Prevalence of dental anxiety and fear among medical students at University of Thamar

Ahmed A. Madfa[1, *], Abdullah G. Amran[2], Fadhel A. Al-Sanabani[1], Mohammed N. Alhajj[3], Nasr H. Al-Qudaimi[4], Nayl A. AL-Malahy[1], Hamzah A. Al-washali[5], Xiao-Guang Yue[6]

[1]Department of Conservative Dentistry, Faculty of Dentistry, University of Thamar, Dhamar, Yemen

[2]Department of Periodontology, Faculty of Dentistry, University of Thamar, Dhamar, Yemen

[3]Department of Prosthetic Dentistry, Faculty of Dentistry, University of Thamar, Dhamar, Yemen

[4]Department of Pediatric Dentistry, Preventive Dentistry and Orthodontics, Faculty of Dentistry, University of Thamar, Dhamar, Yemen

[5]Faculty of Demonstrative Sciences, University of Thamar, Dhamar, Yemen

[6]Wuhan University of Technology, Wuhan, China

Email address:
ahmed_um_2011@yahoo.com (A. A. Madfa)

Abstract: *Background/purpose*: Fear from dental treatment is widespread distressing problem for the dentist. Anxiety may have an impact to the dentist-patient relationship and it may cause to misdiagnosis. Therefore, this study aimed to assess the levels of dental anxiety and fear among medical students at University of Thamar. *Materials and methods*: Dental anxiety scale (DAS) and Dental Fear Survey (DFS) were completed by one hundred undergraduate medical students. Cross-tabulations were applied to determine the levels of DAS and DFS. Pearson's correlation was used to analyse the association among the dental anxiety measurements. Pearson's correlation also was used to investigate the association between DAS and DFS tests. *Results*: The prevalence of moderate dental anxiety in this sample was 51%, while both 12% of the sample was characterized with high and severe dental anxiety. There were association for question #1 to question #3 (0.368, $p = 0.000$) and question #4 (0.133, $p = 0.191$). Furthermore, the question #2 showed association with question #3 (0.362, $p = 0.000$) and question #4 (0.250, $p = 0.013$). However, the lowest relationship (0.088, $p = 0.387$) was noticed between question #3 and question #4. Respondents who reported moderate dental fear were 79%, whereas 12% of the sample was characterized with high dental fear. Pearson's correlation between DAS and DFS tests was 0.142 with p-value = 0.158. *Conclusions*: The overall dental anxiety and fear from dental treatment was still high. Therefore, more prevention protocols and dental health educational programs are recommended for employing in Yemeni universities.

Keywords: Dental Anxiety, Dental Fear, Dental Education, Dental Health, Yemen

1. Introduction

Dental fear is a specific type of fear, an individual emotional reaction to threatening stimuli, and is common among children and adults. However, dental anxiety is a multidimensional complex phenomenon occurring due to the dental treatment procedures. This phenomenon describes as a feeling or reaction to a known source of danger that lies in the subconscious.[1]

The concepts of dental fear and dental anxiety are often used interchangeably within the dental literature and anxiety is often used as a synonym for fear. Therefore, the terms 'dental fear' and 'dental anxiety' are combined 'dental fear and anxiety (DFA), and used from this point forward to indicate unpleasant or negative emotions associated with dental visits and dental treatment.[2-4]

Traumatic experiences in association with medical and/or dental treatment are known to be important factors for the development of extreme dental anxiety. Additionally, dental anxiety is influenced by many factors which are personality characteristics, negative childhood dental experiences, negative attitudes in the family, and bad experience from previous dental procedures.[5, 6]

Dental anxiety has been recognized as a significant health

issue in many countries. The prevalence of anxiety has been found to vary in content, pattern and level of fear across different cultures and across different populations. Research indicates the prevalence of dental anxiety to vary from as little as 3% to as great as 43% in different populations.[7-17]

