

# Knowledge, attitudes, and willingness of oral health professionals to treat transgender patients

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## ABSTRACT

**Background:** Lack of knowledge about transgender patients often correlates with increased stigma and an unwillingness to provide care to this population. This study examined the knowledge, attitudes, and willingness of oral health care providers with regard to treating transgender patients. **Methods:** Dentists, mid-level providers, and dental hygienists in the United States and Canada accessed an online survey (N = 315) focused on assessing knowledge, attitudes, and willingness to provide care and/or seek additional education on treating transgender individuals. Descriptive statistical, correlational, and regression analyses were conducted. **Results:** The survey completion rate was 85% (n = 268). Respondents correctly answered an average of 70% of the knowledge questions, with 56% of participants unable to define "gender" and 66% unable to define "sex identity". Almost 1 in 4 respondents incorrectly defined a trans male or trans female, or misidentified particular health disparities experienced by transgender individuals. A lack of willingness to seek additional information on providing culturally competent care, having lower levels of knowledge, and identifying with specific religions correlated with higher levels of stigma ( $p < 0.001$ ). While US providers exhibited low stigma overall, Canadian providers, survey respondents with higher levels of knowledge, and those with transgender friends and/or family demonstrated lower levels of stigma ( $p < 0.001$ ). **Discussion and conclusions:** Transgender individuals face disparities in medical and oral health care. Based on the findings of this survey, it will be important to address factors associated with higher levels of stigma and educate oral health professionals on providing culturally competent care for transgender individuals.

## RÉSUMÉ

**Contexte :** Le manque de connaissances sur les patients transgenres est souvent associé à une exacerbation de la stigmatisation et de la réticence à fournir des soins à ce groupe. Dans le cadre de cette étude, on a examiné les connaissances, les attitudes et la disposition des fournisseurs de soins buccodentaires à l'égard du traitement des patients transgenres. **Méthodes :** Des dentistes, des prestataires de niveau intermédiaire et des hygiénistes dentaires des États-Unis et du Canada ont répondu à un sondage en ligne (N = 315) axé sur l'évaluation des connaissances, des attitudes et de la disposition à l'égard des soins ou de la recherche d'une formation supplémentaire sur le traitement des personnes transgenres. On a procédé à des analyses de statistique descriptive, de corrélation et de régression. **Résultats :** Le taux de réponse était de 85 % (n = 268). En moyenne, les répondants ont répondu correctement à 70 % des questions portant sur les connaissances : 56 % des participants n'étaient pas en mesure de définir la notion de « genre » et 66 % n'étaient pas en mesure de définir la notion « d'identité sexuelle ». Près d'un quart des répondants ont mal défini les concepts d'homme et de femme trans, ou bien ils ont fait des erreurs dans l'identification des disparités particulières en matière de santé auxquelles sont confrontées les personnes transgenres. On a établi une corrélation entre un manque de volonté quant à la recherche de renseignements supplémentaires sur la prestation de soins adaptés à la culture, un faible niveau de connaissances et l'identification à certaines religions d'une part et des niveaux de stigmatisation plus élevés d'autre part ( $p < 0,001$ ). Bien que, dans l'ensemble, on ait constaté un niveau de stigmatisation faible chez les fournisseurs des États-Unis, ce niveau était d'autant plus faible parmi les fournisseurs canadiens, les répondants dont le niveau de connaissances était plus élevé et ceux qui comptaient des personnes transgenres parmi leurs amis ou les membres de leur famille ( $p < 0,001$ ). **Discussion et conclusions :** Les personnes transgenres sont confrontées à des disparités dans les domaines des soins médicaux et buccodentaires. D'après les résultats de ce sondage, il sera important d'effectuer un travail autour des facteurs associés à des niveaux de stigmatisation plus élevés et de sensibiliser les professionnels de la santé buccodentaire à la prestation de soins culturellement adaptés auprès des personnes transgenres.

**Keywords:** attitude; barriers to care; beliefs; cultural competency; dental; dental hygienist; knowledge; oral health care; stigma; transgender; willingness

**CDHA Research Agenda categories:** access to care and unmet needs; capacity building of the profession

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## PRACTICAL IMPLICATIONS OF THIS RESEARCH

- Increasing awareness of the discrimination, stigma, and biases that transgender individuals experience in society may reduce the likelihood of perpetuating these behaviours when providing oral health care.
- Oral health professionals should recognize that their lack of knowledge and own personal beliefs may produce behaviours that are perceived as discriminatory or biased by transgender patients.
- Continuing education on how to provide culturally competent care to the transgender population would be beneficial for all oral health professionals.

