

The Fear of Pain and Embarrassment in Relation to Dental Anxiety

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Abstract

Introduction/Background

Going to the dentist can be an intimidating experience for some people. While some people are nervous about surgical procedures, others may feel stressed while being examined or thinking about an upcoming appointment. People who feel uneasy, worried, or fearful when visiting the dentist have dental anxiety. Someone who deals with dental anxiety dreads and attempts to avoid appointments, which in return can lead to complications. Skipping visits can result in poor oral health such as gum disease, discoloration of teeth, pain, and more. Finding out the main causes of dental anxiety can help a dentist better understand their patients and thus lead to less missed visits. While there are many different causes, some will be more obvious than others.

Method

This study looked at the fear of pain and the fear of embarrassment in relation to dental anxiety. It examined if different factors that lead to higher anxiety and whether there were gender differences. The study was conducted by first using Corah's Dental Anxiety Scale (DAS) to determine the anxiety of each participant. Then the Dental Concerns Assessment (DCA) was used to help determine whether fear of pain or fear of embarrassment was the leading cause. Participants were asked to decide which of the two factors was more likely to cause their dental anxiety. The data collected was analyzed to determine if there were gender-specific differences.

Conclusion

Among males and females, a large number of people chose fear of pain as their reason for dental anxiety. Even when asked to choose which of the two factors was more likely, fear of pain was still higher overall. Both fear of pain and fear of embarrassment came in second, while

fear of embarrassment was last. The results of the study show that fear of pain is the main cause for dental anxiety.

Introduction

According to Wahid, et al (2015), dental anxiety is “a perception of fear arising from anticipated pain or discomfort” and is more common than people may think. It is one of the most common reasons for a patient avoiding the dentist. According to Ragnarsson (1998), it is estimated that 4% to 15% of people avoid seeing the dentist due to dental anxiety. The popularity of dental anxiety was shown to be 198 out of 1000 or equal to the fear of flying on an airplane (ibid). Dental anxiety is ranked fourth or fifth amid a list of 40 generally feared situations (ibid). People with dental anxiety have a sense of uneasiness when it is time for their appointment and have unfounded worries and fears. Dental anxiety affects patients but also affects the dentist and dental hygienist (Seckman, 2011). They do so by putting more stress upon the staff and they take more time and effort to treat. People who tend to have a high or severe level of anxiety may avoid treatment and routine check-ups. Avoiding these dental visits, this can lead to neglecting of teeth and poor oral health. Once they are treated, anxious patients are usually unsatisfied with the care they receive (Quteish, 2002). A very anxious patient is hard to treat in a dental office and in the end may still resist treatment when they finally keep their appointment. This can lead to a cycle of patients keeping their appointments, but resisting treatment, thus leaving both the dentist and patient frustrated. It is important to research dental anxiety so that future and current dentists can better understand the causes and know how to cope with an individual patient’s fear. Also, it can help patients become more relaxed and open to communicating with their dentist and hopefully lessen their dental anxiety. The purpose of this study is to determine the leading cause of dental anxiety. One of the factors considered for

the study is the fear of pain. The other factor considered is the fear of embarrassment. The goal is to decide which is more likely to cause dental anxiety. Another goal is to determine whether there are gender-specific differences.

Literature Review

Several studies have been done on dental anxiety, focusing on factors influencing or affecting dental anxiety. Below are a few pertinent studies that have been conducted on dental anxiety.

Dental Anxiety: Maintaining Control Of Problem Patients

Dental Hygienist Cathy Hester Seckman (2011), discusses how dental anxiety patients can make the job of a dentist and dental hygienist more stressful. According to Seckman, fear is a big problem for patients, especially fear of loss of control. Such patients know that they will have to lean back and be put in a vulnerable position while undergoing a procedure that they think will be painful. Fear of pain is another common trigger for dental anxiety in patients. Before the patient even sits in the chair, he or she becomes restless. Sometimes patients who have fear of pain are offered anesthesia but some may have needle phobia as well. Patients can also have the fear of the unknown, such as the likelihood of something going wrong. Another trigger is also the fear of embarrassment. Patients with this fear may not want to hear a lecture on how they should be treating their teeth or they may not want to be touched because of past abuse.

