

Prevalence of Dental Anxiety Among Transgender Women in Malaysia and its Associated Factor

Abdul Hadi Said¹, Farah Natashah Mohd^{2*}, Khairunnisa Abu Zarim³,
Nurul Ruziantee Ibrahim⁴, Samsul Draman¹

1. Family Medicine Department, Kulliyah of Medicine, International Islamic University Malaysia, Kuantan, Malaysia.
2. Special Care Dentistry Unit, Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia.
3. Meru Dental Clinic, Klang, Selangor, Ministry of Health, Malaysia.
4. Oral Pathology and Oral Medicine unit, Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia.

Abstract

The prevalence of dental anxiety among transgender women (TGW) in Malaysia is still unknown. The objective of this study was to determine the prevalence of dental anxiety among TGW and its associated factors.

A cross sectional study was conducted among 100 TGW from 16th-18th August 2019 during a medical camp in Terengganu, Malaysia using universal sampling. A validated Malay version of Modified Dental Anxiety Scale (MDAS) was used to assess the prevalence of dental anxiety among TGW. Bivariate (Chi-square and Mann Whitney tests) and multivariate analysis (Multiple logistic regression) were used to assess the association between dental anxiety and sociodemographic profile. P value of <0.05 was set as statistically significant.

One hundred participants included in the study. A fifth of them had history of being discriminated when seeking dental treatments. Eighty-seven percent of the respondents had dental anxiety with a quarter of them had extreme dental anxiety (dental phobia). The percentage of MDAS anxiety scores associated with the use of the drill and intraoral local anaesthetic injection was found to be the highest among other items. However, bivariate and multivariate analysis performed failed to find any significant association between dental anxiety and sociodemographic profile.

It is foreseeable that majority of TGW have dental anxiety. Therefore, it is crucial for the dental practitioner to acknowledge this finding and offer appropriate dental management in overcoming dental anxiety among TGW.

Clinical article (J Int Dent Med Res 2021; 14(2): 691-695)

Keywords: Dental anxiety, transgender, women.

Received date: 18 January 2021

Accept date: 10 February 2021

Introduction

Transgender is a term for people who live opposite to their gender assigned for them at birth¹. The prevalence of transgender women (TGW) or known as "Mak Nyah" in Malaysia was 500 in 2001 and showed more than hundred percent increment to 1,333 in 2009².

Oral health is important for a total well-being of a person³. Studies shown that oral diseases had impact on chronic systemic

condition namely periodontal disease and dental caries^{4,5}. Patients with chronic conditions such as end stage renal failure and Sjogren syndrome might presented with oral manifestation hence affecting their oral health care⁶.

However, little is known about the oral health among transgender women in Malaysia as well as worldwide^{7,8}. It is well known that transgender have long faced health care inequality which contributed by social stigma, low income and their unwillingness to reveal themselves to health care providers⁹. This inequalities in accessing health care services including dental care services may subsequently contribute to dental fear/anxiety¹⁰. In addition, experience of discrimination and suboptimal treatment received by this group proved to be the significant predictor for dental anxiety¹⁰.

*Corresponding author:

Assistant Professor Dr Farah Natashah Mohd,
Special Care Dentistry Unit, Department of Oral diagnosis and
OMFS, Kulliyah of Dentistry,
IIUM Kuantan Campus, Kuantan, Malaysia.
E-mail:fasha@iium.edu.my

Fear is usually defined as an unpleasant emotion or thought that someone has when they are frightened or worried by something dangerous, painful, or bad that is happening or might happen¹¹. An existing specific stimulus like needles, drilling or the dental setting in general that can provoke fear in dental clinic known as dental anxiety. Dental anxiety can be described as an aversive emotional state of apprehension or worry in anticipation of the feared stimulus of dental treatment¹². Dental anxiety is very common and the level of anxiety differs from one person to another. People who have never experienced any dental procedure before will have more anxiety compared to people who have done dental procedure¹².

