners was seen, ($p<0.05$). This positive attitude should be looked upon as an opportunity to identify weakness and promote understanding of the concept of evidence based practice by conducting seminars on evidence based dentistry or by

recommending the introduction of evidence based practice into the dental education curriculum.

In terms of perceived barriers in use of evidence based dentistry, lack of access to full text articles followed by lack of time difficulties in application into routine clinical practice and lack of skill to appraise scientific journals are the most common barriers, this finding was in accordance with the study by Iqbal A and Glenny AM[1], Zamros YF *et al*[5] and Prabhu S *et al*[2].

The results may be because lack of wired or wireless internet connection available at the workplace of the professionals and also due to requirement of payed subscription for journals.

The lack of knowledge regarding the terms used in EBP resulted in lack of skill to appraise scientific journals.

Most respondents felt that the use of EBP is important, and showed great interest in finding out further information by attending workshop on EBP. The positive attitude shown by the professionals plays an important role in arranging for training program in EBP as the knowledge of EBP not only allows clinicians to apply research findings to solve daily clinical problems, but also serves as a methodology to improve their knowledge and clinical skills and help them monitor the quality and effectiveness of clinical treatments. Therefore, more EBP courses are needed in order to provide the patients with the optimal treatment.

There are certain limitations of our study. This is a cross-sectional study with relatively small sample size and hence it is difficult to generalize the findings. The sampling frame for private practitioners included only the members who were registered under Indian Dental Association Pune branch other practicing dental and medical practitioners were not considered. Moreover, although, systematic random sampling was done in the study, but before randomization participants willing to participate were selected. Therefore around one third of the invited academicians and practitioners refused to take part in the survey. This group might have had different levels of attitudes and usage of EBP compared to those who actually completed our questionnaire (presumably less favourable attitude and lower use). Therefore, studies with relatively larger population involving all institutes in the states is highly recommended.

Since it was a questionnaire study, knowledge attitude and perceived barriers of EBP among the respondents may or may not be predicted, reflecting the inherent limitation of the study. Social desirability bias is a major factor contributing to it. Another limitation results from our decision to dichotomize the dependent variables for analyses. The choice of where to dichotomize the 5-point Likert scale used to measure several dependent variables was somewhat arbitrary. Further studies are needed to evaluate the knowledge, attitude and perceived barriers to EBP by taking in-depth interviews, focus group discussions, comparisons between different age groups, years of experience, different specialities, etc.

Conclusion:

Evidence based practice is relatively a new paradigm in dentistry and thus may not be a well-known concept to every dental professional. The present study showed that the dental professional's knowledge of the terms used in evidence based practice was limited and they were willing to undergo training in EBP, this was reflected as a positive attitude of the professionals towards imparting evidence based dentistry in clinical practice and the respondents agreed to include evidence based practice in dental curriculum. Potential barriers exist in practice of evidence based dentistry. There should be an adequate program developed in the form research workshops and seminars on EBP to overcome the barriers perceived by the dental professionals in practice of evidence based practice, thereby integrating the concept of evidence based dentistry into routine clinical practice, which improves the quality of dental care provided to the patient.

Table 1: Distribution of dental academicians and private practitioners according to their knowledge score of EBP

