

Dental Anxiety is very High in The Republic of Kiribati

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Abstract

The objective of the study was to evaluate the levels of dental anxiety in Kiribati using the Corah Dental Anxiety Scale (DAS). One hundred participants between the ages of 18 and 50 years were interviewed in the capital city Tarawa. The participants rated their anxiety using DAS, with a range of possible scores between 4 (no anxiety) and 20 (maximal anxiety). One person had never been to the dentist and was excluded from analysis. 48 males and 51 females had a mean age of 30 years with a range of 18-50 years. The mean DAS was 11(SD=3.9) and ranged from 4-18. Forty-two percent of the participants were anxious ie $DAS \geq 13$ with a mean age of 31(SD=10.5) yrs. When examined by gender, males had a lower mean DAS of 10 compared with females who had a mean DAS of 12. The difference noted was of borderline significance ($P=0.048$). There was no relationship between age and anxiety. Almost one quarter (23%) had a high level of anxiety ie $DAS \geq 15$ with a mean age of 30(SD=10.5) years. 21% of males and 26% of females had a high level of anxiety. A large proportion of the sampled population had moderate to high dental anxiety and were relatively young adults (approximately 30 years of age). This is an important public health problem for Kiribati. Such patients after being identified should be managed appropriately which may include behavioural and/or pharmacological therapy. These baseline studies can serve as a reference point to monitor whether dental anxiety changes over time.

Key words: Corah's Dental Anxiety Scale (DAS), Dental anxiety, Kiribati

Introduction

Despite the technological advances in dentistry, anxiety about dental treatment and the fear of pain associated with dentistry remains globally widespread and is considered a major barrier to dental treatment (WEINSTEIN *et al.* 1993, DIONNE *et al.* 1998, CHAPMAN and KIRBY-TURNER 1999, FREEMAN 1999, LOCKER *et al.* 2001, NUTTALL *et al.* 2001).

Dental fear is a normal protective reaction to a real threat and the feeling of fear does not remain when the threat is no longer present. Dental anxiety on the other hand

is more of a subjective state of feeling that is often associated with a feeling of impending doom or danger. Unlike fear, the feelings of anxiety are often felt when a stimulus or threat is not immediately present or readily identifiable (WEINER and SHEEHAN 1984, WEINER and SHEEHAN 1988, CHAPMAN and KIRBY-TURNER 1999).

Despite the routine use of analgesics such as local anaesthetics, the fear of painful or uncomfortable dental procedures can be a great source of anxiety to patients (AARTMAN *et al.* 1999).

Dental anxiety can not only be a problem for those suffering from it but also for the treating oral health care practitioner (WEINER and SHEEHAN 1988, AARTMAN *et al.* 1999). High levels of dental anxiety may make safe and successful treatment impossible and such patients may continue to avoid regular dental care for life. Dental anxiety can be the prime reason for missed or cancelled appointments, lead to irregular dental attendance, cause delay in seeking treatment, early discontinuation of dental treatment, or its avoidance altogether (THOMSON *et al.* 1996, SETTINERI *et al.* 2005, WOGELIUS and POULSEN 2005). High dentally anxious people are more concerned with and feel more ashamed about telling their dentist that they are dentally anxious (SCOTT 1984).

It has been established that dental anxiety can have detrimental consequences for people's oral health and has been associated with poor clinical oral health status ie more decayed and missing teeth and adversely effects the person's well-being (van WIJK and HOOGSTRATEN 2003). Similarly the periodontal status of dentally anxious people is reported to be poor (LOCKER *et al.* 2001). Such consequences can pose a serious public health challenge to oral health care professionals (GILLAHAN 2006). Dental anxiety is well described in the Western world, however there is little literature on the situation in Oceania and the developing world in general (SMITH and HEATON 2003, TUISUVA and MORSE 2003, UDOYE *et al.* 2005).

If oral health care workers are aware of the level of anxiety of their patients and particularly if such levels are higher in certain risk groups then the profession can be better prepared to take measures to help alleviate the anxiety. Prior to this study the level of dental anxiety in The Republic of Kiribati (Kiribati) was unexplored and unknown. The Republic of Kiribati (pronounced Kiri-bas) is a group of 33 coral atolls scattered in the Pacific Ocean, 21 of which are inhabited and straddling an area greater than Australia. The capital city Tarawa is about halfway from Australia to Hawaii and 7064 km SE from Japan (DISTANCE CALCULATOR 2006, CENTRAL INTELLIGENCE AGENCY 2006).

