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Concept of Research among Undergraduate Dental Students and Recent Graduates at Dr. Ishrat-ul-ebad khan Institute of Oral Health Sciences

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Abstract

Objective: Research plays a vital role in advancing knowledge therefore it is considered to have a positive impact on Medical and Dental Students. This Survey based study was aimed to assess the Concept of research among Dental students and Recent graduates in Karachi. The participants were evaluated quantitively in accordance with their Knowledge, Attitude and Practice towards conducting research.

Methodology: A cross sectional, Questionnaire based study was conducted on Dental students and House officers of Dr Ishrat-Ul-Ebad Khan Institute of Oral Health Sciences- Dow University Of Health Sciences (DIEKIOHS-DUHS), Karachi- Pakistan. A self-constructed Questionnaire comprising of 20 questions was distributed among a total of 300 participants that incorporated 3rd year, 4th year and House officers of our Dental College. This Questionnaire stressed on to evaluate the knowledge, attitude and practice of these participants. A descriptive statistics and frequency analysis were carried out on the gathered data using SPSS. Chi-square test was also applied in this study. Moreover, One-Way ANOVA test was used to analyse the relation between the Age and the Status. A $P < 0.05$ was considered statistically significant.[11]

Results: The Response Rate of this study was 100%, reflecting the positive attitude of students towards research. The outcome of the participants according to their status included 3rd year (N=130,43.3%), 4th year (N=70,23.3%) and House Officers (N=100,33.3%). There was gender inequality as majority of the participants were females (n=215). A systematic review of the knowledge and attitude of the participants of DIEKIOHS-DUHS reveal that 83.8% of the students had a positive attitude, whereas only 33.9% of the students submitted right answers for Questions concerning knowledge regarding research. Subsequently, it is concluded that students of DIEKIOHS are inclined to alter the current trends in the future.

Conclusion: A Moderate level of knowledge and a decent practice approach of the students were prevailed from this study. However, they possessed a remarkable attitude towards conducting research. It can be highlighted that if major barriers (topic selection, literature search and academic overload)[1] in conducting research subside, students of DIEKIOHS would be prone to conduct further researches in their future.

Key words: Knowledge, Attitude, Practice, Dental Students, Recent Graduates

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Introduction

Research is an indication of scientific progress within a specific field. Its importance has amplified throughout the world, which is an indication of its significance within the educational curriculum.

Research is a methodical process to attain new knowledge, science or development using standard guidelines.[1,2]Skills such as literature search, gathering and evaluating data along with critical assessment of evidence are imparted through research practice which is invaluable to the physicians' evidence-based practice.[2]Research is vital for the understanding of problems which affects the health of individuals, communities, and health systems. Health research is essential in improving health care and plays a central role in the field of medicine. It is crucial for health care improvement and executes a major part in the medical sector. Quality research allows developments in the domains of disease surveillance, diagnosis treatment and its prevention.[4] Moreover, Scientific research is defined as the systematic way of proving or disproving theories.[7,14,1] Therefore it should be treated as an essential component of medical schooling.[1]

There are several hurdles faces by students who want to pursue

research alongside their medical education. Many of these hurdles are related to time, economical limitations[19], occupied clinical activities[20] and absence of interest.[21] Similar surveys recognized economic incentives and infrastructure support as important variables in encouraging research.[22] Younger doctors exhibited more interest concerning research[23] while the percentage of female doctors involved in research was lower than their counterparts.[19] It can be concluded that insufficient mentoring and lack of time cn be labelled as major obstacles in conducting research.[4,24,25]

Research is obligatory as it is one part of the central curriculum in Bachelor of Dental Surgery (BDS) program in DIEKIOHS.[19] With the aim of advancing a confident attitude amongst undergraduate students regarding scientific research, it is vital to familiarize them with critical thinking and reasoning. The long-lasting benefit of research conduction by undergraduate students has a positive influence on these student's research activities after graduation, as compared to those students who never conducted research during their undergraduate program.[1] During these activities they learn to recognize the research's question, accordingly, create hypotheses, thoroughly investigate the related literature, adopt an appropriate methodology, gather the relevant data, evaluate it and finally, craft a comprehensive research article. Students are also then supported to publish these articles in medical journals or present them in conferences.[19]

