

Information Seeking Behaviours and Perceived Determinants towards Research among Faculty of Postgraduate Dental Institutions in South India - A Cross-Sectional Survey

Vandana.K¹, Harikrishna Raju. S², Narendra Babu. J³, Chandrasekhara Reddy V⁴, Sudhir. KM⁵, Krishna Kumar⁶, V.R Chandrababu Pamidi⁷

1-Assistant professor, Department of Public Health Dentistry, Dr. Sudha and Nageswarao dental college, Andhra Pradesh, India. 2- Assistant professor, Department of Public Health Dentistry, GSL Dental college and Hospital, Andhra Pradesh, India. 3- Senior Resident, Department of Orthopaedics, Pinnamaneni Siddhartha Institute of Medical Sciences, Andhra Pradesh, India. 4- Professor & HOD, Department of Public Health Dentistry, Narayana Dental College and Hospital, Andhra Pradesh, India. 5,6- Reader, Department of Public Health Dentistry, Narayana Dental College and Hospital, Andhra Pradesh, India. 7- Assistant Professor, Department of Oral and Maxillofacial Surgery, GSL Dental college and Hospital, Andhra Pradesh, India.

Correspondence to:
Dr. Vandana K, Senior lecturer, Department of Public Health Dentistry, Dr. Sudha and Nageswarao dental college, A.P, India.
Contact Us: www.ijohmr.com

ABSTRACT

Purpose / Objectives: To assess information seeking behaviours, the extent of involvement and perceived determinants of Postgraduate Dental Trainers towards research. **Methods:** A cross-sectional descriptive survey was conducted among faculty members of Postgraduate Dental Institutions in South India using a 25 item pretested, structured, and self-administered a questionnaire. **Results:** A total of 430 faculty members participated in the survey. The mean age of respondents was 35±6.7 years with 57.2% males and 42.7% females. The majority of the Respondents (33.9%) preferred reading specialty journals more frequently than did their reference counterparts journals and they read journals (57.2%) once in a week. Textbooks and journals were most preferred (63.2%) as information seeking sources in the field of dental research. Female respondents (5.9±2.4) and Readers (5.9±2.3) in the hierarchical designation cadres were found to have better knowledge scores regarding perceived determinants towards research. Respondents with a master's degree in public health dentistry (7.2 ± 2.8) had better knowledge scores followed by Periodontics (6.4 ± 2.4) and Pedodontics (6.2 ± 2.2). Respondents with teaching experience of 5-9 years (5.8 ± 2.3) had better knowledge scores towards perceived determinants of research which was statistically significant. Lack of funding (22%) was also found to be a most important barrier pursuing research. **Conclusion:** Information seeking behaviours and perceived determinants towards research among respondents varied according to their hierarchical designation cadres and field of academic specialization.

KEYWORDS: Information seeking, Perceived determinants, Research

INTRODUCTION

The term "information-seeking" means a process of inquiry in which people are engaged to change their state of knowledge. Literature regarding information seeking across numerous health disciplines was exemplified. Over the past years the information seeking sources available to health professionals, including dentistry, has been diversified. The most common evidence sources utilized by health professionals were Online databases (e.g., PubMed), continuing dental education (CDE), communication with colleagues, professional organizations, study clubs, and peer-reviewed journals.¹

Emerging science and advances in information technology have led to a veritable explosion in the amount of scientific information available to professionals. 24 million records going back to 1966, selectively to the year 1865; about 500,000 new records are added each year and 13.1 million of PubMed's records

are listed with their abstracts, 14.2 million articles have links to full-text (of which 3.8 million articles are available full-text for free for any user at PubMed database (28 July 2014). In MEDLINE database 5,653 journals are currently indexed, among them 87 belongs to dentistry representing the growing quantity of published scientific information, challenging the health professionals in implementation of evidence-based practice. To achieve evidence-based practice, dental professionals should be proficient in obtaining valid, reliable, current scientific information. Time, poor access to evidence, inefficient information systems, and clinical knowledge are the obstacles faced by professionals to integrate evidence-based decision at clinical practice. Rapid availability of evidence provides new boulevards to collect, compare, and infer information in responding to patient problems. Whether information-seeking has an impact on Trainer, student and patient still remains an area of further inquiry, particularly in dentistry.²

How to cite this article:

Vandana.K, Raju HS, Babu NJ, Reddy VC, Sudhir KM, Kumar K, Pamidi VRC. Information Seeking Behaviours and Perceived Determinants towards Research among Faculty of Postgraduate Dental Institutions in South India - A Cross-Sectional Survey. *Int J Oral Health Med Res* 2015;2(3):26-33.

