ORIGINAL ARTICLE

An Assessment of Dentists' Knowledge of Evidence Based Terms

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ABSTRACT

Objective: The study was conducted to assess dentists' understanding of terms used in evidence based healthcare.
Study Design: Cross-sectional questionnaire based study.
Place and Duration of Study: This study was conducted in the department of community dentistry at Islamic International Dental Hospital Islamabad from April 2013 to August 2013.
Materials and Methods: A questionnaire based cross-sectional study was conducted among faculty members of the Faculty of Dentistry, Riphah International University. A sample of 38 faculty members (n=38) was selected. The sample was stratified into senior (n=17) and junior (n=21) faculty members. A self-administered questionnaire, including 10 questions, was distributed by hand among the faculty members. The participants were asked about their knowledge about the methodological terms used in evidence based literature.
Results: Majority (82%) of the respondents had basic knowledge of the terms used in questionnaire and many of them who did not know showed desire to know. Eight percent (3) of the respondents said that they knew dummy term and could explain it to others where as 21.1% (8) had some knowledge of the term. Evidence based practice should be encouraged among young dentists by senior members and it should be part of curriculum for the dental students.
Conclusion: Senior faculty members are more knowledgeable compared to juniors. Although majority (82%) of the respondents have basic knowledge but not all of them can explain it to others, indicating their poor understanding.

Keywords: *Evidence Based Practice, Dental Education, Evidence Based Dentistry.*

Introduction

Evidence based practice is a triad of evidence, clinical experience and patient preference.[1] Although it is not a new concept as its origin dates back to mid-19th century but in the past four decades evidence based practice had attained paramount importance in making effective and efficient health-care decisions.[2] It is defined as "the practice of dentistry that integrates the best available evidence with clinical experience and patient preferences in making clinical decisions".[3] With changing times, rapid technical advances, maturing health-care consumers and advancing information technology; implementation of evidence based practice is ever more important.[1] Challenging and complex cases now demand innovations in thought process of dentists which can only be made possible if the professionals are well equipped with knowledge of EBD.[4] Critical appraisal of scientific literature which forms the core of EBD helps in bridging research findings with real world dental practice.

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Five fundamental tiers of EBD include.[5,6]

1) Generating an answerable question to a problem related to patients.
2) Literature search for the problem.
3) Critical appraisal of best available evidence for the particular problem.
4) Implementation of the findings into clinical practice.
5) Evaluation of its impact on dental practice, dentists and patients

EBD benefits all of its three components of dental healthcare system (dentists, dental practice and patients) alike. For dentists, it provides life-long opportunity of learning new advances in their field. Dental treatments based on evidence rather than opinions provide a long term monitoring of dentists' capabilities and skills. Treatments of patients in the light of best available evidence considering their preferences enhance their faith in dentists.[1,7-9]

However, practice pattern of most of the dentists is governed by the training they receive during or after graduation. A few practitioners take the trouble to update their knowledge about new innovative steps thus giving away potential opportunity to provide quality healthcare service to their patients.[10] In addition, literature research reveals that a lack of time to study scientific literature, complexity of used words, lack of skill in critical appraisal, poor availability of evidence and failure to cast aside an

orthodox mind-set in the provision of healthcare services are the major short-comings in application of EBD.[11,12] Considering the importance of EBD in real world dental practice a study was conducted to assess the understanding of EBD terms among the dentists at the Faculty of Dentistry, Riphah International University (RIU), Islamabad.

Materials and Methods

A cross-sectional, questionnaire based study was conducted at Riphah International University, after the ethical approval from Research Ethics Committee of the Faculty of Dentistry, Riphah International University. All current members of the Faculty of Dentistry were included in the study. Faculty members of all other departments of the university were excluded. Data was collected from 38 faculty members, which were divided into two groups upon the basis of seniority into senior faculty members (n=17) and junior faculty members (n=21) by a self-administered, structured questionnaire distributed by hand among the faculty members of the college in September, 2013. Complete anonymity of the participant's data was maintained to increase response rate and reduce bias during the study. A questionnaire was designed at the Community Dentistry Department of RIU. The questionnaire was distributed amongst eight senior faculty members and they were requested to give a qualitatively evaluate the questionnaire for validity and appropriateness. Modifications were made in the questionnaire in the light of the suggestions made. Brief introduction of the study was given on the front page of questionnaire.