Dental anxiety can affect the dentist-patient relationship, and may lead to misdiagnosis.[18] When dentally anxious patients were compared with dentally non-anxious patients; the former group had significantly more decayed surfaces, fewer filled surfaces, and significantly more missing teeth. Consequently, dentally anxious patients were less likely to adopt preventive dental behaviours and required more extensive dental treatment. These findings seemed to suggest that dental anxiety influences the timely receipt of preventive and treatment services, culminating in the deterioration of oral health.[19, 20]

Nevertheless, many improvements in dental equipment, treatment procedures dental instruments and behavioural management procedures, however, dental anxiety remain a significant challenge for both the dentists and their patients.[15] A better understanding of the differences between dentally anxious and non-anxious people beyond clinical variables is important, as it gives insight into the impact of dental anxiety on people's daily living and quality of life.

The need for dental health care in Yemen is increasing and is paralleled by an increasing number of dental faculties as well as private dental clinics. However, information about the prevalence of dental anxiety among medical students in Dhamar, Yemen has not been published. In addition, until now no information is available about the prevalence of dental anxiety among Yemeni Population. This information is needed to assist the designing of appropriate measures in the planning phase of oral health care for medical students as they are a target for improvement and promotion the oral health among Yemeni population. Hence, this cross sectional study was designed and conducted to assess the prevalence and level of dental anxiety and dental fear among medical students in University of Thamar, Dhamar City, Yemen.

2. Materials and Methods

2.1. Sample

The study was approved by the research ethics committee of University of Thamar. This cross-sectional study was conducted on undergraduate students of university of Thamar. The students were recruited from medical Faculty. About 123 students agreed to participate in the study but analysis was carried out on 100 students who provided complete data on the variables of interest to this study.

2.2. Procedure

Prior ethical approval was obtained from the Ethics Committee; students were randomly selected and signed the agreement of participation form.

After a brief explanation about the structure and aims of this survey, all participants received an unidentified copy of the questionnaire. The pre-tested questionnaires, to ensure the understanding of the questionnaire by student, the effortlessness of answering the questions and the time needed to fill out the questionnaire were performed. They were asked to fill the copy of the questionnaires retrospectively from April 2014 till May 2014.The distributed of questionnaire to the students was through the Faculty authorities.

2.3. Materials

Corah's Dental anxiety scale (DAS) was used in this study. DAS consists of four questions with five choices, measured in scores of 1 to 5, including the followings: [21]

1. If you had to go to the dentist tomorrow, how would you feel about it?
2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
3. When you are in the dentist's chair waiting while he gets his drill ready to begin working on your teeth, how do you feel?
4. You are in the dentist's chair to have your teeth cleaned, while you are waiting and the dentist is getting out the instruments which he will use to scrape your teeth around the gums, how do you feel?

The scores for each of the 4 questions were summed to give the level of dental anxiety. The overall maximum score is 20 as follows:

2.4. Scoring the Dental Anxiety Scale

a = 1, b = 2, c = 3, d = 4, e = 5 Total possible = 20

2.5. Anxiety Rating

- 5 - 8 = low anxiety
- 9 - 12 = moderate anxiety
- 13 - 14 = high anxiety
- 15 - 20 = severe anxiety (or phobia).

The Dental fear survey (DFS) was also used in the study; it consists of 26 questions with four choices, measured in scores of 0 to 3. The scores for each of the 26 questions were summed to give the level of dental fear. The overall maximum score is 78. A score of less than 26 indicates a low fear concern; between 26 and less than 52 it is referred to as a medium fear concern and 52 and above indicates a high fear concern.

2.6. Statistical Analysis

Data has been collected and entered to the computer using SPSS (Statistical Package for Social Science) program for statistical analysis, (version 18; Inc., Chicago. IL). Cross-tabulations were used to determine of percentages of non-anxious students against anxious students. The Pearson's correlation was utilized to assess associations among the dental anxiety measurements. The associations between DAS and DFS were tested with Pearson's correlation.

