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**Preparation of Nursing Students to Address Challenging Behaviors of Patients
with Autism Spectrum Disorder in Health Care Settings**

by

Paige Winslow

A Thesis

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree

Master of Science in

Child and Family Studies

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Abstract

The purpose of this research was to examine the use of a training program, designed for this study, to educate nursing students in addressing challenging behaviors in children with Autism Spectrum Disorder (ASD) in health care settings. The training program designed for this study included lecture, role-play, and debriefing components. Two main components were evaluated in this research study: the nursing students' knowledge and understanding of ASD, and the students' self-perceived competency in addressing challenging behaviors of children with ASD in a health care setting. The researcher used a combination of quantitative and qualitative measures, through pre-training and post-training assessments, to evaluate the effectiveness of this training program. The results of this study show that the training program used was effective for both improving the nursing students' understanding and knowledge of Autism Spectrum Disorder as well as improving their self-perceived competency in addressing challenging behaviors in children with ASD in a health care setting. Extending this research to a larger sample size, multiple nursing programs, and related health care fields is needed to further study the effectiveness of this training program.

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Chapter 1: Introduction and Purpose

As the prevalence of children diagnosed with Autism Spectrum Disorder (ASD) continues to rise, the importance of providing professionals in health care and educational settings with training for working with individuals with ASD also continues to rise. Children with ASD are more likely to use health care services than those who do not have ASD and are also hospitalized an average of 1.5 times longer than those without ASD (Jolly, 2015). When working with a patient with ASD, it is important for nurses to use strategies to prevent challenging behaviors at the onset of every visit (Drake, Johnson, Stoneck, Martinez, & Massey, 2012). Although there is significant support for training nurses to work with children with ASD throughout the literature, there are currently no formal training programs or guidelines for caring for children with ASD required in most nursing education curricula.

This thesis focuses on answering the following questions:

1. Does the use of the training program designed for this project increase nursing students' knowledge and understanding of autism spectrum disorder?
2. Does the use of the training program designed for this project improve nursing students' self-perceived competency in addressing challenging behaviors of children with ASD in a health care setting?

My interest in conducting a study on nursing students and their abilities to work with the challenging behaviors of children with ASD is related to my work experience with children with ASD, my experience as a guest lecturer, and my educational background. My undergraduate degree is in communication sciences and disorders with a minor in community psychology. While earning my undergraduate degree, I took many courses related to working with individuals

with ASD. I took several courses that focused on language development in children with ASD and on communication strategies to use with individuals with ASD. I also took many courses related to Applied Behavior Analysis (ABA), which is an effective and proven behavioral therapy approach used with individuals with ASD. Over the past 10 years, I have worked as a paraprofessional, adaptive recreation program specialist, and a personal care assistant. In each setting, I worked with children with ASD who displayed challenging behaviors. As a program specialist, my job was centered on working directly with these challenging behaviors, designing behavior management plans, and training others in how to effectively work with children who display challenging behaviors. As a result of these experiences and my educational background, I was asked to speak about ASD to the Rochester Community and Technical College (RCTC) pediatric practical nursing students during their unit on developmental disorders. This particular experience and my conversations with the RCTC nursing faculty furthered my interest in designing a formal training program to teach nursing students how to address challenging behaviors displayed by children with ASD in a health care setting.

Definition of Terms

Throughout this thesis, the following terms are referred to frequently and are defined as follows:

- **Autism Spectrum Disorder (ASD):** all autism disorders merged under the umbrella diagnosis of ASD including those that were previously recognized as different subtypes such as: autistic disorder, childhood disintegrative disorder, pervasive developmental disorder-not otherwise specified (PDD-NOS), and Asperger syndrome.