The knowledge transformation between discovery and implementing teaching practice might potentially be reduced by understanding the information-seeking behaviors of dental practitioners.^{3,4} Research training is essential to inculcate critical thinking and reasoning skills and to develop a positive attitude among postgraduate students towards scientific research from the beginning to their career. It also helps developing countries to achieve self-reliance and implement evidence based practice in health care.

Unfortunately, the number of and quality of research in the field of dentistry has declined over the past years, and there is a dire need for more dental research investigators, So the role of postgraduate dental research trainers is thus more important in encouraging and motivating postgraduate dental students towards research activity to reduce the lacunae dental literature. In India, relatively little is known about postgraduate dental trainers stated knowledge and attitudes towards research. Hence this study was undertaken to explore knowledge, attitudes towards research, utility and accessibility of research, publishing practices of postgraduate dental trainers and barriers while pursuing research.

MATERIALS & METHODS

Study design and Subjects: A cross-sectional descriptive survey was conducted among faculty members of postgraduate dental institutions of South India between the months of July to August 2014.

Source of data: The source of data was primary in nature, and it was obtained through a self-administered questionnaire.

Study subjects: All faculty members of the selected postgraduate institutions are included in the survey.

Inclusion criteria: The entire eligible faculty from these selected postgraduate institutions with a qualification of BDS and MDS on the day of survey and who gave informed consent were involved.

Ethical clearance and informed consent: Ethical clearance for conducting the survey was obtained from institutional review board of research. Prior to the start of the survey, permission to conduct the survey was obtained from the Principals of the selected postgraduate dental institutions in Andhra Pradesh and Tamil Nadu respectively. The purpose of the survey was explained to the faculty members, informed consent was obtained from them during the survey.

Validation of the Questionnaire: The 25 item self-administered questionnaire which was designed for this study was validated by checking Content validity before conduction of pilot survey using content validity index with Davis criteria 1992{1- not relevant, 2- somewhat relevant, 3- quite relevant,4- highly relevant.⁵ It was given to two experts in the field of dental research, and their response was recorded, item and scale content

validity was checked, and was found to be acceptable.^{6,7}

A pilot survey was conducted among 78 faculty members of one of the Dental institutions of Andhra Pradesh to assess the reliability of questionnaire by using test-retest design. It was given to same faculty members twice with seven days apart. Reliability was assessed and the Cronbach's alpha statistics was 0.8734*, 0.7369* and 0.9999* which indicated significant correlation.

Multi stage sampling was done. At the first stage out of four states in South India two states (Andhra Pradesh and Tamil Nadu) were selected randomly, in the second stage proportionate numbers of postgraduate dental colleges were selected from these two randomly selected states. and proportionate sampling was done, 8 Postgraduate dental colleges were selected from 16 postgraduate institutions in Andhra Pradesh and 7 postgraduate dental colleges were selected from 14 postgraduate institutions in Tamil Nadu by lottery method. One of the randomly selected dental colleges in Tamil Nadu did not give permission for conducting the survey. Hence it was excluded from the study.

Collection of data: Data was collected using a pre-tested, self-administered structured questionnaire in their respective institutions. The Questionnaire was divided into three parts; the first part was related to demographic details which include age, gender, qualification, department, designation and teaching experience. Second part consisted of questions pertaining to knowledge, and the third part was related to attitudes of faculty members towards journal reading habits and research practices. Questionnaire was distributed to all the faculty members who were present on the day of the investigation, of selected postgraduate institutions and collected back on the same day.

Statistical analysis: The collected data was analyzed using SPSS 20 version statistical package. Descriptive statistics were performed to analyze the influence of age, gender, department, designation and teaching experience on knowledge scores pertaining to research using Analysis of variance (ANOVA) and t-test.

RESULTS

Sociodemographic and Practice- Related Characteristics- A total of 430 faculty members participated in the survey. Mean age of the respondents was 35.7±6.7 years with 57.2% males and 42.7% females. Majority of the respondents represented from Department of Periodontics (13.9%), and least was from Department of Public Health Dentistry (7.9%). When the respondents were divided based on Hierarchical designation cadres, majority were Assistant. Professors (45.1%) followed by Readers (25.3%) with less than four years of teaching experience (44.6%) (Table 1).

