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Attitudes and Barriers Toward Conducting Research Among Dentists in National Guard Health Affairs, Riyadh

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Abstract

Objectives: The aim of this study is to assess the attitude of National Guard Health Affairs' (NGHA) dentists toward conducting and contributing in the research process, and to identify the barriers and obstacles they might face.

Methods: A cross-sectional survey was conducted using a self-administered questionnaire to collect data from 128 practicing dentists in NGHA, Riyadh. The questionnaire was designed based on reviewed relevant published studies, and then face validation of questionnaire was done. Non-probability convenient sampling technique was used so that all the dentists available during the study time period were included. The questionnaire consisted of three parts: demographic details of the participants and past research experience, attitudes towards research, and barriers upon conducting research.

Results: The vast majority of our participants had positive attitudes towards research; 87.5% seemed to be willing to be involved in research, and 83.6% altered an element of their practice. Specialists and consultants were more significantly willing to apply research outcomes in their practice than general practitioners. Positive attitudes were also found toward the impact of research; 96.9% of our participants thought that by conducting research their knowledge increases, and 93.8% believed that career prospects would be better. In the current study, the main barrier to research was reported as time constraints due to workload and busy schedules (87.5%), followed by and lack of support from funding agencies to conduct research (84.4%), and lack of documentation and maintenance of records (76.6%). In addition, 81.2% of the participants did not report good interdepartmental coordination needed to conduct research.

Conclusions: A large majority of surveyed dentists considered research useful for their profession and showed positive attitudes toward conducting research. However, they considered it difficult to conduct research, with the main barriers being lack of: time, financial support, good interdepartmental coordination, and proper documentation of patients' records.

Key words: Dental Research, Attitude Of Health Personnel, Research Barriers, Financial Support, Lack Of Time, Interdepartmental Coordination

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The world today is an era of research. In dental health research, conducting scientific and accurate research is a big concern, as everyone is striving to contribute to the generation of evidence-based practice (Pratap et al., 2014). This would increase both effectiveness and efficiency of dental therapeutics. Despite its importance, dentists are discouraged from conducting research (Murillo et al., 2006). That is due to variety of barriers such as understanding the research process itself and its execution, study approvals, and dedication of staff members. The main challenges reported were: time limitations, busy clinical practices, and lack of interest and publication lag (Memarpour et al., 2015). Another study in India showed that one of the biggest obstacles during research conduction is lack of documentation and record maintenance (Bishen et al., 2015). In contrast, one Canadian study targeting dentists showed that half of them weren't willing to participate in research (Bedos and Allison, 2004). Other related studies identified funding and infrastructure support as key factors in promoting research (Sabzwari et al., 2009). On the other hand, bureaucracy and administrative overburden, lack of adequate and timely secretarial, technical and computerial assistance, frustration from inter- and intra-departmental poli-

tics were major barriers towards research (Gupta et al., 2015).

In the Arab world, there is rarity of research publications. The main struggles were lack of funding and financial support, lack of interest, and lack of research education (Aboshady and Gouda, 2016). Medical students in three Arab countries added lack of time due to the heavy workloads of students, inadequate mentoring, and lack of rewarding as major obstacles facing student performing research (Amin et al., 2012). Additionally, most of the dental authors are not full time researchers therefore they do research when indicated e.g. for departmental promotion or to fulfill their postgraduate requirement (Al-Mohaya, 2016). One of the problems commonly faced is the high rejection rate, which could be attributed to the poor quality of the submitted articles, inappropriate study designs, lack of statistics analysis, and many other factors (Sabzwari et al., 2009).

There is very little information in the literature about the attitude of dentists toward conducting research and obstacles they might encounter. We, in National Guard Health Affairs (NGHA), lack the necessary information needed to understand and highlight these attitudes and barriers. Therefore, the aim of the study is to define and tackle these obstacles that they might face and to emphasize the importance of research awareness. This would, in turn, encourage dental clinicians to participate more in research, widen the scope of research, and create a more suitable environment. The objectives of this study are to:

1) Assess the attitude of dentists in general toward conducting and contributing in the research process.