Moreover, the benefits of research are also contributed to the faculty, creating a competitive environment and encouraging students to outdo themselves. This ultimately leads to a growth and development of research activities within the institution.[1]

Many research studies have been carried out in Saudi that highlight the significance of research among the undergraduate medical students.[1] [26-28] but very limited research studies are available about the dental students in Pakistan.[1] The results of the current study may be a source of reference and developing strategies for promoting research environment among the dental schools in Pakistan.[1] Thus, the primary objective of our study was to assess the concept of research in dental students and recent graduates[19] to determine their research participation and practices.[2]

Methodology

A cross sectional, Questionnaire based study was conducted on Dental students and House officers of Dr Ishrat-Ul-Ebad Khan Institute of Oral Health Sciences- Dow University of Health Sciences (DIEKIOHS-DUHS), Karachi- Pakistan in April 2019. 1st year and 2nd year dental students were excluded from the study as they are new to the medical field.[2] Hence, only 3rd year and 4th year undergraduate Dental students were included along with the newly graduates (House Officers) of this Dental College of the same year. A sample size of approximately 300 students participated in the study. Epi Info Statistical Software was utilized with a confidence level (Z) of 95%, margins of error of 5% (d) and a good knowledge of 33% established by previous literature. A sample size of 339 students was attained by applying this formula n = (Z2 * p * q) / d2 ; nevertheless, a sample of 300 students were selected comprising of 3rd and 4th year students as well as recent graduates (House Officers) of Dr Ishrat-Ul-Ebad Khan Institute Of Oral Health Sciences, DUHS to participate in this study.[10]

A paper-based Questionnaire comprising of 20 multiple choice questions was adapted from the previous studies[1,6,8,13]along with some alterations of our own. It was distributed along with an informed consent to 300 participants at the end of the lecture class in our University. The survey consisted of demographic questions (age, gender, status)[16] questions to assess their knowledge regarding research (yes/no), Questions on attitudes towards research and research skills.[16]

The surveys' collected data was examined utilizing IBM statistical package for social sciences (SPSS v.17). A descriptive statistics and frequency analysis were carried out on the gathered data using SPSS and the Chi-square test was used. One-Way ANOVA test was also used to analyse the relation between the Age and the Status. A $P < 0.05$ was considered Significant.

Results

In this study, the response rate was 100% owing to the fact that all the 300 participants answered the Questionnaire. As shown in Figure 1, out of all the participants in this study, there was an unequal gender distribution with 215 (71.7%) being Females and 85(28.3%) being Males. Among the 300 participants, 130 (43.3%) were the 3rd Year students, 70 (23.3%) were the 4th year students, 100 (33.3%) were the House Officers.

SPSS was utilized to examine the collected data with the help of the Descriptive Statistics and Frequency Analysis test. For a scientific statistical analysis of the responses, Chi-Square and One-Way ANOVA tests were applied while keeping the cut-off level for significance with a p-value of 0.05.

The Questions to evaluate the knowledge of the participants regarding scientific research are presented below in Table 1. The pie-chart shown in Figure 2 illustrates that amongst 300 participants, 66.7% had good knowledge regarding Research hypothesis and only 22.7% of the participants understood the exact meaning of the term, 'Research'. On the other hand, a much poorer response was received regarding the understanding of the term "Medline", with only 12.3% of the participants giving the correct response.

