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## Dental Fear among Transgender Individuals - A Cross-Sectional Survey

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### Abstract

**Aims:** The aims of this study were to 1) evaluate the level of dental fear among transgender individuals, and 2) investigate specific predictors of dental fear in individuals who identify as transgender.

**Method and results:** An anonymous survey among transgender adults was conducted using both a web based and paper survey. The survey included the Dental Fear Survey (DFS), history of hormonal interventions, perceived gender roles, and demographic information. The bivariate analyses did not show a significant difference in DFS between sex assigned at birth ( $p=0.628$ ) or among gender identities ( $p=0.109$ ). A regression model analysis for the level of DFS by using participants' demographic information as independent variables indicated the fear and experience of discrimination/maltreatment were significant predictors of dental fear; standardized beta-coefficients( $p$ -value) were 0.35( $p=0.017$ ) and 0.28 ( $p=0.041$ ), respectively.

**Conclusion:** The fear and experiences of discrimination/maltreatment were significantly positively associated with their level of dental fear.

### Keywords

Dental anxiety; Transgender Persons; Surveys and Questionnaires

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Conflicts of interest

All authors declare no conflicts of interest with respect to the authorship and publication of this article.

Ethics Statement

The Institutional Review Board of Case Western Reserve University approved the current study protocol.

## Introduction

Dental utilization is important for oral health<sup>1-4</sup>; people who utilize professional dental care regularly have fewer oral health problems. However, studies have demonstrated that dental care-related fear and anxiety (i.e. dental fear) prevents regular dental utilization; it is one of the most common barriers to obtaining dental care, along with the cost of dental procedures.<sup>5, 6</sup> Dental fear has been studied for several decades; approximately 75% of adults have some anxiety about going to the dentist and about 10–20% of adults indicate they have severe dental fear.<sup>7-9</sup> The prevalence of dental anxiety did not significantly change in the United States (U.S.) from the 1960s to 2001.<sup>10</sup>

The dental fear literature consistently indicates that females are reported to have higher levels of dental fear than males.<sup>9, 11, 12</sup> After controlling other characteristic factors such as socio-economic status and education level, sex is a strong predictor of dental fear.<sup>6, 13, 14</sup> Although biological and psychosocial factors have been discussed as the causes of the sex difference in self-reported dental fear, the mechanisms for this difference have not been completely understood.<sup>15, 16</sup>

Individuals who identify as transgender are defined by the National Institutes of Health (NIH) as “individuals who cross or transcend culturally defined categories of gender.”<sup>17</sup> According to a recent report, 0.3% of the American population consists of transgender and gender non-conforming individuals.<sup>18</sup> The National Transgender Discrimination Survey reports that 19% of individuals who identify as transgender have experienced refusal of health care, 28% experienced harassment, 2% were victims of violence in a medical office, and 50% felt a lack of provider knowledge regarding the caring of transgender individuals. Furthermore, 63% of transgender individuals have experienced significant discrimination, such as bullying, physical and sexual assault; 41% reported attempting suicide and 28% have postponed receiving health care due to fear of discrimination.

Previous studies reported that people who experienced maltreatment or psychological trauma have higher level of dental fear and difficulty of receiving dental care.<sup>19</sup> Dental fear also often relates to other psychological/psychiatric problems such as depression and posttraumatic stress disorder,<sup>20</sup> which are often reported among individuals who identify as transgender.<sup>21, 22</sup> Many transgender individuals may have difficulty receiving dental care due to fear, however, no prior studies have examined levels of or predictors of dental fear in this population.