Dental anxiety remains as a barrier to a successful dental management in many developed countries¹³. A study revealed that those who have high levels of dental anxiety have poor oral health habits (infrequent tooth brushing, tobacco use, unhealthy eating habits) which increase the need for treatment during dental check-up¹². Reasons of having dental anxiety mostly related to exogenous factors such as traumatic dental experience, vicarious learning from others or media¹⁴. It is also found that endogenous factors such as personal traits can be part of contributing factor of dental anxiety¹⁴. There are few tools to assess the dental anxiety status such as Corah's Dental Anxiety Scale (DAS)^{15, 16}, Dental Fear Survey (DFS)¹⁷ and Modified Dental Anxiety Scale (MDAS)¹³. MDAS is widely used and has been translated into many languages including Malay. It was reported that the prevalence of dental anxiety in Malaysia population is about 88%¹⁸. However, this study was done among general population. A study done in Washington, showed the dental anxiety among transgender were higher compared to another study done among adults in the United States using Dental Fear Survey (DFS)¹⁰. Hence, it will be of interest to know the prevalence of dental anxiety or dental fear among the TGW population in Malaysia which should be expected to be higher than the non-transgender population.

The objective of this study was to determine the prevalence of dental anxiety among TGW in Malaysia and its associated factors.

Materials and methods

Study design, population and sampling

This was a cross sectional study conducted during a medical camp programme for TGW in Malaysia. It was held in Terengganu state, Malaysia from 16th to 18th August 2019. It is a yearly medical programme aimed to educate TGW about their health care including oral health care. Using universal sampling methods, we approached all the TGW who attended the programme (total of 150 attendees) to participate in the study. Those who consented were given a set of self-administered questionnaire to fill-up. Out of 150 total attendees approached, only 100 participants consented and completed the questionnaire which was then included in this study. Hence, the final sample size was 100 participants.

Study instruments

This study used the validated Modified Dental Anxiety Scale (MDAS) Malay version. It comprises of 5 items asking about participant's feeling related to dental treatment with the answer for each item ranging from 'not anxious' to 'extremely anxious'. The questions asked in the questionnaire include 'feeling a day prior to dental treatment', 'feeling inside the waiting room' and 'feeling prior to certain dental procedures'. The total score ranges from 5 to 25 with higher score indicating higher level of dental anxiety¹⁸. Sociodemographic profile of participants was also acquired to assess for factors associated with dental anxiety.

Statistical analysis

Data was analysed using SPSS version 24.0. The skewed distributed data was reported as median and interquartile range. The categorical data was reported as frequency and percentages. The dental anxiety score was categorized into 4 categories ranging from no dental anxiety to extreme dental anxiety (dental phobia). Chi square and Man Whitney tests were used in bivariate analysis to assess for association between dental anxiety and sociodemographic profile. Multiple logistic regression tests were employed to determine any relationship between dental anxiety and sociodemographic profile. The binary dependent variable used in multiple logistic regression was dental anxiety ('yes' and 'no') with the numerical coding for 'yes' was set bigger so which means it was the category used to be the predicted

outcome.

Ethics

Ethical approval was obtained from IUM Research Ethics Committee (IREC 2019-170) prior to commencement of this study. This study had been performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki.

Results

Table 1 shows more than half of the participants are smokers (52.5%) with majority (58.6%) completed their education up to secondary school. It is also illustrate that about a fifth of respondent had history of being discriminated when seeking dental treatments. Half of participants brush their teeth twice daily. Only 10% of the respondents earned more than RM3000 per month.

Variables	n (%)
Age (median(IQR))	32(12)
Smoking status n=99	
Yes	52 (52.5)
No	47 (47.5)
Alcohol consumption n=99	
Yes	11 (11.1)
No	88 (88.9)
Highest education level n=99	
Primary	12 (12.1)
Secondary	58 (58.6)
Tertiary (Diploma and above)	29 (29.3)
Discrimination during dental rx n=96	
Yes	21 (21.9)
No	75 (78.1)
Frequency of brushing teeth n=97	
Once daily	10 (10.3)
Twice daily	52 (53.6)
Thrice daily	30 (30.9)
More than thrice daily	5 (5.2)
Monthly income n=95	
≤ RM3000	85 (89.5)
> RM3000	10 (10.5)

Table 1. Sociodemographic profile.