2) Identify the obstacles and challenges they are facing.

Materials and Methods

NGHA provides optimum healthcare to Saudi Arabian National Guard personnel, their dependents and other eligible patients. It also provides excellent academic opportunities, conducts research and participates in industry and community service programs in the health field. One of its services is dental care, which consists of primary, secondary, and tertiary dental centers. A cross-sectional survey using a self-administered questionnaire was conducted in these dental centers of NGHA, Riyadh, Saudi Arabia. All dental practitioners working in NGHA, Riyadh and fulfilling the inclusion/exclusion criteria were included in this study. Included subjects were:

- Consultants, specialists, general practitioners, third-year and fourth-year residents, and
- Clinicians with minimum of two years working experience.

Exclusion criteria:

- First-year and second-year residents.
- Part-time clinicians and on locum.
- Clinicians with less than two years working experience.

The primary outcome of the study is to estimate the prevelance of barriers and attitudes toward conducting research among dentists. Assuming a prevelance of 50% and a precision level of 5 %, the optimal sample size required is 128 subjects (assuming finite population correction). N-query software was used for sample size calculation. Non-probability convenient sampling technique was used because the study was conducted during summer vacation where not everyone is available. Therefore, those who were available at the time of data collection, and fit the required criteria were included. Participation in the research was with no incentives for the respondents and on a voluntary basis.

A questionnaire was designed to incorporate attitudes and barriers in relation to research that were identified in previous studies (Allison and Bedos, 2003; Bedos and Allison, 2002; Bedos and Allison, 2004; Bishen et al., 2015; Sabzwari, et al., 2009), but with minor modifications. Then, face validation of questionnaire was done with the help of the research and biostatistician team. In all, the survey instrument consisted of 35-item, close-ended, and self-administered questions. The response format was categorical e.g. yes/no, or by choosing (an) appropriate response(s) from given options, and the time required to complete the questionnaire was 15-20 minutes. The questionnaires consisted of three parts:

- Part I: demographic details of the participants (age, gender, dental specialty, rank of occupation, and place of work, academic affiliation, and work experience), and three questions about past research experience were also included (Fig. 1).
- Part II: attitudes towards research (Fig. 2).
- Part III: barriers faced when conducting research (Fig. 3).

Q1. How old are you? 25-34 / 35-44 / 45-55 years

Q2. Are you Female or Male? Female / Male

Q3. In which field of dentistry do you principally work? (Please tick only one box)

1. General practice
2. Pediatric dentistry
3. Dental public health
4. Periodontics
5. Prosthodontics
6. Endodontics
7. Orthodontics
8. Oral surgery
9. Oral medicine/pathology or radiology
10. Others

Q4. Total years of experience since graduation? 2-8 / 9-15 / 16-22 / >23 years

Q5. Have you been involved in research as a dental/graduate student or intern? Yes / No

Q6. Have you done any course/degree/certification in research before graduation? Yes / No

Q7. Have you done any course/degree/certification in research after graduation? Yes / No

Q8. Are you a .....?

A. General dental practitioner
B. Resident
C. Specialist
D. Assistant consultant
E. Associate consultant
F. Consultant

Q9. Are you affiliated with College of dentistry (king Saud bin Abdulaziz University) as a part timer? Yes / No

Q10. Are you working at .....?

A. Primary dental center
B. Secondary dental center
C. Tertiary dental center

Figure 1: Part I of the questionnaire (demographic details of the participants and their past research experience).

