
Dental fear and associated factors among adults in Dar es Salaam, Tanzania

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Abstract

Aim: To determine the occurrence and possible social demographic factors related to dental fear among adults in Dar es Salaam, Tanzania. **Design:** A cross-sectional descriptive study. **Study participants and methods:** 306 participants (71.3%) had visited a dentist before thus completed the Corah dental anxiety scale (DAS) and the Dental fear survey form (DFSF). Chi-square test was used to test for significant differences. **Results:** Females were more regular attendees to dental clinics and less likely to hesitate making or canceling appointments than males, while less educated participants were significantly more likely to hesitate making appointments due to fear of dental treatment. Utilizing DAS score, 21.8% of study participants were found to have dental fear with the mean DAS score of 3.38. Employing DFSF, increase in heart beat was the most reported physiological response during dental treatment, and feeling of the needle being injected was the most reported stimuli of dental fear. **Conclusion:** Dental fear among adults in Ilala was a real problem as it was reported by a substantial proportion of the study population and several factors were found to be important stimuli for triggering fear.

Key words: Dental fear, dental visits, dental treatment, adults, Tanzania

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Introduction

Dental fear is irrational fear or anxiety towards dental treatment and dentistry in general. Fear of dental treatment has been considered a major hindrance to delivery of quality dental care (1). Dentally anxious patients are more difficult to manage, take longer time to treat and are a major source of stress for the dental practitioner. Their tendency to break dental appointments may compromise smooth running of a dental practice. A study done in Kenya, reported that most respondents considered dental treatment uncomfortable and painful. Respondents reported also that fear arising from information given by other dental patients were most important reasons that kept them from visiting a dental clinic (2). Dental fear is more common in women than men. For instance, Milgrom et al (3) showed that females were 1.8 times more likely to report high levels of dental fear than males. Age has been reported as another demographic factor associated with fear. As one gets older the likelihood of dental fear decreases, thus older people are reported to show less fear than younger people (4).

Dental fear has been related to delay in seeking of dental treatment. Studies done on onset of dental fear revealed two ages of onset; childhood onset, in which it is reported 85% of studied cases had childhood onset of fear. Another age of onset is adulthood onset. Regarding fear of early childhood onset, the Dental

professional behaviour and previous traumatic dental experiences were the most important causes of fear while for the adulthood onset; pain was an important causative factor (5). Fear of adolescent onset has also been reported and are said to be related to social factors (6).

The most feared events in dentistry as ranked by patients are drilling, dental injections, extraction, site of people in white coats and the dental environment (7). From a study done in an Icelandic adult population, it was reported that people with higher education level have less dental fear (8). Regarding edentulousness and fear, it is reported that fear is less in old women with loss of teeth or who are edentulous (9), although Stourthard (10) reported contradicting findings.

In Tanzania most patients visit dental clinics in an emergency, when they are in pain, without appointment (11) thus create a huge workload for dentists. Only one study about dental fear has been conducted in Tanzania among child escorts to dental clinics (12). The findings of that study revealed that 44% of respondents reported dental treatment as frightening. Information on dental fear among the Tanzanian community is not known, therefore the aim of this study was to investigate the occurrence of dental fear and the possible social demographic factors related with dental fear among adult population in Ilala, Dar es Salaam.

Study participants and methods

The study was a descriptive cross sectional, which was conducted in Ilala municipality, Dar es Salaam. Ilala was chosen among the three municipals on convenience due to having many institutions compared to the other two municipalities of Temeke and Kinondoni.

Study participants

The study population comprised of employees, working in various institutions in Ilala municipality. There are 50 institutions which employ at least 100 workers who can read and write. The 50 institutions were grouped into five categories; Health care (seven), Higher learning (four), Primary school (twenty), Secondary school (nine) and Financial institutions (ten). From each of the five groups, two member institutions were randomly selected, giving a total of ten institutions to take part in the study. All adult employees within the age range of 18 to 60 years were eligible to participate. A minimum sample size of 556 was predetermined; eventually 60 participants were selected from each institution making a total sample of 600 subjects. Informed consent was obtained from participants before they were requested to fill in the questionnaire. A total of 600 questionnaires were distributed to institutions for the participants to fill them during their free time. The questionnaires were collected from each institution three or four days later as per appointment. Ultimately, 429 questionnaires were filled and handed back, a response rate of 71%. However, only 306 respondents had visited a dentist before thus they are the ones who completed the Corah dental anxiety scale (DAS) and the Dental fear survey form (DFSF),

Methodology

A structured questionnaire was used. The first section inquired on demographic data and attendance to a dental clinic. Furthermore, it inquired on reasons for not having attended a dental clinic.