Dental anxiety can be looked at with different assessment tools such as the McGill Pain Questionnaire or the more widely used tool the Corah's Dental Anxiety Scale. According to

Seckman, a study done in Michigan in 1998 used the scale and concluded that dental anxiety patients are more likely to be women with lower income and poor oral health.

Dental Anxiety Level Of Patients Presenting To Operative Dentistry Department

The research done by Wahid, et al (2015), using the Corah's Dental Anxiety Scale, looked at the anxiety levels of adult patients in order to understand the possible causes of dental anxiety and ways to eliminate or mitigate the triggers of the anxiety. Their study showed that the average score of dental anxiety within the population they studied had a value of 9.35 out of 20. Most of their patients had moderate dental anxiety. They were able to determine specific factors such as the dental drill, or waiting to get their teeth cleaned that led to apprehension of dental visits. Determining the components allowed them to come up with different solutions that could lessen patients' anxiety. They also noted that more women had high and severe dental anxiety in comparison to a few men in the same category. Dental anxiety within their research was linked to pain in treatment and the negative attitude of the dentist.

Dental Anxiety and Regularity of Dental Attendance In Younger Adults

The study done by D.S.M. Quetish Tanni (2002) looked at the relationship of dental anxiety and the regularity of dental attendance among young adults. The study was conducted using an altered Dental Fear Survey (DFS). The results showed that 20.9% of young adults were regular dental visitors while 79.1% were irregular visitors. There were different reasons for irregular attendance and 13.3% was due to the fear of the dentist. Sensation and sight of injection and sight and sound of drill were the most common factors causing fear at the dental office. Just like Wahid and his associates in study of "Dental Anxiety Level Of Patients

Presenting To Operative Dentistry Department,” females were once again determined to be more anxious than males.

The Prevalence Of Dental Anxiety and Fear In Patients Referred to Isfahan Dental School

Saatchi, Abtahi, Mohammadi, Mirdamadi, & Binandeh (2015) evaluated the prevalence of dental anxiety and fear in patients referred to their dental school and their relation to their age, gender, educational level, past traumatic experiences and frequency of dental visits. The study was conducted by asking questions about their age, education, and past experiences, how frequently they visited the dentist. They then administered the Modified Dental Anxiety Scale (MDAS) and the Dental Fear Survey (DFS). Their results showed that 58.8% of the people studied had dental anxiety. Education had no effect on dental anxiety or dental fear. Past traumatic experiences raised levels of dental fear and dental anxiety. People who visited the dentist less often were more anxious than those who visited regularly. As reported in many other studies, women had higher anxiety and dental fear than men.

Gender Differences In Reported Dental Fear And Fear Of Dental Pain

In the research done by Heft et al (2007), the authors looked gender difference in reports of global dental fear, global fear of dental pain, and specific fear of dental pain. They also looked at how the wording of questions about specific fear of dental pain influenced a report and how the interactions between gender differences and wording affected the reports of specific fear of dental pain. They conducted the research through a telephone survey. Their results found that there were gender differences when reporting dental fear and fear of pain. Men and women were more likely to say their true feelings with regards to dental fear in a more

social setting. Women were more likely to express their feelings on dental fear than men. Men showed lower levels of dental anxiety than women but expected more pain before treatment.

The results concluded that women were more likely to admit their global fear of dental pain and specific fears of dental pain. These findings show some of the reasoning as to why women tend to have higher scores than men on the subject of dental anxiety within research.