The respondent's knowledge scores regarding perceived determinants towards research revealed female respondents (5.9±2.4) and Readers (5.9±2.3) in the

Variables	n (%)	
Age	20-30 years	121 (28.1%)
	31-40 years	239(55.5%)
	41-50 years	57(13.2%)
	51-60 years	13(2.5%)
Gender	Male	246(57.2%)
	Female	184(42.7%)
Qualification	MDS	417(96.9%)
	BDS	13(3%)
Department	Periodontics	60(13.9%)
	Prosthodontics	43(10%)
	Orthodontics	46(10.6%)
	Conservative and Endodontics	55(12.7%)
	Pedodontics	49(11.3%)
	Oral and maxillofacial surgery	43(10%)
	Oral medicine and Radiology	54(12.5%)
	Oral pathology and Forensic medicine	46(10.6%)
	Public Health Dentistry	34(7.9%)
Designation	Professor and Head of the Department	93(21.6%)
	Associate professor	24(5.5%)
	Reader	109(25.3%)
	Sr.Lecturer	194(45.1%)
	Jr.Lecturer	10(2.3%)
Teaching Experience	≥ 10 years of experience	108(25.1%)
	5-9 years of experience	130(30.2%)
	≤ 4 years of experience	192(44.6%)

Table 1: Sociodemographic and Practice- Related Characteristics of study participants

hierarchical designation.

Cadres were found to have better knowledge scores. Respondents with the master degree in public health Dentistry (7.2 ± 2.8) had better knowledge scores followed by Periodontics (6.4 ± 2.4) and Pedodontics (6.2 ± 2.2). Respondents with teaching experience of 5-9 years (5.8 ± 2.3) had better knowledge scores with respect to gender (P value=0.02), the field of specialization (P value <0.001) and designation (Pvalue=0.04) and was found to be statistically significant (Table 2).

Dental Information-Seeking Sources

Majority (33.9%) of the respondents indicated that they prefer to read specialty journals as compared to International (29.3%), National (9.6%) and Local (1.6%) journals (Table3). Most (57.2%) of the respondents preferred reading journals once in a week. Interestingly there were 20.9% of respondents who read journals daily. When respondents were asked regarding their preferred information seeking source in the field of dental research 63.2% preferred readingtext books and journals(Table 5).

Protocol driven method was the most (56.2%) preferred search strategy followed by snowball method (29%) and personal knowledge (14.1%) for browsing recently published articles {Table 3}. Motivation of postgraduate students towards research practices -When a question was asked to the respondents about the most to least preferred order for updating postgraduate students in their concerned speciality, Most of them preferred conducting journal article discussions (62.1%), followed by seminar presentations (26.1%) and abstract discussions (11.7%). Similarly when a question was raised regarding methods for introducing/ motivating postgraduate students to

Variables	Mean ± S.D	
Age	20-30 years	5.6±2.3
	31-40 years	5.7±2.3
	41-50 years	5.4±2.4
	51-60 years	4.6±2.6
Total	5.6±2.3	
	P value= 0.28	
Gender	Male	5.4±2.3
	Female	5.9±2.4
	P value=0.02*	
Department	Periodontics	6.4±2.4
	Prosthodontics	4.4±2
	Orthodontics	5.2±2.4
	Conservative and Endodontics	5±1.7
	Pedodontics	6.2±2.2
	Oral and maxillofacial surgery	4.7±1.8
	Oral medicine and Radiology	5.7±2.1
	Oral pathology and Forensic medicine	5.8±2.4
	Public Health Dentistry	7.2±2.8
	Total	5.6±2.3
	P value <0.001**	
Designation	Professor and Head of the Department	5.6±2.6
	Associate professor	5.1±2
	Reader	5.9±2.3
	Sr.Lecturer	5.6±.2
	Jr.Lecturer	3.6±1.6
	Total	5.6±2.3
	P value=0.04*	
Teaching Experience	≥ 10 years of experience	5.5±2.4
	5-9 years of experience	5.8±2.3
	≤ 4 years of experience	5.6±2.3
	Total	5.6±2.3
	P value=0.62	

Table 2: Comparison of Demographic variables with Knowledge scores

journal article reading, it was mostly by conducting journal article discussions (58%) followed by literature search in library (28%) and short communication paper presentations (13.9%) {Table 5}. Journal article and critical appraisal discussions were mostly (71.4%) done once in a week in most of the institutions {Table 3}. When a question was asked regarding the benefits/advantages of reading/referring journals, the majority of them felt that it inculcates critical thinking and reasoning skills among post graduates (Table 5).

