

**Increasing Certified Registered Nurse Anesthetist (CRNA) Knowledge and Comfort  
in the Care of Transgender Patients**

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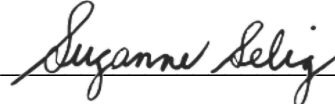
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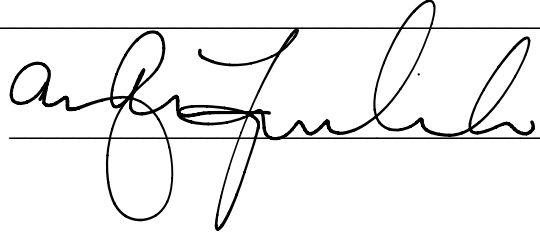
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## Abstract

**Background and Purpose:** Disparagement, discrimination, and social stigma affect a transgender individual's way of life. This treatment comes from family, community and frequently healthcare providers. Minimal to complete lack of transgender education in nursing and medical school programs have contributed to the deficiency of knowledge and comfort healthcare providers have in caring for transgender patients. The aim of this scholarly project was to examine whether an online-education module would increase the knowledge and comfort of Certified Registered Nurse Anesthetists (CRNAs) in caring for transgender patients.

**Subjects and Methods:** CRNAs from a Midwest, academic medical center (N=318) were invited to participate in the study. A pre-survey, an online-education module, and a post-survey were used. Comparison was made between the pre- and post-surveys, which measured the knowledge and attitudes CRNAs' had about transgender patients. The three parts of the study (pre-survey, online-education module, and post-survey) were conducted in October 22, 2019. Each part of the study lasted for two weeks; moving from the pre-survey, to the online-education module, then the post-survey. The surveys were conducted using RedCap and the online-education module was conducted using MyLearning.

**Results:** Of the 318 CRNAs, 154 (48%) completed the pre-survey, 173 (54%) completed the post-survey, and 218 (69%) completed the online educational module entitled, "Transgender Education and Anesthetic Considerations." Using the Wilcoxon Rank Sum test, the total knowledge scores were compared between the pre- and post- surveys revealing statistical significance at a p value of <0.001. Using Cochran Armitage Trend test, seven of the eleven questions about CRNA attitudes showed a statistically significant (p value < 0.05) positive change between the pre- and post- surveys.

**Discussion and Conclusion:** This study illustrated that a computer-based learning module increased the knowledge and comfort level of CRNAs when providing care to transgender patients. There are no studies identified in the published literature that addressed the knowledge and comfort level of CRNAs in caring for transgender patients. This study is intended to fill this gap and provides a much needed source of knowledge on this topic for this particular group of healthcare providers.

**Keywords:** Transgender care, CRNAs, knowledge, comfort

## Introduction

A discussion on transgender patients must begin with a distinction between sex and gender. According to the World Professional Association for Transgender Health (WPATH), “sex is assigned at birth as male or female and is usually based on the appearance of the external genitalia.”<sup>1(p97)</sup> Gender refers to “the social construct of what a society, culture, family, or peers consider maleness/femaleness.”<sup>2(p603)</sup> Gender identity is an internal sense an individual has of being a man/male or woman/female, or something in between.<sup>1</sup> Individuals who belong to the transgender community identify with the gender opposite the gender they were born with. Transgender females believe they are genuinely female, while transgender males believe they are genuinely male. The transgender community is a diverse group that faces unique challenges. Pleak states, “because the sense of maleness/femaleness is so certain and unquestioned by the majority of people, most have difficulty understanding this feeling in others, especially in the absence of observable differences.”<sup>2(p603)</sup> Marginalization, discrimination, and social stigma affect a transgender individual’s way of life. Mistreatments begin within their own families. There is discrimination and lack of acceptance from loved ones when someone decides to live his or her true self. This frequently leads to being cast out into the streets with only themselves or friends to lean upon. Our “Western culture” believes in a “binary” system of sex only being male or female, and gender only being boy/man and girl/woman.<sup>3</sup> In this system, there is no fluidity between these dual systems of sex and gender. An individual is not allowed to be on the spectrum of being male, female, or somewhere in between. According to Merryfeather and Bruce, “if people do not perform

in the gender style that is considered appropriate, it is an indication that they are sick in some way or that errors in socialization occurred during their formative years.”<sup>3(p114)</sup>

Merryfeather and Bruce explain the idea of discourse by stating, “discourse from a critical perspective refers to a manner of thinking that is often taken for granted, unexamined, and operates subliminally. Discourses shape our lives and guide us in making meaning of our perceptions and experiences.... Discourses of gender are generated and reinforced in society through the power of institutions and social conventions that determine and support a particular manner of thinking.”<sup>3(p112)</sup>

Merryfeather and Bruce states that “dominant discourse defines the margins of acceptability as well as who falls outside those margins.”<sup>3(p112)</sup> They further explain that “our Western society has a pervasive and dominant gender schema. We live in a world that is strictly divided into binary opposites: male and female, black and white, right and wrong.”<sup>3(p112)</sup> A transgender or gender non-conforming person does not fit within this architecture of gender. Their existence “beyond the margins can mean verbal or physical attack and, in some cases, death.”<sup>3(p112)</sup>

Since transgender people do not fall within socially accepted parameters they are not seen or acknowledged, which creates an environment of “invisibility”.<sup>3(p112)</sup> Imagine a world in which the core of one’s being goes unrecognized – within the family, in schools, when one seeks employment, or when one needs social services such as health and housing. There would be no easy way of accessing any of the institutions and services that others take for granted because of this rejection.<sup>3</sup> Although transgender people face concerns similar to the general population, they are at a greater disadvantage. Findings of the 2015 United States Transgender Survey (USTS) “reveal disturbing

patterns of mistreatment and discrimination.”<sup>4(p2)</sup> As reported by the survey, “the distinction between transgender people completing the survey and the U.S. population are startling when it comes to the most basic elements of life, such as finding a job, having a place to live, and accessing medical care.”<sup>4(p2)</sup> According to Dr. Todd Nippoldt, an endocrinologist from Mayo Clinic in Rochester, Minnesota “a disproportionate number of transgender people are uninsured and 19 percent have been denied care by health care providers.... transgender individuals have suffered some form of maltreatments at the hands of medical providers, including harassment and violence.”<sup>5(p1)</sup> This has contributed to a high rate of suicide among transgender individuals.<sup>5</sup> According to a National Transgender Discrimination Survey by the American Foundation for Suicide Prevention and the William’s Institute, 4.6 percent of the general U.S. population has self-reported attempting suicide; the number increased between 10 and 20 percent for lesbian, gay, and bisexual respondents; while 41 percent of transgender respondents have attempted suicide.<sup>6</sup>

“The Mayo Clinic Transgender and Intersex Specialty Care Clinic (TISCC) was developed to provide for the mental health, hormonal and surgical needs of transgender patients, as well as those with differences of sexual development (DSD), also referred to as intersex.”<sup>5(p1)</sup> Gender or sex reassignment surgeries (SRS), also known as gender confirming surgeries, began in 2017 at Mayo Clinic in Rochester, Minnesota with the arrival of two qualified plastic surgeons. According to one of the surgeons, Dr. Oscar Manrique, there is an increased demand for gender confirming surgery at Mayo Clinic, especially vaginoplasties. Since gender confirming surgeries began in 2017, there have been 102 vaginoplasties performed at Mayo Clinic, Rochester. Currently (as of February

18, 2020), there are 35 vaginoplasties approved and waiting to be scheduled. The typical wait time is 8-12 months. The anesthesia department at Mayo Clinic provides the anesthetic needs for gender confirming surgeries. The increase in transgender patients necessitates the need for culturally competent education for Certified Registered Nurse Anesthetists (CRNAs) who care for these patients.

There is a lack of education regarding transgender patients and their care among the CRNAs at Mayo Clinic. This research project aims to answer the following question: Would a computer-based learning module increase the knowledge and comfort level of CRNAs when providing care to transgender patients?