Effect Of Fear On Dental Utilization Behaviors And Oral Health Outcome

According to research done by Xiaoxian, Heft, Bradley, & Lang, there is evidence that dental fear has an impact on dental care utilization behavior. Dental fear is a major roadblock in seeking dental care. There is a trend for people with high dental anxiety to see the dentist less often. Females tend to have more dental visits, better oral hygiene, and work better with the dentist even though dental fear is higher and more common among women. The aim of their study was to assess the independent effects of reported dental fear on dental care utilization behaviors and oral health outcome in a sample of adult Floridians. They collected data from a monthly telephone survey. They measured specific fear of dental pain (FDP). FDP measures a number of fears in relation to some specific painful dental events. They measured global fear of dental pain, which examines overall fearfulness of pain invoked in any type of dental treatment. They also measured the overall fearfulness of dentistry, which is global dental fear. Moreover, they also measured dental utilization behaviors and oral health outcomes by looking at whether or not dental fear had caused them to avoid making an appointment, what their approach to seeing the dentist was, and whether they had gone to the dentist recently. They also collected data on gender, age, race, education, and income. Global FDP and global dental fear were associated with all of the dental utilization behaviors and oral health outcomes. People with high FDP and high global dental fear were more likely to avoid making an appointment, to be a

problem at the office, to not attend checkups, and rate their oral health negatively. People who reported high fear of dentists in general were four times more likely to avoid an appointment than those with low fear. Moreover, participants who reported high global FDP were nearly three times more likely to avoid an appointment than those with low global FDP. Participants with high global dental fear were less likely to rate their oral health as good. Their study confirmed that dental fear could lead to the avoidance of dental treatment and poor oral health.

Changes Over Time In Adult Dental Fear And Correlation To Depression And Anxiety: A Cohort Study Of Pregnant Mothers And Fathers

In the study done by Leutgeb, Übel, and Schienle (2013) their aim was to examine changes in dental fear over the course of pregnancy and after delivery among mothers and fathers. They also wanted to see if the changes correlated with depression and anxiety. From previous studies they learned that females were usually more fearful than men and younger people admitted their fear more than adults. They conducted their study using longitudinal pilot data. They used the Modified Dental Anxiety Scale (MDAS), the Edinburg Postnatal Depression Scale (EPDS), the State Trait Anxiety Inventory (STAI), and the Pregnancy Related Anxiety Questionnaire (PRAQ). There was an apparent decrease of dental fear in mothers during the later term of their pregnancy but after the child was born, the fear increased due to treatment of dental anxiety. Dental fear in fathers increased steadily due to anticipatory dental anxiety. There was no apparent relationship between dental fear and depression and anxiety in mothers but there was a relationship in fathers with both depression and anxiety. The symptom levels of the majority in the study were moderate in relation to levels of depression and anxiety. In their results they found that 52 to 54% of their participants were not afraid of the

dentists, 42 to 46% were somewhat afraid, and 2-5% were very afraid. They also noticed that hormones could explain the gender differences and associations with dental fear in relation to depression and anxiety. Overall, they learned that pregnancy had a different effect on mothers and fathers in dental fear.

Dental Fear And Anxiety In An Adult Icelandic Population

The research done by Ragnarsson aimed to investigate to what extent dental fear affected the adult Icelandic population and to see if there was a prevalence of dental anxiety in comparison to other studies from neighboring countries. The study was conducted by using the MONICA, the codename of the World Health Organization, survey, the Dental Anxiety Question (DAQ), and through an oral examination. The results showed that at all levels of fear, fear was more common in the younger ages for both genders. They also learned that fear was more common in rural areas and that it could be due to limited access to care. They noted that women admitted to the dental fear more than men and this finding was persistent in all age groups and fear levels. When looking at the number of decayed teeth between men and women, men had higher fear of the dentist and more decayed teeth than women. When looking at the number of filled teeth, people within both genders confessed to fear and had somewhat fewer fillings. When they studied patients with higher education, they had a higher number of patients who insisted they had no dental fear. People with higher education tended to have more teeth remaining. It also was determined that the tooth decay numbers increased with increasing levels of admitted dental fear.