3. Results

The population included medical undergraduate students distributed randomly among all levels of the study. The percentages for non-anxious students against anxious students are shown in Table 1. Fig. 1 displayed the anxious students compared to non-anxious of medical undergraduate students. The prevalence of moderate dental anxiety in this sample was 51%, while both 12% of the sample was characterized with high and severe dental anxiety.

Pearson's correlation was used to analyse the association among the dental anxiety measurements (Table 2). The correlation between the question #1 and question #2 was 0.170 (p = 0.095). The association of question #1 to question #3 and question #4 was 0.368 and 0.133 respectively (p = 0.000, 0.191). Similarly, the question #2 showed association with question #3 and question #4 0.362 and 0.250 respectively (p = 0.000, 0.013). However, the lowest relationship (0.088, p = 0.387) was noticed between question #3 and question #4.

Respondents who reported moderate dental fear were 79%, whereas 12% of the sample was characterized with high dental fear as presented in Table 3 and Fig. 2. Pearson's correlation also was used to investigate the association between DAS and DFS tests, in which the association was 0.142 with p-value = 0.158 (Table 4).

Table 1. *Percentages of dental anxiety among variables.*

Anxiety rating	Low	Moderate	High	Severe
Percentage	25%	51%	12%	12%

Table 2. *Pearson's correlation representing interrelationships among variables.*

	Question #1	Question #2	Question #3	Question #4
Question #1	-	.170	.368**	.133
Question #2	.170	-	.362**	.250*
Question #3	.368**	.362**	-	.088
Question #4	.133	.250*	.088	-

**Correlation significant at the 0.01 level (2-tailed)
*Correlation significant at the 0.05 level (2-tailed)

Table 3. *Percentages of dental fear among variables.*

Fear Concern	Low	Moderate	High
Percentage	5%	79%	16%

Table 4. *Pearson's correlation representing interrelationships between dental anxiety and fear.*

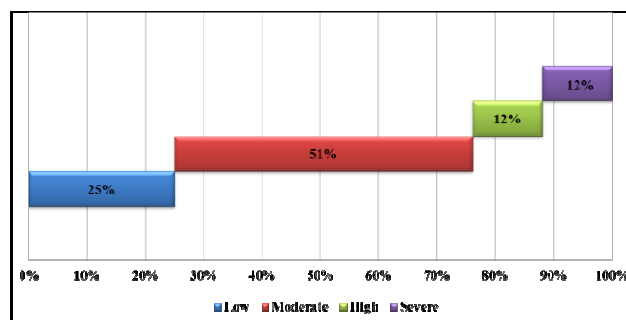|		Anxiety	Fear
Anxiety rating	Pearson Correlation	-	.142
	Sig. (2-tailed)		.158

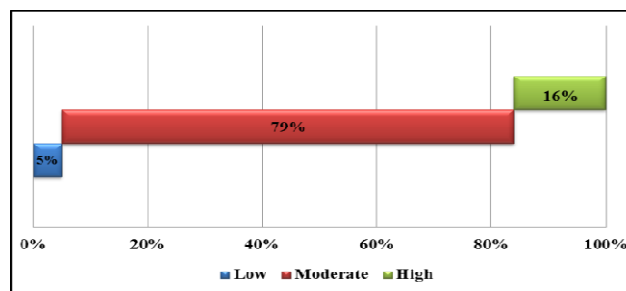**Fig 1.** *Percentages of dental anxiety among respondents.*

Fig 2. *Percentages of fear from dental procedures among respondents.*

4. Discussion

Generally, communication with the non-anxious patients is easy, but quite challenging with the severely anxious patients who initially are reluctant to commit to any program connected with dentistry and tried to avoid meetings with the dentist. Lack of dental care may lead to a deteriorated state of oral health that may prompt such individuals to seek dental care only when experiencing acute pain. A history of urgent dental care encounters may predispose people to being fearful of the dentist because previous experiences with the dentist may have been painful.