MDAS score range (dental anxiety category)	n(%)
0-5 (No dental anxiety)	13(13.0)
6-10 (Low dental anxiety)	28(28.0)
11-18 (Moderate dental anxiety)	35(35.0)
19≥25 (Extreme dental anxiety/Dental phobia)	24(24.0)

Table 2. prevalence of dental anxiety by category based on MDAS scores (n=100).

Table 2 shows majority of the respondents (87%) have dental anxiety range from low to extreme. 24% of them have extreme level of dental anxiety (dental phobia).

Variables	Prior to dental visit tomorrow n(%)	Inside the waiting room n(%)	Prior to use of drill n(%)	Prior to scaling and polishing n(%)	Prior to intraoral injection n(%)
Not anxious	42(42)	32(32)	19(19)	39(39)	27(27)
Slightly anxious	25(25)	23(23)	19(19)	20(20)	17(17)
Fairly anxious	12(12)	19(19)	17(17)	16(16)	17(17)
Very anxious	11(11)	15(15)	18(18)	15(15)	13(13)
Extremely anxious	10(10)	11(11)	27(27)	10(10)	26(26)

Table 3. Item frequency breakdown of MDAS (n=100).

Sociodemographic Profile	Dental Anxiety		p-value
	No n(%)	Yes n(%)	
Median Age (IQR)	31(15)	32(12)	*0.58
Smoking	Yes	8(15.4)	0.54
	No	5(11.1)	
Alcohol	Yes	1(9.1)	0.55
	No	12(14.0)	
Monthly Income	≤ 3000	12(14.5)	0.58
	> 3000	1(10.0)	
Education Level	Primary	2(16.7)	0.35
	Secondary	8(14.3)	
	Tertiary	3(10.3)	
Brushing teeth	Twice daily	9(15.0)	0.63
	More than twice daily	4(11.4)	
Discrimination during dental visit	Yes	3(15.0)	0.56
	No	10(13.5)	

Table 4. Association between sociodemographic profile and Modified Dental Anxiety Scale.

*Mann-Whitney test.

Variables	B	Wald	Adjusted odd ratio (AOR)	95% CI	P value
Age in years	-0.047	2.056	0.954	0.895 to 1.017	0.152
Smokers *(Non-smokers)	-0.226	0.096	0.798	0.191 to 3.329	0.757
Alcohol consumption					
Yes	0.125	0.011	1.133	0.110 to 11.641	0.916
*(No)					
Discrimination during dental visit					
Yes *(No)	-0.592	0.560	0.553	0.117 to 2.609	0.454
Income					
≤3000 *(>3000)	0.526	0.187	1.692	0.156 to 18.315	0.665
Brushing teeth frequency					
Twice daily *(more than twice daily)	-0.385	0.254	0.680	0.152 to 3.039	0.614
Highest education level					
Secondary *(tertiary)	-0.462	6.246	0.630	0.110 to 3.600	0.603

Table 5. Multiple logistic regression to determine relationship between dental anxiety# and sociodemographic profile.

Dependent variable used to be the predicted outcome was those with dental anxiety ('yes' coding)

*reference

Table 3 shows that more than a quarter of total respondents (27%) and (26%) respectively are extremely anxious to having a drill inside the mouth and intra oral injections.

Bivariate and multivariate analysis illustrate no significant association between dental anxiety and sociodemographic profile (Table 4 and Table 5).

Discussion

This study revealed that the prevalence of dental anxiety among TGW was high. It is not possible to make direct comparison of the prevalence of dental anxiety as there was no similar study done among TGW in Malaysia as well in other countries. A study done among 70 transgender people in United States of America found that they had higher dental fear score in comparison to the cisgender. Nevertheless, this study used different scoring to assess the dental anxiety namely Dental Fear Survey (DFS)¹⁰. The prevalence of dental anxiety among TGW in our study was almost similar to the study done among adult population in Kelantan state in Malaysia with 88.6% had dental anxiety range from low to extreme¹⁸. These consistent findings showed that the prevalence of dental anxiety in Malaysia were high regardless of the population. Nevertheless, in present study a quarter of the respondents had extreme dental anxiety (dental phobia) whilst in the previous study found only 3.5% of their respondents had dental phobia¹⁸. Studies done in Jordan and Turkey had almost similar findings with the present study where the percentage of extreme dental anxiety (dental phobia) among adults were 23.5% and 22 % respectively^{19, 20}.