## INTRODUCTION

Transgender individuals have a gender identity or gender expression that is not the same as the sex they were assigned at birth. A transgender woman lives as a woman but was assigned male at birth, and a transgender man lives as a man but was assigned female at birth.<sup>1</sup> Transgender individuals may choose to transition socially, legally, and/or physically according to how they identify.<sup>1</sup> Social and legal transitioning can include clothing choices, using pronouns for the gender they identify with, changes in appearance, and change of name.<sup>1</sup> Physically transitioning can include non-medical options, such as chest binding and tucking, as well as medical options such as gender-affirming hormonal therapy or “top surgery.”<sup>1</sup> There are over 1.4 million transgender adults in the United States (US) and an estimated 75,000 transgender individuals aged 15 years and older in Canada. Worldwide, there are an estimated 25 million transgender individuals representing diverse races, ethnicities, religions, income levels, sexual orientations, and education levels.<sup>1-9</sup>

Transgender individuals have reported discrimination, violence, bias, and stigmatization from most facets of society, including health care providers and systems.<sup>9-10</sup> While Canadian officials and organizations frequently cite the 2015 US Transgender Survey,<sup>9</sup> in 2019 the PULSE Canada project<sup>3</sup> collected data from 2,873 trans and non-binary people that highlighted health disparities and critical information similar to the 2015 American survey. In the US survey<sup>9</sup> and PULSE survey<sup>2</sup>, transgender individuals reported being verbally harassed (46% and 72%, respectively) and physically attacked (9% and 17%, respectively) because they are transgender. In addition, participants reported experiencing violence from members of their own families (10% and 6%, respectively), being forced from their homes because they are transgender (8% and 7%, respectively), and experiencing homelessness or housing insecurity at some point in their lives (30% and 22%, respectively). In the US Transgender Survey,<sup>9</sup> over 30% of respondents reported workplace mistreatment, including verbal, physical, and sexual assault, or being denied promotions or being fired because they identify as transgender. James et al.<sup>9</sup> also noted that, as compared to the general US population, more transgender individuals were living in poverty (29% versus 12%), experiencing unemployment (15% versus 5%), and were less likely to own a home (16% versus 63%). The disparities deepened when race, ethnicity, and disability were taken into account. Overall, violence, hardship, and discrimination contribute to over 40% of US<sup>9</sup> and 44.8%<sup>2</sup> of Canadian transgender individuals attempting suicide at least one time, a rate that is at least 9 times the attempted suicide rate in the US general population<sup>9</sup> and nearly 3 times the rate among the heterosexual Canadian population.<sup>2</sup> Persistent discrimination, violence, stigma, and hardship also contribute to higher rates of substance use disorders and mental health concerns in the transgender population.<sup>2,10</sup>

Alcohol, drugs, smoking, and medications used to treat mental health conditions can all have deleterious effects on oral health.<sup>11</sup> In addition, transgender individuals have a high incidence of sexually transmitted diseases (STDs), some of which can have oral manifestations and consequences.<sup>12</sup> High rates of disordered eating among transgender youth, including binge eating, fasting, and vomiting, can also impact oral health.<sup>13</sup> Direct research on the effect of cross-sex hormonal therapy on oral health in the transgender population is very limited, although a 2019 systematic review examined the effects of cross-sex drug therapy on bone mineral density in the context of dental implant placement in transgender patients.<sup>14</sup> Given their unique health care needs, transgender individuals require providers who are well educated, knowledgeable, and culturally competent. Yet, inequities continue to affect this population’s ability to obtain necessary care.

Discriminatory treatment by providers contributes to health care disparities.<sup>9</sup> James et al.<sup>9</sup> found 33% of respondents in the 2015 American survey of trans people reported at least 1 negative experience with a health care provider, including verbal harassment, being denied care or the need to educate their provider on transgender health care. These statistics were similar to findings from the Canadian PULSE survey.<sup>3</sup> According to James et al.,<sup>9</sup> 23% of transgender individuals surveyed acknowledged they avoided seeking health care when they needed it because they feared being mistreated.<sup>9</sup> The PULSE survey reported that 47% of respondents had unmet medical needs in the previous year.<sup>3</sup> Additional barriers to care included health system issues such as a lack of transgender-friendly paperwork, a lack of knowledgeable, culturally competent, and friendly staff, as well as financial issues.<sup>3,15</sup> Culturally competent providers can positively impact health care for the transgender population, but barriers currently prevent the achievement of this goal.