- **Challenging Behavior:** any behavior displayed by a child that interferes with the healthcare worker's ability to provide care for the child or prevents them from providing care to the child without using extreme measures (sedation or physical restraint).
- **Aggression:** any behavior or attempt at a behavior that causes physical harm to others or to self or threatens someone's physical safety.
- **Property damage:** any behavior the damages or attempts to damage any personal or public property.
- **Eloping:** leaving or attempting to leave the designated treatment area without being accompanied by a caregiver for any amount of time
- **De-escalation:** any decrease in the intensity, frequency, or duration of a challenging behavior.
- **Health Care Setting:** a medical setting in which inpatient or outpatient services can be given.

My Research

Justification for development of a training program to teach nursing students how to work with children with ASD who may display challenging behaviors was found in conducting research using electronic media and the St. Cloud State University library. Research was limited to articles that were peer-reviewed. I also spent time collaborating with the nursing faculty from Rochester Community and Technical College (RCTC) while designing my training program in order to produce a program that would fully meet the needs of their students. While conducting my research, I attended a program presented by a member of the Mayo Clinic behavioral

intervention team in order to gain more insight into how challenging patient behaviors are currently being addressed in the health care setting. I visited the Autism Speaks website and collected a variety of resources pertaining to children with ASD and health care visits. The following chapter summarizes information gathered to justify my study.

Chapter 2: Literature Review

Prevalence of Medical Conditions and Autism Co-occurring

As the rate of Autism Spectrum Disorder continues to increase and the number of identified medical conditions occurring in conjunction with ASD rises, the likelihood of encountering a child with ASD in a health care setting also increases. There are multiple medical conditions known to be associated with ASD including seizures, sleep disturbances, gastrointestinal (GI) disorders, and psychiatric disorders (Scarpinato et al., 2010). Seizures are reported in 11-39% of children with ASD; children with ASD who have more severe cognitive and motor impairments have a higher risk of epilepsy than children with ASD who have lower levels of impairment. Seizure activity frequently results in the need for acute hospital stays for evaluation and medication adjustments. Sleep disturbances, such as irregular sleep/wake patterns, problems with sleep onset, poor sleep, early waking, and poor sleep routines, occur in the range of 44-83% of children and adolescents with autism. The most common GI disorders seen in children with ASD are chronic abdominal pain, diarrhea, constipation, and food sensitivities. These GI disorders frequently complicate hospital stays for children with autism (Scarpinato et al., 2010).

One of the most common reasons for hospital stays for children with ASD is related to co-occurring mental health and psychiatric disorders. The most common mental health and psychiatric disorders seen in children with autism include: mood disorders, specific phobias, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, major depression, aggression, and self-injurious behavior. These co-existing mental health and psychiatric

disorders also commonly complicate hospital stays for patients with autism, their families, and their care teams (Scarpinato et al., 2010).

Frequency of Hospitalization of Children with ASD

The likelihood of health care providers encountering a pediatric patient with ASD is very high. Studies show that 64.9% of children with ASD are admitted to the hospital during the first 5 years of life, compared to typically developing children who only have a 48.2% admission rate (Johnson & Rodriguez, 2013). Studies also found that children with ASD were 20% more likely to be hospitalized after injuries than typically developing peers. ASD has been associated with higher rates of emergency rooms visits and hospital treatment for a variety of different types of injuries. McDermott, Zhou, and Mann's (2008) article reported that children with ASD are treated for injuries to the head, face, and neck at a rate 40% higher than that of typically developing peers. Children with ASD are 7.6 times more likely to be seen for poisoning than typically developing peers. Children with ASD are also treated for injuries to the upper limbs at a rate that is two and half times higher than the rate of children without disabilities. Typically developing children are treated for fractures at a rate that is three times lower than that of children with ASD. Children with ASD are treated for self-inflicted injuries at a rate that is 7.6 times higher than typically developing children. Typically developing children were found to have significantly lower rate of treatment for injuries resulting from being cut or pierced by an object than children with ASD (McDermott et al., 2008). Johnson and Rodriguez's (2013) article reported that children with ASD are more likely to be hospitalized, have longer lengths of hospital stays, higher rates of visits for outpatient therapy, and higher associated costs than typically developing peers.