This study also found a fifth of the respondents had history of being discriminated when seeking dental treatments. Nevertheless, there was no significant association found between dental anxiety and discrimination experience in our study. Another study among transgender in United States of America found that transgender people who experienced discrimination when seeking treatment were more prone to have dental anxiety¹⁰. However, the study involved both transgender men and women and with smaller sample size than our present study. Anyhow, in general, it is well known that previous negative dental experiences may contributed to dental anxiety as found in

several previous studies^{21, 22}

The percentage MDAS anxiety scores associated with the use of the drill and local anaesthetic injection found to be the highest among other items. The findings were consistent with other studies^{18, 19, 23}. Needle and drill are reported to be the most anxiety provoking stimulus due to feel of pain on injection when delivering local anesthesia, and the vibrations felt during drilling that causes them to have increased in anxiety level²¹.

Our study failed to find any association between dental anxiety and sociodemographic profile of the respondents using bivariate and multivariate analysis. A few previous studies done among population other than TGW found that people with low income have lack of awareness on dental health which resulted in poor oral health and inadvertently increase in dental anxiety^{24, 25}. Although our results shows no significant finding between dental anxiety and their education level, previous study found that the level of education was seen to have an inverse relationship with percentage of MDAS scores; where those who have higher educational levels were relatively more aware about dental treatment and visit the dentist more regularly¹³. Hence, they have a better oral health and resulted in less dental anxiety^{13, 26}. However, from our findings, the educational background did not have any relationship with dental anxiety which in accordance with previous studies^{18, 27}.

Limitations of the study

Our study had relatively small sample size in proportion of the number of TGW in Malaysia. Therefore, the result of this study may not be generalized to all TGW population in Malaysia. This small sample size may also affect our bivariate and multivariate statistical analysis which resulted in failure to find any significant association. Apart from this, the causes of dental anxiety were not been explored in this study.

Conclusions

Unsurprisingly, majority of the TGW have dental anxiety with almost a quarter were dental phobic. Drill and intraoral injection were the highest contributing factors for dental anxiety. Dental practitioners should be aware that TGW should not be discriminated and they are prone to have dental anxiety. Our role is to treat our patients professionally and to provide alternative

dental management (eg: cognitive behavioural therapy, conscious sedation) to reduce dental anxiety among the patients regardless of their background.

Acknowledgements

This study was funded by International Islamic University of Malaysia Flagship Research Initiative Grant Scheme: IRF19-022-0022.

Declaration of Interest

The authors report no conflict of interest.