Can You Read My Poker face? A Study On Sex Differences In Dentophobia

The research done by Tolvanen, Hagqvist, Luoto, Rantavuori, Karlsson, Karlsson, & Lahti (2013) aimed to compare changes in heart rate and electromyography activity of the musculus levator labii between dental fear and non-fearful men and women to identify gender specific psychophysiological reactions. The study was conducted through interviews. Participants completed the Dental Anxiety Scale (DAS) and the State Trait Anxiety Inventory (STAI). After they participated in experimental sessions, they were shown 120 pictures representing four different categories such as phobia, danger, disgust, and neutral while recording their EMG and electrocardiogram. The pictures related to phobia portrayed dental treatment. Men and women did not differ in heart rate acceleration but did differ in facial EMG activity. Women showed a rise in activity in musculus levator labii. Men with dental phobia looked at dental treatment scenes as equally disgusting as women but had lower disgust facial EMG activity than women. They found that men are usually more successful at regulating their reactions to dental treatment.

The Ability of Corah's Dental Anxiety Scale and Spielberger's State Anxiety Inventory To Distinguish Between Fearful and Regular Norwegian Dental Patients

In the research done Kvale, G., Berg, E., & Raadal (1998), the purpose of the study was to test the ability of Corah's Dental Anxiety Scale (DAS) and Spielberger's State Anxiety to decipher between fearful and regular attending patients. In the study, there was a fear group and a reference group. The fear group included people who were in treatment for dental fear and the reference group were patients of general dentists. Both instruments reliability were high. Consequently, these findings validate the results of other research done on dental anxiety using the DAS or some edited form of it. For the fear patients, the average score was a 15.8 out of 20.

It was noted that some of the reference patients were assigned to the fear group once the results were concluded because they were not fully comfortable with the dentist. Even though there was a slight difference, women had a tendency to score higher than men. The result between the genders correlates with other research done on dental anxiety.

Factors Associated With Different Measures of Dental Fear among Children at Different Ages

In a study done by Rantavuori, Tolvanen, Hausen, Lahti, & Seppä (2009), their aim was to determine the associations between 4 dental fear measures and treatment procedures, oral habits, and family characteristics at different ages. Their study was done using dental examinations and a survey. The results showed that factors related to children's dental fear varied greatly among different ages. Direct and indirect family components played a large role in the dental fear but still varied with age. At 12 years old, children are more able to comprehend what is going on during treatment and therefore become more sensitive to selective fears. Girls ages of 6 to 9 years are more likely to understand negative information such as that eating candy can lead to more treatment at the dentist office. Using the avoidance of candy to instill motivation for kids to brush their teeth may reflect a family's oral health habits and their fears. In their findings they found that 15-year-old girls were more likely to be anxious at the dentist than boys. They also found that gender difference in dental anxiety among adults only appeared at 15 years old.

Dental anxiety can be due to fear of loss of control, fear of pain, fear of the unknown, and fear of embarrassment (Seckman). Having dental anxiety sometimes leads to patients avoiding the dentist and skipping appointments. This can be due to the fact that anxious patients correlate going to the dentist with pain and a negative attitude (Wahid et al). Possible factors