A lack of knowledge about the health care needs of lesbian, gay, bisexual or trans (LGBT) patients among health care providers can lead to less favourable attitudes towards transgender patients.<sup>16-20</sup> It can also result in a refusal to care for transgender patients,<sup>16</sup> an ambivalence towards providing care<sup>18</sup> or their feeling threatened by a loss of authority or a shifting balance in the patient-provider relationship, which can translate into stigma and discrimination against transgender patients.<sup>19</sup> A lack of knowledge can also contribute to the perception that providers are insensitive, ignorant or transphobic.<sup>17</sup>

Transphobia is associated with a lack of willingness to provide care to transgender individuals.<sup>21-23</sup> Providers may exhibit “tacit stigma” in the form of an unwillingness to provide care, despite evidence-based guidelines.<sup>21</sup> Vance et al.<sup>24</sup> also observed that some providers were discouraged from providing care by colleagues, community physicians, unsupportive administrators, a lack of training in transgender care, as well as personal, religious or

cultural objections to providing transgender medical therapy. Research shows that the willingness to care for transgender individuals is associated with clinicians' previous experience with transgender care, education on and knowledge about transgender care, and confidence in providing care to these individuals.<sup>21-24</sup>

While medical research has examined the knowledge, attitudes, and willingness of providers to treat transgender patients, no oral health research on this topic has been conducted to date. With the scarcity of primary research on the oral health of transgender individuals, oral health care providers may have similar shortfalls in their knowledge and, thus, similar attitudes towards transgender patients. To fill this gap in the literature, this study examined the knowledge, attitudes, and willingness of oral health care professionals to treat transgender patients.

## METHODS

This study was granted exempt status through MCPHS University's institutional review board for research protocols in accordance with the revised Common Rule at 45 CFR 46 104(d)(2)(i) and assigned protocol number IRB040921B. A cross-sectional survey research design was used to examine the knowledge, attitudes, and willingness of a non-probability sample of oral health care providers using a web-based platform (Qualtrics<sup>SM</sup>).

### Study population

Inclusion criteria stated research participants had to be dentists, dental hygienists or mid-level providers in the US or Canada, providing patient care, and able to read English. Those who did not meet these criteria were excluded from participation.

An a priori power analysis to determine the needed sample size was conducted using G\*Power 3.1.<sup>25</sup> For all measures, the following parameters were used:  $\alpha = 0.05$  and  $\beta = 0.8$ . Based on previous work using the Transgender Stigma Scale (TSS) and vignettes,<sup>21,26</sup> the effect size of this study was expected to be medium ( $f^2 = 0.15$ ) according to Cohen's criteria.<sup>27</sup> For the planned multiple regression with 3 predictors, the suggested minimum size was 77 completed surveys. The planned chi-square analysis using a 2 x 3 contingency table ( $w = 0.3$ ,  $df = 5$ ) required a total sample size of 143 to reach 80% power.

### Instrument

The final survey instrument contained 39 items in the following sections: demographics (16 items), the Transgender Stigma Scale (TSS)<sup>21</sup> (12 items), knowledge (7 items), and willingness vignettes (4 items). The TSS used a 5-point Likert scale (1 = strongly agree to 5 = strongly disagree). The TSS has a high level of internal reliability (Cronbach's  $\alpha = 0.89$ ). For this study, the word "office" replaced "clinic" in the question, "I would prefer colleagues did not refer transgender women to my office," as this word is more commonly associated with dental or dental hygiene practices.

The knowledge questions were developed in collaboration with a transgender individual and based on recommendations made by Russel and More<sup>11</sup> on how oral health care providers can improve LGBT oral health care. The items were designed to measure the level of foundational knowledge, a predictor variable for willingness and stigma, which is a specific type of attitude. The 4 willingness vignettes were also developed in collaboration with a transgender individual. Two vignettes examined the willingness of oral health care providers to see and/or accept a transgender patient in their schedules based on a 6-point Likert scale (1 = completely unlikely to 6 = extremely likely).<sup>26</sup> Two vignettes asked respondents to rank their level of willingness to participate in 4 activities of varying time and effort related to educating themselves on providing care to transgender patients, including an option to "not seek additional information" (1 = most willing and 5 = least willing).

Because the knowledge questions and willingness vignettes were developed for this study, validation was conducted with a panel of experts ( $N = 8$ ) consisting of 2 dentists, 1 medical student, 4 dental hygienists, and 1 psychology professor. The panel included members of the LGBTQIA+ community, oral health care professionals with experience in providing care to transgender individuals, and those who did not have experience but were members of the target audience. Revisions were made based on recommendations. The questions and vignettes regarding foundational knowledge and willingness were assessed for relevance to the aims utilizing the content validity feedback form. All survey questions and vignettes were graded using a 4-point scale (1 = not relevant to 4 = highly relevant). The Individual Content Validity Index (I-CVI) was computed as the number of experts in agreement with a rating of 3 or 4, divided by the number of experts, or a proportion of experts in agreement about the relevance.<sup>28</sup> The Summary Content Validity Index (S-CVI) was computed by taking the I-CVI for each item in the survey and then computing the average of all I-CVI. The S-CVI/avg was 0.965.

Pilot testing of the survey was conducted using 12 individuals who met the study's inclusion criteria. Participants for the pilot testing were based in the US and were asked to provide feedback on the survey's length and clarity. Their responses were not included in the final analysis.