### **Literature Review**

The transgender community is a unique group facing a multitude of social and health challenges. According to the Transgender Discrimination Survey, “transgender and gender non-conforming people face injustice at every turn: in childhood homes, in school systems that promise to shelter and educate; in harsh and exclusionary workplaces; at the grocery store; the hotel front desk, in doctors’ offices and emergency rooms; before judges; and at the hands of landlords, police officers, health care workers and other service providers.”<sup>7(p2)</sup>

The transgender community experiences a large quantity of discrimination and mistreatment leading to economic and health disparities.<sup>4,7</sup> The 2015 United States (US) Transgender Survey examined the experiences of transgender people in many areas. This was “the largest survey examining the experiences of transgender people in the United States, with 27,715 respondents from all 50 states, the District of Columbia, American Samoa, Guam, Puerto Rico, and United States military bases overseas.”<sup>4(p2)</sup> The

overarching themes were: “pervasive mistreatment and violence;”<sup>4(p2)</sup> “severe economic hardship and instability; [and] harmful effects on physical and mental health.”<sup>4(p3)</sup>

The discrimination and mistreatment of transgender people begins at home. The 2015 US Transgender Survey revealed that, “ten percent of those who came out to their immediate family reported that a family member was violent towards them because they were transgender, and 8% were kicked out of the house for being transgender.”<sup>4(p6)</sup> Society has provided their own mistreatments and discrimination through school, work/employment opportunities, and government services (i.e., public offices and officers such as police). In school (K-12), those who were or were perceived to be transgender were exploited in various ways: “54% were verbally harassed, 24% were physically attacked, 13% were sexually assaulted, and 17% left school as a result of the severe mistreatments.”<sup>4(p9)</sup> The unemployment rate is three times higher in the transgender community than in the U.S. population. Of those with jobs, work life is not easy. Based on this same survey, “thirty percent of respondents who had a job... were fired, denied a promotion, or [experienced] mistreatment [in various forms (verbal and physical persecution/aggression)] related to their gender identity or expression.”<sup>4(p11)</sup>

Social services have also been disappointing for the transgender community. Many have experienced homelessness at some point in their lives. Respondents of the 2015 US Transgender Survey stated that they had “experienced housing discrimination (23%) in the form of eviction or denial of home/apartment, along with further mistreatment during time spent in shelters. Seventy percent of respondents who stayed in shelters reported being harassed, sexually or physically assaulted, or kicked out.”<sup>4(p11)</sup> Law-enforcement has also added to the problem. Grant et al reported that “one fifth



(22%) of transgender people who had interacted with police reported harassment, and 6% of transgender individuals reported that they experienced bias-motivated assault by officers.”<sup>7</sup> Grant et al also disclosed that “black transgender people reported much higher rates of biased harassment (38%) and assault (15%) from police officers.”<sup>7(p160)</sup>

There are significant health inequalities between the general population and the transgender community.<sup>8</sup> These differences lead to significant morbidity and mortality. A common health disparity is lack of access to primary healthcare. Primary care has been touted as a “determinant of health equity.”<sup>9(p217)</sup> According to Edmiston et al, “primary care is the first point of entry into the healthcare system for most undiagnosed patients...[and] encompasses care for most basic medical needs and also includes health education, health maintenance, disease prevention, diagnosis, and treatment.”<sup>9(p217)</sup> Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) prevention is one of the preventable health conditions affecting the transgender community, especially “transgender women of color.”<sup>9(p217)</sup> Edmiston et al further conclude that “lack of preventative health screenings, such as those for HIV and AIDS, is the result of several factors, including economic marginalization, social stigma, and limited access to healthcare.”<sup>9(p217)</sup>

Limited access to care is due in part to fear of discrimination from health care providers. The lack of knowledge and misunderstanding of transgender people results in awkwardness in interactions and communication. Transgender people have long experienced stigma and oppression from a variety of people, including health professionals. This has caused fear and anxiety about the treatment they receive in the health care system, thereby increasing barriers to health care in this population. The

conflict between a person's gender beliefs and the sex they were assigned at birth can sometimes produce mental health problems referred to as gender dysphoria.<sup>5</sup> WPATH defines gender dysphoria as the "distress that is caused by a discrepancy between a person's gender identity and that person's sex assigned at birth (and the associated gender role and/or primary and secondary sex characteristics)."<sup>1(p96)</sup> Hormonal therapy and gender-affirming surgeries have been used to help the transgender individual align their body into the gender they identify with. However, access to insurance and healthcare reimbursement have proved to be daunting.<sup>10</sup> The transgender community has unique health care needs that can make access to care challenging. In a pursuit towards their true self, transgender people seek gender affirmation through social, medical, and surgical means.

Literature has shown the need for transgender education; this is apparent in multiple specialties in medicine and nursing.<sup>11,13-16</sup> According to the Institute of Health, medical school and residency curricula are lacking in content regarding transgender education.<sup>9</sup> Those schools that do cover LGBT (lesbian, gay, bisexual, and transgender) education provided content that is not standardized with other schools.<sup>11</sup> Also, the amount of time spent on the subject averages 5 hours, provoking negative dissatisfaction among medical school deans regarding their institution's education of LGBTQI healthcare issues.<sup>11</sup> This lack of education during medical training echoes the current state of education within other groups of healthcare providers. Gynecologists have an important role in the health maintenance and care of both transgender women and transgender men.<sup>12</sup> A survey of gynecologists stated "59.1% reported that the care of LBG (lesbian, bisexual, and gay) patient was not part of their residency...[and that] 80% did not receive

training in residency on the care of the transgender patient.”<sup>13(p115)</sup> Another study by Morrison et al, reported the number of hours dedicated to transgender education in plastic surgery and urology programs amounted to “1 hour of didactic time and 2 hours of clinical time.”<sup>14(p178)</sup> This study also revealed that the attitudes of residency program directors towards transgender education may contribute to the low amount of transgender education.<sup>14</sup> The implementation of specific LGBT curriculum faces many barriers, among them “being insufficient faculty members with expertise to teach this topic, discomfort with the subject, and curricular over-crowding and a lack of instructional time.”<sup>15(p109)</sup>

No literature was found to demonstrate the existence of or need for transgender education of CRNAs. However, a Doctor of Nursing Practice capstone paper was found to provide insight into the need for transgender education for nurse anesthetists. Although only 45 of 1000 surveys sent to nurse anesthetists were returned; it was apparent that there is a need for culturally competent care and transgender education among this population.<sup>16</sup> A survey of nurse practitioners inquiring about their knowledge of and self-efficacy in caring for the transgender patient suggested an “average level of knowledge and a low self-efficacy or confidence for providing transgender health care.”<sup>17(p98)</sup> The results indicated that the majority of respondents feel they have “full respect” and “acceptance” towards transgender patients, however, they also report a sense of “low self-efficacy” for providing care for members of this group.<sup>17(p98)</sup> Both nurse anesthetists and nurse practitioners are considered advanced practice nurses; therefore, it may be reasonable to infer that a lack of knowledge and education about the transgender population found in nurse practitioners would also translate to CRNAs. Twenty-six of

416 nurse practitioners report having received no transgender content during their nurse practitioner education.<sup>18</sup> This suggests that nursing educational programs have not yet recognized the need to include this content in their curricula.<sup>17</sup> As the transgender population gains greater visibility, the importance and need for transgender knowledge and education for all perioperative nurses is imperative.<sup>18</sup> CRNAs are an integral part of the perioperative care team and thus should receive education on the unique healthcare concerns of transgender people.

A qualitative study of 268 nurses in San Francisco, California explored nurses' knowledge of transgender patient care.<sup>19</sup> "Nurses' discomfort with transgender patients was the most pronounced theme in the findings, occurring in well over half of the respondents' interviews."<sup>19(p261)</sup> The results highlight the need for further education, especially when nurses from a region of the country considered "more progressive than much of the United States in terms of attitudes about and experience with transgender individuals" feel uncomfortable about caring for transgender patients.<sup>19(p257)</sup>

Various strategies have been implemented to remedy the lack of transgender education of health care providers.<sup>20-22</sup> Some schools of nurse anesthesia have begun incorporating culturally competent care in their curricula. "The Kaiser Permanente Institute for Culturally Competent Care has enabled the Kaiser Permanente School of Anesthesia to become one of the first CRNA programs in the western United States to incorporate a formal cultural competency curriculum into its educational program."<sup>20(p53)</sup> Through the integration of a four-module, 16-hour cultural competence training session within the nurse anesthesia curricula, the Kaiser program prepared their students to provide culturally competent care to a very diverse population (i.e. race, ethnicity,

gender, and gender identity) in 12 different hospitals affiliated with the school.<sup>20</sup> Another approach to increase inclusion of transgender education in the nursing curricula is to include it under the foundation of “culture of safety.”<sup>21</sup> A study evaluated the knowledge, attitudes, and self-efficacy of physical therapists in caring for LGBT spinal cord injury patients before and after they were given a diversity training video.<sup>22</sup> The results revealed an increased confidence in caring for the LGBT patients.<sup>22</sup> One hospital created an education action plan after having a transgender patient in their care brought forward the realization that the staff at their facility were ill prepared to appropriately address the patient’s needs.<sup>23</sup> The action plan developed was an all-encompassing endeavor that used “an online education learning module, live discussions with members of the LGBTQ community, and a video in which transgender patients discussed their own healthcare experiences.”<sup>23(p26)</sup>

CRNAs provide care throughout the entire perioperative period. They are responsible for managing a patient’s physiologic status. However, the CRNA’s role extends beyond patient physiology, requiring a holistic approach to patient care. It is fundamental that CRNAs understand transgender issues and provide culturally competent care to their transgender patients. As the transgender community gains greater visibility, it is imperative that CRNAs are equipped with the necessary education to provide the most appropriate and sensitive care to this unique population. A lack of formal education exists in our nursing and medical programs. This oversight must be remedied by providing education to health providers.

## **Methodology**

### Setting

This research project was conducted at the Mayo Clinic in Rochester, Minnesota which is a 2,000-bed academic institution comprised of two major hospitals (St. Mary's Hospital and Rochester Methodist Hospital). There are 318 CRNAs currently employed at Mayo Clinic, Rochester.

