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## RESEARCH ARTICLE

**Perceptions towards evidence based practice among oral health professionals in Mangalore, India.**

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**Manuscript Info      Abstract**

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**Background:**-Evidence based practice (EBP) is a way to transfer evidence obtained from research into everyday provision of health care services. A dentist should not only know about the sources to obtain evidence, but also be able to critically assess the mountain of research studies available. This study was aimed to determine EBP knowledge, attitudes, confidence in critical appraisal skills and methods for accessing evidence among oral health professionals in Mangalore, India.

**Material and method:**-We used a standardized and validated 36 item EBP KACE (Knowledge, Attitudes, Confidence and Evidence) questionnaire which consisted of 4 domains, Knowledge of Critical Appraisal, Attitudes about Evidence-Based Practice, Confidence in Critical Appraisal Skills and Accessing Evidence. Statistical analysis was performed using student's t test, binary logistic regression and bivariate correlation tests.

**Results:**-A total of 133 males and 231 females took part in the study (n=364). Participants were divided into interns, postgraduate students and specialists. Mean knowledge of postgraduates (2.45; SD 1.2) was highest. Attitudes levels were similar for postgraduates (4.4; SD 2.5) and undergraduates (4.7; SD 2.6). Postgraduate students were more aware of newer methods of accessing evidence (4.1; SD 2.0) ( $p < 0.01$ ) compared to others.

**Conclusions:**-Postgraduates had greater knowledge of EBP and better ideas of ways to access evidence. The undergraduates showed a positive attitude and interest towards evidence based practice. Hence, making evidence based practice a formalized part of dental curriculum would enable young dentists to make optimal treatment decisions essential in the interest of the patient as well as the community.

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**Introduction:-**

Evidence-Based Practice (EBP) has been proposed as a way to promote the transference of evidence obtained from research into the day-to-day provision of health care services (Hendricson et al., 2011). It is defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients". (Sackett et al., 1996)

Being a healthcare provider, it is imperative that the dentist provide the best of care for all patients. One of the challenges for dentists and other health care providers is staying abreast of new developments in biomedical sciences and in clinical practice. Dentistry is a fast-developing, dynamic science, demanding that all dentists constantly update their skills and knowledge of new technology and scientific advances.

Evidence Based Dentistry (EBD) may be defined as “the practice of dentistry that integrates the best available evidence with clinical experience and patient preference in making clinical decisions” (Sutherland, 2001).

The clinician should use the best evidence available in consultation with the patient, to decide upon the treatment alternative which suits that patient best.<sup>3</sup>This approach not only offers an avenue for lifelong learning but also develops the clinicians skills and performance with time (Richards and Lawrence, 1995), (Bader et al., 1999), (Iqbal and Glenn, 2002).

Dentists need to be aware of all the suitable sources to obtain evidence from. The next step is the selection of the most robust and suitable evidence from the ever growing collection of information. It is also important to find out if new knowledge is being efficiently transferred and implemented in dentistry. This has been achieved using the KACE (Knowledge, Attitudes, Access, and Confidence Evaluation) Questionnaire (Hendricson et al., 2011). It is an assessment tool to measure evidence-based practice in the dental environment. Although studies in this area have been carried out in different parts of the world, no studies were done in India. The paucity of data led to the conception of this study which aimed to determine Evidence Based Practice knowledge, attitudes, confidence in critical appraisal skills and methods for accessing evidence among oral health professionals in Mangalore, India.

### **Material and method:-**

A cross sectional study was carried out from March 2014 to August 2014. The KACE Questionnaire was used (Hendricson et al., 2011). It has four domains. The first domain, “Knowledge of Critical Appraisal” has 10 items with five options and the last option being “I don’t know”, in order to avoid guess-work. The second domain, “Attitudes about Evidence-Based Practice” has 10 items with options in the form of a Likert Scale ranging from “strongly disagree” to “strongly agree”. The third domain, “Confidence in Critical Appraisal Skills” has 7 items with options in the form of a Likert Scale ranging from “not at all confident” to “very confident”. The fourth domain was, “Accessing Evidence” and it contained 9 items with options in the form of a Likert Scale ranging from “never” to “very frequently”. The validity and reliability of the questionnaire was tested by a pilot study on 10 respondents who were representatives of the study subjects but not included in the study ( $k=0.82$ ). Permission to conduct the study was obtained from the Institutional Ethics Committee. (Protocol reference No: 14052 date 11/4/2014)

The study population included all the interns and oral health professionals in Mangalore city, who were willing to give written informed consent. Each participant was given 15 minutes time to fill the questionnaire. If any participant was not available in the first visit, a second visit was made. Data collected from the participants comprised demographics and information from the KACE questionnaire. It was coded and analyzed using the SPSS version 11.5 with the level of statistical significance kept at  $p < 0.05$ . Descriptive as well as inferential statistics were analyzed with Chi square test and student’s t- test. The influence of socio-demographic variables on the four domains of the questionnaire was assessed with Spearman’s correlation and binary logistic regression analysis.