that lead to apprehension of dental visits include waiting to have teeth cleaned and the dental drill (Wahid et al). Some other factors can be sensation and sight of injection and sight and sound of the drill (Quteish). People who visit the dentist less are often more anxious than those who attend the dentist regularly (Saatchi et al). All of the research studied had the same result of women having higher dental anxiety and yet still produced more information. Interestingly enough, women have higher dental anxiety but still visit the dentist often, have better oral health, and are more likely to comply with the dentist than men (Xiaoxian et al). When reporting on dental anxiety, women are more likely to express their feelings on dental fear than men. Men show lower levels of dental anxiety than women but expect more pain before treatment (Heft et al, 2007). Yet, men are usually more successful at regulating their reactions to dental treatment (Tolvanen et al, 2013). Hormones could explain the gender differences and associations with dental anxiety (Leutgeb). During pregnancy, there is an apparent decrease of dental fear in mothers during the later term of their pregnancy. Once their child is born, their fear increases but dental fear in fathers increases steadily due to anticipatory dental anxiety (Leutgeb). Dental anxiety can be influenced by direct and indirect family components but levels of anxiety can also differ at various age levels (Rantavuori). In the study done Saatchi and his associates, education had no effect on dental anxiety, but in the study done by Ragnarsson; people of higher education had less dental fear and more teeth remaining. Tooth decay numbers increase with rising levels of admitted dental anxiety among fearful patients (Ragnarsson). This is probably due to their avoidance of the dentist. Even though some people may have moderate levels of dental anxiety, sometimes they can be a part of the more fearful group of people because they are not always fully comfortable with the dentist (Kvale et al).

Methods

This study was conducted using surveys. Participants were emailed a survey that included the Corah's Dental Anxiety Scale and the Dental Concerns Assessment and a specific questionnaire that was created for the research. The email included a consent form, details of the study and how the information would be handled. The Institutional Review Board of Tyler Junior College approved the research. Participants first completed the Corah's Dental Anxiety Scale followed by the Dental Concerns Assessment. At the end of the survey, the participants were asked whether fear of pain, fear of embarrassment, or both were the leading cause for their dental anxiety. The Corah's Dental Anxiety Scale is one of the most common scales used to measure dental anxiety (Wahid et al). The scale consists of four questions each including five answer choices. Answer "a" of the choices corresponded to being the least anxious and has a value of one. Answer choice "e" corresponded to severe anxiety and has a value of five. The Dental Concerns Assessment was created by Oregon Health Science University School of Dentistry. It includes 26 questions with various dental concerns. After each concern, participants had to choose whether their concern was low, moderately low, moderate, moderately high, or high. The answer values were ranked from 1 to 5. The value of one corresponded with low level of concern and the value 5 corresponded with a high level of concern.

Once participants completed the survey, their dental anxiety was ranked under the Corah's Dental Anxiety Scale. The ranking on the scale included a minimum score of 4 to 8, which means that the person had low anxiety. A score of 9 to 12 meant that the person had moderate anxiety. A score of 13 to 14 meant that a person had high anxiety, and a maximum

score of 15 to 20 meant that a person had severe anxiety. Fear of pain and fear of embarrassment were measured and compared using the Dental Concerns Assessment. The answer to the question was examined and all of the information from the survey was then analyzed between the answers chosen by males and females and the overall results of the survey.

Both the Corah's Dental Anxiety Scale and the Dental Concerns Assessment were edited for the benefit of this research. Question one of Corah's Dental Anxiety questionnaire was edited. Answers b and c were altered. Choice b was adjusted from "I wouldn't care one way or the other" to "I would be a little uneasy about it" in order to correspond to all the other choice "b" responses on the scale. Choice c was changed from "I would be a little uneasy about it" to "I would be a little tense" in order to match the scale. On the Dental Concern Assessment the scale was changed from low, moderate, high, and don't know, to low, moderately low, moderate, moderately high, and high. This was done so that the research was given more depth and so that the researcher would be able to probe at the answers. It also allowed for the Corah's Dental anxiety Scale and the Dental Concerns Assessment to have a cohesive scoring system. Participants answered all of the questions within the assessment but only 22 of the questions were accounted for. Questions 8, 17, 21, and 24 were not used for calculations once the survey was complete. The survey only calculated 22 questions so that there would be an equal amount of pain concerns versus embarrassment concerns. Also some of the question such as 21 and 24 did not fit under either category. Editing the scale may have skewed the results of the research. With further research, the information should be useful. A copy of the Corah's Dental Anxiety Scale and the Dental Concerns Assessment can be found in Appendix A and Appendix B.