### Study Design

The Mayo Clinic Institutional Review Board (IRB) determined that based on the responses submitted through the Mayo Clinic IRBe Human Subjects Research Wizard tool, and in accordance with the Code of Federal Regulations 45 CFR 46.102, the study did not require IRB review (*Appendix A*). The University of Michigan-Flint IRB deemed the study "Not Regulated." This designation was granted because the study focused on activities and procedures and did not fit the definition of human subjects research requiring IRB approval (per 45 CFR 46, 21 CFR 56) (*Appendix A*). The study consisted of a pre-survey questionnaire, an educational module, and a post-survey questionnaire. The study population consisted of 318 CRNAs. The purpose of the pre-survey was to ascertain two main points: basic knowledge of transgender patients and comfort level of providing care for the transgender patients. The questions used in the pre-survey questionnaire were adapted from the questionnaire used by Ann Lee Burch, EdD, MPH, PT in her study investigating health care providers' knowledge, attitudes, and self-efficacy when working with spinal cord injury patients with diverse sexual orientations.<sup>22</sup> Permission was granted by Ann Lee Burch to use and modify her questionnaire as a basis for this study's pre- and post- survey questions (*Appendix B*). The pre- and post- survey questionnaires created for this study used dichotomous questions as well as Likert scales to discover CRNAs' basic knowledge of transgender patients, attitudes towards and

comfort in caring for transgender patients, and basic demographic questions. The pre- and post- survey questionnaires were identical with the exception of the post-survey, which included three additional questions inquiring about the educational module's usefulness, further topics of education, and preference to care for transgender patients. The RedCap application was used to build and manage the survey process. The pre-survey was sent to 318 CRNAs, and a timeframe of two weeks was allotted to complete it (*Appendix C*). RedCap was programmed to remind those who had not completed the survey to do so every two days until the deadline.

This study utilized Mayo Clinic's Learning Management Systems (LMS) which assigns required curriculum to all Mayo Clinic employees. Staff can access required learning modules through an online educational repository called MyLearning. The online educational module given to the CRNAs was created and disseminated via MyLearning. After the two-week pre-survey completion deadline, the online educational module entitled "Transgender Education and Anesthetic Considerations," was assigned to the CRNAs to complete within two weeks. Reminders were sent to those who had not completed the online module every two days until the deadline. The online educational module took approximately 20 minutes to complete, and it included a video interview with a transgender female. IRB consent was not needed to conduct a video interview because the project is part of a quality improvement project. However, an institutional consent form was explained and signed by the interviewee prior to conducting the interview (*Appendix D*).

The post-survey questionnaire was sent to the CRNAs after the educational module deadline. The post-survey questions were created through RedCap and were

identical to the pre-survey questions, with several additions focusing on the educational module (*Appendix E*). As with the pre-survey and the MyLearning educational module, the CRNAs had two weeks to complete the post-survey. Reminders were programmed into RedCap to remind CRNAs who had not completed the post-survey to do so by sending reminders every two days until the deadline. The pre-survey, MyLearning online module, and post-survey could only be accessed within the Mayo Clinic intranet. Individuals were required to be on campus or have remote access from home (given only through supervisor permission) in order to participate.

### Statistical Analysis

Statistical analysis was performed on completed pre- (n = 154) and post- (n = 173) surveys. The difference between the pre- and post- survey respondents is attributed to the two-week allotted time to take the tests as well as individuals who were away from work due to vacation or Family and Medical Leave (FMLA). The Wilcoxon Rank Sum test was used to compare between the two responses. The P value for the knowledge based questions (questions 1-10) was calculated using the Fisher's Exact Test. The questions relating to CRNAs' attitudes (questions 11-21) were compared using the Cochran Armitage Trend Test. For question 15, groups were compared using Fisher's Exact Test after excluding those who indicated they had not cared for transgender patients. For question 17, groups were compared using the Cochran Armitage Trend Test after excluding those who responded "Not Applicable."

### **Results**

Of the 318 CRNAs, 154 (48%) completed the pre-survey, 173 (54%) completed the post-survey and 218 (69%) completed the online educational module entitled,



“Transgender Education and Anesthetic Considerations.” The total knowledge scores between the pre- and post- surveys were statistically significant ( $P < 0.001$ ). Knowledge questions, number one and nine showed a statistically significant improvement ( $P < 0.05$ ) in choosing the correct answer between the two surveys. Question one asked the respondents to answer true or false to the statement: “Sex and gender are the same.” Question nine was a multiple choice question inquiring about adverse effects of hormone replacements: “All of the following are adverse effects of hormone therapy EXCEPT.”

**Table 1.** Knowledge.\*

QUESTION	PRE (N = 154) N (%)	POST (N = 173) N (%)	P VALUE
1	131 (85)	165 (95)	**
2	151 (98)	169 (98)	
3	140 (91)	166 (96)	
4	135 (88)	162 (94)	
5	139 (90)	164 (95)	
6	149 (97)	171 (99)	
7	141 (92)	151 (87)	
8	128 (83)	150 (87)	
9	39 (25)	67 (39)	**
10	140 (91)	159 (92)	
<b>Total knowledge score</b>			$<0.001$
<b>Mean <math>\pm</math>SD</b>	8.4 $\pm$ 1.2	8.8 $\pm$ 1.1	
<b>Median (25<sup>th</sup>, 75<sup>th</sup>)</b>	9 (8, 9)	9 (8, 10)	

\* For each of the ten knowledge questions, the number (%) of respondents who answered correctly is presented. A total knowledge score was calculated as a total number of correct responses and was compared between time periods using the Wilcoxon Rank Sum test.

\*\* Fisher’s Exact Test  $p < 0.05$

Seven of the eleven questions about CRNA attitudes showed a statistically significant ( $P < 0.05$ ) positive change between the pre- and post- surveys. The CRNAs felt more prepared to provide care to transgender patients (question 11); they indicated increased comfort in addressing transgender patients (question 12); they rated an increased knowledge about the challenges transgender patients face (question 13); they

had an increased level of confidence in their ability to provide an environment of sensitivity and tolerance for the transgender patient (question 18); they increased their mindfulness towards and have begun actively learning more about the use of inclusive language/terminology during the interactions they have with transgender patients (question 19); they increased their general knowledge of the transgender patient population (question 20); and they increased their confidence in the knowledge of anesthetic considerations for the transgender patient (question 21).

**Table 2.** Attitudes.

QUESTION	PRE (N = 154) N (%)	POST (N = 173) N (%)	P VALUE*
<b>11. How prepared do you feel to provide care to transgender patients?</b>			<0.001
Very prepared	15 (10)	41 (24)	
Somewhat prepared	59 (38)	105 (61)	
Neither prepared or unprepared	42 (27)	19 (11)	
Somewhat unprepared	31 (20)	5 (3)	
Very unprepared	7 (5)	2 (1)	
<b>12. Please indicate how comfortable or not comfortable you are in addressing transgender patients:</b>			<0.001
Very comfortable	29 (19)	49 (28)	
Somewhat comfortable	63 (41)	89 (52)	
Neither comfortable or uncomfortable	25 (16)	21 (12)	
Somewhat uncomfortable	29 (19)	10 (6)	
Very uncomfortable	6 (4)	3 (2)	
<b>13. Please rate your knowledge about challenges transgender patients face:</b>			<0.001
Very high level of knowledge	4 (3)	12 (7)	
High level of knowledge	20 (13)	45 (26)	
Average level of knowledge	75 (49)	103 (60)	
Low level of knowledge	35 (23)	8 (5)	

<b>Very low level of knowledge</b>	17 (11)	2 (1)	
<b>No knowledge</b>	2 (1)	1 (1)	
<b>14. My personal beliefs make it difficult for me to care for transgender patients.</b>			0.929
<b>Strongly agree</b>	2 (1)	5 (3)	
<b>Somewhat agree</b>	14 (9)	12 (7)	
<b>Neither agree or disagree</b>	32 (21)	33 (19)	
<b>Somewhat disagree</b>	22 (14)	28 (16)	
<b>Strongly disagree</b>	84 (55)	94 (55)	
<b>15. Please indicate agreement or disagreement with the following statement: I feel that it is necessary to interact with transgender patients in a manner that is different from my usual anesthetic practice.</b>			1.00**
<b>Agree</b>	12 (8)	13 (8)	
<b>Disagree</b>	113 (74)	126 (74)	
<b>I have not cared for a transgender patient</b>	28 (18)	32 (19)	
<b>16. My attitudes/beliefs towards working with transgender patients are best described as:</b>			0.123
<b>I have full respect and acceptance for transgender patients</b>	95 (63)	119 (70)	
<b>I have some respect and acceptance for transgender patients</b>	35 (23)	33 (20)	
<b>I have tolerance for transgender patients</b>	21 (14)	16 (9)	
<b>I find it difficult to have tolerance for transgender patients</b>	1 (1)	1 (1)	
<b>17. The quality of the services that I personally provide to the transgender patient population is best described as:</b>			0.958***
<b>Very high quality</b>	96 (62)	116 (68)	
<b>High quality</b>	28 (18)	32 (19)	
<b>Average quality</b>	4 (3)	5 (3)	
<b>Low quality</b>	1 (1)	0 (0)	
<b>Very low quality</b>	0 (0)	1 (1)	
<b>Not applicable</b>	25 (16)	17 (10)	
<b>18. My confidence in my ability</b>			<0.001