The Corah Dental Anxiety Scale (DAS) is a widely used measure of dental anxiety that was introduced in 1969 (CORAH 1969) and continues to be a valid and reliable tool for evaluating dental anxiety (RONIS 1994, UDOYE *et al.* 2005). The DAS has been employed as an epidemiological tool and as a clinical tool to measure the level of dental anxiety in general dental practices (ERTEN *et al.* 2006, STABHOLZ and PERETZ 1999), specialists' clinics (PERETZ and MOSHONOV 1998) and in dental fear clinics (AARTMAN *et al.* 1999).

The purpose of the study was to evaluate the levels of dental anxiety in Kiribati

using DAS.

Methods

From the central street of the capital city Tarawa, one hundred adults were recruited for interview until there was a gender balance of males and females.

The age of the participants was restricted to adults from 18-50 years to reduce the number of long-term edentulous individuals whom may not remember what it is like to go to the dentist.

Prior to the commencement of the study, the study protocol was approved by the Fiji School of Medicine's School of Oral Health Research Committee.

To determine the level of dental anxiety, the participants completed Corah's Dental Anxiety Scale (CORAH 1969). The scale contains four questions dealing with the patient's subjective response to:

- 1) Anticipating visit to the dental clinic (How would you feel if you had to go to the dentist tomorrow?)
- 2) Waiting in the dentist's office for treatment (How do you feel while waiting in the dentist's office for your turn?)
- 3) Waiting in the dental chair for drilling of teeth (How do you feel while you are sitting in the dental chair while the dentist is getting the drill ready?)
- 4) Waiting in the dental chair for cleaning of teeth (How do you feel while you are waiting for the dentist to scrape and clean your teeth?)

For each question the participants select a response from five possible options that ascend in their level of anxiety. Each question can hence have a minimum score of 1 and a maximum score of 5. The range of possible scores is between 4 (no anxiety) and 20 (maximal anxiety).

The statistical package SPSS v.13 (SPSS Inc, Chicago, USA) was used to analyse the data. Data were checked for equity of variance using Levene's test. Analysis of variance (ANOVA) was used to determine differences between variables and regression analysis was employed to determine the relationship between age and anxiety. The one-sample *t-test* was used to compare DAS with existing values from other populations.

Results

Of the 100 participants in the study one person had never been to the dentist hence their response was not included in the analysis. Responses were received from 48 males and 51 females. The mean age of the participants was 30 years with a range of 18-50 years. The internal consistency reliability coefficient for DAS was satisfac-

tory ($\alpha=0.73$). Factor analysis was used to confirm the appropriateness of the Corah's items and revealed a strong one-dimensional factor underlying all items. Homogeneity-of-variance was verified with Levene's test.

The prevalence of dental anxiety (ie $DAS \geq 13$) in the sample was 42% with a mean age of 31($SD=10.5$) years.

The overall severity represented by a mean DAS was 11($SD=3.9$) and ranged from 4-18. Males had a lower mean DAS of 10 compared with females who had a mean DAS of 12. The difference noted was of borderline significance ($P=0.048$). There was also no relationship between age and anxiety ($P>0.05$).

Almost one quarter (23%) of the participants had a high level of anxiety ie $DAS \geq 15$ with a mean age of 30($SD=10.5$) years. 21% of males and 26% of females had a high level of anxiety (Table 1). There was no statistically significant difference in age or gender in those with high anxiety ($DAS \geq 15$) and the rest of the participants.

Table 1. Dental Anxiety Scores (DAS).

DAS	Males	Females	Total
4	1	3	4
5	2	2	4
6	5	1	6
7	8	2	10
8	2	1	3
9	5	4	9
10	3	5	8
11	4	2	6
12	1	6	7
13	4	6	10
14	3	6	9
15	8	3	11
16	0	3	3
17	0	4	4
18	2	3	5
Total	48	51	99

Discussion

Researchers such as CHAPMAN and KIRBY-TURNER (1999) suggest that there is a relationship between general anxiety and dental anxiety. Whilst general anxiety in the United States of America has been increasing over the past 50 years, dental anxiety appears to have remained stable (SMITH and HEATON 2003). It should be borne in mind that the origins of dental anxiety are numerous and complex and have been shown in other parts of the world to be associated with a systematic, irregular attendance pattern, history of extractions, having a dentally anxious parent and is also related to memory distortions and personality types. Highly anxious dental patients tend to overestimate the intensity of aversive dental events even if they have never experienced the particular experience before (van WIJK and HOOGSTRATEN 2005). More research however is required in this area (MILSOM *et al.* 2003).