Common Problems Displayed by Children with ASD in Health Care Settings

Hospitalization for any child can be a stressful experience; however, research shows that hospitalization for children with ASD often provokes challenging behaviors that stress parents, families, and health care providers (Johnson & Rodriguez, 2013). There are four major categories of challenging behaviors reports in Johnson and Rodriguez' article: non-compliance, hyperactivity, self-stimulatory, and self-injury. The category of non-compliance was extended to include emotional outbursts, temper tantrums, and other behavioral outburst. The category of hyperactivity was extended to include impulsive behaviors, elopement, and pestering behaviors. Self-stimulatory behaviors also included behaviors revolving around "sensory defensiveness." Sensory defensiveness was defined as "a child's aversion to certain environment elements, such as sounds, textures, and odors" (Johnson & Rodriguez, 2013, page 8).

One of the common reasons, reported by nurses, for children with ASD having tantrums is requesting the child to participate in their health care (Browne, 2006). Overstimulation from people, loud noises, smells, and other factors in the environment are also reported as a common reason for agitation among children with ASD in the hospital. Agitation caused by overstimulation was reported to frequently progress to emotional outbursts as well. Another common reason children with ASD display challenging behaviors while they are hospitalized is a result of the disruption to their routines and rituals. Challenging behaviors were also reported because of problems involving communication including: problems communicating physical pain, problems communicating general needs and wants, and problems understanding expectations and directions. Transitions, waiting time and physical discomfort have also been

reported as factors that provoke challenging behaviors for children with ASD in a health care setting (Johnson & Rodriguez, 2013).

Medical Personnel and ASD

The need for medical personnel to have an understanding of ASD and receive training for working with children with ASD continues to become more important. One negative experience during a health care visit for a child with ASD can negatively affect that child's behavior at future visits. Despite this fact, effective training programs in behavior management skills are often unavailable to nurses within the hospital. (Drake et al., 2012). Pediatric primary care providers also often report that they lack training in managing medical and behavioral issues for children with ASD (Bellando, Fussell, & Lopez, 2016). A study done in 2014 revealed that physicians had low self-perceived competency for providing care for children with ASD; the lowest levels of self-perceived competency were in the areas of "discussing the medical plan" and "finding resources for the patient with ASD to communicate" (Broder-Fingert, Ferrone, Giauque, & Conners, 2014). Drake et al.'s (2012) study showed that nurses believed that working with children with ASD was very stressful especially when there were tasks that needed to be done in a timely manner. Jolly's (2015) article reported that families of children with ASD report feeling that they are not heard by medical professionals. It is important for nurses to have the appropriate training to support both the child with ASD and their families in a health care setting. Families of children with ASD often experience exhaustion, depression, frustration, and poor physical health while their child is hospitalized due to the lack of support and understanding among health care professionals (Jolly, 2015).

Components of Effective Training

Throughout the literature there are many suggestions of components that should be included when training an individual to work with a child with ASD. Roncaglia's (2012) article stated that training should include the following components: ecological awareness, positive behavior support, low-arousal approaches, role-plays, and debriefing and emotional regulation. Ecological awareness was described as one's ability to recognize, understand, and manipulate factors in the environment that may contribute to behaviors. Positive behavior supports were described as delivering all strategies and interventions in positive and non-confrontational ways. The area of low-arousal approaches focused on the use of redirection and on the observer's self-awareness of body language in response to challenging behaviors. Role-plays were used in trainings for two main purposes: to allow individuals to practice strategies in stimulated situations and to offer individuals an opportunity to experience the feelings associated with being involved in a situation where a challenging behavior occurred. The final area of debriefing and emotional regulation was used to teach individuals how to talk about incidences involving challenging behaviors after they occur (Roncaglia, 2012). Background knowledge in how children with ASD communicate was identified as an area nurses need to be trained in so they are able to provide high quality care to patients with ASD (Brown & Elder, 2014). Another article stated that it is imperative for nurses to understand the unique challenges of children with ASD and have background knowledge of ASD (Scarpinato et al., 2010).