<b>to provide an environment of sensitivity and tolerance for the transgender patient is best described as:</b>			
<b>Extremely confident</b>	46 (30)	67 (39)	
<b>Very confident</b>	56 (36)	82 (48)	
<b>Somewhat confident</b>	44 (29)	19 (11)	
<b>Not very confident</b>	8 (5)	1 (1)	
<b>Not at all confident</b>	0 (0)	1 (1)	
<b>19. Do you consider the language/terminology that you use during the interaction you have with the transgender patient to be inclusive?</b>			0.002
<b>I have never thought about it</b>	35 (23)	22 (13)	
<b>I have thought about it</b>	42 (27)	44 (26)	
<b>I have thought about it and plan to learn more</b>	51 (33)	50 (29)	
<b>I have thought about it and have begun to take steps to learn more (reading, discussions, workshops, coursework)</b>	19 (12)	43 (25)	
<b>I have been actively involved in learning more (i.e. reading, discussions, workshops, coursework) for a period greater than 6 months</b>	7 (5)	12 (7)	
<b>20. My general knowledge of the transgender patient population is:</b>			<0.001
<b>Very high level of knowledge</b>	2 (1)	3 (2)	
<b>High level of knowledge</b>	8 (5)	41 (24)	
<b>Average level of knowledge</b>	98 (64)	112 (65)	
<b>Low level of knowledge</b>	25 (16)	13 (8)	
<b>Very low level of knowledge</b>	18 (12)	2 (1)	
<b>No knowledge</b>	2 (1)	1 (1)	
<b>21. My confidence in the knowledge of anesthetic considerations for the transgender patient can be described as:</b>			<0.001
<b>Extremely confident</b>	8 (5)	13 (8)	
<b>Very confident</b>	33 (22)	86 (50)	
<b>Somewhat confident</b>	73 (48)	65 (38)	
<b>Not very confident</b>	33 (22)	6 (4)	
<b>Not at all confident</b>	5 (3)	1 (1)	

\*Attitudes were compared between groups using Cochran Armitage Trend Test.

\*\* Groups were compared using Fisher's Exact Test after excluding those who indicated they had not cared for transgender patients.

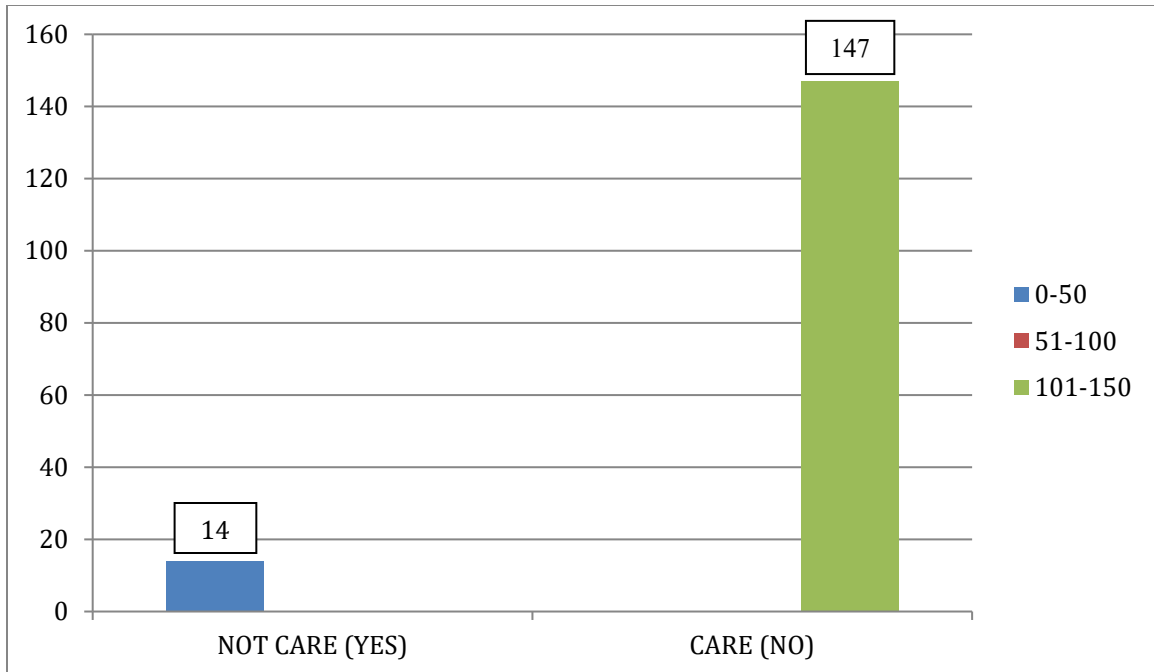
\*\*\* Groups were compared using the Cochran Armitage Trend Test after excluding those who responded Not Applicable.

Three additional questions were included in the post-survey (*Table 3*). Question 22 revealed that, among respondents, 86% (148/173) indicated that the education module was somewhat or very helpful in providing care to transgender patients. Twelve respondents mentioned additional ideas they would like to receive (question 23); the majority 33% (4/12) stated that they would like a yearly summary, including any recent literature on the topic. Nine percent (14/161) of post-survey respondents (question 24) indicated that, if given the choice, they would prefer not to care for transgender patients (*Figure 1*). Although there were 173 respondents to the post-survey, only 161 answered question 24.

**Table 3.** Additional post-survey questions.

QUESTIONS	ANALYSIS
<b>22. How helpful or not helpful did you find this educational module in providing care to transgender patients?</b>	<b>POST (N = 173) N (%)</b>
Very helpful	67 (39)
Somewhat helpful	81 (47)
Neither helpful or not helpful	15 (9)
Somewhat not helpful	4 (2)
Not at all helpful	5 (3)
<b>23. What additional education would you like to receive about transgender patients?</b>	<b>33% of respondents indicated they would like to see a yearly summary/updated literature*</b>
<b>24. If you had a choice, would you prefer not to care for transgender patients?</b>	<b>POST (N = 161) N (%)</b>
Yes	14 (9)
No	147 (91)

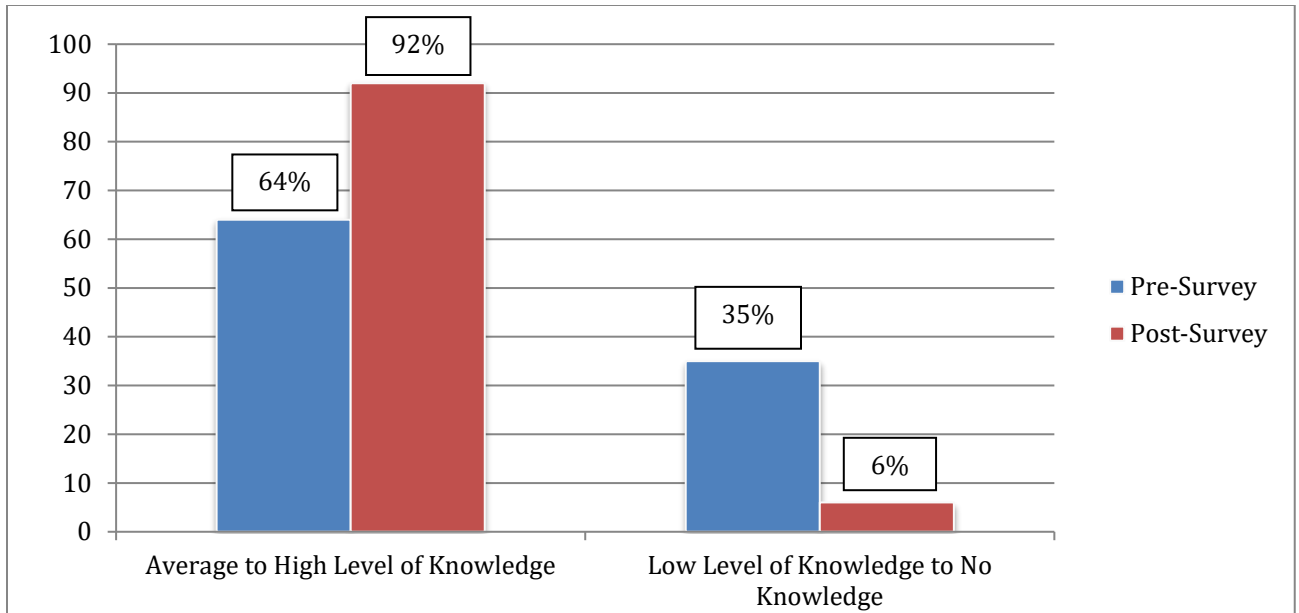
\* N=12.