Individuals who identify as transgender are also in a unique position regarding biological and psychosocial conditions in the field of sex-difference research: there is a spectrum of transgender identities and biological conditions due to hormonal interventions. Transgender males are males who were assigned female sex at birth (i.e. AFAB) and have a gender identity compatible with males, while transgender females are females who were assigned male sex at birth (i.e. AMAB) and have a gender identity compatible with females. Gender nonconforming individuals identify as both genders or neither. Among cisgender individuals (i.e., individuals whose sex assigned at birth is consistent with their gender identity (internal sense of maleness, femaleness, a combination of both or neither), their biological and

psychosocial conditions generally correspond to their sex and often, although not always, align with each other<sup>23</sup>. However, among transgender individuals, their biological and psychosocial conditions are not always correspond to their sex due to a spectrum of transgender identities and various gender transition statuses.<sup>23, 24</sup> For example, transgender males who have never received any hormonal intervention, such as hormone replacement therapy or ovariectomy, are biologically identical to cisgender females in terms of gonadal hormone, however, they identify as male and therefore their behavior may align with socially acceptable forms of masculinity. Another example is that of transgender females who cannot be identified as a AMAB by other people until their disclosure because they have completed gender transition, including all medical and social gender affirming interventions, and they behave as females. These characteristics of transgender individuals may help us to understand sex differences in self-reported dental fear.

This is an initial study of dental fear among individuals who identify as transgender. This exploratory study examines levels of dental fear within, and specific factors predicting dental fear among a sample of transgender individuals, as well as raises awareness of the clinical implications of the specific fear among transgender individuals for dental care providers. The aims of this study were to 1) evaluate the level of dental fear among individuals who identify as transgender and 2) investigate specific predictors of dental fear for individuals who identify as transgender.

## Material and Methods

An anonymous survey was conducted among individuals 18 years or older who identify as transgender by using both a web based survey (Research Electronic Data Capture survey) and hard copy/paper survey administered from January 2016 to June 2016. The Tailored Design Method<sup>25</sup> was modified for this survey and used for development and distribution of the survey.

### Recruitment:

We engaged leaders within the transgender communities in urban cities in the Midwestern United States to distribute the information about the survey through verbal communication and social media. We sent two reminder messages to the communities approximately three weeks apart in January and February, 2016 and kept the web based survey open until June, 2016. The researchers distributed the hard copy surveys and information cards, which provided the link of the survey, in transgender community meetings approximately once a month. Additionally, we held booths during local events for transgender communities in order to recruit participants. Finally, we recruited participants from a hospital-based primary care clinic that specialized in health care for transgender people.

### Questionnaire:

The questionnaire has been developed for this research purpose. It included following tools. (Please see the appendix for detail.) The Dental Fear Survey (i.e. DFS)<sup>5</sup> is the most frequently used questionnaire for the measurement of dental fear and it has been translated into many languages.<sup>26-28</sup> The DFS is composed of 20 items with three dimensions: eight

items for avoidance, five items for physiological arousal, and seven items for fears of specific stimuli/situations. High internal consistency, validity, and test-retest reliability were reported in the English version as well as in other language versions.<sup>7, 26–28</sup> The total score of DFS ranges from 20 to 100, with a higher score indicating higher levels of dental fear.

Participants' characteristic questions included sex, gender identity (internal sense of maleness, femaleness, a combination of both or neither) and racial/ethnic background, were adapted from the National Transgender Discrimination Survey<sup>29</sup> and a review article.<sup>30</sup> We also adapted two additional questions<sup>28</sup> regarding fear of maltreatment in dental clinic and experiences of maltreatment in general (not specifically in the dental setting; please see Appendix).

Gender transition questions, which were also adapted from the National Transgender Discrimination Survey, consisted of history of medical interventions (e.g., hysterectomy) and age of when they received the interventions to assess their gender transition status.<sup>28</sup> It was used to determine whether the AFAB have been experiencing menstrual cycle. Two 5-options Likert scale questions about participants' perceived social gender role (i.e., how others treat them in terms of being male or female) were included in the questionnaire.

### **Statistical Analyses:**

A total sample size of 70 (male: female=1:1) was calculated with a significance level of 5% and statistical power of 80% based on previous studies which used DFS and compared sex differences in the United States.<sup>31</sup> Participants were dichotomized whether they were experiencing menstrual cycles or not by A) participants who experience a menstrual cycle as AFAB without any hormonal intervention or menopause, or B) participants who do not experience a menstrual cycle due to either hormonal interventions (more than one year hormone therapy and or uterus/ovarian surgery), which eliminate the menstrual cycles, or to assigned male at birth (i.e., AMAB).