Partnering with Family Members and Caregivers

There are many strategies throughout the literature that have been used by health care professionals to address challenging behaviors from children with ASD in the health care setting.

One study reported that “proactive rather than reactive” strategies are most important when working with a child with ASD in the health care setting (Drake et al., 2012). One of the best ways health care providers can proactively address challenging behaviors is by listening and encouraging active involvement of the family members and caregivers. Family members and caregivers often have insight on many factors that may help to prevent challenging behaviors such as: what triggers behaviors for their child, what causes anxiety for their child, the best way to communicate with their child, and what helps to calm their child (Jolly, 2015).

Chapter 3: Method

Research Design

This research was intended to answer the following questions:

1. Does the use of the training program designed for this project increase the nursing students' knowledge and understanding of autism spectrum disorder?
2. Does the use of the training program designed for this project improve the nursing students' self-perceived competency in addressing challenging behaviors of children with ASD in a health care setting?

The research design used in this study was a combination of qualitative and quantitative research. The qualitative measure of this study involved the nursing students' self-perceived competency in caring for children with autism spectrum disorder who display challenging behaviors in a health care setting. The quantitative measure of this study evaluated nursing students' knowledge and understanding of autism spectrum disorder.

Training Program

The training program used for this study was designed by the author in collaboration with representatives from the nursing faculty at Rochester Community and Technical College. The training program took place during the students' 2-hour class period. The training consisted of two main parts: a lecture portion, and a role-play portion with debriefing. The lecture portion of this training included a brief overview of Autism Spectrum Disorder and information about behavior management techniques for preventing and de-escalating challenging behaviors that individuals with ASD may display. The information from the lecture portion of this training was delivered in a power-point presentation created by the author. The lecture portion of this

training also included demonstrations of behavior management techniques by the author and training assistants.

Following the lecture portion of this training, the students were taken to a hospital simulation lab for the role-play and debriefing portion of this training. Each student was given a written scenario (Appendix F) prior to the role-play portion of this training and had 5 minutes to plan their role-play presentation. Each written scenario included: a description of a child with ASD, a health-care related task to complete, suggested behavior management techniques to use, a description of the challenging behaviors their child may display, and triggers of the challenging behaviors for their child. The nursing students were allowed to use props found in the simulated hospital room and props specifically provided that were necessary to complete their health-related task.

The nursing students were placed in three groups for the role-plays and debriefing; each group worked with a training assistant. The training assistants served as the patient for each role-play scenario. The nursing students were required to complete one of the following health care related tasks on their patient during the role-play: preparing their patient for a blood draw, giving an oral medication, or waiting with their patient for an x-ray. Following each role-play scenario, the training assistants along with the author conducted a 5–10 minute debriefing session. During the role-plays, the author was available to answer questions and model techniques as needed. The nursing students not actively participating in the role-plays were able to observe other students within their groups and were given the opportunity to comment and ask questions during the debriefing session. Following the training the nursing students were given a

resource list (Appendix G) related to working with children with ASD to review on their own time.

Participants

The participants of this study were nursing students who were enrolled in the pediatric practical nursing course during the spring 2017 semester at Rochester Community and Technical College. Thirty-six nursing students participated in this study. Of these students, four were male and 32 were female. The ages of the participants ranged from 18-44 years. The students were randomly divided into a control group and a test group. The students in the test group completed the training program designed for this study. The students in the control group completed the standard curriculum related to ASD by their instructor during the time of study.