### Procedure

Owners and moderators of 17 dental hygiene professional Facebook pages from the US and Canada were contacted through their specific pages to request permission to post the invitation to participate in the study. Once approval was obtained, the invitation was posted on the social media site. State and provincial dental and dental hygiene associations were emailed and asked to disseminate the invitation to participate via member mailing lists, social media sites or their websites. The link in the invitation took

Table 1. Characteristics of participants (N = 268)

Variable	N	%
<b>Age (years)</b>		
Mean (SD)	43.2 ( $\pm$ 12.60)	
Under 25	18	6.7
26 to 35	70	26.1
36 to 45	69	25.7
46 to 55	57	21.3
55 and older	54	20.1
<b>Gender</b>		
Male	13	4.9
Female	253	94.4
Gender variant	2	0.7
<b>Sexual orientation</b>		
Heterosexual	245	91.4
Homosexual	6	2.2
Bisexual	15	5.6
Asexual/other	2	0.7
<b>Race (1 missing response)</b>		
African American	1	0.4
Black	3	1.1
Asian	9	3.4
Caucasian	241	90.3
Native American	1	0.4
Biracial/multiracial	8	3.0
Prefer not to answer	4	1.5
<b>Ethnicity</b>		
Hispanic/Latino/Spanish origin	13	4.9
Not Hispanic/Latino/Spanish origin	246	91.8
Prefer not to answer	9	3.4
<b>Religion</b>		
Christian	111	41.4
Muslim	2	0.7
Catholic	56	20.9
Jewish	10	3.7
No religious affiliation	78	29.1
Prefer not to answer	3	1.1
Another religion	8	3.0

Continued...

potential respondents to the informed consent statement. After review, the potential respondent could click “yes” if they agreed to participate and were then able to access the survey. If they clicked “no,” they exited the survey. Participants did not receive an incentive to participate. A reminder was posted to social media sites weekly, and the survey remained open for 6 weeks. The data were then downloaded into spreadsheets for analysis.

### Analysis

Descriptive statistics were used to provide an overview of the sample characteristics. When possible, the 95% confidence interval and effect size for a given statistic were reported. To measure attitudes towards transgender individuals, the

Table 1. Continued

Variable	N	%
<b>Entry-level credential earned</b>		
Certificate (DH)	32	11.9
Associate (DH)	136	50.7
Bachelor's (DH)	61	22.8
Bachelor's (mid-level provider)	5	1.9
Master's (mid-level provider)	14	5.2
Doctorate (DDS/DMD)	20	7.5
<b>Highest credential earned</b>		
Certificate	24	9.0
Associate degree	89	33.2
Bachelor's degree	84	31.3
Master's degree	47	17.5
Doctorate	24	9.0
<b>Country of practice</b>		
Canada	48	17.9
United States	220	82.1
<b>Practising as a:</b>		
Dental hygienist	227	84.7
Mid-level provider	21	7.8
Dentist	20	7.5
<b>Years in practice (1 missing response)</b>		
Mean (SD)	17.52 ( $\pm$ 12.95)	
<5 years	52	19.4
6 to 10 years	50	18.7
11 to 20 years	72	26.9
21 to 30 years	37	13.8
>31 years	56	20.9
<b>Do you have friends or family who are transgender?</b>		
Yes	88	32.8
No	180	67.2

scale scores for the TSS and willingness were scored and reported according to the recommendations of the scale creators. Spearman's rank-order correlations were used to identify relationships between the items or scales of the TSS and willingness. If scores were recoded as categorical, then chi-square tests of independence were calculated.

To measure oral health professionals' level of foundational knowledge about transgender individuals, respondents' answers to the knowledge items were first coded as correct or incorrect. The frequency and percentage of correct responses for each item were reported in addition to the frequency and percentage of total correct answers to all foundational knowledge items.

Table 2. Knowledge related to transgender individuals (N = 268)

	Incorrect		Correct	
	n	Valid	n	Valid
Gender refers to _____?	151	56.3	117	43.7
<i>Correct response:</i> The social constructs of being male or female such as behaviours and roles.				
When a patient comes to the office who identifies as male, but was assigned female at birth, the individual should be recognized as a _____.	74	27.6	194	72.4
<i>Correct response:</i> Transgender male				
What is the definition of "sex identity"?	176	65.7	92	34.3
<i>Correct response:</i> The marker assigned based on genital appearance at birth.				
A patient's preferred pronoun is decided by _____.	25	9.3	243	90.7
<i>Correct response:</i> Asking the patient how they would like to be addressed.				
All of the following represent ways a transgender individual can express themselves, EXCEPT one. Which one is the EXCEPTION?	5	1.9	263	98.1
<i>Correct response:</i> Education level				
What term is an appropriate description of an individual who has transitioned from male to female?	59	22	209	78
<i>Correct response:</i> Trans female				
Compared to the general population, transgender individuals may experience all of the following EXCEPT one. Which one is the EXCEPTION?	73	27.2	195	72.8
<i>Correct response:</i> Low unemployment rates				