Statement	Options n (%)			
1. Frequency of reading Journals	Daily 89(20.9%)	Once in a week 246(57.2%)	Once in a month 70(16.2%)	Rarely 21(4.8%)
2. Most preferred journal	International 126(29.3%)	National 39(9.6%)	State 7(1.6%)	Speciality 146(33.9%)
3. Frequency of conducting Journal article and critical appraisal discussions	Daily 33(7.9%)	Once in a week 298 (71.4%)	Once in a month 34 (8.1%)	Rarely 12 (2.8%)
4. Search strategy for browsing recently published articles	Protocol driven method 242(56.2%)	Snowball method 125(29%)	Personal Knowledge 61(14.1%)	No idea 2(0.4%)
5. Keyword Search strategies for retrieving articles from electronic databases	Single term search strategies 38(8.8%)	Combined term search strategies 103(23.9%)	Both 289(67.2%)	

Table 3: Attitudes of Postgraduate dental trainers towards research

Publication practices

Most accepted method used for checking the number of citations received by the publication manuscript is science citation index of citation index database, number of participants who followed this method was 49.6% {Table 4}. The factor influencing for selecting a journal to submit manuscript was described as indexing by (44.1%) of respondents. When a question was asked regarding the beneficial aspect of journal indexing, the majority of the respondents stated that it was used for improving the quality of the particular journal (51%) (Table 5).

Assessment of knowledge scores

Subject's proportion with a correct answer for each question on knowledge questionnaire is shown in Table 4. When a question was asked about the purpose of using keywords in the article, most of the respondents (74.4%) replied that it was to capture as many relevant articles as possible in short time, similarly when a question was asked regarding online databases like Medline and Embase, just half of the participants (49.5%) were aware of this online databases. Majority of the respondents were aware that Systematic reviews and Meta-analysis has highest weightage in Hierarchy of Evidence Based Dental Research. When a question was asked about what is journal selector and impact factor?. 90.1% and 84.6% respondents respectively gave correct answer stating that journal selector gives brief outset of all the journals related to your manuscript on the basis of impact factor and open access. The impact factor is an average number of times the articles of the particular journal selected are cited in the past two years. However on the other side only a few respondents were aware of the keyword search engines (24.6%) like MeSH and Boolean operators. Ghost author was stated as the person

who contributed to a piece of work but is left uncredited by 44.1% of respondents.

Interestingly very few respondents were aware of Guidelines for assessing various types of studies, 22.5% were aware of STROBE guidelines (Strengthening of Reporting of Observational Studies), 31.1% were aware of CONSORT guidelines (Consolidated Standards of Reporting Trials), 12.7% were aware of STARD guidelines (standards of Diagnostic Accuracy) and 15.8% were aware of PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-analysis) (Table 4).

Barriers while pursuing research when a question was asked about the barriers faced by the respondents in pursuing research, Lack of funding (22%) was considered as most important hurdle for research practices followed by lack of time (10.5%), future benefit (3.8%) and interest (7.6%) (Fig 1).

Questions	Options n (%)				
1. Most to least preferred order for updating postgraduate students in their concerned specialty?	By seminar presentations 109 (26.1%)	By holding Abstract discussions 49 (11.7%)	By conducting Journal article discussion 259 (62.1%)		
2. Rank the following sources for information in the field of dental research from most to least preferred order?	Textbooks and journals 272 (63.2%)	Sources of continuing dental education 28(6.5%)	Internet based search for information 94 (21.8%)	Consult with colleagues 13 (3%)	Expert opinion 23 (5.3%)
3. Rank the methods for introducing/motivating post-graduate students to journal article reading from most to least preferred order?	By literature search in library 117 (28%)	By conducting journal article discussions 242 (58%)	Short communication paper presentations 58 (13.9%)		
4. Rank the benefits/advantages of reading/referring journals from most to least preferred order?	It helps to inculcate critical thinking and reasoning skills amongst post graduate students 229 (53.2%)	It helps in professional enhancement 58 (13.4%)	It helps in promotion of knowledge which enhances patient care 107 (24.8%)	It helps in building career for future benefits 36 (8.3%)	
5. Rank the beneficial aspect of journal indexing in research from most to least preferred order?	To improve the quality of the particular journal 213 (51%)	To increase the visibility of open access scientific journals 92 (22%)	To promote increased usage and impact of the particular journal 112 (26.8%)		
6. Rank the following factors for selecting a journal to submit your manuscript from most to least preferred order?	Open access 23 (5.5%)	Impact factor 113 (27%)	Acceptance rate 19 (4.5%)	International journal 78 (18.7%)	Indexing 188 (44.1%)

Table 5: Order of priority of respondents towards Research and Publication Practices