**Figure 1.** CRNA response to not care for transgender patients if given a choice. (Question 24)

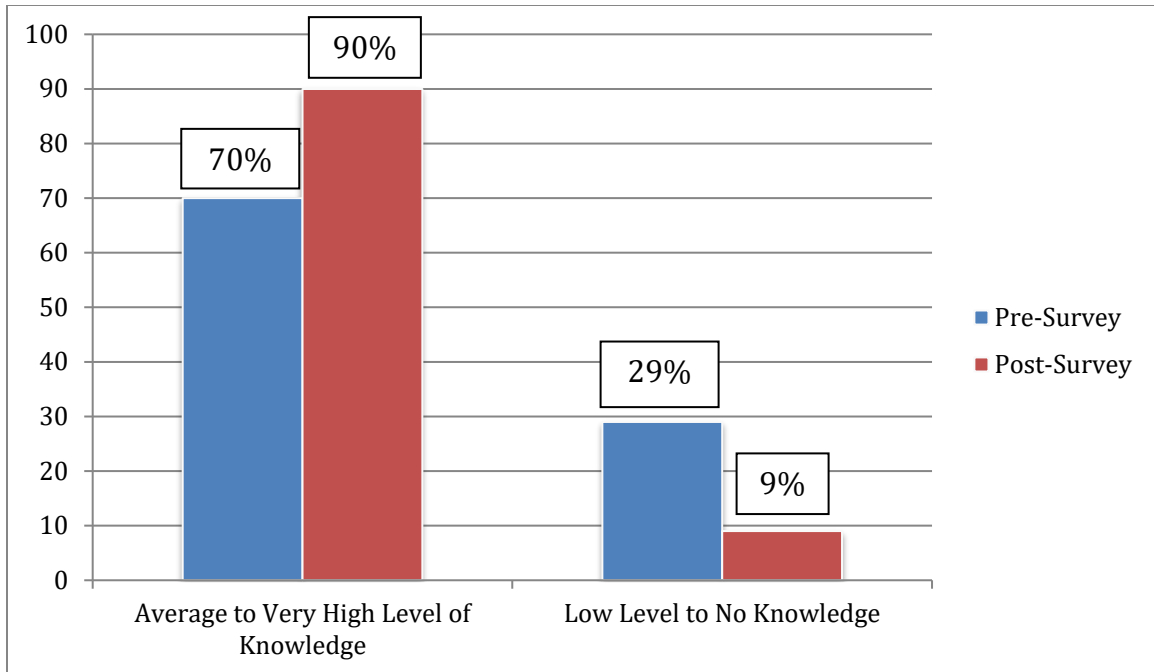
The majority (68% pre-survey; 70% post-survey) of respondents had > 5 years of experience as an anesthesia provider and had taken care of at least one transgender patient (76% pre-survey; 77% post-survey).

The results demonstrated that a computer-based educational module increased the CRNAs' knowledge of transgender patients. The knowledge-based questions (question 1-10) resulted in a total knowledge score between the pre-survey (n = 154) and post-survey (n = 173) which revealed a  $P < 0.001$  (see Table 1). Question 13 showed a statistically significant improvement in knowledge regarding challenges faced by transgender patients. The rating of average to very high level of knowledge increased from 64% (99/154) in the pre-survey to 92% (160/173) in the post-survey. Additionally, the rating of low level of knowledge to no knowledge improved from 35% (54/154) to 6% (11/173), respectively (*Figure 2*).



**Figure 2.** Knowledge rating regarding the challenges transgender patients face. (Question 13)

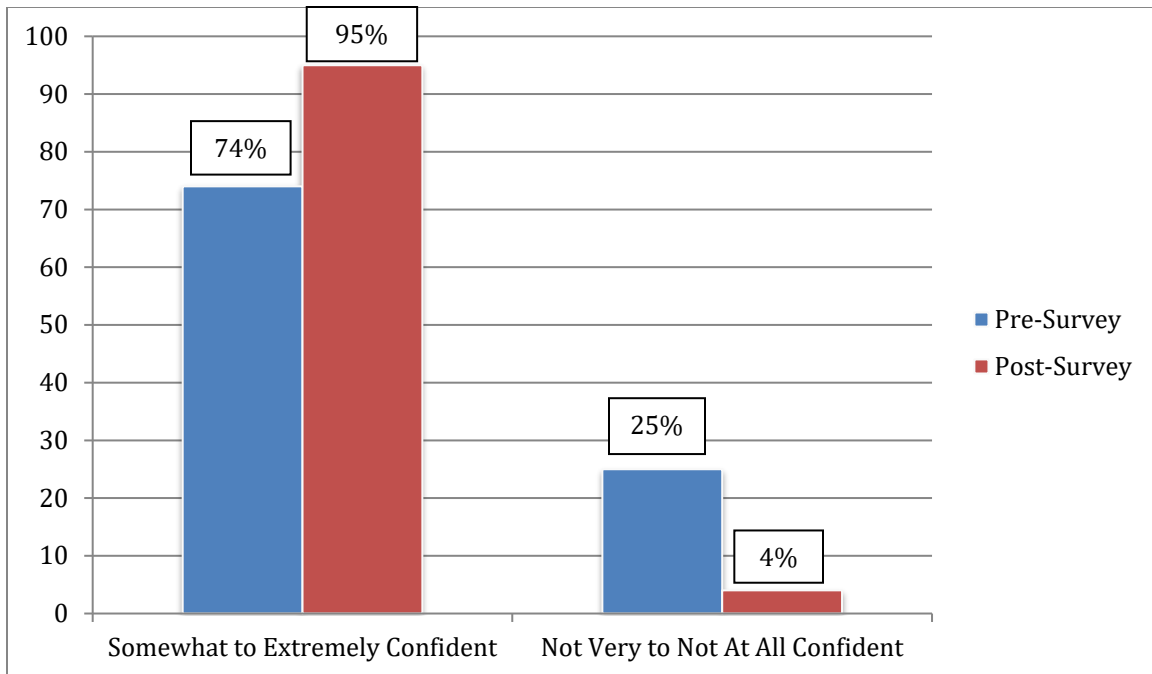
There was a statistically significant increase in general knowledge of the transgender population, noted in question 20. CRNAs who responded that they had an average to very high level of knowledge of the transgender population scored 70% (108/154) in the pre-survey and 90% (156/173) in the post-survey. Those who had a low level to no knowledge of transgender patients decreased from 29% (45/154) in the pre-survey to 9% (16/173) in the post-survey (*Figure 3*).



**Figure 3.** General knowledge of the transgender patient population. (Question 20)

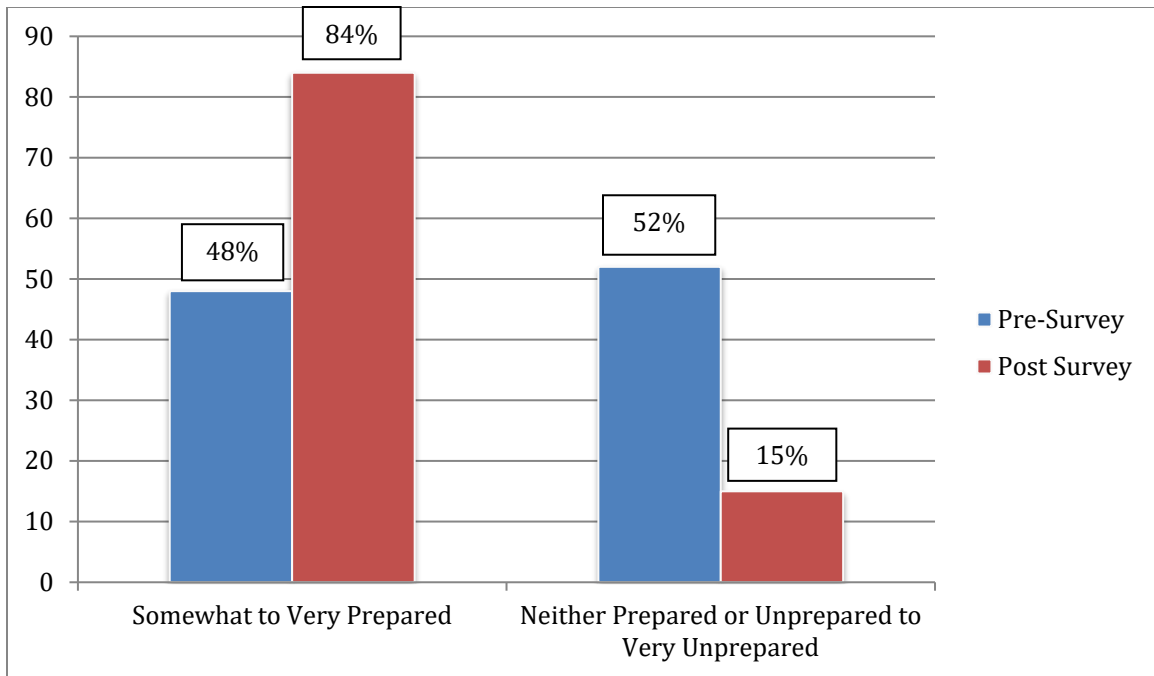
Question 21 asked the CRNAs to rate their level of confidence in the knowledge of anesthetic considerations for the transgender patient. The rating of somewhat to extremely confident went from 74% (114/154) in the pre-survey to 95% (164/173) in the post-survey. The rating of not very confident to not at all confident decreased from 25% (38/154) in the pre-survey to 4% (7/173) in the post-survey (*Figure 4*).