A variety of methods was used to model relationships between demographic characteristics, instrument items, and subscales. Spearman's rank-order correlations assessed the relationship between TSS, knowledge or willingness item scores, and ordinal/continuous demographic variables. A one-way ANOVA was used to test for differences in mean TSS, knowledge or willingness scores across demographic categories (e.g., education level). A single categorical demographic variable was entered as the independent variable and instrument scale scores as the dependent variable. If the F tests' alpha level was below 0.05, then post hoc pairwise comparisons were conducted to identify which mean scores of demographic categories differed. If scale scores did not meet normal distribution assumptions, then the non-parametric alternative Kruskal-Wallis test was employed. In the case of demographic variables with only 2 groups, an independent groups t-test or Mann-Whitney U test was used to analyze differences in scale scores. The 2-group demographic variables were entered as the independent variable, and the TSS, knowledge or willingness scores served as the dependent variable.

A total of 4 multiple linear regression models were used to examine the predictive relationship between willingness, TSS, and knowledge scores. Responses to willingness

vignettes were regressed onto the TSS scores and total number of correct knowledge items. Demographic variables that were shown to be related to willingness in the earlier stages of analysis were entered as potential covariates. Multiple regression analyses allowed the measurement of the relationship between the predictor and outcome after accounting for intercorrelations between predictors. This measurement is susceptible to inflated F values as the number of predictors increases. Therefore, only TSS items or scales determined to be significantly correlated prior to regression were entered into the initial model.

The critical cutoff alpha level for this study was  $p = 0.05$ . Non-parametric statistical methods were used when the variables did not meet assumptions based on the normal distribution. All analysis was conducted using SPSS version 27.

## RESULTS

A total of 315 individuals accessed the survey and 268 completed at least 80% of the responses. Their responses were included in the analyses, giving a completion rate of 85%. Dental hygienists were the predominant responding population (n = 227, 85%, Table 1). Over 33% (n = 89) of respondents reported an associate degree as their

Table 3. Willingness vignettes (N = 268)

Statement	n	%
You are at the front desk and learn a transgender patient has been scheduled to see you next week. How likely would you be to ask to have this patient scheduled with another provider?		
Completely unlikely	252	94
Unlikely	12	4.5
Somewhat unlikely	1	0.4
Somewhat likely	–	–
Likely	–	–
Extremely likely	3	1.1
Your colleague tells you they have a transgender patient in their schedule they are not comfortable treating, and they ask you to take the patient for them. How likely are you to agree to take this patient?		
Completely unlikely	2	0.70
Unlikely	2	0.70
Somewhat unlikely	–	–
Somewhat likely	3	1.1
Likely	34	12.7
Extremely likely	227	84.7

Table 4. Willingness of oral health care providers to seek additional knowledge (N = 268)

	1 = most willing % (n)	2 % (n)	3 % (n)	4 % (n)	5 = least willing % (n)	Mean (SD)
<b>On my own time, I am willing to:</b>						
Spend 20 minutes reading an article on transgender oral health	25.7 (69)	29.9 (80)	20.5 (55)	22 (59)	1.9 (5)	2.43 (1.13)
Spend 20 minutes searching for and reading evidence-based information online about the oral health needs of transgender patients	14.2 (38)	28.0 (75)	29.5 (79)	23.1 (62)	5.2 (14)	2.74 (1.13)
Spend about 20 minutes listening to a transgender individual speak about discrimination and bias experienced in healthcare in a TED Talk	24.3 (65)	22.0 (59)	28.0 (75)	21.6 (58)	4.1(11)	2.56 (1.18)
Attend a virtual, live CE course on providing culturally competent care to transgender individuals	19.4 (52)	19.0 (51)	19.4 (52)	28.7 (77)	13.4 (36)	3.03 (1.32)
Not seek additional information	16.4 (44)	1.1 (3)	2.6 (7)	4.5 (12)	75.4 (202)	4.25 (1.47)
<b>During my work hours, I am willing to:</b>						
Spend 20 minutes reading an article on transgender oral health	30.6 (82)	27.2 (73)	18.3 (49)	21.6 (58)	2.2 (6)	2.30 (1.17)
Spend 20 minutes searching for and reading evidence-based information online about the oral health needs of transgender patients	13.1 (35)	38.8 (104)	27.6 (74)	17.4 (46)	3.4 (9)	2.59 (1.01)
Spend about 20 minutes listening to a transgender individual speak about discrimination and bias experienced in healthcare in a TED Talk	13.4 (36)	19.8 (53)	34.3 (92)	26.1 (70)	6.3 (17)	2.88 (1.11)
Attend a virtual, live CE course on providing culturally competent care to transgender individuals	26.1 (70)	12.7 (34)	16.8 (45)	32.1 (86)	12.3 (33)	3.01 (1.38)
Not seek additional information	16.8 (45)	1.5 (4)	3.0 (8)	3.0 (8)	75.5 (203)	4.23 (1.51)