Questions	Options n (%)					
1. Purpose of using keywords	To capture as many relevant articles as possible in short time 320(74.4%)	To brief out the contents of the article 102(23.7%)	No idea 8(1.8%)			
2. Keyword search engine preferred for single and combined term searching?	MeSH and Boolean IR system 106(24.6%)	Boolean IR system and MeSH 45(10.4%)	Both 115(26.7%)	No idea 164(38.1)		
3. Terms used in Boolean IR system search engines?	AND, NOT, NEAR, OR, () 112(26.8%)	+, -, " ", OR, NESTING 31(7.4%)	Both 70(16.7%)	No idea 204(48.9%)		
4. Medline and Embase?	The first and best known online medical journals 125(29%)	International association of medical informaticians 44(10.2%)	Printed form of ExcerptaMedica 15(3.4%)	Abbreviation that lists parts of the research article 32(7.4%)	Medical database 213 (49.5%)	No idea 1(0.2%)
5. In evidence based dental research which type of studies would be given highest weightage?	Systematic reviews and Meta-analysis 225(53.9%)	Randomized controlled trials 83(19.9%)	Case control studies 35(8.3%)	Cohort studies 11(2.6%)	Case series, case reports 31(7.4%)	Editorial, Expert opinion 5(1.1%)
6. Use of journal selector	It gives brief outset of all the journals related to your manuscript on the basis of open access and impact factor 376(90.1%)	For online publicity of journal 39(9.3%)	No idea 2(0.4%)			
7. Impact factor?	Average number of times the articles of the particular journal selected are cited in the past two years 353(84.6%)	Influence of a journal article over the first two years of publication 63(15.1%)	No idea 1(0.2%)			
8. Ghost author?	Someone who contributed to a piece of work, but is left uncredited 184(44.1%)	Someone who is listed as an author without making the necessary contributions 223(53.4%)	No idea 10(2.3%)			
9. Checking the number of citations published paper had received?	Author index of medline database 82(19.6%)	Corporate index of science citation index database 22(5.2%)	Author index of the current contents database 46(11.0%)	Citation index of the science citation index database 207(49.6%)	Author index of the science citation index database 59(14.1%)	No idea 1 (0.2%)
10. Guidelines for observational studies	STROBE 94(22.5%)	CONSORT 47(11.2%)	PRISMA 18 (4.3%)	STARD 13 (3.1%)	No idea 245 (58.7%)	
11. Guidelines for clinical trials	STROBE 12 (2.8%)	CONSORT 130(31.1%)	PRISMA 25(5.9%)	STARD 9 (2.1%)	No idea 241(57.7%)	
12. Guidelines for systematic reviews and meta-analysis	STROBE 12(2.8%)	CONSORT 37 (8.8%)	PRISMA 66(15.8%)	STARD 19(4.5%)	No idea 283(67.8%)	
13. Guidelines for studies of diagnostic accuracy	STROBE 17(4%)	CONSORT 17(4%)	PRISMA 18(4.3%)	STARD 53(12.7%)	No idea 312(74.8%)	

Table 4: Proportion of Postgraduate dental trainers with correct answers for the questions

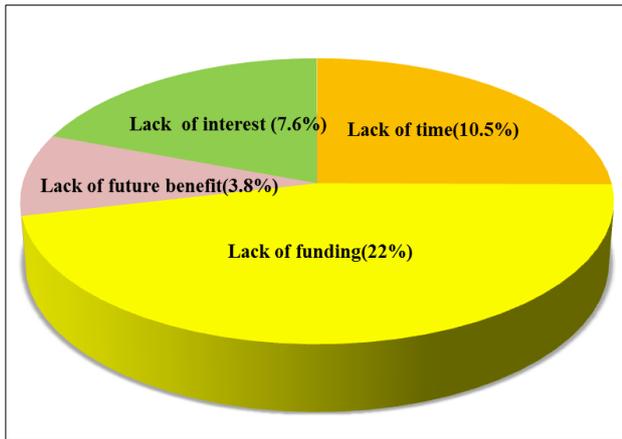


Fig 1: Barriers in Pursuing Research

DISCUSSION

Information seeking behaviour aids to address the gaps in research knowledge by inculcating critical thinking, reasoning skills, and positive attitude amongst postgraduate students towards scientific research from the beginning to their career. It also helps developing countries to achieve self-reliance and implement evidence-based practice in health care. So this cross-sectional survey was designed to assess the information seeking behaviour, extent of involvement and perceived determinants of postgraduate dental trainers towards research in India.

In the present study, young respondents had better knowledge scores compared to their older counterparts regarding perceived determinants towards research. Electronic Health Record adoption may have been higher than older physicians because of the breadth and length of exposure to technology which helps to keep them updated towards research practices. A study by Tenopir C, King DW (2001) found that over 40% of research scholars of ages 31-40 years and only 16.3% of ages of 51 and 60 used electronic Journals as the source of the article they last read.⁸

However a study by Tenopir C et al. (2007) stated that 30.3% of scientists aged 51 and 60 years as compared to 11.2% of the scientists between the age of 31 and 40 used print journals as their source of the article last read.⁹ Female respondents had better knowledge scores in the present study. Female participants showed positive attitudes towards scientific research practices.¹⁰ However in contrast a study conducted by Tenopir C et al. (2007) had shown that male participants read higher number of articles in each month than female participants.⁹