Results

A total of 57 people participated in the study. Out of the 57 people, there were 20 males and 37 females. The first question on the DAS was relevant to a patient's dental anxiety level when they were scheduled for a check-up the next day. Majority of the participants, 40.4%, responded that they would look forward to it as a reasonably enjoyable experience. The second question was associated with how a patient would feel while they were waiting for their turn with the dentist. 45.6% of the participants responded that they would feel relaxed while waiting. The third question pertained to a patient's anxiety level while the dentist is preparing the drill to begin working on their teeth. 40.4% of the participants responded that they would feel a little uneasy while waiting for the dentist to begin working. The last question of the Corah's Dental Anxiety Scale asked the participant to imagine that they are in the dentist's chair while the dentist or dental hygienist is getting out the instruments, which will be used to scrape their teeth around the gums and answer how they would feel. 40.4% of the participants said that they would feel uneasy. The results of the DAS showed that 33 people, 14 males and 19 females, out of the 57 participants had low anxiety.

Corah's Dental Anxiety Scale			
	All	Male	Female
Low	33	14	19
Moderate	13	3	10
High	5	1	4
Severe	6	2	4

The results of the Dental Concerns Assessment showed that 40 participants, 12 males and 28 females, out of the 57 participants had a higher score for fear of pain. Out of the 26 concerns, there were some concerns that stuck out with having a higher anxiety level than others. The second concern about not being numb enough had 31.6% respond with moderate anxiety. The fourth concern on injection (Novocain) had 22.8% respond with high anxiety and 26.3 % with moderate anxiety. The sound or feel of scraping during teeth cleaning had 33.3% respond with moderate anxiety and 21.1% with high anxiety. Concern 7 on gagging had 24.6% respond with moderate anxiety. The concern on jaws getting tired had 29.8% respond with moderate anxiety. Not having enough information about procedures had 35.1% participants answer moderate. Root canal treatment and extraction had the highest percentage of people answer to high anxiety levels. Root canal treatment had 31.6% answer high and extraction had 36.8% answer high anxiety levels. Fear of being injured had interesting results. 21.1% participants answered high anxiety levels yet another 21.1% answered low anxiety levels. Low anxiety levels, moderately low, and moderate, had exactly 19.3 % per each category for the fear of being injured. 24.6% of the participants were moderately worried that they may need a lot of treatment and 21.1% were worried about the cost of dental treatment they might need. Majority of the concerns with the high anxiety levels were related to pain. Therefore this is the why fear of pain resulted with the higher score.

Dental Concerns Assessment			
	All	Male	Female
Pain	40	12	28
Embarrassment	14	7	7

Both	3	2	1
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When participants were asked which option was more likely the reason for their dental anxiety, 51.9% answered pain. This was 30 of the participants. Fear of pain was the highest scoring answer, both fear of pain and fear of embarrassment was the second with 26.3% and embarrassment was last with 21.1%. This once again reinforced pain being the highest score.

Final Question			
	All	Male	Female
Pain	30	10	20
Embarrassment	13	6	7
Both	14	4	10

Conclusion

Although some may think otherwise, everyone has some degree of dental anxiety. The results show that fear of pain is the leading cause of dental anxiety. Pain was the most common choice within each gender. There was not really a difference between factors among the men and the women. Both genders had fear of pain as the most common reason for their dental anxiety. Looking among the people that participated in the research and considering the Dental Concerns Assessment, it could be determined that men had fear of embarrassment as a higher choice due to the ratio of fear of pain to fear of embarrassment. For men the ratio was 12 to 7 and for the women was 28 to 7. These ratios may have occurred due to the amount of people that were involved in the survey. They may be subject to change if more people were able to

participate. When participants were asked which option is more than likely the reason for their dental anxiety, the question choice ranked from fear of pain being the highest chosen factor, fear of both, and fear of embarrassment was ranked last. Comparing the scores found from the two scales mentioned above, there was not a specific anxiety level that clearly showed that a participant had a fear of pain. The scores were not exactly the same when comparing the anxiety levels with the fear of pain and fear of embarrassment scores. They were all over the place but still gave enough information to determine the final results. Once again the pattern could be subject to change if more people were studied.