Before the final regression model analysis, the descriptive analyses for participants' demographic characteristics information and bivariate analyses for DFS scores were conducted. The total DFS scores were compared between sexes (AMAB, AFAB), and among gender identities (transgender male, transgender female, gender non-conforming) to test differences in dental fear level by sexes and gender identities. Correlations of DFS with the fear of maltreatment were conducted to test the association between dental fear and fear of maltreatment in a dental clinic. Total DFS scores of AFAB were compared between those who had hormonal interventions and who had not had hormonal interventions to test the association between dental fear and hormonal interventions, (which has been suggested as the cause of the sex difference of dental fear<sup>32, 33</sup>). AMABs were dichotomized based on answer to the perceived gender role as female. (AMABs who were treated as female were defined by choosing 4 or 5 level out of the 5-point Likert scale question of the perceived social gender role.) The total DFS of AMAB score was compared between those who were or were not treated as female in their community, which impact their behavior in their daily life<sup>34</sup>, to assess the association between perceived gender social roles and dental fear level. Finally, we investigated predictors of dental fear among transgender individuals by using a regression model analysis. The regression model was developed based on previous reports

and were conducted with total DFS score as the outcome and sex (AFAB or AMAB), age, the fear of maltreatment in a dental clinic (1–5 scale), maltreatment experiences (yes or no), gender identity (transgender female, transgender male, and gender non-conforming), whether participants experience a menstrual cycle and perceived gender role as male or female (1–5 scale), as predictors. All statistics were completed by IBM SPSS Statistics 24 (IBM Corp., Armonk, NY, USA).

## Results

Seventy individuals (AMAB/AFAB rate was 36/34) who identify as transgender completed the survey: 38 participants used web based survey, 15 mailed back the survey, and 17 completed the survey during events or community meetings for transgender individuals. There were no significant differences in participants' demographics (age, sex, gender identity, ethnicity, race, and experience of discrimination) and their dental fear levels ( $P = 0.193$ ) by mode of survey completion.

Table 1 shows participants' demographic information, such as age and distribution of sex and ethnicity. Fifty-nine (85.5%) participants reported having at least one instance of maltreatment and 10 (14.2%) participants indicated they were "Very much" or "Extremely" fearful of experiencing maltreatment in a dental clinic.

The mean (s.d.) of total DFS scores for AMAB and AFAB were 50.0 (20.8) and 47.7 (17.8), respectively. This did not show a significant difference ( $t=0.49$ ,  $df=63$ ,  $0.628$ ). Table 2 shows the mean (SD) of total and subscale scores of DFS by gender identities. There were no significant differences in total DFS scores and DFS subscales, except the score of avoidance ( $F=4.687$ ,  $p=0.013$ ). Tukey HSD Post-hoc test indicated that the avoidance score in gender non-conforming individuals was significantly greater than for transgender males and transgender females ( $p=0.01$  and  $0.05$ , respectively).

Table 3 shows the results of Pearson Correlation of DFS scores with fear of being maltreated in a dental clinic; all combinations indicated a significant positive relationship ( $p=0.014$  to  $<0.001$ ). Therefore, individuals who had more fear of experiencing maltreatment in a dental clinic reported significantly higher dental fear.

Table 4 shows the comparison of DFS scores between participants' condition as AFAB who had or had not had hormonal interventions in more than one year and as AMAB who were or were not treated as females. Both hormonal condition and social gender role comparisons did not show significant difference in total DFS scores ( $t=-0.399$   $df=29$   $p=0.693$ ;  $t=1.543$   $df=30$   $p=0.133$ ; respectively).

Table 5 shows the outcomes of the regression model analyses. The F-test indicates a significant fitting of the model for DFS ( $F=3.09(9,43)$ ,  $p=0.006$ , with an  $R^2$  of 0.393). The results of the regression model analysis for DFS showed both fear of maltreatment in dental clinic and experiences of maltreatment as significant predictors of dental fear (DFS).