The present study represents one of the first attempts to characterize dental anxiety and fear among Yemeni population.

Since dental fear is subjective and multidimensional, it can be difficult to study. So, numerous scales and questionnaires have been developed to assess dental fear and anxiety, however, to date, there is no single scale which can be considered as a gold standard for measuring dental fear and anxiety for children and adolescents. However, Corah's DAS[21] has been reported as the most widely used psychometric measure of dental fear and anxiety for adults.[22, 23] Thus, DAS was selected for use in this study in part to provide wide comparison with previously published studies.

Respondents completed the questionnaire by themselves and they were advised to ask investigator for help only if needed. This way other students influence, if not controlled properly, may lead to serious biases as cultural factors. Students, who left any one of the questions without response, were excluded from the sample.

Noticeably, the sense of fear to stimuli was varies because each individual has special fear responses due to different stimuli during dental treatments. This study revealed that

seeing the anaesthetic needle, and feeling the needle injection and drilling were the most common fear from other dental procedures. The findings of the present study are consistent with previous studies that reported these two procedures feared most by respondents all over the world.[24-25] According to results of this study; the third most feared item was pain during dental treatment as well as fear of having instruments in the mouth, ranked fourth of all fear items.

The findings of this study suggested that 12% of respondents recruited from medical faculty severe dental anxiety and also 12% are characterized as presenting high dental anxiety. These findings are higher than the prevalence of dental anxiety reported by previous studies.[21, 26] Woodmansey[27] reported the prevalence of severe dental anxiety as 5%, while Sohn & Ismail[28] found that the prevalence of high to severe dental anxiety was 10%. McGrath and Bedi[29] observed a prevalence of severe dental anxiety of 11%, whereas, Thomson et al.[30] reported the prevalence of high dental anxiety at 21.1%. Additionally, one study conducted among Saudi student showed the prevalence of high to severe dental anxiety was 39%.[31] Even through, the current study should good findings comparing with some previous studies whose are more familiar with dental clinics, but, this study was carried out among medical students only, which can be justified, by the fact, that medical students are more educated and motivated for dental treatment than others.

The prevalence of dental anxiety among medical students was still high, which raises the potential for serious health consequences resulting from not maintaining oral health. This is due to dental education programs and prevention protocols are limited in the Yemen as general and particularly in universities and schools. This high level of anxiety will complicate the dental treatments as it is difficult to control such patients due to their fears and low cooperation at the dental chair side. These findings suggested that there should be increased efforts to screen people learning in the universities in Yemen. So, the students with high dental anxiety and fear need continued positive motivation by a non-threatening process such as an oral prophylaxis, which elicited the lowest levels of anxiety and fear. Parallel to these efforts, medical students should be encouraged to discuss oral health and unmet oral health needs with their primary care clinicians to address these needs in such settings to encourage the medical students for establishing a regular dental relationship with their patients in future.

This survey was performing to test and explain the possible factors that may affect dental anxiety of students in Yemen and the relationship between dental anxiety and fear. Nevertheless, there were correlation between dental anxiety and fear among studied population; however, this relationship was not significant. This is may be due to a possible bias was introduced as only, by the fact, students were questioned. Furthermore, some students may not have any experience of visiting of dentist. Thus they don't have any experiences about some items in fear concern questioners.[32] This could be because these students at that time had no defined concept of dental treatment, and do not assume dental treatment to be fearful. Even though these students, who had never been to the dentist, may not really fear the dentist, they might have an uneasiness regarding their dental visit. Therefore, this possibly confirms that there are not significant difference between the dental anxiety and fear.

5. Conclusions

Under limitations of the current study, it can be concluded that dental anxiety remains a significant problem for many patients. The overall dental anxiety and fear of dental treatment among medical students were still high. Therefore, more prevention protocols and dental health educational programs are recommended for employing in Yemeni universities.

In order to generalize the results of such studies among Yemeni population, future studies on the relationship of dental anxiety with oral health status should be carried out using larger random samples.

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