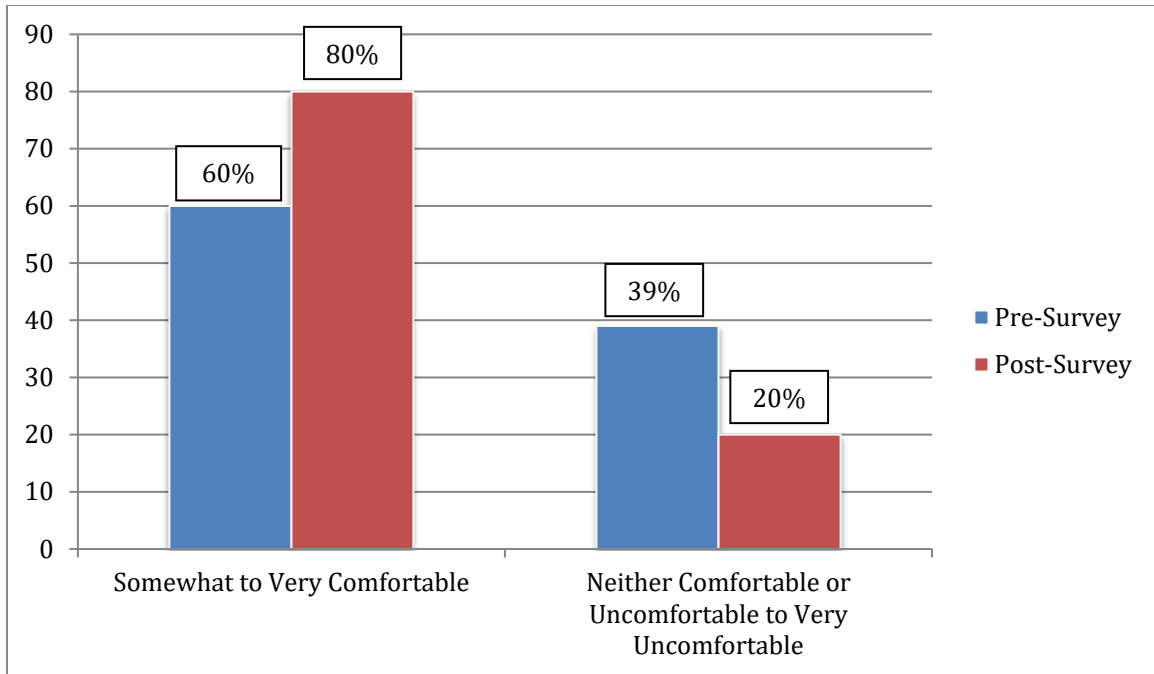
**Figure 4.** Confidence in knowledge of anesthetic considerations for the transgender patient. (Question 21)

The results also demonstrated that a computer-based educational module increased the comfort and attitude of CRNAs towards caring for transgender patients. Pre-survey question 11 demonstrated that 48% (74/154) of CRNAs who felt somewhat to very prepared to provide care to transgender patients. Post-survey results revealed an increase in feeling somewhat to very prepared at 84% (146/173). The feeling of being neither prepared or unprepared, somewhat unprepared, or very unprepared decreased from 52% (80/154) pre-survey to 15% (26/173) post-survey. Differences in the pre- and post- survey results were statistically significant (*Figure 5*).



**Figure 5.** Preparedness to provide care to transgender patients. (Question 11)

As indicated in pre-survey question 12 60% (92/154) of CRNAs were somewhat to very comfortable in addressing transgender patients. There was an increase to 80% (138/173) in the post-survey. The feeling of being neither comfortable or uncomfortable, somewhat uncomfortable, and very uncomfortable decreased from 39% (60/154) in the pre-survey to 20% (34/173) in the post-survey (*Figure 6*).



**Figure 6.** Comfort level in addressing transgender patients. (Question 12)

The questions described showed statistically significant improvement of results with a  $P < 0.001$ . The improvement in CRNA knowledge and comfort in the care of transgender patients may help to improve not only the care they provide to transgender patients, but the overall healthcare experience for these patients as well.

No change was noted in pre- versus post-survey question 14. The majority of CRNAs somewhat to strongly disagreed with the statement, “My personal beliefs make it difficult for me to care for transgender patients” (69% (106/154) in the pre-survey; 71% (122/173) in the post-survey). This may be a result of professional integrity, personal beliefs aside, in providing the best care to all patients. There was also no change in pre- (73%) and post- (73%) survey question 15. The majority of CRNAs felt that they interacted with transgender patients in the same manner as any other patient, indicating that they treated all patients the same, regardless of their gender identity. In question 16, the CRNAs were asked to describe their attitudes/beliefs towards working with

transgender patients. The results showed no change between the pre- and post-surveys. The majority of CRNAs disclosed that they have some to full respect and acceptance for transgender patients (84% pre-survey; 88% post-survey). In question 17, CRNAs were asked to describe the quality of the services they provide to the transgender population. Of those that have taken care of transgender patients, 81% pre-survey and 86% post-survey state that they provide a high to very high quality of service to their transgender patients. These results signify the high level of professionalism that CRNAs maintain to provide the same high quality care to all patients.

It is interesting to note, if given a chance, some CRNAs would choose not to care for transgender patients (9%, 14/161). This is not surprising, noting the results of question 16. Fourteen percent (22/154) of CRNAs in pre-survey and 10% (17/173) of CRNAs in post-survey indicated that their attitudes and beliefs as having tolerance or difficulty tolerating working with transgender patients. In question 14, 10% (16/154) in the pre-survey and 10% (17/173) in the post-survey indicated CRNAs somewhat agreed to strongly agreed that their personal beliefs make it difficult for them to care for transgender patients. The study showed that the majority of CRNAs are able to provide quality care to their transgender patients despite their personal beliefs.

## **Discussion**

This study illustrated that a computer-based learning module increased the knowledge and comfort level of CRNAs when providing care to transgender patients. The total knowledge scores between the pre- and post- surveys were statistically significant ( $P < 0.001$ ). Seven of the eleven questions about CRNA attitudes indicated a statistically significant ( $P < 0.05$ ) positive change between the pre- and post- surveys. The use of computer-based learning has proved to be very effective among health

professionals and this study revealed that to be true.<sup>24</sup> The results of this study reflects the same positive outcome seen in other studies that utilized an on-line module to educate their staff about the LGBTQ community.<sup>23</sup>

No studies were identified in the published literature addressing the knowledge and comfort level of CRNAs in caring for transgender patients. Previous studies have echoed the need for CRNAs to gain further knowledge of the transgender community, and this study fulfills that need.<sup>16</sup> This study demonstrates that an online-education module can increase CRNAs' knowledge and comfort level in the care of this patient population.

This study contributes to the provision of culturally competent care. According to Campinha-Bacote, cultural competence is an "expansion of patient-centered care."<sup>25(p1)</sup> Cultural competence as defined here focuses on "improving health care quality through individualized care and relationship building, while increasing health equity and reducing disparities."<sup>25(p1-2)</sup> Increasing knowledge about the transgender community, the struggles they undertake, and the manner in which they would prefer to be addressed are critical for the provision of culturally competent care.

### Limitations

This study has several limitations. There were more participants in the post-survey (n=173) than in the pre-survey (n=154). This was due to the study design. In order to maintain anonymity, the study was sent to the participants in the pre-survey, online-education module, and post-survey were not individually tracked. Results were based on the number of respondents in the pre-survey and post-survey. Individual CRNAs were not tracked regarding the portion of the study (pre-survey, online-education module, or

post-survey) they participated in. The increase in post-survey participants may be due to social desirability bias. According to Fisher, social desirability bias is the “phenomenon” where “respondents are often unwilling or unable to report accurately on sensitive topics for ego-defensive or impression management reasons. The result is data that are systematically biased toward respondents’ perceptions of what is “correct” or socially acceptable.”<sup>26(p303)</sup> This may have increased the number of post-survey participants because it was deemed meritorious to participate in the study. As the study gained traction among the CRNAs, the desire to participate may have elevated. Social desirability bias may have contributed to how the respondents answered the pre- and post-surveys attributing to more favorable responses and statistical significance of the study. Another limitation is the length of time the CRNAs were allotted for participation in the pre-survey, online-education module, and post-survey. CRNAs wishing to participate were unable to because the timeframe allotted had passed. Perhaps extending the time period would have elicited an even greater response rate in the pre-survey, online education module, and post-survey. Future research should focus on improving the educational experience of the CRNAs, moving from a passive learning mode to active participation. Simulation-based learning has shown promise in improving patient care while providing greater satisfaction to learners and educators.<sup>27</sup> A simulation of patient interaction with transgender patients would be an invaluable addition to the education provided to CRNAs. Ideas for further education generated from post-survey question 23 focused on yearly education/competency in caring for transgender patients. A post-year evaluative study on knowledge retained by the CRNAs during the educational module may provide data to support on-going education/competency in caring for transgender

patients. This study may also add value to the creation of LGBTQ curriculum in nurse anesthesia programs.

### Dissemination

The planned dissemination of this project is to present a poster at the 46<sup>th</sup> Annual Mayo Clinic Seminar for Nurse Anesthetists, which will be held on October 21-23, 2020, in Rochester, MN and to submit for publication in the American Association of Nurse Anesthetists (AANA) journal.

### **Conclusion**

This scholarly project illustrated the importance of increasing CRNA knowledge and comfort in caring for transgender patients. To further increase comfort in caring for these individuals, it is imperative that CRNAs are educated in providing culturally competent care, as the community is gaining visibility. The online educational module revealed a statistically significant increase in CRNA knowledge as well as comfort in caring for transgender patients.

As advanced practice nurses, CRNAs care for transgender patients throughout the perioperative period. As the anesthesia provider during a vulnerable time, CRNAs are in the best position to be patient advocates. The improvements in knowledge and comfort in the care of transgender patients noted in this study will undoubtedly contribute to a positive experience for the patient and the anesthetist, thus resulting in delivery of high quality patient care.