## Discussion

This exploratory study is an initial report about dental fear among individuals who identify as transgender. The total DFS score among individuals who identify as transgender (48.88) was comparatively higher than the DFS score that had been reported between 1973 and 2016 in the USA (the range of DFS score was 34.7 to 46.3).<sup>5, 31, 35–38</sup> Fear levels in transgender males and females were slightly higher (44.74 and 47.64, respectively) from the previously reported levels among cisgender individuals, while the level in the gender non-conforming group indicated a much higher score (58.14) than the previously reported dental fear level. The reason for the slightly higher dental fear may be explained by the minority stress theory. The concept of minority stress stems from several social and psychological theoretical orientations and can be described as a relationship between minority and dominant values and resultant conflict with the social environment experienced by minority group members.<sup>39, 40</sup> Minority stress often results in a lifetime of harassment, maltreatment, discrimination and victimization and may ultimately impact access to care.<sup>40, 41</sup> This may increase dental fear levels.<sup>19</sup> Additionally, associations between dental fear and both fear of maltreatment in dental clinics and past maltreatment were significant, which is consistent with previous research among different populations, such as among cisgender adults and children. Previous studies reported that even if the maltreatment or discrimination occurred during childhood, long term effects impact patients' dental fear and dental behavior, such as uncooperative behavior during dental treatment and cancellations without notice.<sup>19, 42</sup>

A high prevalence of discrimination and/or maltreatment among individuals who identify as transgender was seen in this study as well as in the national discrimination survey among individuals who identify as transgender.<sup>29</sup> They have experienced transgender related discrimination in clinics,<sup>29, 43</sup> although we did not assess the experience of maltreatment in dental settings specifically, but more generally. Maltreatment/discrimination may lead to distrust of dental personnel.<sup>44</sup> Some may think of discrimination or maltreatment by health professionals as being overtly insulting or derogatory in their speech toward individuals who identify as transgender. However, it can be just as damaging to the provider-patient relationship when the dentist and/or staff engage in unintentionally disparaging behaviors such as using incorrect pronouns or referring to the patient by his/her previous name (e.g., "Please seat Michael, I mean Michelle, or whatever name he's going by now, in Room 4."). We see this study as a first step in bringing the specific issues faced by this population to dental providers' awareness, so when they do treat individuals who identify as transgender, they are aware of patients' concerns and are able to address them appropriately.

Sex is a strong predictor of dental fear after controlling other characteristic factors such as socioeconomic status and education level among cisgender individuals.<sup>6, 13, 14</sup> Although we did not see significant differences in the level of dental fear between sexes, gender non-conforming individuals have a higher level of avoidance than individuals who identify as male or female. We could not find any related research that demonstrated that gender non-conforming individuals were more anxious than other individuals who identify as transgender, suggesting that this area requires further research.

Although biological and psychosocial factors of sex differences have been discussed as causes of sex differences in self-reported dental fear, the causes are not yet well understood.<sup>15, 16</sup> One of many possible biological factors are gonadal hormones (e.g. Estradiol), which may contribute to increased levels of dental fear through increase pain levels during the fluctuation of ovarian hormones, which occur late luteal phase through an early follicular phase of the menstrual cycle<sup>45</sup>, as well as social roles and social expectations, which may contribute to lower levels of self-reported dental fear among people who identify as male.<sup>15, 33, 46</sup> Due to ethical reasons, hormonal interventions in cisgender individuals are difficult. On the other hand, many transgender individuals already receive hormonal interventions to change their hormone status (e.g., stopping menstrual cycle) for gender dysphoria and these responses to the interventions may be observed. Gender-affirming surgeries, such as chest and genital surgery, help to reduce a perceived mismatch between their physical appearance and gender identity. In turn, this can change an individual's social gender role and expectations for reporting fear.<sup>34</sup> However, in this study, the variability of the hormonal intervention may mask the gender difference in dental fear levels; we did not have enough power to see a significant association of hormonal and psychosocial transition difference with dental fear. Additionally, we hypothesized that AMAB who were treated as female would report higher dental fear levels than AMAB who were not treated as female. Although there was no significant difference, Table 4 indicated the opposite direction; AMAB who were not treated as female might have more psychological stress than AMAB who were treated as female. Gender non-conforming individuals also have higher levels of dental fear. These unclear conditions may lead to increased stress, which in turn increase dental fear levels<sup>19</sup>. Future research regarding the influence of hormonal intervention and psychosocial transition on dental fear level is needed.