Q1. In your opinion, are the results of dental research useful to you? Yes / No

Q2. By conducting research your knowledge increases? Yes / No

Q3. Career prospects will be better by conducting research work? Yes / No

Q4. Would you like to be involved in research in any way; e.g. in designing, conducting or facilitating research projects (i.e. permitting access to your patients)? Yes / No

Q5. Have you ever altered an element of your clinical practice as a result of learning the results of some research? Yes / No

Q6. If yes, how? (N.B. You may tick more than one)

A. A material (e.g. restorative, endodontic, prosthetic, surgical)
B. A treatment technique (e.g. restorative, endodontic, prosthetic, surgical)
C. A diagnostic technique (e.g. for caries, periodontal disease)
D. A medical treatment (e.g. antibiotics, chlorhexidine, fluoride)
E. An educational message (e.g. for caries, oral cancer)
F. An overall management strategy (e.g. caries risk assessment)
G. Others

Q7. How could the dental research be promoted in NGHA? (N.B. You may tick more than one)

A. Set up a mechanism for funding research
B. Publish more reports of research activities
C. Disseminate the findings of dental research through media
D. The organization of continuing education forums on research issues
E. Other

Q8. Do you think courses should be introduced for the dental personnel to be able to do research in a better way? Yes / No

Figure 2: Part II of the questionnaire (Attitudes towards research).

	Agree	No opinion	Disagree
Q1. The library website has enough references to support research work.			
Q2. There is good interdepartmental coordination to conduct research activities.			
Q3. If I want to conduct research, I would not know whom to contact.			
Q4. I am instructed to maintain quality and quantity of clinical work, but not to undertake research work.			
Q5. My work place does not provide exclusive administrative and technical support for research work.			
Q6. My research work or publications suffer due to authorship issues.			
Q7. After time spent with clinical work and sometimes administrative work, I have no time left in my schedule to do research.			
Q8. I do not want to compromise my family time because of research.			
Q9. It usually takes a long time first to conduct a study, and then to write and publish it. This is a waste of time and a boring job.			
Q10. Separate time should be allotted to conduct research while planning dentist's workload.			
Q11. I can get funding from my work if I want to start or initiate research activates.			
Q12. I am sometimes unable to publish my work because I lack skills in critical analysis and methodology.			
Q13. My articles are not accepted in international journals.			
Q14. Training in research methodology should be mandatory as it improves skill and knowledge			
Q15. There should be support from the funding agencies to conduct any research work.			
Q16. Publishing research in academic journals is not important for my career.			
Q17. Lack of documentation and record maintenance is a hurdle to research work.			

Figure 3: Part III of the questionnaire (Barriers faced when conducting research).

Permission to carry out the study was obtained from the dental services authorities, and ethical clearance was obtained from the Institutional Review Board of (IRB approval # RSS16/018) of King Abdullah International Medical Research Center (KAIMRC). The research team members went to the dental centers of NGHA during the daytime shift of duty i.e. 8am to 5pm to distribute the questionnaires. Each participant was first given an informed consent form, and then the questionnaire was filled up. The questionnaires were checked on the spot by the team, in case of any missing answers, the participant would be asked to fill the needed information at the same time.

The collected data was entered in Excel file in accordance with a codebook previously prepared for the questionnaire, then transferred to SPSS (version 17.0) file to perform statistical analysis. Mean and standard deviation were calculated for the continuous variables, while the categorical variables were reported as frequency and percentages. Following descriptive statistics, simple bivariate analyses of the relationships between the dependent (attitude-related) variables and independent (demographic) variables were performed using chi square tests at 5% level of significance. Multiple logistic regression analysis was performed to investigate predictors of involvement in research with 95% confidence intervals of odds ratios.

Results

Completed surveys were collected from 128 dentists, 68% were male and 32% were female. Participants' age ranged between 25-55 years; about half of them (51.63%) were younger than 35 years of age (Table 1). Other demographic characteristics of the participants such as occupation, workplace, work experience, and affiliation with the college of dentistry are given in table 1. Good research knowledge of NGHA practicing dentists was revealed; > 90% of the subjects had participated in research as an intern or a graduate, and >60% have taken research courses before and/or after graduation (Table 2). Although 62.5% of the dentists in our study undertook research courses before graduation and 66.4% were trained after graduation (Table 2), 96.1% of the participants think that research courses should be constantly introduced (Table 3).

