

Dental anxiety among Wisma Lincoln University College community

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Abstract

Dental anxiety is common among people of all ages, which results in delay and avoidance of dental visit and eventually deterioration of oral health. The aim of this study is to assess the dental anxiety level among the community in Wisma Lincoln University College. A cross-sectional study was carried out from April to December 2018. A total of 186 participants were included in this study. The Modified Dental Anxiety Scale (MDAS) was used to assess participants' dental anxiety level. The prevalence of participants with severe anxiety level was 16.7% (n=31), with Indian female being the highest number (n=6, 20%). Participants felt most anxious if they were to receive a local anesthetic injection, with a mean score of 2.04 for male and 3.76 for female. With regards to the aspects of dental treatment that make participants anxious, 74.7% (n=139) of the participants would feel anxious about extraction, followed by pain arising from treatment (63.4%, n=118) and fear of injury caused by dental instrument (60.8%, n=113). In conclusion, 16.7% of the community in Wisma Lincoln University College were highly anxious, with Indian female being most anxious (20%).

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Introduction

Dental anxiety is very common among people of all ages, which results in delay or avoidance of dental visit and eventually deterioration of oral health (Armfield, 2013; Carter *et al.*, 2014). Such people often have irregular dental attendance and only seek care in the case of an emergency (Armfield *et al.*, 2007). Dental anxiety happens due to various reasons, such as traumatic childhood experience, fear of injection or unpleasant past dental visits (Beaton *et al.*, 2014). It is not only a distressing problem for the public, but also for the dental practitioners as it can lead to increase chair time, diagnosis

inaccuracy and negative dentist-patient relationship (Armfield *et al.*, 2009).

Despite of the advances of modern dentistry, dental anxiety remains a huge problem to patients and dentists. According to Hmud and Walsh (2007), restorative dentistry is the main trigger for dental anxiety due to the sight of drills and needle, sound and sensation of drilling and smell of dental chemicals. Alternatively, atraumatic restorative treatment, air abrasion, chemo-mechanical caries removal and lasers are encouraged in anxious patients (Hmud & Walsh, 2007). It is also noted that the time waiting for dental treatment is considered by many as anxiety provoking, as patients have the time to thinking about the worst

possible outcome that can happen to them (Cohen *et al.*, 2000).

Dental anxiety has been studied extensively worldwide, with a prevalence from 10 to 65% in different countries (Nicolas *et al.*, 2007; Viinikangas *et al.*, 2007; Hill *et al.*, 2013; Bell *et al.*, 2012; Kirova *et al.*, 2010). Systematic review by Silveira *et al.* (2021) on adults found that the prevalence of dental fear and anxiety was 15.3%, with 3.3% having severe dental fear and anxiety. The prevalence of dental anxiety among Malaysians has been reported to be around the same level. Study by Gunjal *et al.* (2017) among Malaysian students found that 16% of them had high level of dental anxiety, while another study among dental patients reported that 9.9% of them had high level of anxiety (Kueh, 2013). This study aims to assess the dental anxiety level among the community in Wisma Lincoln University College.

Materials and Methods

Study design

A cross-sectional study was carried out at Wisma Lincoln University College, involving staff, students, and visitors, from April to December 2018. A sample size of 186 was determined based on the prevalence of dental anxiety of 12.2-15.3% from the systematic review by Silveira *et al.* (2021) and Cianette *et al.* (2017) on adolescents and adults. Convenience sampling technique was used to select the participants for this study. An informed consent was obtained from all the participants prior to answering the questionnaire. Ethical approval was obtained from the Dental Research Ethics Committee, Lincoln University College (LUCethics/FDent/009/2018).