References

1. Bradford J, Reisner SL, Honnold JA, and Xavier J. Experiences of Transgender-Related Discrimination and Implications for Health: Results From the Virginia Transgender Health Initiative Study. *American Journal of Public Health* 2013; 103(10):1820-1829.
2. Meier SC and Labuski CM. The Demographics of the Transgender Population in International Handbook on the Demography of Sexuality, International Handbooks of Population © Springer Science and Business Media Dordrecht 2013: 289-327.
3. World Health Organization, Oral health. September 2018 [cited 2018 12 October]; Available from: http://www.who.int/oral_health/publications/factsheet/en/.
4. Sabbah W, Folayan MO, and El Tantawi M, The Link between Oral and General Health. *International Journal of Dentistry* 2019; 7862923.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6560319/pdf/IJD2019-7862923.pdf>
5. Morita I, Inagaki K, Nakamura F, Noguchi T, and Matsubara T. Relationship between periodontal status and levels of glycated hemoglobin. *J Dent Res* 2012; 91(2):161-6.
6. Hamburger, J., Orofacial manifestations in patients with inflammatory rheumatic diseases. *Best Practice & Research Clinical Rheumatology* 2016;30(5): 826-850.
7. Islam R, Alam MK, and Khamis MF, Medical and Dental Problem among Transgender – An Untouched Topic: A Review. *Int J Pharm Bio Sci* 2015; 6(3): 1229-1237.
8. Ludwig DC and Morrison SD, Should Dental Care Make a Transition? *The Journal of the American Dental Association* 2018; 149(2):79-80.
9. Brown JF and Fu J Emergency Department Avoidance by Transgender Persons: Another Broken Thread in the "Safety Net" of Emergency Medicine Care 2013; Vol. 63(6): 721-722.
10. Heima M, Heaton LJ, Ng HH and Roccoforte EC. Dental fear among transgender individuals - a cross-sectional survey. *Special Care in Dentistry* 2017; 37(5): 212-222.
11. Cambridge Dictionary. 2020 [cited 2020 22 March]; Available from: <https://dictionary.cambridge.org/dictionary/english/fear>.
12. Caltabiano ML, Croker F, Page L, Sklavos A, Spiteri J et al. Dental anxiety in patients attending a student dental clinic. *BMC oral health* 2018; 18(1):48-48.
13. Humphris GM, Dyer TA, and Robinson PG. The modified dental anxiety scale: UK general public population norms in 2008 with further psychometrics and effects of age. *BMC Oral Health* 2009; 9: 20-20.
14. Beaton L, Freeman R, and Humphris G. Why are people afraid of the dentist? Observations and explanations. *Med Princ Pract* 2014; 23(4):295-301.
15. Corah NL, Gale EN, and Illig SJ. Assessment of a dental anxiety scale. *The Journal of the American Dental Association* 1978; 97(5): 816-819.
16. Reshitaj, A., et al., Oral Health Related Quality of Life and Dental Anxiety Children with Malocclusion between 11-14 years Old *Journal of International Dental and Medical Research*, 2019. 12(3): p. 1047-1049.
17. Kleinknecht RA, Thorndike RM, McGlynn FD, and Harkavy J. Factor analysis of the dental fear survey with cross-validation. *J Am Dent Assoc* 1984; 108(1): 59-61.
18. Sittheeque M, Massoud M, Yahya S, Humphris G. Validation of the Malay version of the Modified Dental Anxiety Scale and the prevalence of dental anxiety in a Malaysian population. *Journal of Investigative and Clinical Dentistry* 2015; 6(4):313-320.
19. Tunc EP, Firat D, Onur OD, and Sar V. Reliability and validity of the Modified Dental Anxiety Scale (MDAS) in a Turkish population. *Community Dent Oral Epidemiol* 2005; 33(5):357-62.
20. Abu-Ghazaleh SB, Rajab LD, Sonbol HN, Aljafari A K, Elkarmi RF, and Humphris G. The Arabic version of the modified dental anxiety scale. Psychometrics and normative data for 15-16 year olds. *Saudi Med J* 2011; 32(7):725-9.
21. Beaton L, Freeman R, and Humphris G. Why are people afraid of the dentist? Observations and explanations. *Medical principles and practice : International Journal of the Kuwait University, Health Science Centre* 2014; 23(4):295-301.
22. Jamieson LM, Steffens M, and Paradies YC. Associations between discrimination and dental visiting behaviours in an Aboriginal Australian birth cohort. *Australian and New Zealand Journal of Public Health* 2013; 37(1): 92-93.
23. Humphris GM, Freeman R, Campbell J, Tuutti H, D'Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. *Int Dent J.* 2000;50(6):367-70.
24. Sohn W, Ismail AI. Regular dental visits and dental anxiety in an adult dentate population. *J Am Dent Assoc.* 2005;136(1):58-66; quiz 90-1.
25. Ekanayake L, Dharmawardena D. Dental anxiety in patients seeking care at the University Dental Hospital in Sri Lanka. *Community Dent Health.* 2003;20(2):112-6.
26. Anastasia Dinny Setiawati, et al., Assessment of Dental Anxiety Using Braille Leaflet and Audio Dental Health Education Methods in Visually Impaired Children. *Journal of International Dental and Medical Research*, 2017. 10(Special Issue): p. 441-444.
27. Saatchi M, Abtahi M, Mohammadi G, Mirdamadi M, Binandeh ES. The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. *Dent Res J (Isfahan).* 2015;12(3):248-53.