In the present study, Readers in the hierarchical designation cadre and participants with teaching experience of 5-9 years were found to have better knowledge scores as compared to others. A study conducted by Rogers et al. (2001) found that younger faculty members were seeking information from various sources and updated towards current literature, thereby improving their knowledge towards research than older faculty members.¹¹ Respondents with master degree in

Public Health Dentistry had better knowledge scores, the probable reason may be that they are more updated with knowledge in research methodology, and there is lot of research being done in Departments of Public Health Dentistry of various institutions. Moreover, most of the respondents are actively involved in journal club and critical appraisal discussions which keep them updated towards research practices. When attitudes of respondents towards research practices were assessed, Journals were frequently read once in a week by most (57.2%) of the participants in the present study. However, this average number of readings is much lower than that of the medical faculty at the University of Tennessee, who report reading on average approximately 322 articles yearly. Moreover Davidoff et al.(1995) stated that to keep up with the current medical literature, a general physician would need to read 17 articles each day. It may be due to workplace and work responsibilities which likely account for relatively low amounts of overall reading by respondents.¹²

This study highlights that textbook and journals (63.2%) were the primary source of information for respondents. As textbooks were easily accessible and more reliable information was provided, so many of the respondents would have opted for that. This inclination is independent of the level of qualification and the hierarchical designation cadres. A study of information sources used by pediatricians- on-call in hospital units mostly was guidelines and textbooks and a few used the internet or journals.¹³ Similarly Selvi F, Ozerkan AG (2002) surveyed private practicing dentists and revealed that to obtain information, practitioners preferred to use traditional methods such as discussions with colleagues, textbooks, and the brochures.¹⁴ However contrary to this, a study stated that for source of information, experts and colleagues are a quicker, cheaper and easy source, and also provide guidance, affirmation, and other psychological benefits than computerized sources which can not consolidate.¹⁵

The present study revealed that the printed journals were chosen by most of the respondents as the important factor for accessing printed or electronic formats at times of need. A study reported that over 68% of the last article readings by American Association of Paediatrics members came from personal print subscriptions (433 of 632).⁹ Clinical/research faculty use print journals more often than other type of users stated by Sathe NA et al. (2002)¹⁶. However, electronic journals have replaced printed journals as the most commonly used resource when looking for medical information by Weng YH et al.(2013). In addition, access to Web portals and online databases can enhance the utilization of electronic journals and electronic books.¹⁷ Henceforth electronic journals might not be altering fundamental research behaviours, they might be shifting users perceptions of the journal itself. Majority (33.9%) of the respondents in this study indicated that they prefer to read speciality journals as compared to international (29.3%), national (9.6%) and local (1.6%) journals, speciality journals are

easily available to the respondents in hospitals and more interest of the respondents towards their particular field of specialization. Moreover due to high subscription charges of international journals, many institutions are not affording for it hence respondents could not access them.

A study had shown that there was a significant difference in preference of journals among paediatricians. This finding reflects the preference for peer-reviewed journals as a general information source that is Archives of Disease in Childhood and British Medical Journal (BMJ). It, therefore appears that there are a small number of key journals for dissemination.¹³ The present study revealed the majority of respondents (58%) conducting journal article discussions for updating postgraduate students in their concerned specialty, followed by seminar presentations (28%) and abstract discussions (13.9%).

Journal article and critical appraisal discussions were (71.4%) conducted once in a week in most of the institutions and moreover many of the respondents replied that the benefits/advantages of reading/referring journals were to inculcate critical thinking and reasoning skills among students (53%). This not only serves the purpose of enhancing their clinical but also raises their interest research activities. This critique also nurtures the ability of critical appraisal of different scenarios and helps to develop better insight in the knowledge but also rises interest in research activities. This encourages the ability of critical appraisal of different scenarios and aids to develop better insight in the respondents.¹⁸⁻²⁰ Ebbert JO et al. (2001) explained the effectiveness of adult learning through journal club settings.²¹ Similarly Moharari RS et al. (2009) have advocated that to enhance critical appraisal skills, journal club can be a useful forum.²² However, a study done by Sumi et al. (2009) stated that majority of physicians (93.2%) desired to attend lectures or seminars on one or more topics related to clinical research.²³

Regarding publication practices most accepted method used for checking the number of citations was science citation index of citation index database, Just half (49.6%) of them were aware of this method. The Citation Index provides indexing entries to the current literature by means of the ordered listing of all items cited during a current year. It delivers a way to search and scrutinize the literature in a way not possible through simple keyword/topical searching. It also enables users to collect data on the "impact" of journals, as well as evaluating particular areas of research activity and publication.²⁴ The factor influencing selecting a journal to submit manuscript was described as indexing by (44.1%) respondents. Indexing improves the quality of a particular journal.²⁴

The ease of locating relevant articles from the electronic databases was done by using both single and combined term keyword search strategies just by 26.7% of the respondents. Boolean operator's keyword search strategies were known only to 16.7% of the respondents. Boolean

Operators are simple words (AND, OR, NOT or AND NOT) used as permutations to pool or eliminate keywords in a search, ensuing in more focused and productive results.