Research tool

The questionnaire used was the Modified Dental Anxiety Scale (MDAS) (Humphris *et al.*, 2000), which has been validated and pre-

tested extensively worldwide (Sitheeque *et al.*, 2015; Humphris *et al.*, 1995; Humphris *et al.*, 2009). It has also been translated into the Malay version and tested among the local population (Sitheeque *et al.*, 2015). In this study, both the English and Malay language were included in the MDAS questionnaire. The first part of the questionnaire consisted of 5 questions, assessing patients' anxiety level in relation to "thinking of seeing a dentist, sitting in the waiting room, having a tooth drilled, having teeth scaled and polished, and having a local anesthetic injection". Each question had five responses, using a 5-point Likert scales, ranging from not anxious, slightly anxious, fairly anxious, very anxious to extremely anxious, scored from 1 to 5 respectively. The patients would be categorized into low anxiety (5-11), moderately anxious (12-18) and severely anxious (≥ 19), based on their scores. The second part of the questionnaire included 10 possible aspects of dental treatment that would make participants anxious, and they could choose more than one answer.

Data collection and analysis

A total of 186 questionnaires were distributed randomly to the staff, students, and visitors at Wisma Lincoln University College. Explanations were given to the participants regarding the objectives of the study. All queries from the participants were clarified before they filled in the questionnaires. The questionnaires were collected back upon completion and the data were analysed by applying descriptive and inferential statistical analysis, using SPSS version 24. T-test was used to compare the mean score of each question in the MDAS between male and female.

Results

One hundred and eighty-six participants took part in this study. The demographic data of the participants is shown in Table 1. Most of the respondents were female (55.9%, n=104), Malay (53.2%, n=99) and 16 to 25 years old (59.2%, n=110). Table 2 presents the MDAS score categories of the

participants. 16.7% (n=31) of the participants had severe anxiety level (MDAS score ≥ 19). Table 3 shows the number of participants who obtained MDAS score of 19 and above based on race and gender. Indian female had the highest percentage (20%, n=6) of high anxiety level, compared to other groups.

When looking at the individual aspect of the MDAS, the participants felt most anxious if they were to receive a local anesthetic injection, with a mean score of 2.04 for male

and 3.76 for female ($p < 0.001$), as shown in Table 4.

Table 5 shows 10 aspects of dental treatment that would make the participants anxious, and participants could choose more than one answer. The result showed that 74.7% (n=139) of the participants would feel anxious about tooth extraction, followed by pain arising from treatment (63.4%, n=118) and fear of injury caused by dental instrument (60.8%, n=113).

Table 1. Demographic data of the participants

Variables	Number (n)	Percentage (%)
Gender		
Male	82	44.1
Female	104	55.9
Age		
16-25	110	59.2
26-35	32	17.2
36-45	10	5.4
46-55	17	9.1
56-65	9	4.8
More than 65	8	4.3
Race		
Malay	99	53.2
Chinese	57	30.6
Indian	30	16.1
Total	186	100

Table 2. MDAS score categories of the participants

	Anxiety Level	Number (n)	Percentage (%)	
MDAS score	5-11	Low	112	60.2
	12-18	Moderate	43	23.1
	≥ 19	High	31	16.7
Total		186	100	

Table 3. Participants having MDAS score ≥ 19 , based on race and gender

Race	Male		Female		Total	
	n	%	n	%	n	%
Malay	2	2	16	16.2	18	18.2
Chinese	3	5.3	4	7	7	12.3
Indian	0	0	6	20	6	20

Table 4. Mean score for individual aspect of the MDAS for all participants based on gender

Questionnaire Item	Male	Female	p-value (T-test)
	Mean (SD)	Mean (SD)	
Thinking of seeing a dentist	1.68 (0.925)	2.6 (1.232)	<0.001
Sitting in waiting room for treatment	1.83 (0.965)	2.68 (1.284)	<0.001
About to have a tooth drilled	1.94 (1.194)	3.47 (1.251)	<0.001
About to have your teeth scaled and polished	1.76 (1.058)	2.96 (1.473)	<0.001
About to have a local anesthetic injection	2.04 (1.195)	3.76 (1.356)	<0.001

Table 5. Aspects of dental treatment that make participants anxious

Aspects of dental treatment that make participants anxious	Number (n)	Percentage (%)
Pain arising from dental treatment	118	63.4
Putting dental instrument into the mouth	90	48.4
Gagging feeling	46	24.7
Tiring jaw after prolonged mouth opening	60	32.3
Worried having a lot of dental treatment	50	26.9
Worried for the cost of dental treatment	84	45.2
Insufficient information about dental procedures	72	38.7
Fear of injury caused from dental instruments	113	60.8
Dislike the feeling of numbness from anesthesia	72	38.7
Tooth extraction	139	74.7