We asked several leaders within transgender communities to distribute the survey through their social media, such as Facebook and blogs. Thus, it was impossible to calculate an exact response rate. However, when we introduced the survey in the community meeting, 94% of eligible attendees responded. Although this study used a web based questionnaire and could reach a wider audience, most of our participants were from Northeast Ohio. This can introduce a selection bias and limit the generalizability of the results. Although there were limitations for generalizability, as the first step, this study helps us to understand dental fear level among individuals who identify as transgender.

## Conclusion

In this initial study of dental fear among individuals who identify as transgender, we did not see any sex differences in dental fear levels among individuals who identify as transgender. However, after controlling for characteristics of individuals who identify as transgender, such as age and sex, the fear of discrimination and maltreatment in dental clinic, and experiences of discrimination and maltreatment were significantly associated with the level of dental fear. Oral health care providers should be aware of these specific predictors to evaluate the dental fear levels of their patients who identify as transgender.



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## Appendix

“Transgender/gender non-conforming” describes people whose gender identity or expression is different, at least part of the time, from the sex assigned to them at birth.

Do you consider yourself to be transgender/gender non-conforming in any way?

1. Yes\_ Please complete the rest of survey
2. No \_ Please DO NOT complete the rest of survey.

The items listed below describe possibly painful dental procedures.

Please look at each item carefully and think about how FEARFUL you are of experiencing the PAIN associated with each item. If you have never experienced the PAIN of a particular item, please answer on the basis of how FEARFUL you expect you would be if you had such an experience. Circle one category per item to rate your FEAR OF PAIN in relation to each event.

1. Receiving an anesthetic injection in the mouth	Not at all	A little	A fair amount	Very much	Extreme
2. Having a tooth drilled	Not at all	A little	A fair amount	Very much	Extreme
3. Receiving root canal treatment	Not at all	A little	A fair amount	Very much	Extreme
4. Having a tooth pulled	Not at all	A little	A fair amount	Very much	Extreme
5. Having a wisdom tooth extracted	Not at all	A little	A fair amount	Very much	Extreme

When I present documents with my name and gender (like a driver's license or a passport) that do not match my gender presentation: (Mark all that apply.)

- a. I have been harassed.
- b. I have been assaulted/attacked.
- c. I have been asked to leave.
- d. I have had no problems.
- e. Not applicable. I have only presented documents that match

How FEARFUL are you of being discriminated/maltreated in a dental clinic due to your identity as a transgender/gender non-conforming individual?

- a. Not at all
- b. A little
- c. A fair amount



- d. Very much
- e. Extremely fearful

The items below refer to various situations, feelings, and reactions related to dental work. Please rate your feeling or reaction about these items by *circling the number* (1, 2, 3, 4, or 5) of the category which most closely corresponds.

	never	once or twice	a few times	often	nearly always
1. Has fear of dental work ever caused you to put off making an appointment?	1	2	3	4	5
2. Has fear of dental work ever caused you to cancel or not appear for an appointment?	1	2	3	4	5

When having dental work done ...

3. my muscles become tense.	1	2	3	4	5
4. my breathing rate increases.	1	2	3	4	5
5. I perspire.	1	2	3	4	5
6. I feel nauseated and sick to my stomach.	1	2	3	4	5
7. my heart beats faster.	1	2	3	4	5
8. I seriously gag.	1	2	3	4	5
9. I have difficulty breathing.	1	2	3	4	5

Following is a list of things and situations that many people mention as being somewhat anxiety or fear producing. Please rate how much fear, anxiety, or unpleasantness each of them causes you by *circling the number* (1, 2, 3, 4, or 5) of the category which most closely corresponds. (If it helps, try to imagine yourself in each of these situations and describe what your typical reaction is.)