**Appendix A: IRB Approval Letters**

---

## *Memo*

**Date:** Thursday, September 19, 2019  
**From:** Mayo Clinic Institutional Review Board  
**Re:** Transgender Education and Anesthesia Considerations  
**To:** Maria I. Peterson, APRN, CRNA

The Mayo Clinic Institutional Review Board (IRB) acknowledges that based on the responses submitted for this new activity through the Mayo Clinic IRBe Human Subjects Research Wizard tool, and in accordance with the Code of Federal Regulations, 45 CFR 46.102, the above noted activity does not require IRB review.

Other Federal, State and local laws and/or regulations may apply to the activity. This study must be reconsidered for submission to the IRB if any changes are made.

The Principal Investigator is responsible for the accuracy and reliability of the information submitted through the Human Subjects Research Wizard tool, for following all applicable Federal, State and local laws and/or regulations, and is also responsible for submitting research studies to the IRB when required.





To: Maria Peterson

Cc:

Amy Franckowiak  
Suzanne Selig  
Maria Peterson

Subject: eResearch System-Generated Notice of "Not Regulated" Status for HUM00171196

**SUBMISSION INFORMATION**

**Title:** Transgender Education and Anesthetic Considerations

**Full Study Title (if applicable):**

**Study eResearch ID:** HUM00171196

**Date of this System-Generated Notice:** 10/9/2019

**IRB "NOT REGULATED" STATUS:**

Based on the information provided, the proposed study does not fit the definition of human subjects research requiring IRB approval (per 45 CFR 46, 21 CFR 56) because in this case, it is activities or procedures rather than human subjects that are the object of the study.

**Appendix B: Permission from Ann Lee Burch****Peterson, Maria I. (Jhoel), APRN, CRNA**

---

**From:** Ann Lee Burch <aburch@atsu.edu>  
**Sent:** Monday, January 28, 2019 3:17 PM  
**To:** Peterson, Maria I. (Jhoel), APRN, CRNA  
**Subject:** [EXTERNAL] Re: FW: Pre and Post briefing Questionnaires

Maria,

You do have my permission, however, I always request that students obtain a copy of my dissertation from Columbia Libraries directly if they need to use any information from it. Good luck with your research.

Ann Lee Burch PT, MPH, EdD  
Interim Dean  
Vice Dean and Associate Professor  
Arizona School of Health Sciences  
A.T. Still University  
[aburch@atsu.edu](mailto:aburch@atsu.edu)  
480 219 6061



Please schedule all appointments through Executive Assistant: Mellissa Eisenmann 480-219-6155 [meisenmann@atsu.edu](mailto:meisenmann@atsu.edu)

---

**From:** Peterson, Maria I. (Jhoel), APRN, CRNA  
**Sent:** Tuesday, January 15, 2019 4:27 PM  
**To:** 'aburch@atsu.edu'  
**Subject:** Pre and Post briefing Questionnaires

1

Hello Dr. Burch,

My name is Maria I. Peterson, and I am a nurse anesthetist pursuing my doctoral degree at the University of Michigan Flint. My study explores the need for providing culturally competent care for the transgender patient. My study aims mirror your own study as illustrated in your article, "Healthcare providers' knowledge, attitudes, and self-efficacy for working with patients with spinal cord injury who have diverse sexual orientations." I was wondering if I would have your permission to use your pre-briefing and post-briefing questionnaires.

I would absolutely appreciate your assistance with my capstone project.

Sincerely,

Maria I. Peterson, APRN, CRNA

**Appendix C: Pre-Survey***Confidential*

Page 1 of 3

**Transgender Education Pre-Survey**

Please complete the survey below.

Thank you!

---

**THE TRANSGENDER PRE-EDUCATION QUESTIONNAIRE  
Health Care Provider Survey (PRE)**

This survey is being used to assess the anesthesia provider's knowledge and experience with the transgender patient.  
Thank you!

---

**BASIC TRANSGENDER RELATED KNOWLEDGE:**

---

1. Sex and gender are the same.  
 True  False
- 
2. Gender identity refers to an internal sense of being male, female, or along the spectrum.  
 True  False
- 
3. A transgender woman is someone who was assigned male at birth but identifies as female.  
 True  False
- 
4. Gender incongruence can also stem from differences in sexual development.  
 True  False
- 
5. Gender dysphoria refers to: (choose one)  
 a. How gender is presented to the outside world  b. Sexism amongst males and females  
 c. The distress felt regarding the incongruence between one's gender identity and one's physical phenotype  
 d. Someone who has a gender identity that coincides with the sex they were assigned at birth
- 
6. Transgender people experience the following: (choose one)  
 a. Economic hardships  b. Social discrimination  c. Increased incidence of self-harm and suicide  
 d. All of the above
- 
7. Gender affirmation can only be accomplished through name and pronoun change.  
 True  False
- 
8. The best method of determining which pronoun to use (i.e. she, he, they, etc.) when addressing a transgender patient is to use the sex listed in the medical record.  
 True  False
-

*Confidential*

Page 2 of 3

---

9. All of the following are adverse effects of hormone therapy EXCEPT:

- a. Erythrocytosis    b. Lipid profile changes    c. Stroke    d. Thyroid storm

---

10. Gender affirming surgery is the end goal for all transgender patients.

- True    False

---

**PROVIDER ATTITUDES TOWARDS TRANSGENDER PATIENTS:**

---

11. How prepared do you feel to provide care to transgender patients?

- a. Very prepared    b. Somewhat prepared    c. Neither prepared or unprepared    d. Somewhat unprepared    e. Very unprepared

---

12. Please indicate how comfortable or not comfortable you are in addressing transgender patients:

- a. Very comfortable    b. Somewhat comfortable    c. Neither comfortable or uncomfortable    d. Somewhat uncomfortable    e. Very uncomfortable

---

13. Please rate your knowledge about challenges transgender patients face:

- a. Very high level of knowledge    b. High level of knowledge    c. Average level of knowledge    d. Low level of knowledge    e. Very low level of knowledge    f. No knowledge

---

14. My personal beliefs make it difficult for me to care for transgender patients.

- a. Strongly agree    b. Somewhat agree    c. Neither agree or disagree    d. Somewhat disagree    e. Strongly disagree

---

15. Please indicate agreement or disagreement with the following statement: I feel that it is necessary to interact with transgender patients in a manner that is different from my usual anesthetic practice.

- a. Agree    b. Disagree    c. I have not cared for a transgender patient

---

16. My attitudes/beliefs towards working with transgender patients are best described as:

- a. I have full respect and acceptance for transgender patients    b. I have some respect and acceptance for transgender patients    c. I have tolerance for transgender patients    d. I find it difficult to have tolerance for transgender patients

---

17. The quality of the services that I personally provide to the transgender patient population is best described as:

- a. Very high quality    b. High quality    c. Average quality    d. Low quality    e. Very low quality    f. Not applicable

---

18. My confidence in my ability to provide an environment of sensitivity and tolerance for the transgender patient is best described as:

- a. Extremely confident    b. Very confident    c. Somewhat confident    d. Not very confident    e. Not at all confident
-

*Confidential*

Page 3 of 3

---

19. Do you consider the language/terminology that you use during the interaction you have with the transgender patient to be inclusive?

- a. I have never thought about it    b. I have thought about it    c. I have thought about it and plan to learn more    d. I have thought about it and have begun to take steps to learn more (reading, discussions, workshops, coursework)    e. I have been actively involved in learning more (i.e. reading, discussions, workshops, coursework) for a period greater than 6 months

---

20. My general knowledge of the transgender patient population is:

- a. Very high level of knowledge    b. High level of knowledge    c. Average level of knowledge  
 d. Low level of knowledge    e. Very low level of knowledge    f. No knowledge

---

21. My confidence in the knowledge of anesthetic considerations for the transgender patient can be described as:

- a. Extremely confident    b. Very confident    c. Somewhat confident    d. Not very confident  
 e. Not at all confident

---

**DEMOGRAPHICS:**

---

22. How many years have you been an anesthesia provider?

- a. Less than 1 year    b. 1-5 years    c. 6-10 years    d. More than 10 years

---

23. How many transgender patients have you cared for in your career at Mayo and elsewhere?

- a. None    b. Less than 10    c. 10-20    d. More than 20

**Appendix D: Institutional Consent Form for Video Interview**



**Authorization to Capture Image, Audio and/or Story  
Non-Medical Photography**

Form content not retained in medical record.  
Scanned into Image Audio Authorizations.

Patient/Participant Name (First, Middle, Last) [REDACTED]	Birth Date (mm-dd-yyyy) 12-23-85
--	-------------------------------------

I authorize to be interviewed, photographed, audiotaped, videotaped, and/or filmed (collectively called "Materials") by Mayo Clinic or their selected media representatives ("Mayo Representatives"). The Materials may be used for publication, broadcast, medical instruction, patient education, electronic transmission (including digital media), or any other use Mayo Clinic deems appropriate.

The purpose of this disclosure is to allow Mayo Representatives to record Materials, and/or for Mayo Clinic to disseminate health information to the general public. I also authorize Mayo Clinic personnel, including provider(s), to be interviewed by Mayo Representatives and to discuss details of relevant medical conditions.