Discussion

The present study was conducted to investigate the dental anxiety level among Wisma Lincoln University College community, using the MDAS questionnaire. In this study, 16.7% of the participants were considered to have high dental anxiety level, with Indian female being the most anxious (20%). However, according to Schuur and Hoogstraten (1993) higher anxiety score among women did not necessarily mean that they were more anxious, but they expressed their anxiety level more readily than men. Similar results were observed in Adult Dental Survey 2009 in the United Kingdom (Hill *et al.*, 2013), with 12% of the population having extreme dental anxiety. Studies conducted in other European countries among French and Finnish adults revealed that the prevalence of adults with severe dental anxiety were slightly lower, with the prevalence of 7.3% and 8% respectively

(Nicolas *et al.*, 2007; Viinikangas *et al.*, 2007).

When compared to local studies, contrasting results are seen. Study by Sitheequ *et al.* (2015) among dental patients at Hospital Universiti Sains Malaysia found that only 3.5% of them had high level of dental anxiety, while in a similar study among patients attending dental clinic Oya, Sib, 9.9% of them reported to have high level of dental anxiety (Kueh, 2013). The difference in the results could be attributed by patients' oral health awareness and their frequency of exposure to clinical and dental settings. Nevertheless, in a more recent study among 1024 Malaysian students using the MDAS, the percentage of students with high level of dental anxiety was 16.3% (Gunjal *et al.*, 2017).

With respect to individual question in the MDAS for all participants, the highest mean score was seen to be associated with

intraoral anesthetic injection for both male and female (2.04 and 3.76). Such finding is consistent with the literature, as needle injection is often cited as the main cause of dental anxiety (Hakim and Razak, 2014; Siddiqui *et al.*, 2016; Al-Omari & Al-Omiri, 2009; Yoshida *et al.*, 2009; Gunjal *et al.*, 2017). This is most likely because injection can inflict pain, and dental anxiety often arises due to anticipation of pain during the procedure. Nevertheless, newer technology such as Computer Assisted Relaxation Learning (CARL) (Heaton *et al.*, 2013), a self-paced, computerized program based on systematic desensitization has proven to be effective in helping patients to reduce their self-reported, injection specific dental anxiety.

Finally, when asked about the aspects of dental treatment that make participants anxious, 74.4% of the participants claimed that tooth extraction would make them anxious, followed by pain arising from dental treatment (63.4%) and fear of injury caused by dental instrument (60.8%). Thus, it is important to always assess patients' level of dental anxiety prior to dental treatment, explain each step of the procedure to them clearly and adopt a supportive, gentle, and sympathetic approach to help patients to relax and adapt to the clinical settings.

Dental anxiety has become a major barrier to assessing dental care and maintenance of good oral health by many people (Krishnan *et al.*, 2020; Freeman, 1999; Milgrom *et al.*, 2010; Hill *et al.*, 2013). Individual with dental anxiety often find themselves being trapped in a vicious cycle of avoiding dental visit, seeking care only when there is pain and eventually needing invasive dental treatment (Armfield *et al.*, 2007; Armfield, 2013). These people also report to have very bad oral health (Armfield *et al.*, 2009). Thus, identifying ways in which these people can be supported is vital, to increase their utilization of dental care. For example, setting up specialized dental clinic to manage patients with dental anxiety would help to alleviate their dental anxiety level and increase their uptake of dental care.

Several limitations were present in this study. The results from the cross-sectional study did not demonstrate a causal relationship. The sample size was small and only taken from Wisma Lincoln University College. Thus, it is not representative of the whole population. Also, self-reported questionnaire was prone to recall bias and social desirability bias, where participants tend to hide their feeling of dental anxiety.

Conclusions

Based on the study, 16.7% of the community in Wisma Lincoln University College were highly anxious, with Indian female being most anxious (20%). Most participants would feel anxious if they were to have a tooth extraction (74.7%, n=139), followed by pain arising from dental treatment (63.4%, n=118). Apart from psychotherapeutic and pharmacological interventions, elimination of dental anxiety can be achieved by dental education and promoting awareness about oral health.

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