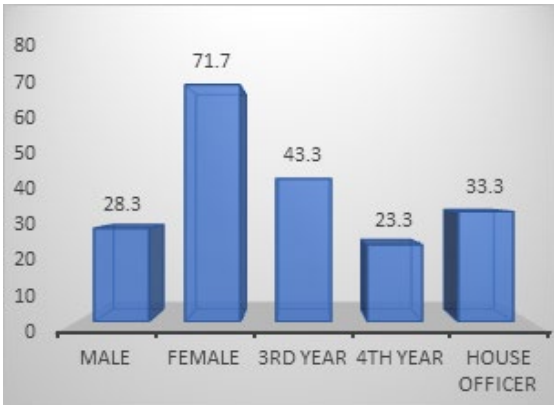

Figure 1: Distribution of participants as per gender and status

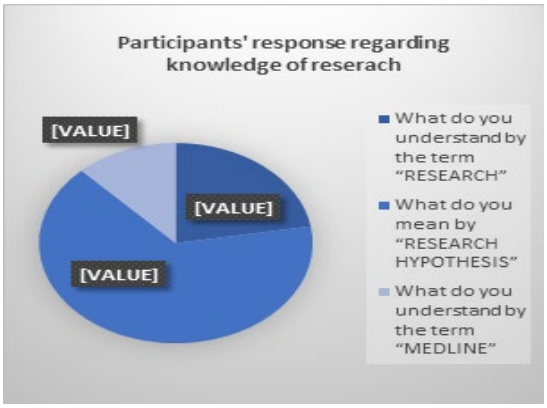

Figure 2: Response regarding knowledge of research

	QUESTIONS	RESPONSES		
		CORRECT N (%)	INCORRECT N (%)	p-value
1	What do you understand by the term "RESEARCH"	68 (22.7%)	232 (77.3%)	<0.01
2	What do you mean by "RESEARCH HYPOTHESIS"	200 (66.7%)	100 (33.3%)	<0.00
3	What do you understand by the term "MEDLINE"	37 (12.3%)	63 (87.7%)	<0.02

Table 1: Participants' response regarding knowledge about research (N=300)

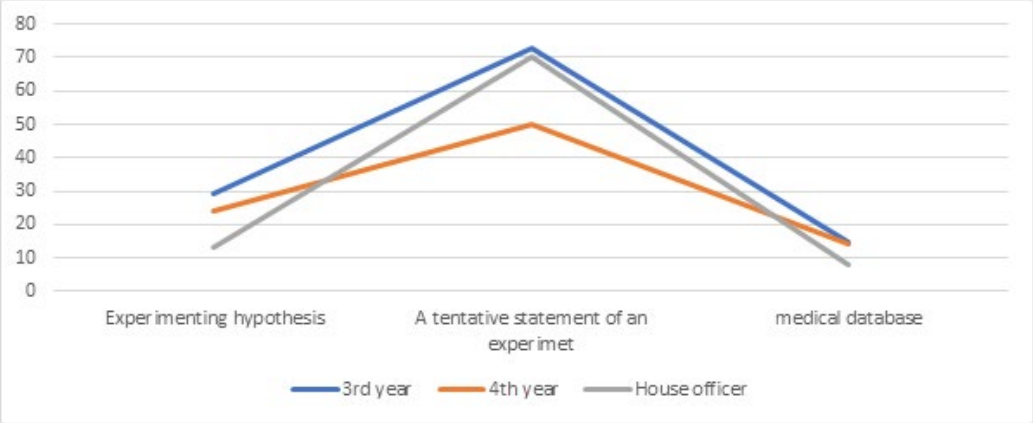

Figure 3: Relationship of three groups with respect to their knowledge regarding research

The Pearson's Chi-Square test was applied to evaluate the Categorical Data on students' responses regarding research activities. (5) A Chi square value of 27.396, d = 8 and $p < 0.001$ was obtained for Question 1. Similarly, for Question 2, the value was 33.06, d = 6 and $p < 0.00$ and for Question 3, the value was 23.85, d = 8 and $p < 0.002$. From the above-mentioned results of the Chi Square test, it is inferred that there is an evidence of a strong relationship between the status of the participant and their knowledge regarding research.