Table 5. Transgender Stigma Scale (n = 234)

Statement	Strongly agree % (n)	Somewhat agree % (n)	Neutral % (n)	Somewhat disagree % (n)	Strongly disagree % (n)	Total score
If I found out that my best friend was changing their sex I would not support him/her.	13.8 (37)	3.7 (10)	10.1 (27)	7.8 (21)	64.6 (173)	521
Changing one's sex is an affront to God.	7.8 (21)	6.3 (17)	14.9 (40)	9.7 (26)	61.2 (164)	509
Men who act like women should be ashamed of themselves.	0.7 (2)	3.5 (9)	8.2 (22)	10.1 (27)	77.6 (208)	374
Children should play with toys appropriate to their own sex.	1.9 (5)	2.6 (7)	7.1 (19)	14.6 (39)	73.9 (198)	386
Men who see themselves as women have a mental health problem.	2.6 (7)	10.8 (29)	10.8 (29)	13.4 (36)	62.3 (167)	477
Feminine boys should be treated for their problem by a qualified health professional. (1 response missing)	0.7 (2)	2.6 (7)	8.6 (23)	15.0 (40)	73.0 (195)	382
I would discourage my son/daughter from having a transgender friend.	1.5 (4)	3.0 (8)	6.7 (18)	9.3 (25)	79.5 (213)	369
Sex change operations are morally wrong.	6.0 (16)	5.6 (15)	11.9 (32)	11.9 (32)	64.6 (173)	473
Feminine men make me feel uncomfortable.	1.1 (3)	3.4 (9)	7.1 (19)	12.3 (33)	76.1 (204)	378
People are either men or women; there should be no middle point.	13.8 (37)	8.2 (22)	10.4 (28)	18.3 (49)	49.3 (132)	587
I would prefer colleagues did not refer transgender women to my office.	0.4 (1)	0.4 (1)	4.1 (11)	5.6 (15)	89.6 (240)	312
I would avoid sharing a practice with a colleague that provides services to transgender women.	-	-	3.0 (8)	2.6 (7)	94.4 (253)	291

highest academic credential, with 82% (n = 220) practising in the US and 18% (n = 48) in Canada. The majority of respondents (n = 111, 41.4%) identified as Christian and nearly 21% (n = 56) identified as Catholic, while 29% (n = 78) reported no religious affiliation (Table 1). Over 91% (n = 245) of participants identified as heterosexual, 9% (n = 23) identified as homosexual, bisexual, “other” or preferred not to answer (Table 1). Respondents averaged 17.52 years in practice (±12.95). Over 67% (n = 180) of respondents did not have friends or family who were transgender (Table 1).

The results of the knowledge questions are reported in Table 2. The average number of correctly answered items was 4.90 out of 7 (SD = 1.30). The majority of respondents correctly identified how a transgender individual might express themselves (98%) and how to determine a patient’s preferred pronoun (91%). When asked about the appropriate term to describe an individual who has transitioned from male to female, 78% answered correctly, whereas, when asked the correct term for an individual assigned female at birth but who identifies as male, slightly less knew the correct answer (72%). When asked what the term “gender” refers to, approximately 56% could not answer correctly. Finally, over 27% of respondents did not identify that transgender individuals experience higher rates of substance abuse, domestic abuse or suicide compared to the general population.

The results of the willingness vignettes are reported in Table 3. When providers were asked how likely they were to request to have a transgender patient moved from their schedule to another provider’s schedule, the vast majority reported they were “completely unlikely” or “unlikely” to do this (94% and 4.5%, respectively). When asked if they were willing to take a transgender patient from another provider who is not comfortable treating a transgender patient, 85% said it was “extremely likely,” with nearly 13% reporting it was just “likely” they would.

The second set of vignettes examined respondents’ willingness to seek additional information on providing care to transgender individuals either on their own time or during work time when it might be paid. In both scenarios, respondents were most willing to spend 20 minutes reading an article on transgender oral health, although more preferred to do this during work hours (Table 4). Twenty-four percent of respondents were willing to spend 20 minutes of their own time listening to a transgender individual speak about discrimination and bias in health care via a TED talk, whereas 26% were willing to attend a virtual, live continuing education course on providing culturally competent care to a transgender individual during work hours. Searching for and reading evidence-based information online about the oral health needs of transgender patients was similarly ranked for both

scenarios. In both scenarios, over 16% of respondents ranked “they would not seek additional information” as their first choice.