The second section inquired on dental fear to only those who had attended a dental clinic at least once. Both DAS (13) and DFSF (14) were used to inquire on dental fear among the 306 participants. Regarding DAS score, 4 questions with a five point scale were asked. Thus a subject could score a maximum of 20 points. Degree of dental fear was then graded into not fearful (score 4-12), moderately fearful (score 13-14) and highly fearful (score 15-20).

Using the DFSF, one question with a five point scale (1 = never, 2 = once or twice, 3 = a few times, 4 = often and 5 = nearly every time) inquiring as to whether dental fear has caused a subject to hesitate making an appointment or cancel an appointment for dental treatment was asked. Furthermore, two

questions required respondents to rate themselves using a five point scale (1 = not at all, 2 = a little, 3 = somewhat, 4 = much and 5 = very much) regarding stimuli of dental fear and physiological responses to dental treatment. Thus any participants who rated himself/herself between score 2-5 was considered to be elicited to dental fear by a given stimulus or to experience a specified physiological response while undergoing dental treatment.

Data management and analysis

Data was entered in a computer and analyzed by SPSS 10.0 programme. Age and education were dichotomized, age was dichotomized at its median split producing two groups; 1= lowest 18-27 years and 2=highest 28-60 years. Education was dichotomized into two categories; 1= Primary and secondary and 2= Higher education, certificates and graduates.

Chi-square test was used to test for differences between groups. Statistical significance level was set at $P < 0.05$.

Results

Utilization of dental services

Three hundred and six (71.3%) participants had visited a dentist at least once in their life. Of whom, 178 (58.2%) were females and 128 (41.8%) were males. There was a significant difference in proportions of males over females who had visited a dentist ($p = 0.02$). Fifty one females (25.5%) and 46 males (31.1%) had not visited a dentist at all. Also there was a significant difference in proportions of young and old subjects who had attended a dental clinic ($p = 0.05$). Eighty one percent of the older subjects had attended a dental clinic compared to 71% of younger subjects. Reasons given for not having attended to a dental clinic were; not to have suffered from dental problems (80 %), fear (4.1%) and cost (2.5%).

Table 1: Distribution of the study population by age and sex

Age in years	Male		Female		Total	
	n	%	n	%	n	%
18-27	58	47.2	65	52.8	123	40.2
28-60	88	48.6	94	51.4	183	59.8
Total	147	48.0	159	52.0	306	100

Corah Dental Anxiety Scale score

The mean Corah Dental Anxiety Scale (DAS) score was 8.8 (Table 2). About twenty two percent (21.8%) of the subjects were found to be moderately or highly fearful of dental treatment, (Table 3). Significantly more females (15.9%) reported to be fearful of dental treatment than males (5.8%), ($p = 0.001$). Older

subjects were significantly more fearful than the younger subjects ($p = 0.014$).

Table 2: Distribution of mean DAS scores (n = 306)

DAS score	n	Mean score
4-12	239	7.8
13-14	36	13.5
15-20	31	16.7

Overall mean score = 8.8

Dental Fear Survey Form

Twenty two percent of the participants put off making an appointment due to dental fear. On average the mean score with regard to canceling an appointment and putting off making an appointment for dental treatment was 2.1. There was no significant difference in the possibility of canceling an appointment between the two sexes. Whereas, the less educated were more likely to put off making appointments and to cancel appointments than the highly educated ($p = 0.001$).

Table 3: Distribution of DAS scores by sex (n = 306)

DAS Score	Male		Female		Total	
	n	%	n	%	n	%
4-12	110	35.9	129	42.1	239	78.1
13-14	10	3.2	26	8.4	36	11.7
15-20	8	2.6	23	7.5	31	10.1
Total	128	41.8	178	58.2	306	100.0

More females were fearful of dental treatment than males, ($p = 0.001$).

Older subjects were significantly more fearful than the younger subjects ($p = 0.014$).