They are useful in saving time by focusing searches for more 'on-target' results that are more appropriate to needs, eliminating unsuitable or inappropriate searching.²⁵ 56.2% of respondents browsed recently published articles using protocol driven method where search strategy is defined at the outset of the study using electronic and hand literature.

In the present study, respondents (49.5%) accessed Medline and Embase databases in retrieving articles and found essential in improving the knowledge towards research practices. PubMed is more updated, gives more relevant and recent results and has online first studies in comparison to Google Scholar.^{26,27}

Moreover a study by Tenopir C et al. (2007) had reported that on average respondents who used PubMed read 1,000 articles in the last month.⁹ More than half of the participants gave a response that systematic reviews and meta-analysis were given highest weightage in evidence-based dentistry as systematic reviews are those that use explicit methods to identify, select and appraise relevant research. The credibility of research depends on a critical valuation of the assets and flaws in study design, conduct, and analysis.

The Consolidated Standards of Reporting Trials (CONSORT) Statement was developed in 1996 and revised 5 years later.²⁸ Similar initiatives have followed for other research areas for reporting of Meta-analyses: Preferred reporting items of Systematic reviews and Meta-analysis (PRISMA) statement or diagnostic studies: Standards of diagnostic accuracy (STARD) and (STROBE) statement and network of researchers developed recommendations for reporting of observational research. Interestingly very few respondents were aware of Guidelines for assessing observational studies (STROBE 22.5%)³¹, clinical studies (CONSORT 31.1%), diagnostic accuracy studies (STARD 12.7%)³⁰, systematic review and meta-analysis (PRISMA 15.8%).²⁹ A study revealed that without sufficient clarity of reporting, the benefits of research accomplish more slowly and there is a need for guidance in reporting studies conveyed by Bogardus ST et al (1999) and Rennie D (2001).^{32,33}

In the present study respondents showed desultory response towards research activities. There are several reasons for this unexcited response, Noteworthy factor for this behaviour is a lack of institutional support for the subscription to paid journals which promote interest in research. Lack of funding forms the main hurdle in pursuing research. However a lack of research training was considered as a barrier to those involved in the research.³⁴ Allocation of time is identified as one of the characteristics of research productivity.³⁵⁻³⁸