The literature shows that women have a lower tolerance to pain and generally report higher levels of anxiety and that gender differences relating to dental anxiety that have been reported may be not only numerical but also qualitative in their nature (SCHWARZ and BIRN 1995, LOCKER *et al.* 2001). In Indonesia and Argentina males report higher dental anxiety than females (TSUBOUCHI *et al.* 1990). Studies that have used DAS have generally found that little gender differences in dental anxiety exist (SCOTT *et al.* 1984, PERETZ and MOSHONOV 1998). A larger sample size than that used in our study may be required to detect any gender differences.

Our study does not agree with other studies which found that there is an inverse relationship with age and dental anxiety (NEVERLIEN 1990, LOCKER and LIDDELL 1991, SCHWARZ and BIRN 1995, LIDDELL and LOCKER 1997, STABHOLZ and PERETZ 1999, UDOYE *et al.* 2005). Explanations proposed as to why dental anxiety might decrease with age include the ability to cope with experiences or the phenomenon may be due to the ageing process itself characterized by a general decline in anxiety (LIDDELL and LOCKER 1997). Our study did not note such a relationship possibly due to the fact that an extraordinarily high prevalence of anxiety.

DAS of 13 or 14 should make the dentist suspicious that the patient is anxious and scores of 15 or higher almost always indicate high anxiety (LOCKER *et al.* 2001).

The mean DAS of 11 in our study is the highest we could find in the literature and is significantly higher than in Nigerians (7.3) (UDOYE *et al.* 2005), Germans (8.6) (KUNZELMANN and DUNNINGER 1990), Hong Kong Chinese (8.7) (SCHWARZ and BIRN 1995), Australians (9.0) (THOMSON *et al.* 1996), Israel (9.4) (PERETZ and MOSHONOV 1998), New Zealand (9.8) (THOMSON *et al.* 1999) and Russians (10.0) (BERGIUS *et al.* 1997) (all $p < 0.05$).

Forty-two percent of the participants reported dental anxiety (ie $DAS \geq 13$) and again is the highest level of dental anxiety we could locate in the literature as rated by the DAS tool. In a survey in USA nearly 30 percent of respondents reported being somewhat nervous, very nervous or terrified about going to the dentist (DIONNE *et al.* 1998). In New Zealand dental anxiety has been reported to be as high as 21% of re-

spondents (THOMSON *et al.* 1999). Forty-two percent of Canadians agree with the statement, "When I go to the dentist, I think of pain." (WEISENBERG *et al.* 1975).

In other multinational studies only 4-7% of subjects reported having extreme dental fear (TSUBOUCHI *et al.* 1990) compared to almost a startling one quarter (23%) of the participants from Kiribati.

In a study that examined DAS in an outpatient dental emergency clinic, amongst different ethnic groups it found that Puerto Ricans scored highest, Blacks lowest, and Whites in-between (WEISENBERG *et al.* 1975). The reasons for this ethnic distinction are unknown however low DAS scores have been attributed to poor dental awareness (UDOYE *et al.* 2005). In New Zealand dental anxiety was more prevalent among individuals in receipt of Social Welfare benefits (ie poor) (THOMSON *et al.* 1999) and in Israel patients with higher education demonstrated lower dental anxiety (PERETZ and MOSHONOV 1998).

The study did not examine any possible causes for the anxiety or the variety of different treatments and other factors that may influence anxiety. One dentist and one dental therapist currently serve a population of 103,000. In the past there had been no dental personnel and mortality through dental disease was high.

An extremely large proportion of the sampled population had moderate to high dental anxiety and were relatively young adults (approximately 30 years of age). This is an important public health problem for Kiribati. Such patients after been identified should be managed appropriately which may include behavioural and/or pharmacological therapy. This baseline study can be built upon to include people from the other areas of this vast yet sparsely populated Pacific Island Country and can serve as a reference point to monitor whether dental anxiety changes over time.

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