Stigma was measured using the Transgender Stigma Scale (TSS), with results reported in Table 5. Responses were assigned a point value from 1 (no stigma) to 5 (high stigma). Items were summed to create the total score, with higher scores indicating a higher level of stigma.<sup>21</sup> Scores for the TSS statements ranged from 291 to 587, with a mean score of 420 (SD = 89.4), indicating that the sample group had low overall transgender stigma, even though some statements scored higher. Twenty-two percent of respondents agreed people are either men or women and there should be no middle point. Over 14% of respondents agreed with the statement that changing one’s sex was an affront to God. Almost 18% said they would not support their best friend if he or she decided to change their sex. Finally, almost 12% of respondents agreed that sex change operations were morally wrong.

The results of the TSS were compared to the results of the knowledge questions and demographic characteristics. A Spearman’s correlation coefficient showed a higher number of correctly answered items was related to a lower TSS score or lower transgender stigma ( $\rho = -0.37, p < 0.001$ ). A Mann-Whitney U test compared the TSS scores with respondents with or without transgender friends and/or family. Participants with a transgender friend and/or family member had a lower TSS score (Mean[M] = 1.32, SD = 0.54) compared to those without (M = 1.69, SD = 0.77,  $p < 0.001$ ).

Comparisons of the TSS to demographic variables revealed that religious identification and country of practice were related to higher TSS scores, while age, years of practice, and education level were not. Although the sample group had low stigma overall, Canadian practitioners had a lower TSS score (M = 1.23, SD = 0.41) than their American counterparts (M = 1.64, SD = 0.75,  $p < 0.001$ ). A Kruskal-Wallis test revealed a difference in TSS scores between those who identify as Christian, Catholic or had no religious affiliation ( $p < 0.001$ ). Post hoc pairwise comparisons using Mann-Whitney U tests showed Christians had higher TSS scores (M = 1.82, SD = 0.76;  $p < 0.001$ ) than Catholics (M = 1.55, SD = 0.76;  $p = 0.004$ ) and those with no religious affiliation (M = 1.22, SD = 0.42;  $p < 0.001$ ). Catholics had a higher mean TSS score than those with no affiliation ( $p = 0.003$ ). Kruskal-Wallis tests confirmed that age ( $\rho = -0.05, p = 0.40$ ), years of practice ( $\rho = 0.01, p = 0.91$ ), and the level of dental hygiene education ( $p = 0.18$ ) or highest credential obtained ( $p = 0.23$ ) did not correlate with higher TSS scores.

## DISCUSSION

The purpose of this study was to examine the knowledge, attitudes, and willingness of oral health care providers to treat transgender patients. The research aims included measuring attitudes of oral health professionals towards transgender individuals utilizing the TSS, the level of

foundational knowledge possessed by said providers, and models of inter-relationships between demographics, stigma, willingness, and knowledge.

A key part of this research examined the level of foundational knowledge oral health care providers possessed about transgender individuals, as it is often a predictor variable for willingness and attitudes. About two-thirds of participants could not define the terms “gender” and “sex identity”; roughly one-quarter of the participants could not define “trans male” or “trans female”. One participant commented on social media that they were glad they took the survey because they did not realize how little they knew about transgender individuals. When examining the data, the authors found respondents skipped some knowledge questions but answered others, suggesting they may not have known the answer. Previous research showed that providers who were less knowledgeable about transgender patients had less favourable attitudes and higher levels of discrimination, or were perceived to be transphobic when interacting with transgender patients.<sup>17-20</sup>

Increasing awareness of the unique health needs of transgender individuals is crucial. In addition, there is a need for more educational opportunities to inform current and future oral health professionals on providing culturally competent care, especially as cultural differences have been cited as barriers to care.<sup>23</sup> While continuing education (CE) opportunities on providing culturally competent care to lesbian, gay, bisexual, trans or queer (LGBTQ) patients are slowly growing, oral health care providers may be indifferent to expanding their knowledge about this community, as evidenced by the approximately 16% of respondents in this study who did not feel the need to seek additional information about transgender oral health care and the 16% who reported the same in a 2022 study that focused on the LGBTQ+ population as a whole.<sup>34</sup> This indifference may be due to discomfort with the topic, a perception they do not need additional information on the topic, stigma, bias or discrimination. Previous research found 48% of dental hygiene programs and 29% of dental programs had no curriculum hours devoted to LGBTQ content,<sup>29</sup> suggesting the need for increased education in entry-level oral health professional programs. In addition, few states or provinces require CE in cultural competency as part of licence renewal, and only the District of Columbia in the US requires that some proportion of the CE credits be focused on LGBTQ+ patient care.<sup>35</sup> While requiring LGBTQ+ specific CE credits is admirable, at minimum, licensing bodies should require that a specific number of CE hours be devoted to cultural competency. There is also the need for primary research in the oral health field to examine the effects that gender-affirming hormonal therapy may have on the oral cavity,<sup>14</sup> allowing for the development of evidence-based guidelines to inform clinical practice.