### **Results:-**

Of the 364 participants, 133 were males (36.5%) and 231 were females (63.5%). The mean age of the study population was 26 years (SD 4.93). There were 128 interns, 134 postgraduate students and 102 specialists who participated in this study. (Table 1).

The mean scores were calculated for each of the four domains. In the knowledge domain, specialists and postgraduate students fared slightly better with a mean score of 2.30 and 2.40 respectively. The knowledge amongst interns was lesser, with a mean score of 1.67. Despite lesser score in the Knowledge domain, the interns had the highest mean score of 4.77 in the Attitude domain. The least score of 2.13 was seen among the postgraduate students (Table 2).

In the Confidence domain, the specialists had the highest confidence in their skills of critical appraisal with a mean score of 1.18 while the least (0.85) was scored by the interns.

More innovative and appropriate methods of accessing evidence were used by the postgraduate students and the least informed about different approaches for evidence were the interns. The mean score of postgraduate students in the Evidence domain was 4.11 and that of the interns was 2.34 (Table 2).

Independent sample t-test was done to find the association between various demographic characteristics and means of the four domains. Mean level of knowledge of EBD was found to increase with age (2.69 SD 1.4;  $p < 0.001$ ). Confidence in critical appraisal (1.8 SD 0.1;  $p < 0.001$ ) and methods of accessing evidence (2.4 SD 0.1;  $p < 0.001$ ) followed a similar trend and seemed to improve with age. Attitude towards evidence based dentistry was related to gender showing males to have a more positive attitude towards it as compared to females (5.2 SD 2.9;  $p < 0.01$ ). (Table 3)

For binary logistic regression, the subjects were dichotomized based on gender (male, female), age (above 25 years and below 25 years) and qualification (interns and postgraduates; the latter group comprised postgraduate students and specialists). This was done to be able to quantify the difference between the undergraduates with the remaining dentists. It showed that while interns had greater confidence in their skill of practicing evidence based dentistry (OR 2.092;  $p < 0.01$ ), it was the postgraduates who used better means of accessing evidence (OR 0.338;  $p < 0.001$ ) (Table 4).

Bivariate correlation of the four domains showed a positive correlation of knowledge with attitude ( $r: 0.22$ ;  $p < 0.001$ ), confidence ( $r: 0.16$ ;  $p < 0.001$ ) as well as evidence ( $r: 0.26$ ;  $p < 0.001$ ). Along with this, a positive correlation was also seen between attitude and confidence ( $r: 0.21$ ;  $p < 0.001$ ) and confidence with evidence ( $r: 0.34$ ;  $p < 0.001$ ) (Table 5).

When the frequency for individual questions was calculated, it was seen that the participants often attended workshops or seminars on evidence based dentistry and Continuing Dental Education. Not only this, they seemed to be well versed with modern gadgets and had a good know-how of using technology such as online databases like Cochrane Collaboration, podcasts and internet in general.

### **Discussion:-**

This study analyzed differences in knowledge, attitudes, confidence levels in EBD and the methods to access evidence across dentists and dental interns in Mangalore city. It included interns, the youngest group that is yet to form opinions and approaches up-till specialists who had been practicing or teaching for decades.

The questionnaire was completed by 364 respondents with a response rate of 84%. Response rates for dentists have been seen to vary from as low as 31% (Mjor et al., 1999) to as high as 98% (Tseveenjav et al., 2003). Though there were more female dentists in the study as compared to male dentists, it was still high enough to give a reliable picture for both the genders. The data on gender points towards greater inclination for evidence based dentistry among males. Studies done in different countries on this subject have concentrated on a single group of dentists; however, this study is the first to include interns, postgraduate students and specialists.

Being a dentist means having to make multiple decisions and keeping the best interests of the patient in mind. The dentists should use the best available evidence while striking a balance between the latest evidence, patient's demand and clinical expertise. In order to be able to do this, there should be a concise grasp of the terms used in EBD as well as the hierarchy of evidence.

Knowledge about EBD in this study was seen to be highest among postgraduate students and specialists. This result is also corroborated by the binary logistic regression according to which knowledge levels tended to increase with age. Knowledge levels when compared gender wise, were higher in females than males. There were no other studies measuring the knowledge levels of the three groups together, so as to enable comparisons with this study.

Application of EBD for deciding a treatment plan involves searching for evidence of which there is ample abundance. It is crucial that dentists are able to sift through all the available excess information and select that which is reliable. This requires an understanding of the study design, sample size calculation, data collection, statistical analysis and biases. They should be able to determine on their own the strengths and limitations of the study from which they seek evidence. Analysis of data showed that confidence in the skill set needed to critically appraise evidence was higher surprisingly among the interns than the postgraduates. However, a possible explanation for this could be the lack of information about the detailed critical evaluation of an article among the interns might lead them to believe it to be much simpler process than it actually is. A study among general practitioners in England showed opposing results by concluding that while the dentists understood the term "critical appraisal", they still felt that there was need for them to acquire those skills (Iqbal and Glenny, 2002).