Characteristics		Frequency (%)
Age	25-34 years	66 (51.63%)
	35-44 years	39 (30.47%)
	45-55 years	23 (17.97%)
Gender	Female	41 (32.03%)
	Male	87 (67.97%)
Occupation rank	General practitioner	36 (28.13%)
	Resident	13 (10.16%)
	Specialist	9 (7.03%)
	Assistant Consultant	12 (9.38%)
	Associate Consultant	13 (10.16%)
	Consultant	45 (35.16%)
Workplace	Primary dental center	40 (31.25%)
	Secondary dental center	10 (7.81%)
	Tertiary dental center	78 (60.94%)
Affiliation with college of dentistry	Yes	47 (36.72%)
	No	81 (63.28%)
Work experience	2-8 years	61 (47.66%)
	9-15 years	37 (28.91%)
	16-22 years	16 (12.50%)
	> 23 years	14 (10.94%)

Table 1: Demographic profile of the participants. (N=128)

Variables	Frequency (%)	
	Yes	No
Have you been involved in research as an intern or a graduate?	118 (92.12%)	10 (7.81%)
Have you done any course / degree / certification in research before graduation?	80 (62.50%)	48 (37.50%)
Have you done any course / degree / certification in research after graduation?	85 (66.41%)	43 (33.59%)

Table 2: Frequency distribution of research knowledge variables of the participants. (N=128)

Variables	Frequency (%)	
	Yes	No
In your opinion, are the results of dental research useful to you?	125 (97.66%)	3 (2.34%)
By conducting research your knowledge increases	124 (96.88%)	4 (3.13%)
Career prospects will be better by conducting research work	120 (93.75%)	8 (6.25%)
Would you like to be involved in research in any way; e.g. in designing, conducting or facilitating research projects (i.e. permitting access to your patients)?	112 (87.50%)	16 (12.50%)
Have you ever altered an element of your clinical practice as a result of learning the results of some research?	107 (83.59%)	21 (16.41%)
Do you think courses should be introduced for the dentists to be able to do research in a better way?	123 (96.09%)	5 (3.91%)

Table 3: Frequency distribution of attitude –related variables toward research. (N=128)

Our study showed a positive attitude toward the importance of research where all participants, except three, found research results to be useful, 87.5% were wiling to be involved in research, and 83.6% have actually altered an element of their practice (Table 3). Table 4 shows the distribution figures of demographic variables of the participants according to research attitude; it was found that neither gender, age, work experience, occupation workplace, nor academic affiliation is affecting the willingness to participate in research. Occupational rank of the practicing dentists was the only significant factor affecting the decision of applying a change in the clinical setting (Table 5). Those who were specialist and consultants showed more willingness to alter the treatment because of research results, whereas general practitioners had the least positive attitude in terms of practical application of research. Other assessed attitudes were related to the impact of research; 96.9% of our participants thought that by conducting research their knowledge increases, and 93.8% believed that career prospects would be better as well.

Demographic variables		Would you like to be involved in research?		
		Frequency (%)		P value
		Yes	No	
Age	≤34 years	57 (51%)	9 (56%)	
	≥35 years	55 (49%)	7 (44%)	0.688
Work experience	≤ 9 years	55 (49%)	8 (50%)	
	≥10 years	57 (51%)	8 (50%)	0.947
Gender	Female	36 (32%)	5 (31%)	
	Male	76 (68%)	11 (69%)	0.943
Occupation rank	General practitioner	32 (29%)	4 (25%)	
	Residents	12 (11%)	1 (6%)	0.924
	Specialists and above	68 (61%)	11 (69%)	
Workplace	Primary dental center	34 (30%)	6 (38%)	
	Secondary dental center	9 (8%)	1 (6%)	0.835
	Tertiary dental center	69 (62%)	9 (56%)	
Affiliation with college of dentistry	Yes	42 (38%)	5 (31%)	
	No	70 (63%)	11 (69%)	0.628