Sr. No	Questions	Dental Academicians				Dental Private Practitioners			
		Correct n (%)	Incorrect n (%)	Chi Square	p-value	Correct n (%)	Incorrect n (%)	Chi Square	p-value
1.	Definition of Evidence based practice	66 (44)	84 (56)	2.16	0.142	57 (38)	93 (62)	8.64	0.003*
2.	Definition of Systematic review	4 (2.7)	146 (97.3)	134.4	0.000*	1 (0.7)	149 (99.3)	146.02	0.000*
3.	Definition of critical appraisal	107 (71.3)	43 (29.7)	27.3	0.000*	59 (39.3)	91 (60.1)	6.82	0.009*
4.	Components of evidence-based practice	45 (30)	105 (70)	24.0	0.000*	33 (22)	117 (78.0)	47.04	0.000*
5.	'Strongest evidence' in the 'hierarchy of evidence'	85 (56.7)	65 (43.3)	2.66	0.102	67 (44.7)	83 (55.3)	1.70	0.191
6.	'Weakest evidence' in the 'hierarchy of evidence'	105 (70)	45 (30)	24.0	0.000*	71 (47.3)	79 (52.7)	0.427	0.514
7.	p value	62 (41.3)	88 (58.7)	4.50	0.034*	26 (17.3)	124 (82.7)	64.02	0.000*
8.	Relative risk	87 (58)	63 (42)	3.84	0.05*	56 (37.3)	94 (62.7)	9.62	0.002*
9.	Odds ratio	60 (40)	90 (60)	6.00	0.014*	18 (12)	132 (88)	86.64	0.000*
10.	Confidence interval	56 (37.3)	94 (62.7)	9.62	0.002*	20 (13.3)	136 (86.7)	80.66	0.000*
11.	Publication bias	64 (42.7)	86 (57.3)	3.22	0.072	47 (31.3)	103 (68.7)	20.90	0.000*

**** p<0.05***

Table 2: Distribution of dental academicians and private practitioners according to their attitude towards EBP

Sr. No	Statements	Dental Academicians				Dental Private Practitioners			
		Positive Attitude n (%)	Negative Attitude n (%)	Chi Square	p-value	Positive Attitude n (%)	Negative Attitude n (%)	Chi Square	p-value
1.	It will reduce healthcare cost	73 (48.6)	77 (51.4)	0.107	0.744	87 (58)	63 (42)	3.84	0.05
2.	It will make decision making easy	136 (90.6)	14 (9.4)	99.22	0.000*	132 (88)	18 (12)	86.64	0.000*
3.	It should be incorporated in dental/ medical curriculum	129 (86)	21 (14)	77.76	0.000*	115 (76.7)	35 (23.3)	42.66	0.000*
4.	It is impractical to follow Evidence Based Practice in everyday practice	61 (40.6)	89 (59.4)	5.22	0.022*	34 (22.7)	116 (77.3)	44.82	0.000*
5.	Evidence based practice devalues clinical experience	83 (55.3)	67 (44.7)	1.70	0.191	57 (38)	93 (62)	8.64	0.03*

**** p<0.05***

Table 3: Distribution of dental academicians and private practitioners according to their perceived barriers towards EBP

Sr. No	Perceived Barriers	Dental Academicians					Dental Private Practitioners				
		Strongly Agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly Disagree n (%)	Strongly Agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly Disagree n (%)
1.	Lack of interest	10 (6.7)	38 (25.3)	26 (17.3)	49 (32.7)	27 (18)	8 (5.3)	35 (23.3)	44 (29.3)	47 (31.3)	16 (10.7)

2.	Lack of time	19 (12.7)	68 (45.3)	9 (6)	39 (26)	15 (10)	25 (16.7)	52 (34.7)	32 (21.3)	32 (21.3)	9 (6.0)
3.	Lack of computer literacy	12 (8)	29 (19.3)	23 (15.3)	53 (35.3)	33 (22)	6 (4.0)	26 (17.3)	36 (24.0)	48 (32.0)	34 (22.7)
4.	Lack of access to internet connection	2 (1.3)	39 (26)	15 (10)	60 (40)	34 (22.7)	3 (2.0)	36 (24.0)	21 (14.0)	53 (35.3)	37 (24.7)
5.	Lack of access to full text articles	28(18.67)	63 (42)	14 (9.3)	34 (22.7)	11 (7.3)	25 (16.7)	62 (41.3)	25 (16.7)	24 (16.0)	14 (9.3)
6.	Lack of skill to appraise scientific journals	11 (7.3)	35 (23.3)	22 (14.7)	58 (38.7)	24 (16)	21 (14.0)	42 (28.0)	33 (22.0)	36 (24.0)	18 (12.0)
7.	Lack of application of evidence in patients	12 (8)	47 (31.3)	36 (24)	37 (24.7)	18 (12)	11 (7.3)	61 (40.7)	44 (29.3)	20 (13.3)	14 (9.3)

*** p<0.05**

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