Stimuli of dental fear

Stimuli reported to be highly feared were feeling of needles being injected and site of a needle. The least

reported stimulus was making an appointment for dental treatment (Table 4). No statistical significant difference was observed between sexes, but statistically significant differences were seen with education (Table 5) where more educated people reported to have fear on site of a drill ($p = 0.036$), site of a needle being injected ($p = 0.001$), feeling vibration of a drill ($p = 0.008$) and having dental work done ($p = 0.01$). Besides, more older participants reported to fear making appointment for dental treatment ($p = 0.011$)

Physiological responses to dental treatment

Palpitations was the most common response while to feel nauseated was the least response reported by participants (Table 5 & 6). The older subjects reported more of increased heart beats than the younger subjects ($p = 0.041$). No statistical significant difference was observed between sexes or education.

Discussion

We consider the response rate of 71.5% to be satisfactory therefore our findings will provide a preliminary understanding of dental fear among adults in Dar es Salaam, Tanzania.

Seventy one percent of the study participants had attended a dental clinic prior to the study. This could be a good sign as it may indicate that many people have become more aware of their oral health problems. On the other hand, it may imply that a good proportion of Tanzanians do suffer from dental diseases at least once in their life time because dental visit is unlikely to be due to routine check up, an uncommon practice in the country (15). More females had visited a dentist than males. This difference was statistically significant, indicating that females are more regular attendees of dental clinics than males. This observation is in agreement with that made by Schuurs et al (16). It is said that females put more value in aesthetics and that they are more compliant than males.

Table 4: Number and percentage of subjects scoring 2 or more on source of fear by sex

Objects of dental fear	Males		Females		Total	
	n	%	n	%	n	%
Feeling the needle injected	105	86.8	160	89.9	265	88.6
Seeing the anesthetic needle	96	80.0	155	86.6	251	83.9
Seeing the drill	90	75.0	143	80.3	233	78.2
Hearing the drill	86	71.7	142	79.8	228	76.5
Feeling the vibrations of the drill	88	73.3	138	77.5	226	75.8
Having dental work done	86	71.7	137	77.4	223	75.1
Being seated in the dental operatory	80	66.1	127	70.9	207	69.0
Having your teeth cleaned	73	61.3	119	67.6	192	65.1
Seeing a dentist walk in	68	56.2	113	63.5	181	60.5
Sitting in the waiting room	69	57.0	103	57.5	172	57.3
The smell of the dentists office	53	43.8	79	44.4	132	44.1
Approaching the dentists office	46	38.0	85	47.5	131	43.7
Making an appointment for dental treatment	21	17.2	36	20.6	57	19.2

There were no statistical significant differences between sexes

Eighty percent of 97 participants who had never visited a dentist reported that they had no need for dental treatment. This is much higher than 34% and 42% reported by Quteish for Jordanians (17, 18). Unlike in established market economy (EME) countries, regular dental check up is not a common practice in Tanzania, thus most Tanzanians are unlikely to visit a dentist in the absence of unbearable dental pain. Four percent of those who had not attended to a dental clinic had reported fear of dental treatment as a barrier. This finding agrees with that of Kouame et al (19). Although many people report to be afraid of dental treatment it is only a few who

report fear of dental treatment as a hindrance for attending to a dental clinic.

Only 2.5% reported inability to meet the treatment cost as the reason of not attending to a dental clinic, much smaller compared to 16.6% reported by Quteish (17, 20), but comparable to 5.3% also reported by Quteish (18). A relatively smaller percentage of Tanzanians would not afford to pay for dental treatment compared to that in EME countries, probably because in Tanzania, the cost of health services particularly at government hospitals is subsidized by the government (21).

Table 5: Number and percentage of subjects scoring 2 or more source of fear by education

Objects of dental fear	No college education		College education		P value
	n	%	n	%	
Feeling the needle injected	69	79.3	196	92.5	0.001
Seeing the anesthetic needle	67	77	184	86.8	0.03
Seeing the drill	63	72.4	170	80.6	N.S.
Hearing the drill	63	72.4	165	78.2	N.S.
Feeling the vibrations of the drill	57	65.5	169	80.1	0.008
Having dental work done	56	65.1	167	79.1	0.01
Being seated in the dental operatory	54	62.1	153	71.8	N.S.
Having your teeth cleaned	51	58.6	141	67.8	N.S.
Seeing a dentist walk in	53	61.6	128	60.1	N.S.
Sitting in the waiting room	49	56.3	123	57.7	N.S.
The smell of the dentists office	38	43.7	94	44.3	N.S.
Approaching the dentists office	42	48.3	89	41.8	N.S.
Making an appointment for dental treatment	20	23.5	37	17.5	N.S.