Future research may look at fear of pain and fear of embarrassment in relation to dental anxiety but also to evaluate for more factors that play as large a role in dental anxiety. It would be prudent to learn different ways to treat people according to the factor that influences their anxiety the most, and possibly ask where people personally believe their anxiety stems from. Once the participants give their answers, it could then be determined if factors from childhood make their anxiety persist as they grow older. The process to obtain future evidence would be slightly similar. The goal will be to have an even larger group of people to study. More time would be spent on interviews. The participants would be given the Corah's Dental Anxiety Scale before hand so that when reviewing their interview and scores, the researchers would have a better understating of each person. The Dental Concerns Assessment would still be used but other forms of measurement would be researched in order to solidify findings. Another way the research would improve would be by talking to many different dentists about their experience with dental anxiety patients. Including dental professionals in the survey may give more insight to their views and concerns about how dental anxiety patients impact their work.

References

- Corah NL. (1969). Development of a dental anxiety scale. *J Dent Res* 1969.
- Heft, M. W., Xiaoxian, M., Bradley, M. M., & Lang, P. J. (2007). Gender differences in reported dental fear and fear of dental pain. *Community Dentistry & Oral Epidemiology*, 35(6), 421-428. doi:10.1111/j.1600-0528.2006.00344.x
- J.H. Clarke and S. Rustvold, (1993). Oregon Health Sciences University School of Dentistry.
- Kvale, G., Berg, E., & Raadal, M. (1998). The ability of Corah's Dental Anxiety Scale and Spielberger's State Anxiety Inventory to distinguish between fearful and regular Norwegian dental patients. *Acta Odontologica Scandinavica*, 56(2), 105-109.
- Leutgeb, V., Übel, S., & Schienle, A. (2013). Can you read my pokerface? A study on sex differences in dentophobia. *European Journal Of Oral Sciences*, 121(5), 465-470. doi:10.1111/eos.12079
- Quteish Taani, D. M. (2002). Dental anxiety and regularity of dental attendance in younger adults. *Journal Of Oral Rehabilitation*, 29(6), 604-608. doi:10.1046/j.1365-2842.2002.00905.x
- Ragnarsson, E. (1998). Dental fear and anxiety in an adult Icelandic population. *Acta Odontologica Scandinavica*, 56(2), 100-104.
- Rantavuori, K., Tolvanen, M., Hausen, H., Lahti, S., & Seppä, L. (2009). Factors Associated With Different Measures of Dental Fear among Children at Different Ages. *Journal Of Dentistry For Children*, 76(1), 13-19.

- Saatchi, M., Abtahi, M., Mohammadi, G., Mirdamadi, M., & Binandeh, E. S. (2015). The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. *Dental Research Journal*, 12(3), 248-253.
- Seckman, C. H. (2011). Dental anxiety: Maintaining control of problem patients. *Rdh*, 31(3), 24-30.
- Tolvanen, M., Hagqvist, O., Luoto, A., Rantavuori, K., Karlsson, L., Karlsson, H., & Lahti, S. (2013). Changes over time in adult dental fear and correlation to depression and anxiety: a cohort study of pregnant mothers and fathers. *European Journal Of Oral Sciences*, 121(3pt2), 264-269. doi:10.1111/eos.12026
- Wahid, U., Amin, M., Choudhry, Z., & Adeel Ahmed, M. (2015). Dental Anxiety Level Of Patients Presenting To Operative Dentistry Department. *Pakistan Oral & Dental Journal*, 35(4), 675-680.
- Xiaoxian, M., Heft, M. W., Bradley, M. M., & Lang, P. J. (2007). Effect of fear on dental utilization behaviors and oral health outcome. *Community Dentistry & Oral Epidemiology*, 35(4), 292-301. doi:10.1111/j.1600-0528.2007.00315.x