	None	a little bit	some	quite a bit	very much
1. Making an appointment for dentistry.	1	2	3	4	5
2. Approaching the dentist's office.	1	2	3	4	5
3. Sitting in the waiting room.	1	2	3	4	5
4. Being seated in the dental chair.	1	2	3	4	5
5. The smell of the dentist's office.	1	2	3	4	5
6. Seeing the dentist walk in.	1	2	3	4	5
7. Seeing the anesthetic needle.	1	2	3	4	5
8. Feeling the needle injected.	1	2	3	4	5
9. Seeing the drill.	1	2	3	4	5
10. Hearing the drill.	1	2	3	4	5
11. Feeling the vibrations of the drill.	1	2	3	4	5

	None	a little bit	some	quite a bit	very much
12. Having my teeth cleaned.	1	2	3	4	5
13. All things considered, how fearful are you of having dental work done?	1	2	3	4	5

Please tell us about your life:

What sex were you assigned at birth, on your original birth certificate?

- a) Female
- b) Intersex
- c) Male
- d) I prefer not to answer this question

What best describes your current gender identity?

- d) Cross dresser
- e) Genderqueer
- f) Gender non-conforming
- g) Man
- h) Part-time as one gender, part time as another
- i) Trans man/Trans male
- j) Trans woman/Trans female
- k) Woman
- l) A gender not listed here (please specify): \_\_\_\_\_

On the scale below, please make a selection to indicate how others treated you in terms of the following genders during CHILDHOOD/TEEN.

	Not at all				All the time
Boy/male	1	2	3	4	5
Girl/female	1	2	3	4	5
Transgender/gender non-conforming child	1	2	3	4	5

On the scale below, please make a selection to indicate how others are CURRENTLY treating you in terms of the following genders.

	Not at all				All the time
Man/male	1	2	3	4	5

	<b>Not at all</b>				<b>All the time</b>
Woman/female	1	2	3	4	5
Transgender/gender non-conforming individual	1	2	3	4	5

Please tell us about health care related to being transgender/gender non-conforming you might have received.

Have you received health care listed below related to being transgender/gender non-conforming? Please mark and estimate the age you started/received below if you received health care.

	<b>No, I have not.</b>	<b>Yes, I have.</b>	<b>Age in years</b>
Counseling	<input type="radio"/>	<input type="radio"/>	
Hormone treatment	<input type="radio"/>	<input type="radio"/>	
Top/chest/breast surgery (chest reduction, enlargement, or reconstruction)	<input type="radio"/>	<input type="radio"/>	
Male-to-female removal of the testes	<input type="radio"/>	<input type="radio"/>	
Male-to-female genital surgery (removal of penis and creation of a vagina, labia, etc.)	<input type="radio"/>	<input type="radio"/>	
Female-to-male hysterectomy (removal of the uterus and/or ovaries)	<input type="radio"/>	<input type="radio"/>	
Female-to-male genital surgery (clitoral release/metoidioplasty/creation of testes/creation of a penis)	<input type="radio"/>	<input type="radio"/>	

Have you changed any of the following documents or records to reflect your current gender?

	<b>Yes, I have changed at least one document</b>	<b>No, I have never change documents.</b>	<b>No, I could not do it. (changes denied, etc.)</b>	<b>I have never tried.</b>	<b>Not applicable</b>
Non-government issued documents such as grocery store membership card	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government issued documents such as Driver's license/state ID, Passport, Birth certificate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

This is the last section. Please tell us about yourself

1. Please provide the first 3 digits of your current zip code:
2. Please indicate your age in years: \_\_\_\_\_
3. How do you classify your ethnic group and race?
  - a) Ethnicity:
    - i) Hispanic or Latino



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**Table 1**

## Participants' characteristics

<b>Mean (standard deviation)of age</b>		<b>37.03 (15.99)</b>	
<b>Range of age</b>		<b>18-76</b>	
<b>Variables</b>		<b>n</b>	<b>%</b>
Sex			
	Assigned female at birth	34	48.6
	Assigned male at birth	36	51.4
Gender identity			
	Transgender male	25	35.7
	Transgender female	31	44.3
	Gender non-conforming	14	20.0
Ethnicity			
	Hispanic or Latino	4	5.7
	Not Hispanic or Latino	63	90.0
Race			
	American Indian or Alaska Native	2	2.9
	Asian	4	5.7
	Black or African American	4	5.7
	Native Hawaiian or Other Pacific Islander	1	1.4
	White	65	92.9
	Other	1	1.4
Fear level of maltreatment in a dental clinic			
	Not at all	16	22.9
	A little	26	37.1
	A fair amount	18	25.7
	Very much	5	7.1
	Extremely fearful	5	7.1
Experiences of maltreatment			
	I have been harassed.	11	15.7
	I have been assaulted/attacked.	1	1.4
	I have been asked to leave.	5	7.1
	I have had no problems.	29	41.4
	Not applicable. I have only presented documents that match.	30	42.9