Twenty two percent of the participants reported to hesitate to seek or make appointment with a dentist due to dental fear which is lower than 31.5% reported by Domoto et al (22). This difference can be explained by the fact that arranging dental visits by appointments is not a well-established procedure in Tanzania. In this study, less educated people were more likely to hesitate making and to cancel appointments than the highly educated. Probably educated individuals are likely to be more aware of their oral health, or are economically better and thus they can afford the treatment costs.

According to DAS score, 21.8% of all participants were found to have dental fear. This finding is in

agreement with the findings reported by Quteish (20) and Thomson et al (23) that 20.8% and 16.6% of the respondents were found to be dentally fearful, but it is lower than 50% reported by Schuurs et al (16). Conceivably exposure to dental treatment at an early age and modern technology prevailing in industrialized countries does not make individuals accustomed to dental treatment and thus does not reduce their level of dental fear.

Unlike in a previous study (4), in this study older people were significantly more fearful than young ones. This difference may be attributed to differences in culture that might be related to responses to unfamiliar situations.

Table 6: Number and percentage of subjects scoring 2 or more on DFSF for the felt physiological responses to dental treatment by sex

Objects of dental fear	Males		Females		Total	
	n	%	n	%	n	%
Muscles become tense	46	38.0	61	34.1	107	35.7
Breathing rate increases	58	48.7	91	51.1	149	50.2
Perspiration	44	37.6	60	34.3	104	35.6
Feel nauseated	16	13.6	23	13.1	39	13.3
Palpitations	73	61.3	101	57.1	174	58.8

No statistical significant differences were observed between sexes

A significant association between sex and the level of fear was observed. Females were more fearful than males, a comparable finding with that of Milgrom et al (3) and Quteish (17). Probably females are emotionally less able to tolerate pain and discomforts associated with dental treatment or are more precise in reporting their dental fear. On the other hand, this finding of females being more fearful than males may be attributed by the pain that females encountered during treatment since more females had visited a

dentist than males and pain has been reported to be an important causative factor of fear of adult onset (5).

In this study, increased heart beats, when undergoing dental treatment was the most frequent physiologic response reported which is in agreement with other studies by Quteish (17, 20), but in contrast to that by Domoto (22) who reported muscle tension as the most common physiologic response. Probably the type of physiological response towards fear is related to culture and traditions.

Table 7: Number and percentage of subjects scoring 2 or more on DFSF for the felt physiological responses to dental treatment by education

Objects of dental fear	No college education		College education		Total	
	n	%	n	%	n	%
Muscles become tense	26	29.2	81	38.4	107	35.7
Breathing rate increases	46	54.1	103	48.6	149	50.2
Perspiration	30	36.1	74	35.4	104	35.6
Feel nauseated	7	8.3	32	15.3	39	13.3
Palpitations	47	56.0	127	59.9	174	58.8

No statistical significant differences were observed between levels of education

The most feared dental situations in this study population were sensation and sight of the anaesthetic needle followed by sight and sensation of the drill. These findings are similar to those reported by Quteish (17, 18, 20), but are in contrast to fear of the drill as the most feared object reported by Bergren (5). The difference can probably be explained by the fact that in Tanzania the most often provided treatment is tooth extraction and restorations are done at a lesser extent (15). Perhaps for this reason some Tanzanians may not have experienced the process of tooth restoration and are thus not aware of the drill.

Conclusion

Dental fear among adults in Ilala was a real problem as it was reported by a substantial proportion of the study population and several factors were found to be important stimuli for triggering fear.

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Once a fellow went into a restaurant and ordered a one-kilo lobster. "Waiter", he said when his meal was placed before him, "this lobster has only one claw."

"I am sorry, sir," the waiter replied. "But sometimes the lobsters fight in the tank."
"In that case," the diner said, "Bring me the winner!"