Questionnaire provided 10 questions to participants to self-evaluate their knowledge about the terms commonly used in research literature in 4 possible ways i.e.

a) I understand and can explain it to others
b) I have some knowledge about it but can't explain to others
c) I have no knowledge about it but would like to know
d) I have no knowledge about it and it has no relevance to me

Following research related terminologies were asked (in the order in which they were given in questionnaire from question ''1-9''):

Meta-analysis, linear regression, cohort study, selection bias, odds ratio, relative risk, null hypothesis, p-value and confidence interval. A dummy term, **relative odds ratio reduction** (question 10) was also used to assess bias during the study.

Data was analysed using SPSS Version. 17.0. Mean and standard deviation were calculated for the answers of the different questions.

Results

Response rate:

All of the faculty members (38) returned the questionnaire. Thus, a 100% response rate was achieved.

Knowledge of EBD-related terms:

Table I shows dentists' self-reported knowledge pertaining to EBD terms used in questionnaire. The table shows that majority of the participants have basic knowledge about EBD-related terms and those who did not know showed desire to know.

Table I: Dentists' self-reported knowledge of EBD-related terms

TERMS	I understand and can explain it to other N (%)	I have some knowledge about it but can't explain to others N (%)	I have no knowledge about it but would like to know N (%)	I have no knowledge about it and it has no relevance to me N (%)
Meta-analysis	10 (26.3)	12(31.6)	16(42.1)	0(0)
Linear regression	3 (7.9)	17 (44.7)	18 (47.4)	0(0)
Cohort study	15 (39.5)	17 (44.7)	6 (15.8)	0(0)
Selection bias	14 (36.8)	18 (47.4)	6 (15.8)	0(0)
Odds ratio	8 (21.1)	11 (28.9)	19 (50)	0(0)
Relative risk	13 (34.2)	17 (44.7)	8 (21.1)	0(0)
Null hypothesis	28 (73.7)	7 (18.4)	3 (7.9)	0(0)
p-value	22 (57.9)	12 (31.6)	4 (10.5)	0(0)
Confidence Interval	8 (21.1)	12 (31.6)	16 (42.1)	2(5.3)
Relative odds ratio reduction	3 (7.9)	8 (21.1)	25 (65.8)	2(5.3)

The participants who selected either of the two options i.e., to explain the terms to others'' and “have some knowledge but can't explain it to others' were considered as the ones having basic knowledge. Table II illustrates the basic knowledge for each of the term used in questionnaire among this group

K-score

Participant with the basic knowledge of one term

Table II: Cumulative percentages for EBD-related terms

TERMS	% of participants having basic understanding (N)
Meta-analysis	57.9 (22)
Linear regression	52.6 (20)
Cohort study	84.2(32)
Selection bias	84.2 (32)
Odds ratio	35.3 (19)
Relative risk	76.5 (30)
Null hypothesis	94.1 (35)
p-value	94.1 (34)
Confidence interval	52.7 (20)

was given K-score of 1. Thus participants with k-score of five or above had the basic understanding of majority of terms. Results showed, almost 82% of the participants (31 out of 38) had k-score five or greater showing that they had basic understanding of majority of the terms. However, not all the participants with basic knowledge could explain the terms to others. Table III represents the percentage of participants with basic knowledge without ability to explain, termed as 'basic understanding' participants with knowledge with ability explain, termed as good understanding, and participants with no understanding.

Table III: Percentage of participants with respect to their level of understanding

TERMS	No Understanding (%)	Basic understanding (%)	Good understanding (%)
Meta-analysis	42.1	26.3	31.6
Linear regression	47.4	7.9	44.7
Cohort study	15.8	39.5	44.7
Selection bias	15.8	36.8	47.4
Odds ratio	50.0	21.1	28.9
Relative risk	21.1	34.2	44.7
Null hypothesis	7.9	73.7	18.4
p-value	10.5	57.9	31.6
Confidence interval	47.4	21.1	31.6

32% (ten out of thirty one) participants who had basic knowledge (K-score greater than, equal to five) could not explain 5 or more terms to others Most recognized and least familiar terms: Results showed that out of nine terms (excluding the dummy term) the most recognized term was null hypothesis 92%(35) and the least familiar term was odds ratio 50%(19). The result showed that in seven out of nine terms (excluding the dummy term) senior members had greater knowledge compared to junior and two

Table IV: Comparison of cumulative percentages between senior and junior faculty

TERMS	Cumulative percentage for seniors (%)	Cumulative percentage for juniors (%)
Meta-analysis	88.2	33.2
Linear regression	52.9	52.4
Cohort study	88.2	81.0
Selection bias	88.2	81.0
Odds ratio	35.3	61.9
Relative risk	76.5	81.0
Null hypothesis	94.1	90.5
p-value	94.1	85.7
Confidence interval	58.8	47.6

of the terms i.e. “Odds Ratio” and “Relative Risk” are more familiar to the junior members.