**Table2:**

Means (s.d.) of total scores and subscales of Dental Fear survey (DFS) and the results of analyses of variance tests

	All participants	Transgender male	Transgender female	Gender non-conforming	F	p
Total score of DFS	48.88 (19.27)	44.74 (17.78)	47.64 (20.36)	58.14 (17.48)	2.296	0.109
Avoidance	16.87 (7.91)	14.6 (7.28)	16.28 (7.88)	22.14 (7.09)	4.687	0.013
Physiologic arousal	11.64 (5.63)	10.33 (4.77)	12.28 (6.36)	12.57 (5.35)	1.023	0.365
Fears of specific stimuli/ situations	20.06 (8.06)	19 (8.06)	19.33 (8.40)	23.43 (6.86)	1.579	0.214

**Table 3:**

Correlations between the fear of maltreatment in a dental clinic with Dental Fear survey (DFS) scores and with subscales

	Total score of DFS	Avoidance	Physiologic arousal	Fears of specific stimuli/situations
Pearson Correlation	0.443	0.507	0.443	0.298
p	<0.001	<0.001	<0.001	0.014

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**Table 4:**

The means (standard deviation) of total score of Dental Fear survey (DFS) and participants' condition in hormonal and social gender roles.

	AFAB with hormonal interventions (n=22) <sup>a</sup>	AFAB without hormonal interventions (n=9) <sup>b</sup>	Statistics outcomes
Total score of DFS	45.91 (16.76)	48.67 (19.19)	t=-0.399 df=29 p=0.693
	AMAB who were not treated as female(n=15) <sup>c</sup>	AMAB who were treated as female (n=17) <sup>d</sup>	Statistics outcomes
Total score of DFS	56.00 (17.49)	44.71 (23.09)	t=1.543 df=30 p=0.133

<sup>a</sup>: Transgender male/gender non-conforming was 15/7

<sup>b</sup>: Transgender male/gender non-conforming was 7/2

<sup>c</sup>: Transgender female/gender non-conforming was 10/5

<sup>d</sup>: Transgender female/gender non-conforming was 17/0

**Table 5:**

The results of the regression model analysis for the total score of Dental Fear Survey

	Unstandardized estimated $\beta$ -coefficients (SE)	Standardized estimated $\beta$ -coefficients	t	p	95% CI for unstandardized estimated $\beta$ -coefficient	
Sex (0: AMAB, 1: AFAB)	-5.98 (11.78)	-0.16	-0.51	0.614	-29.74	17.78
Age	0.08 (0.17)	0.07	0.48	0.633	-0.27	0.43
The fear of maltreated in a dental clinic <sup>(i)</sup>	6.05 (2.43)	0.35	2.49	0.017	1.14	10.95
Experiences of maltreatment (0: No, 1: Yes)	16.88 (8.00)	0.28	2.11	0.041	0.75	33.01
Transgender female (reference group)						
Transgender male	1.79 (13.29)	0.04	0.13	0.894	-25.01	28.58
Gender non-conforming individuals	12.20 (8.82)	0.28	1.38	0.174	-5.59	30.00
Experiencing menstrual cycle (0: No, 1: Yes)	-7.70 (8.42)	-0.18	-0.91	0.366	-24.69	9.29
Being treated as male <sup>(ii)</sup>	-1.34 (2.51)	-0.10	-0.53	0.597	-6.40	3.72
Being treated as female <sup>(ii)</sup>	-3.11 (2.55)	-0.23	-1.22	0.229	-8.25	2.03

<sup>(i)</sup>: 5-option Likert scale (1: Not at all, 5: Extremely fearful)<sup>(ii)</sup>: 5-option Likert scale (1: Not at all, 5: All the time)