I agree that any Materials taken shall be the sole and exclusive property of Mayo Clinic or media representatives, and that they may use the Materials in any manner they wish, including dissemination to the general public via any media. I also understand that my name and/or identity may also be used for these purposes.

I release Mayo Clinic, its employees, and representatives from any and all liabilities which may arise from the use of Materials. Mayo Clinic will not condition treatment on whether I sign this authorization.

Furthermore, I understand that information used or disclosed pursuant to this authorization may be subject to re-disclosure by the recipient and may no longer be protected by federal law. Mayo Clinic has the right to edit, modify and alter my image, likeness, statements, and recorded performance for use in the Materials.

I agree that the Materials will not be submitted to me for approval and that Mayo Clinic will be without liability to me or others for the authorized use(s) of my image, likeness, statements, or recorded performance. I waive any right to inspect or approve the finished product, including written copy that may be created in connection with Mayo Clinic's use and license rights herein. I understand I will not be paid or receive any royalties.

This agreement will be binding upon my survivors, heirs, descendants, administrators, executors, and all others who have or may have a legal claim or rights by virtue of my agreeing to this Release and License.

I understand that this authorization may be revoked at any time except to the extent action has been taken in reliance upon it. Furthermore, I understand that this authorization will remain in effect unless specifically revoked by me. Revocation must be made in writing to Mayo Clinic, \_\_\_\_\_, 200 First Street SW, Rochester, MN 55905.  
(Requesting Department Name)

Upon Mayo Clinic's receipt of this authorization, a digital copy can be provided if requested.

<b>ATTENTION:</b> This is a legal document. Please read carefully. By signing, you agree that you understand and accept the terms on this form. <ul style="list-style-type: none"> <li>• if the patient/participant is 18 years of age or older, the patient/participant must sign and date the form.</li> <li>• if the patient/participant is 18 years of age or older and is incapable of signing, a legally authorized substitute may sign and date the form. Please indicate your legal authority and include documentation of your relationship:                         <ul style="list-style-type: none"> <li><input type="checkbox"/> Legal Guardian or Conservator      <input type="checkbox"/> Health Care Agent (Health Care Power of Attorney)</li> </ul> </li> <li>• if the patient/participant is 17 years of age or younger, the patient's/participant's parent or legal guardian must sign and date the form, unless an exception exists under state or federal law. Please indicate your relationship:                         <ul style="list-style-type: none"> <li><input type="checkbox"/> Parent      <input type="checkbox"/> Legal Guardian</li> </ul> </li> </ul>		
Signature (Required) ▶ [REDACTED]	Date (Required) (mm-dd-yyyy) 12-20-19	Phone 507-226-5260
Printed Name of Person Signing (If not patient/participant) (First, Middle, Last) [REDACTED]	Relationship to Patient/Participant	
Mailing Address (Street, City, State, ZIP Code)	Email	

**Appendix E: Post-Survey***Confidential*

Page 1 of 3

**Transgender Education Post-Survey**

Please complete the survey below.

Thank you!

**THE TRANSGENDER POST-EDUCATION QUESTIONNAIRE****Health Care Provider Survey (POST)**

This survey is being used to assess the anesthesia provider's knowledge and experience with caring for the transgender patient after participating in transgender education.

Thank you!

**BASIC TRANSGENDER RELATED KNOWLEDGE:**

- |  |  |
|--|--|
| 1. Sex and gender are the same.  | <input type="radio"/> True<br><input type="radio"/> False  |
| 2. Gender identity refers to an internal sense of being male, female, or along the spectrum. | <input type="radio"/> True<br><input type="radio"/> False  |
| 3. A transgender woman is someone who was assigned male at birth but identifies as female.   | <input type="radio"/> True<br><input type="radio"/> False  |
| 4. Gender incongruence can also stem from differences in sexual development.                 | <input type="radio"/> True<br><input type="radio"/> False  |
| 5. Gender dysphoria refers to: (choose one)  | <input type="radio"/> a. How gender is presented to the outside world<br><input type="radio"/> b. Sexism amongst males and females<br><input type="radio"/> c. The distress felt regarding the incongruence between one's gender identity and one's physical phenotype<br><input type="radio"/> d. Someone who has a gender identity that coincides with the sex they were assigned at birth |
| 6. Transgender people experience the following: (choose one)                                 | <input type="radio"/> a. Economic hardships<br><input type="radio"/> b. Social discrimination<br><input type="radio"/> c. Increased incidence of self-harm and suicide<br><input type="radio"/> d. All of the above  |
| 7. Gender affirmation can only be accomplished through name and pronoun change.              | <input type="radio"/> True<br><input type="radio"/> False  |

Confidential

Page 2 of 3

8. The best method of determining which pronoun to use (i.e. she, he, they, etc.) when addressing a transgender patient is to use the sex listed in the medical record.

- True  
 False

9. All of the following are adverse effects of hormone therapy EXCEPT:

- a. Erythrocytosis  
 b. Lipid profile changes  
 c. Stroke  
 d. Thyroid storm

10. Gender affirming surgery is the end goal for all transgender patients.

- True  
 False

### PROVIDER ATTITUDES TOWARDS TRANSGENDER PATIENTS

11. How prepared do you feel to provide care to transgender patients?

- a. Very prepared  
 b. Somewhat prepared  
 c. Neither prepared or unprepared  
 d. Somewhat unprepared  
 e. Very unprepared

12. Please indicate how comfortable or not comfortable you are in addressing transgender patients:

- a. Very comfortable  
 b. Somewhat comfortable  
 c. Neither comfortable or uncomfortable  
 d. Somewhat uncomfortable  
 e. Very uncomfortable

13. Please rate your knowledge about challenges transgender patients face:

- a. Very high level of knowledge  
 b. High level of knowledge  
 c. Average level of knowledge  
 d. Low level of knowledge  
 e. Very low level of knowledge  
 f. No knowledge

14. My personal beliefs make it difficult for me to care for transgender patients.

- a. Strongly agree  
 b. Somewhat agree  
 c. Neither agree or disagree  
 d. Somewhat disagree  
 e. Strongly disagree

15. Please indicate agreement or disagreement with the following statement: I feel that it is necessary to interact with transgender patients in a manner that is different from my usual anesthetic practice.

- a. Agree  
 b. Disagree  
 c. I have not cared for a transgender patient

16. My attitudes/beliefs towards working with transgender patients are best described as:

- a. I have full respect and acceptance for transgender patients  
 b. I have some respect and acceptance for transgender patients  
 c. I have tolerance for transgender patients  
 d. I find it difficult to have tolerance for transgender patients

17. The quality of the services that I personally provide to the transgender patient population is best described as:

- a. Very high quality  
 b. High quality  
 c. Average quality  
 d. Low quality  
 e. Very low quality  
 f. Not applicable



Confidential

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18. My confidence in my ability to provide an environment of sensitivity and tolerance for the transgender patient is best described as:	<input type="radio"/> a. Extremely confident <input type="radio"/> b. Very confident <input type="radio"/> c. Somewhat confident <input type="radio"/> d. Not very confident <input type="radio"/> e. Not at all confident
19. Do you consider the language/terminology that you use during the interaction you have with the transgender patient to be inclusive?	<input type="radio"/> a. I have never thought about it <input type="radio"/> b. I have thought about it <input type="radio"/> c. I have thought about it and plan to learn more <input type="radio"/> d. I have thought about it and have begun to take steps to learn more (reading, discussions, workshops, coursework) <input type="radio"/> e. I have been actively involved in learning more (i.e. reading, discussions, workshops, coursework) for a period greater than 6 months
20. My general knowledge of the transgender patient population is:	<input type="radio"/> a. Very high level of knowledge <input type="radio"/> b. High level of knowledge <input type="radio"/> c. Average level of knowledge <input type="radio"/> d. Low level of knowledge <input type="radio"/> e. Very low level of knowledge <input type="radio"/> f. No knowledge
21. My confidence in the knowledge of anesthetic considerations for the transgender patient can be described as:	<input type="radio"/> a. Extremely confident <input type="radio"/> b. Very confident <input type="radio"/> c. Somewhat confident <input type="radio"/> d. Not very confident <input type="radio"/> e. Not at all confident
22. How helpful or not helpful did you find this educational module in providing care to transgender patients?	<input type="radio"/> a. Very helpful <input type="radio"/> b. Somewhat helpful <input type="radio"/> c. Neither helpful or not helpful <input type="radio"/> d. Somewhat not helpful <input type="radio"/> e. Not at all helpful
23. What additional education would you like to receive about transgender patients?	_____
24. If you had a choice, would you prefer not to care for transgender patients?	<input type="radio"/> True <input type="radio"/> False
<b>DEMOGRAPHICS:</b>	
25. How many years have you been an anesthesia provider?	<input type="radio"/> a. Less than 1 year <input type="radio"/> b. 1-5 years <input type="radio"/> c. 6-10 years <input type="radio"/> d. More than 10 years
26. How many transgender patients have you cared for in your career at Mayo and elsewhere?	<input type="radio"/> a. None <input type="radio"/> b. Less than 10 <input type="radio"/> c. 10-20 <input type="radio"/> d. More than 20

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