Table 4: Proportions of demographic variables in relation to the willingness to be involved in research among NGHA dentists in Riyadh city. (N=128)

Demographic variables		Have you altered an element of your clinical practice?		
		Frequency (%)		P value
		Yes	No	
Age	≤34 years	54 (51%)	12 (57%)	0.576
	≥35 years	53 (50%)	9 (43%)	
Work experience	≤ 9 years	52 (49%)	11 (52%)	0.576
	≥10 years	55 (51%)	10 (48%)	
Gender	Female	35 (33%)	6 (29%)	0.943
	Male	72 (67%)	15 (71%)	
Occupation rank	General practitioner	25 (23%)	11 (52%)	.028*
	Residents	12 (11%)	1 (5%)	
	Specialists and above	70 (65%)	9 (43%)	
Workplace	Primary dental center	32 (30%)	8 (38%)	0.692
	Secondary dental center	9 (8%)	1 (5%)	
	Tertiary dental center	66 (62%)	12 (57%)	
Affiliation with college of dentistry	Yes	43 (40%)	4 (19%)	0.066
	No	64 (60%)	17 (81%)	

Table 5: Proportions of demographic variables in relation to altering an element of the clinical practice among NGHA dentists in Riyadh city. (N=128)

In the current study, the main barrier to research was reported as time constraints due to workload and busy schedules (87.5%), followed by lack of support from funding agencies (84.4%), and lack of documentation and maintenance of records (76.6%). Only 24 subjects reported good interdepartmental coordination needed to conduct research, while the vast majority of our participants (81.2%) did not. In addition, not being instructed to undertake research by the institution, not knowing whom to contact in order to conduct research, and lack of administrative and technical support for research work were remarkably reported by more than 60% participants (Fig. 4 & 5).

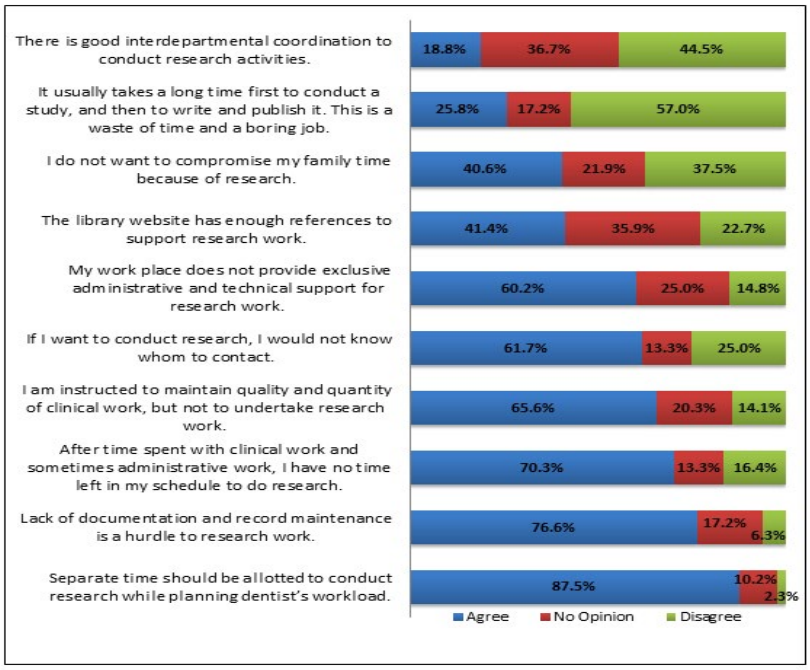

Figure 4: Assessment of Departmental and Time-related barriers toward conducting research among NGHA dentists:

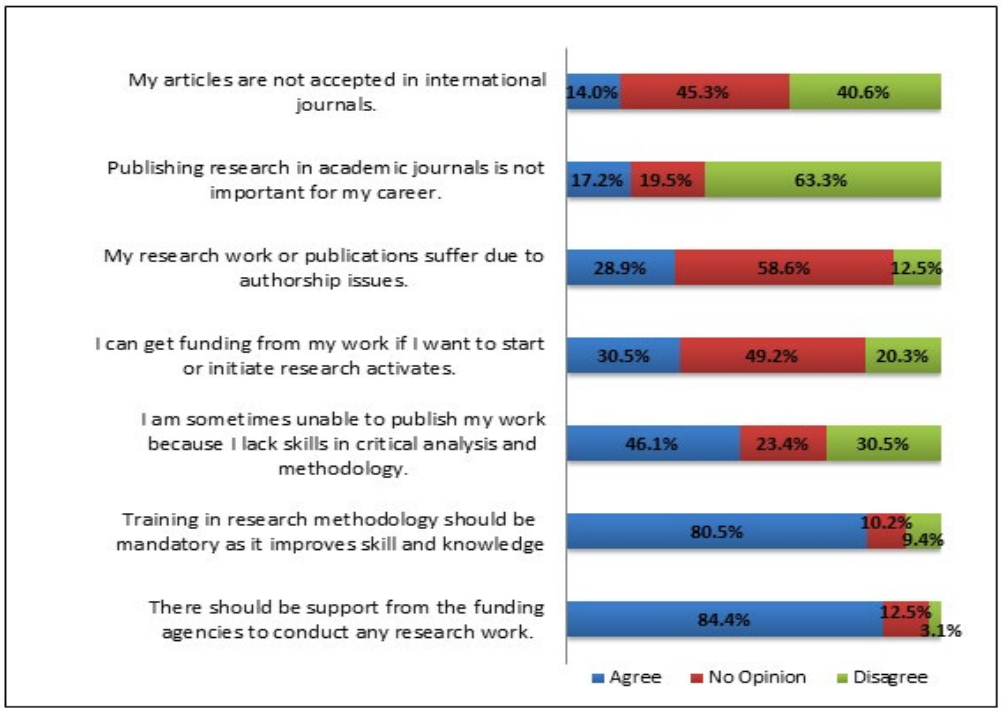

Figure 5: Assessment of financial and other general barriers toward conducting research among NGHA dentists:

Discussion

All sorts of research have been witnessing a great progress in the past few decades and research is deemed crucial for improving the quality of care provided to the patients. To the best of our knowledge, this study is the first attempt to look at the attitudes of the practicing dentists at NGHA/Riyadh (Saudi Arabia) toward research in general and specifically about the barriers they face when involved in research at different levels. The results of the survey are interesting and encouraging where the majority of respondents had a positive attitude toward conducting research, just similar to previous studies. (Amin et al., 2012; Khan et al., 2009; Sabzwari et al., 2009; Vodopivec et al., 2002) The majority of dentists sampled were involved in research either as an intern and/or a graduate. However, 65.6% of the participants reported that they are supposed to focus more on the quality of clinical work rather than research resulting in negligible research activity (Fig. 4). Likewise Sabzwari et al (2009) reported that research among dentists is neglected.

The number of male dentists working at NGHA, Riyadh was more than double that of females (Table 1), however no significant differences in terms of attitudes related to involvement in research was seen from current study. Al-Shalawy and AbdulHaleem (2015) also reported similar non-significant gender effect, contrary to another study where research involvement among female physicians was significantly lower as compared to males (Sabzwari et al., 2009).

The study participants had average work experience of 10 years and though two third of the study population were working in the tertiary dental care setting, where one would expect more research opportunities. Interestingly, in our study, no significant association was seen between years of experience or seniority level and the willingness to be involved in research (Table 4). However, it's noted and reported that the younger the physician/dentist/student the more enthusiastic he/she would be toward conducting research (Khan et al., 2009; Memarpour et al., 2015; Murillo et al., 2006). Attrition of potential investigators may lead to diminished base of needed researches, thus attracting young dentists and rewarding them for pursuing in research era is a very important issue.