REFERENCES

1. Botello-Harbaum MT, Demko CA, Curro FAR, Indal DB, Collie D, Gilbert GH et al. Information-seeking behaviors of dental practitioners in three practice-based research networks. *J Dent Educ* 2013 Feb; 77(2):152-160.
2. Majid S, Foo S, Luyt B, Zhang X, Theng YL, Chang YK et al. Adopting evidence-based practice in clinical decision making: nurses' perceptions, knowledge, and barriers. *J Med Libr Assoc* 2011 Jul; 99(3):229-236.
3. Melnyk BM, Overholt EF. Evidence-based practice in Nursing & Healthcare. A guide to best practice. 2nd ed. Lippincott Williams & Wilkins. 2011.41-47.
4. Bennett NL, Casebeer LL, Kristofco R, Collins BC. Family physicians information seeking behaviors: A survey comparison with other specialties. *BMC Med Inform Decis Mak* 2005 Mar; 22:5-9.
5. Davis, L.L. Instrument review: Getting the most from your panel of experts. *App Nurs Res* 1992; 5:194-197.
6. Lynn, M.R. Determination and quantification of content validity. *Nurs Res* 1986; 35:382-385.
7. Waltz, C.F, & Bausell, R.B. Nursing research: Design, statistics, and computer analysis. Philadelphia:F. A. Davis. 1981.
8. Tenopir C, King DW. Lessons for the future of journals. *Nature* 2001 Oct; 413(6857):672-674.
9. Tenopir C, King DW, Clarke MT, Na K, Zhou X. Journal reading patterns and preferences of paediatricians. *J Med Libr Assoc*. 2007 Jan; 95(1):56-63.
10. Abu-Zaid A, Alnajjar A. Female second-year undergraduate medical students' attitudes towards research at the College of Medicine, Alfaisal University: a Saudi Arabian perspective. *Perspect Med Educ*. 2014 Jan; 3(1):50-55.
11. Rogers S. Electronic journal usage at Ohio State University. *Coll Res Libr* 2001 Jan; 62(1):25-34.
12. Davidoff F, Haynes B, Sackett D, Smith R. Evidence based medicine. *Br Med J*. 1995 Apr; 310(6987):1085-1086.
13. Riordan FA, Boyle EM, Phillips B. Best paediatric evidence; is it accessible and used on-call? *Arch Dis Child* 2004 May; 89(5):469-471.
14. Selvi F, Ozerkan AG. Information-seeking patterns of dentists in Istanbul, Turkey. *J Dent Educ* 2002 Aug; 66(8):977-980.
15. Weatherall DJ, Ledingham JGG, Warrell DA. On dinosaurs and medical textbooks. *Lancet* 1995; 346:4-5.
16. Sathe NA, Grady JL, Giuse NB. Print versus electronic journals: a preliminary investigation into the effect of journal format on research processes. *J Med Libr Assoc* 2002 Apr; 90(2):235-24.
17. Weng YH, Kuo KN, Yang CY, Lo HL, Shih YH. Increasing utilization of Internet-based resources following efforts to promote evidence-based medicine: a national study in Taiwan. *BMC Med Inform Decis Mak* 2013 Jan; 13:4-11.
18. Sidorov J. How are internal medicine residency journal clubs organized, and what makes them successful? *Arch Intern Med* 1995; 155:1193-1197.
19. Heiligman RM, Wollitzer AO. A survey of journal clubs in U.S. family practice residencies. *J Med Educ* 1987; 62:928-931.
20. Van Derwood JG, Tietze PE, Nagy MC. Journal clubs in family practice residency programs in the southeast. *South Med J*. 1991 Apr; 84(4):483-487.
21. Ebbert JO, Montori VM, Schultz HJ. The journal club in postgraduate medical education: a systematic review. *Med Teach* 2001; 23:455-461.
22. Moharari RS, Rahimi E, Najafi A. Teaching critical appraisal and statistics in anesthesia journal club. *QJM* 2009; 102:139-134.
23. Sumi E, Murayama T, Yokode M. A survey of attitudes toward clinical research among physicians at Kyoto University Hospital. *BMC Med Educ*. 2009 Dec; 9:75-82.
24. Morton V, Mallin. The Science Citation Index: "A New Concept In Indexing". Philadelphia: Library trends. 1968. 374-387.
25. Searching CINAHL Cumulative Index to Nursing & AlliedHealth Literature. Newjersey. http://www.libraries.rutgers.edu/smith/library_workshops.
26. Falagas ME, Pitsouni EI, Malietzis GA, Pappas G. Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *FASEB J* 2008; 22(2):338-342.
27. Anders ME, Evans DP. Comparison of PubMed and Google Scholar literature searches. *Respir care* 2010; 55(5):578-583.
28. Moher D, Schulz KF, Altman DG. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomised trials. *Lancet* 2000; 357:1191-1194.
29. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Br Med J*. 2009; 339: 253-255.
30. Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM et al. Standards for Reporting of Diagnostic Accuracy. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. *Br Med J* 2003; 326:41-44.
31. Vandenberg JP, von Elm E, Altman DG, Gotzsche PC, Mulrow CD, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): Explanation and Elaboration. *PLoS Med* 2007; 4:297.
32. Bogardus ST Jr., Concato J, Feinstein AR. Clinical epidemiological quality in molecular genetic research: the need for methodological standards. *J Am Med Assoc* 1999; 281:1919-1926.
33. Rennie D. CONSORT revised—improving the reporting of randomized trials. *J Am Med Assoc* 2001; 285: 2006-2007.
34. Aslam F, Qayyum MA, Mahmud H, Qasim R, Haque IU. Attitudes and practices of postgraduate medical trainees towards research--a snapshot from Faisalabad. *J Pak Med Assoc* 2004 Oct; 54(10):534-536.
35. Brocato JJ, Mavis B. The research productivity of faculty in family medicine departments at U.S. medical schools: a national study. *Acad Med* 2005; 80:244-252.
36. Lloyd T, Phillips BR, Aber RC. Factors that influence doctors' participation in clinical research. *Med Edu* 2004; 38:848-851.
37. Jowett SM, Macleod J, Wilson S, Hobbs FD. Research in primary care: extent of involvement and perceived determinants among practitioners from one English region. *Br J Gen Pract*. 2000; 50:387-389.
38. Gill S, Levin A, Djurdjev O, Yoshida E. Obstacles to residents conducting research and predictors of publication. *Acad Med* 2001; 76:477.

Source of Support: Nil
Conflict of Interest: Nil