Assessment of the participants attitude towards research was evaluated through the Questionnaire. The results of this evaluation are presented in Table 2. An excellent response was acknowledged regarding the attitude of the participants towards research as 92% of them considered research as being important while 91% believed that research will benefit their careers and about 87% agreed to participate in research if given the opportunity in the future. Nevertheless, as shown in Figure 4, only 63.7% of them were motivated by seniors and teachers to conduct their own research. More than 50% of the participants agreed that research conduction secures a better chance for pursuing Post graduate programs

		Yes (%)	No (%)	Don't Know (%)	P value
1	Importance of Research	92	7	1	0.048
2	Research should be a part of the curriculum	87.7	10.3	2	0.479
3	Research beneficial to career	91	6	3	0.753
4	Research advances knowledge	91	7	2	0.378
5	Research part of Dental Education	80.7	15.7	3.7	0.638
6	Motivated by seniors and teachers	63.7	35.3	1	0.026
7	Participate in research if given opportunity	87	13	0	0.255

Table 2: Representing the attitudes of participants towards conducting research (N=300)

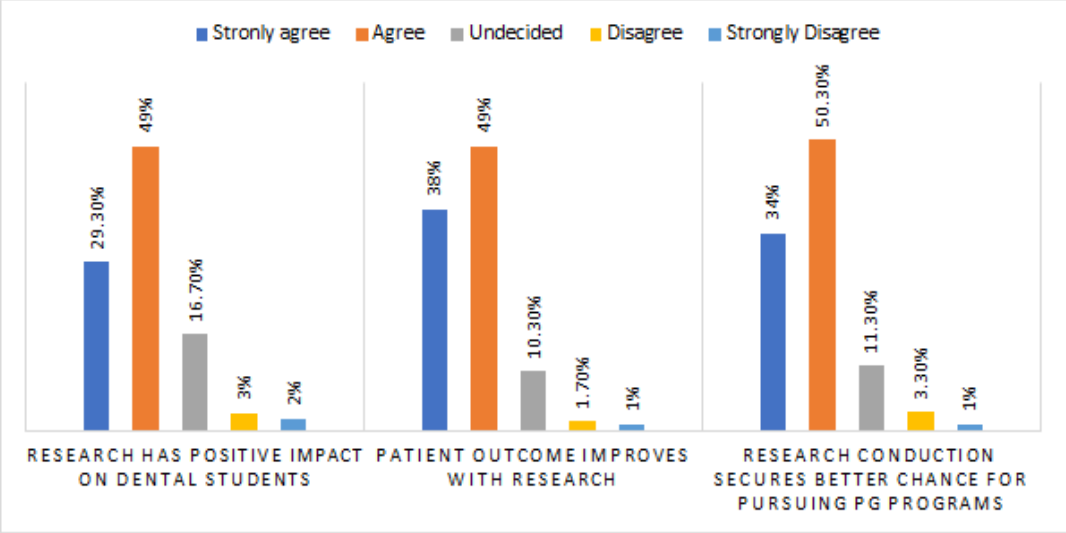

Figure 4: Attitude of participants towards conducting research.

Regarding practice of the Dental students and House officers it is highlighted in Figure 6 that 84.3% of the participants have already participated in research as an Undergrad. However, 67.3% of the participants had no experience of writing a research paper, 77% never presented a research paper and 88% did not have any publications in an Indexed Journal. However, 70.3% of the students have read a minimum of one research paper

One Way ANOVA test was applied considering Age as an Independent variable and Status of the participant as a Dependent variable. A p value of <0.00 was obtained portraying that there is a significant difference when we compare different ages in relation to the status.

Discussion

The improvement and progress of health-care systems is highly dependent on research as it plays a pivotal role in making these health-care systems reachable to the general public.[3] To excel in Dental and Medical practices, every student should possess good knowledge, a positive attitude[3] and a strong motivation towards research. Although many researches[1] [6-11] have already been conducted to assess the knowledge and attitude of undergraduate medical and dental students all over the world, very few have been reported to be conducted in Pakistan.