This study utilized the TSS to measure the level of stigma among oral health care providers against



transgender identities. Stigma occurs when a person disapproves or discriminates against an individual because of something which sets that individual apart from others in the population, such as their culture, sex, gender or socioeconomic status. In this study, religion positively correlated with higher levels of stigma associated with most statements, but especially the idea that sex is binary (male or female) with no middle point and that changing one's sex is an affront to God. These correlations were also observed in Madera et al.<sup>21</sup> Religion and levels of religiosity correlate with conscious and unconscious stigma, also known as tacit stigma, and a lack of willingness to provide medical care to transgender patients.<sup>18,21,23,32</sup> Further research is needed to determine if religion or high levels of religiosity contribute to a lack of willingness to treat and/or tacit stigma in oral health care. In addition, further analysis is required to determine if a lack of knowledge is associated with lower levels of confidence and comfort, as well as higher levels of stigma among oral health care providers. If this is true, additional research could examine not only if participation in CE opportunities improves confidence and comfort, but also if raising awareness of discrimination, stigma, and bias against transgender individuals reduces levels of stigma.

In this study, participants reported a high level of willingness to see transgender patients. This willingness suggests a positive foundational attitude. However, providers who are willing to provide care may be uncomfortable doing so,<sup>16</sup> which can lead to the perception they are transphobic.<sup>17</sup> In addition, willingness to see a transgender patient does not necessarily mean there is no stigma or bias, which can lead to microaggressions against these individuals once they are in the office, especially in light of the gaps in knowledge observed in this study. Providers who express a willingness to provide care to transgender patients may be more likely to seek out additional educational experiences, which will serve to increase their knowledge and thus comfort and confidence. The vignettes, which asked participants to rank their willingness to seek additional information through educational opportunities of increasing effort, may suggest ways providers are most likely to advance their knowledge, guiding authors and educators in the best approaches to disseminate information about providing care to transgender patients. A 2019 systematic review<sup>30</sup> examined the effectiveness of programs designed to reduce provider bias against LGBTQ individuals and found the most effective training programs involved a member of the LGBTQ community as a tutor or in patient panels.<sup>31</sup> Oral health programs and educators involved in developing CE opportunities should consider the concept of “if for me, then with me” during course development. In other words, if educational programs are developed to increase knowledge about transgender individuals, they should include members of this community.

### Strengths and limitations

This study had several strengths. First, it utilized the previously psychometrically validated and highly reliable TSS. Second, the willingness vignettes and knowledge questions were developed in collaboration with a transgender individual and validated for content.

The study limitations include non-probability sampling, which limits generalizability with a relatively small sample, considering the number of potential respondents on some social media sites. The small sample size could indicate bias against the subject matter. When eliminating incomplete data, it was noted that most participants who did not complete the survey stopped at the TSS, possibly indicating potential personal discomfort with those questions. In addition, the TSS used a 5-point Likert scale with “neutral” as the middle point. The authors scored neutral responses with a 3, suggesting “neutral” indicated a higher level of stigma as compared to “somewhat” or “strongly” disagreeing. For several items in the TSS, the number of neutral responses was close to, or as high as, the number who agreed with the statement. The use of neutral, especially on sensitive topics, has been disputed.<sup>36</sup> Respondents may choose the neutral response because they don't want to truly consider their answer. Neutral responses may indicate ambivalence. Research has shown respondents are more likely to choose the neutral response when they have conflicting thoughts or feelings on a topic, or when they are hesitant to choose a response that may not be socially acceptable.<sup>36</sup> When transcribing the TSS Likert scale into Qualtrics, the word “strongly” was accidentally omitted from “strongly agreed”. However, analysis showed this error did not affect the internal reliability of the instrument. Finally, the authors were unable to confirm if respondents were truly “practising” and, as previously noted, there is the potential of social desirability bias, especially in the willingness vignettes, and respondents could be prone to recall, self-reporting, and self-selection bias.

### CONCLUSION

In this study, the potential impact of knowledge on willingness to treat and stigma was explored. After significant investigation of the literature, this appears to be the first study to examine these topics in dentistry and dental hygiene. Educating oral health care providers as students and later in CE courses, utilizing proven and effective programs, may help to increase knowledge, confidence, and comfort in providing care to transgender patients. Having increased knowledge and skills in providing care to this population could potentially reduce actual or perceived stigma in the future. Suggestions for further research include follow-up interviews with oral health professionals to better understand their views, and replication of this study

with increased dissemination to a broader audience of oral health professionals via the participation of an increased number of professional organizations.

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### CONFLICTS OF INTEREST

The authors have declared no conflicts of interest.

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