Knowledge of Dummy Term

Eight per cent (n=3) of the participants said that they had strong knowledge of dummy term ''Relative odds ratio reduction'' and 21.1% (n=8) had poor understanding of the term. Majority of the members 65.8%(n=25) didn't know it and showed desire to know.2 of the members 5.3%(n=2) neither had knowledge nor they desired to know and considered it irrelevant. The group 7.9+21.1=29% (11) claiming that they had knowledge of the dummy term may not have reported their knowledge of other terms appropriately.

Discussion

The present questionnaire survey demonstrates that majority of the participants either had knowledge or desire to know the terms used in questionnaire, reiterating the importance of EBD in solving day to day healthcare problems as well as improving their own knowledge.[7] This is evident from the cumulative percentage also, which is more than 50% for each variable (EBD terms used in questionnaire). However, the participants' understanding do not reflect accurate understanding of the terms, as 32 % of the participants having knowledge of majority of the terms couldn't explain these terms to the others. The lack of knowledge among some faculty members may represent a substantial barrier to implementation of EBD into clinical practice. Common practices such as continuing training courses, reading print journals, consultation with other healthcare professionals and referring to electronic databases can help to increase the knowledge about EBD[13] and to bridge its implementation into clinical practice. The study also shows that the terms ''cohort study'','' selection bias'','' null hypothesis'','' relative risk'' and ''p-value''

were widely known, whereas ''odds ratio'','' meta-analysis'','' linear regression'' and ''confidence interval'' were relatively less known to the dentists. Regarding dummy term the group 29% (n=11) claiming that they had knowledge didn't significantly overrate themselves in other terms asked in the questionnaire. It also predicted that senior faculty members have more understanding of the terms used in EBD as compared to the junior ones thus directly relating years of clinical experience and knowledge about the terms used in EBD. The findings of the study can be compared to a study carried in University of Lowa by Cheryl L. Straub-Morarend and Teresa A. Marshall, which shows higher level understanding and comfort in implementation of EBD among dental consultants (having more experience and clinical practice) compared to general practitioners.[14] The knowledge about EBD can be increased by taking help from colleagues and experts rather than just relying on textbooks or scientific journals as these can no longer be considered sufficiently updated.[10] Moreover it is imperative that the relevant literature is available.[12] Ideally clinicians should be turning to electronic databases of secondary research e.g. Pub Med, Cochrane Library, DARE, EMBASE etc.[1,15] Moreover emphasis should be made towards training, accessing and interpreting evidence, and then spending time putting these skills into practice. It is important because critical appraisal of the scientific literature require specific skills. Thus, evidence-retrieving skills from scientific literature and evidence based practice only can be boosted through workshops, courses and seminars.[16,17] The present study had several limitations. Firstly, it was a self-administered questionnaire based study and participants tend to over-rate their knowledge so no verification of data could be done. Questions to assess the participants' understanding of these terms would have been a more valid tool, as compared to self-reported understanding. Secondly it was a hospital-based study and results cannot be generalized as such. Lastly, we only covered terms related to EBD not the whole steps included in EBD. However, the results of the study had potential implications such as implementation of EBD in curriculum so as to groom the future dentists in the light of it, and licensure to be linked with EBD training for dental practice.

Conclusion

Compared to the past researches, knowledge of dental practitioners has progressed in evidence based dentistry. Even if they didn't know, they expressed desire to find out more information about EBD. As senior members reported to have better knowledge, steps should be taken to inculcate the culture of practicing EBD among young dentists by giving them incentives or relating licensure validity with few hours of EBD training yearly EBD should also be included in the dental undergraduate curriculum. Periodic researches should be done to evaluate the knowledge of dentists so that the effectiveness of implemented steps can be judged and; improved dental practice, increased patients' satisfaction and cost-effective healthcare facilities should be ensured.

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