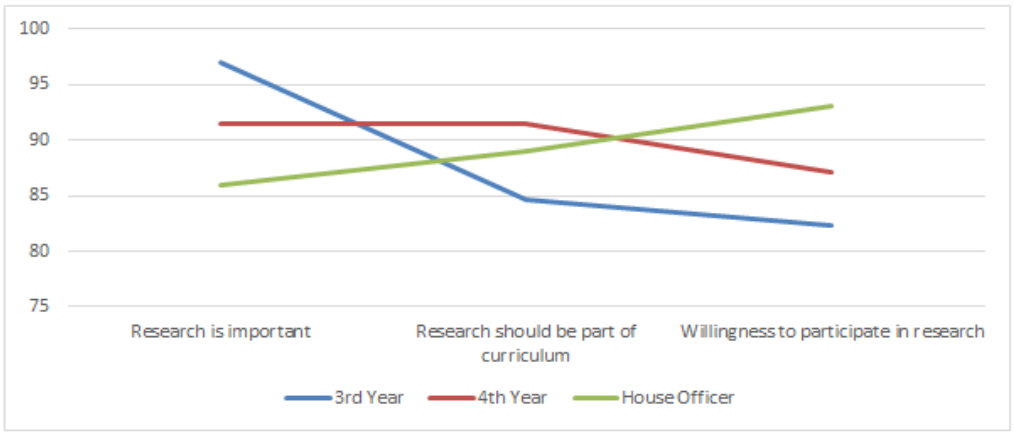

Figure 5: Trend amongst 3rd year, 4th year and House Officers regarding their attitude towards research

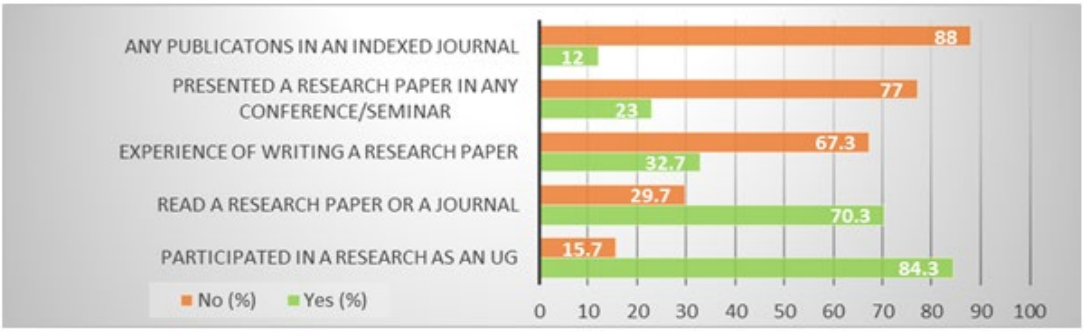

Figure 6: Percentage distribution of participants' response regarding their practice in research

The Objective of our survey-based study was to determine the level of knowledge as well as attitude of Dental students and House officers towards Research. The sample size of this study was 300 and the response rate (100%) was found to be outstanding. This study also gaged the performance of students and recent graduates of DIEKIOHS-DUHS in the field of research. The relationship between individual characteristics such as age, gender, year of education, knowledge and attitudes toward health research were studied.[6,29,30] Our University, DIEKIOHS has made it compulsory for every enrolled dental student to conduct at least one research in their 3rd year. As a result, students are encouraged to acquire the methods of research and enhance their self-confidence for carrying out research-oriented activities.[10]

Undoubtedly, research in general practice is crucial for the improvement of patient care outcomes.[6] Even though in this study[6], a clear connection between gender and knowledge is not consistent with the previous studies[29, 30], it can still be concluded that the average female student has more knowledge than the average male student for the majority of knowledge-based questions. However, both follow a similar trend with regards to correct proportion of answers. Figure 5 shows a common trend concerning the knowledge of 3rd year students, 4th year students and House Officers so there is no significant difference between the three groups with regards to their attitude towards research.

As per the results of our study, a Mean Score value of 3.02 and 1.26 was obtained for participants' knowledge and attitude respectively. For this study, the proportion of correct responses for the knowledge achieved, was 33.9% which is close to percentage of correct answers (32.6%) in a study reported by Habib[1] in which he assessed the knowledge and attitude of undergraduate dental students in King Saud University, Riyadh- Saudi Arabia. Conversely, the percentage (33.9%) attained in this study is lower than the outcomes of the studies of Khan H (2)(43.2%) and Vodopivec[7](44%). Both authors carried out researches with an identical questionnaire between Pakistani and Croatian medical students respectively[1]. It is hypothesized from our results that there is a moderate level of knowledge among the Dental Undergraduates and House officers as compared to the medical students owing to the fact that even less than 50% of the correct answers for knowledge regarding research were received from the participants(n=300) of this study. It is also deduced from our results that a certain age group of 22 had more knowledge among all the age groups who were a part of this study.