The present study clearly revealed the positive attitude of the participating dentist, also the perception of the high impact of research on increasing the knowledge and improving the outcome of dental practice by 96.9% and 93.8% respectively (Table 3). These findings are similar to a Canadian study where 88.8% of the participants, compared to 98% in our study, claimed that research is useful to them (Bedos and Allison, 2004). Pawar et al. (2012) also found that the respondents have positive attitudes, but they fail to transform their knowledge and attitude into their practice because of lack of time and lack of research curriculum.

Exploring dental research barriers specifically for NGHA platform in Riyadh may help pave the way for those dentists who desire to be involved in scientific research. Our study revealed several institutional, departmental and financial barriers that can lead to a non-friendly research environment. The main impediment reported was time limitation; 87.5% of the respondents supported the idea of allotting separate time to conduct research when planning dentists' workload. This is in agreement with many other studies done at different parts of the world. (Bishen et al., 2015; Gupta et al., 2015; Memarpour et al., 2015). We also found that 70.3% of the dentists have no time left to conduct research after spending most of the working time in clinical work and administrative work (Fig. 4). In addition 65.6% stated that undertaking research work is not part of their job description. These findings indicate that maximizing research productivity is achievable only by considering research as a professional activity that is equal in importance with other clinical and/or administrative responsibilities given to the dentist (Bishen et al., 2015).

Finance is a major concern and a significant factor that could either impede or enhance research activity; 84.4% of the study participants emphasized the importance of being supported by funding agencies (Fig. 5). In fact, lack of fund was identified as the second major barrier in our study, similarly literature reported lack of proper funding as one of the biggest obstacles facing research in all fields including clinical and educational research (Albert et al., 2007; Carline, 2004; Khan et al., 2016; Murray, 2002). Dental postgraduates also revealed positive attitudes to conduct research provided that proper funding and separate time is allotted to them (Shakeel Anjum et al., 2016).

Only 18.8% of the participants reported good interdepartmental coordination that enables the researchers to conduct their activities, unlike Bishen et al (2015) who reported that 56% of their respondents were happy with such coordination. Under the institutional and departmental category, other barriers such as lack of documents and lack of administrative / technical support were also reported by 76.6% and 60.2% of the respondents respectively (Fig. 4). In addition, lack of clear guidelines and policy for research activity made 61.7% of participants don't know whom to contact. These figures are comparable to those reported by Bishen et al (2015). To overcome these barriers, institutions should establish working groups of qualified mentors, and this mentorship should be considered by institutional promotion matrices (Murillo et al., 2006).

The limitations of the study include the response bias as some participants might have under or over reported on few item, because the data was collected during their routine working hours. Still effort was done to include all types of staff working in the setting so as to minimize the effect of one group specifically over or underreporting on the research difficulties. Also the convenience sampling is another limitation of the study, but considering the time limitation of the study and the accessibility of the dentists in different hospitals random sampling was not possible. Yet, the study gives insight to the research related problems of dentists who are currently working in different levels. These findings can be used for designing future studies as well as we recommend larger multicenter studies in order to have the actual insight to the research status among dentists.

Conclusion:

A large majority of surveyed NGHA dentists considered research useful for their profession and showed positive attitudes toward conducting research. These findings provide an insight towards the willingness to be involved in research, which could be used to reunite dentists and researchers in a collaborative network. Including such networks in dental practice will be greatly beneficial in providing quality care. However, the participating dentists considered it difficult to conduct research and highlighted certain barriers. The main barriers are lack of: time, financial support, good interdepartmental coordination, and proper documentation of patients' records. Identification these barriers may help dental authorities to intervene for enhancing research-friendly environment.

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