Appendix A

Corah's Dental Anxiety Scale, Revised (DAS-R)

Name _____ Date _____
Norman Corah's Dental Questionnaire

1. If you had to go to the dentist tomorrow for a check-up, how would you feel about it?
 - a. I would look forward to it as a reasonably enjoyable experience.
 - b. I would be a little uneasy about it.
 - c. I would be a little tense.
 - d. I would be afraid that it would be unpleasant and painful.
 - e. I would be very frightened of what the dentist would do.

2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
 - a. Relaxed.
 - b. A little uneasy.
 - c. Tense.
 - d. Anxious.
 - e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

3. When you are in the dentist's chair waiting while the dentist gets the drill ready to begin working on your teeth, how do you feel?
 - a. Relaxed.
 - b. A little uneasy.
 - c. Tense.
 - d. Anxious.
 - e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

4. Imagine you are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist or hygienist is getting out the instruments, which will be used to scrape your teeth around the gums, how do you feel?
 - a. Relaxed.
 - b. A little uneasy.
 - c. Tense.

- d. Anxious.
- e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

Scoring the Dental Anxiety Scale, Revised (DAS-R) (this information is not printed on the form that patients see) a = 1, b = 2, c = 3, d = 4, e = 5 Total possible = 20

Anxiety rating:

- 4 - 8 = low anxiety
- 9 - 12 = moderate anxiety but have specific stressors that should be discussed and managed
- 13 - 14 = high anxiety
- 15 - 20 = severe anxiety (or phobia). May be manageable with the Dental

Concerns Assessment but might require the help of a mental health therapist.

Appendix B**DENTAL CONCERNS ASSESSMENT***

Please rank your concerns or anxiety over the dental procedures listed below by ranking them on the accompanying scale. Please fill in any additional concerns.

Level of Concern or Anxiety

	Low	Moderately Low	Moderate	Moderately High	High
1. Sound or vibration of the drill	1	2	3	4	5
2. Not being numb enough	1	2	3	4	5
3. Dislike the numb feeling	1	2	3	4	5
4. Injection ("Novocain")	1	2	3	4	5
5. Probing to assess gum disease	1	2	3	4	5
6. The sound or feel of scraping during teeth cleaning	1	2	3	4	5
7. Gagging, for example during impressions of the mouth	1	2	3	4	5
8. X-rays	1	2	3	4	5
9. Rubber dam	1	2	3	4	5
10. Jaws get tired	1	2	3	4	5
11. Cold air hurts teeth	1	2	3	4	5
12. Not enough information and procedures	1	2	3	4	5
13. Root canal treatment	1	2	3	4	5
14. Extraction	1	2	3	4	5
15. Fear of being injured	1	2	3	4	5
16. Panic attacks	1	2	3	4	5
17. Not being able to stop the dentist	1	2	3	4	5
18. Not feeling free to ask questions	1	2	3	4	5
19. Not being listened to or taken seriously	1	2	3	4	5
20. Being criticized	1	2	3	4	5
21. Smells in the dental office	1	2	3	4	5
22. I am worried that I may need a lot of dental treatment	1	2	3	4	5
23. I am worried about the cost of dental	1	2	3	4	5

treatment

24. I am worried about the number of appointments and the time required for necessary appointments and treatment; time away from work, or the need for childcare or transportation	1	2	3	4	5
25. I am embarrassed about the condition of my mouth	1	2	3	4	5
26. I don't like feeling confined or not in control	1	2	3	4	5

Other (Use other side if needed):

*Developed by J.H. Clarke and S. Rustvold, Oregon Health Sciences University School of Dentistry, 1993 [revised 1998]