Systematic review of the attitude of Dental students and Recent graduates of DIEKIOHS-DUHS reveal that 83.8% of them had positive attitude towards research, concluding that the students of DIEKIOHS-DUHS are more inclined towards conducting research which might alter the current trend in the future. Comparison of different attitude-based questions suggest that the House Officers are most likely to conduct research whereas 3rd year students appreciate the importance of research but are reluctant to carry it out.

In this study, a total of 92% of the participants believed that research is important and 87.8% of students observed that for their profession, research is favorable (91%) and therefore, it should be a part of their academics as it aids in advancing knowledge (91%)[12]. In addition, a higher percent (87.7%) of participants concurred that if given an opportunity to conduct a research in future, they would avail it as compared to a much lower percent(63.6%) of response in a similar study carried out by Priya[8] in Saveetha Dental College, Chennai-India. Furthermore, in this study the percentage of students motivated by their seniors (63.7%) was slightly higher than the percentage (56%) attained in the study reported by Osman[15] who conducted a similar survey-based study on medical students in Sudanese University. It is noted in figure 5, that only half (50.3%) of the participants agreed that research publication secures a better chance for pursuing postgraduate programs. However, a significantly higher percentage (85.9%) of participants agreed on the same statement, in another similar study testified by Ibrahim,[6] in his Questionnaire based study on medical students and interns in King Abdulaziz University, Jeddah in 2012.

This study gaged the performance of Dental students and graduates of DIEKIOHS-DUHS as reflected in figure 4. In our survey, more than 80% of the students have already participated in research as an undergraduate as compared to only 23.5% and 38.1% in a similar research by Shilpashree[12] on medical students and Ibrahim[6] on medical students as well as interns, respectively. Up to 70% of the participants have at least read one research paper and/or journal, in contrast to only 47.6%, in a study by Gupta[9] amongst Dental students in Central India and 31.2%, in a survey conducted by Priya[8] in Saveetha Dental College. Nevertheless, in our study only 12% of the dental students expressed to have experienced writing a research paper, followed by presenting it in any Conference/Seminar (23%) owing to be a higher count than the one Ibrahim[6] deduced in his study on medical students and interns (12.3%). Hence, it was observed in DIEKIOHS-DUHS that majority of the students are willing to participate in a research project allotted to them (83%) but only a few of them were motivated to work on a research project and publish papers in journals (12%).[10]

Our study had quite a few limitations which included students being casual while completing the Questionnaire as they were less concerned

about it. Furthermore, this study was limited to only one institution with only 300 number of participants, therefore no generic trends could be deduced from the collected data. Adding to this, self-reported measures are usually bias and overestimated unless an objective measure is undertaken to assess the knowledge regarding research [5]. Nevertheless, authors believe that this survey-based study would aid Dental students to upsurge their knowledge concerning research and will contribute as a source of motivation for them.

Conclusion

It can be concluded from this research that a moderate level of knowledge was demonstrated by DUHS's dental undergraduate students, as well as good attitude with a decent practice approach concerning the principles of research. Overall, a massive count of nearly 276 out of 300 participants appreciated the importance of research with more than half of them possessing knowledge about research hypothesis. According to the results achieved, it is accomplished that majority of the participants have already conducted research as an UG and have at least read one research paper. More contrasting results are comprehended when only few of the participants had any experience of writing or publishing any research paper. As the field of research withhold many advantages for the better future of the students, emphasis should be laid on to polish their research skills to its best. For instance, apart from the curriculum burden, enough time should be allotted for Dental students to conduct a research and participate in several workshops and seminars under good statistical assistance and excellent mentor's supervision.[4]

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