One of the basic steps required to practice EBD is to have knowledge of what to read and from where to obtain it. In this study, the postgraduate students scored the highest in methods of searching for reliable evidence. It was also seen that specialists who had been teaching or practicing were more aware of better ways to access evidence. Moreover, they were more adept at integrating technology. Not only did they know more about online databases such as Cochrane Collaboration, they also made use of podcasts and internet with a greater familiarity. A study among general dental practitioners in Malaysia concluded that clinicians were adapting to EBD and moving away from traditional opinion based decision-making (Yusof et al., 2008). On the contrary, another study in Kuwait showed that the clinical decisions made by dentists were mostly based on the clinician's own judgment (73.3%) rather than on evidence-based sources (Haron et al., 2012).

One encouraging finding in our study was that even though levels of knowledge and awareness about methods of accessing evidence, were low among interns, they nevertheless had high mean scores for attitude towards evidence based dentistry. This shows that the even though the interns group may not be aware of innovative means of accessing evidence they were interested in following this approach.

Evidence based practice has been around for quite some time now. A trend of increase in the knowledge and ability to practice it with age and experience has been shown in this study. The low levels of knowledge, but at the same time, positive attitude among interns shows a need for making it a part of the dental curriculum. Based on the findings of this study, more avenues towards knowledge and practice of evidence based dentistry need to be developed right from undergraduate course to strengthen the foundation of EBD among dental students. More workshops and educational programs must be developed not only for postgraduate students or practicing clinicians, but also for the undergraduates. These programs may be effected through the latest technological advancements and in doing so, aid in a shift from eminence based practice to evidence based practice.

## Tables

**Table 1. Characteristics of the study sample**

Characteristic	Description	N%
Gender (n=364)	Male	133 (36.5)
	Female	231 (63.5)
Age	Below 25	187 (50.5)
	Above 25	177 (49.5)
Specialty	Orthodontics	22 (9.3)
	Prosthodontics	29 (12.2)
	Public health dentistry	18 (7.6)
	Oral pathology	12 (5.1)
	Oral medicine and radiology	34 (14.4)
	Oral surgery	22 (9.3)
	Periodontics	25 (10.5)
	Pedodontics	44 (18.6)
Qualification	Endodontics	30 (12.7)
	Interns	128 (35.1)
	Postgraduate students	134 (36.8)
	Specialists*	102 (28.1)

\* Specialists includes teaching faculty and practicing clinicians

**Table 2. Distribution of knowledge, attitude, confidence and evidence scores**

	Interns	Postgraduate students	Specialists
Knowledge	1.67 ± 1.3	2.30 ± 1.4	2.45 ± 1.2
Attitude	4.77 ± 2.6	2.13 ± 0.1	4.40 ± 2.5
Confidence	0.85 ± 1.3	1.16 ± 1.5	1.18 ± 1.4
Evidence	2.34 ± 2.0	4.11 ± 2.0	3.81 ± 2.4

**Table 3. Association between Age, Gender and KACE scores**

	Knowledge Mean $\pm$ SD	Attitude Mean $\pm$ SD	Confidence Mean $\pm$ SD	Evidence Mean $\pm$ SD
Age (P-value)	p<0.001**	p=0.22	p<0.001**	p<0.001**
<25 years	1.92 $\pm$ 1.4	3.0 $\pm$ 0.2	1.5 $\pm$ 0.1	2.3 $\pm$ 0.1
>25 years	2.69 $\pm$ 1.4	2.7 $\pm$ 0.2	1.8 $\pm$ 0.1	2.4 $\pm$ 0.1
Gender (p-value)	p=0.68	p=0.01*	p=0.31	p=0.57
Male	2.26 $\pm$ 1.4	6.03 $\pm$ 2.7	1.3 $\pm$ 1.7	3.4 $\pm$ 2.3
Female	2.23 $\pm$ 1.5	5.2 $\pm$ 2.9	1.1 $\pm$ 1.7	3.5 $\pm$ 2.5

\*Statistically significant at p<0.05    \*\*Statistically significant at p<0.001

**Table 4. Association of KACE values with graduation level**

Domain	SE	Odds ratio	95% CI	P-value
Knowledge Qualification	0.760	0.940	0.212-4.167	0.93
Attitude Qualification	0.640	0.336	0.096-1.178	0.08
Confidence Qualification	0.308	2.092	1.143-3.828	0.01**
Evidence Qualification	0.333	0.338	0.176-0.649	0.001**

\*Statistically significant at p<0.05    \*\*Statistically significant at p<0.001

**Table 5. Correlation between four domains of the KACE questionnaire**

	Knowledge	Attitude	Confidence	Evidence
Knowledge				
Attitude	0.22**			
Confidence	0.16**	0.21**		
Evidence	0.26**	0.23**	0.34**	

\*Statistically significant at p<0.05    \*\*Statistically significant at p<0.001

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