The control group was composed of 16 participants with four participants ages 18-24, eight participants ages 25-34, and four participants ages 35-44. Of the 16 participants in the control group, one participant was Hispanic/Latino, two were African American, and 13 were Caucasian. One of the participants from the control group was male and the other 15 participants were female. When asked about their highest level of education, ten participants responded “some college, no degree,” three responded “associates degree,” two responded “bachelor’s degree,” and one responded with “other.” Of the 16 participants from the control group, seven participants indicated they had no experience working with individuals with ASD, one had 1-4 months of experience, three had 1-2 years of experience, three had 3-4 years of experience, and two had 5 or more years of experience.

Table 1**Demographic Information for Control Group**

Demographic Information Control Group (n=16)	
Demographic Information	Number of Participants from Group
Age	
18-24	4
25-34	8
35-44	4
Ethnicity	
Hispanic/Latino	1
African American	2
Caucasian	13
Highest Level of Education	
Some College, No Degree	10
Associates Degree	3
Bachelor's Degree	2
Other	1
Gender	
Female	15
Male	1
Experience Working with Individuals with ASD	
No Experience	7
1-4 months	1
1-2 years	3
3-4 years	3
5+ years	2

The test group was composed of 20 participants: seven participants ages 18-24, 10 participants ages 25-34, and three participants ages 35-44. Of the 20 participants in the test group, 18 of the participants were Caucasian and two were Asian. Three of the participants were male and the other 17 were female. When asked about their highest level of education, 14 participants responded “some college, no degree,” five responded “associates degree,” and one responded “bachelor’s degree.” Of the 20 participants from the test group, 16 participants indicated they had no experience working with individuals with ASD, three had 1-4 months of experience, and one had 3-4 years of experience.

Table 2**Demographic Information for Test Group**

Demographic Information Test Group (n=20)	
Demographic Information	Number of Participants from Group
Age	
18-24	7
25-34	10
35-44	3
Ethnicity	
Asian	2
Caucasian	18
Highest Level of Education	
Some College, No Degree	14
Associates Degree	5
Bachelor's Degree	1
Gender	
Female	17
Male	3
Experience Working with Individuals with ASD	
No Experience	16
1-4 months	3
3-4 years	1

Data Collection Methods

Data were collected during Spring Semester (January-May) of 2017. During this time, all participants completed a demographic information survey, pre-tests, and post-tests. Four participants were randomly selected to complete a post-training small group interview. The demographic information survey (Appendix B) completed from this study contained six multiple choice questions and was used to collect information about the participants: age, ethnicity, the highest level of education completed, gender, and experience working with individuals with ASD. One pre-test and post-test (Appendix C) taken by participants from this study contained six multiple choice questions and was used to assess the participants' knowledge and understanding of Autism Spectrum Disorder. A second pre-test and post-test (Appendix D)

contained seven rating scale questions and was used to assess the participants self-perceived competency in caring for children with autism spectrum disorder who may display challenging behaviors in the health care setting. The four students randomly selected to participate in the small-group interview (Appendix E) answered six open-ended questions pertaining to the training they received.

Data Analysis Procedures

The participants' scores from the quantitative pre-test and post-test were compared for both the test and control groups. The scores from the quantitative pre-test and post-test were averaged with the average scores of the pre-test and post-test from the control group being compared to the average scores of the pre-test and post-test from the test group. The average rating score for each statement on the qualitative assessment was determined for both groups on the pre-test and post-test and compared. The change in average score for each statement from the pre-test and post-test was compared for the control group and the test group. The training evaluation interviews completed by four of the participants from the test group were examined for common themes.

Chapter 4: Results

Research Question 1

Does the use of the training program designed for this project increase the nursing students' knowledge and understanding of autism spectrum disorder? To answer this question, the participants of this study completed a 6-question multiple-choice assessment prior to and after receiving training. Table 3 summarizes the results of the participants' pre-test and post-test scores. As Table 3 illustrates all participant scores from the test group increased after receiving the training, while the majority of participant scores from the control group either decreased or remained the same on both the pre-test and post-test.

Table 3

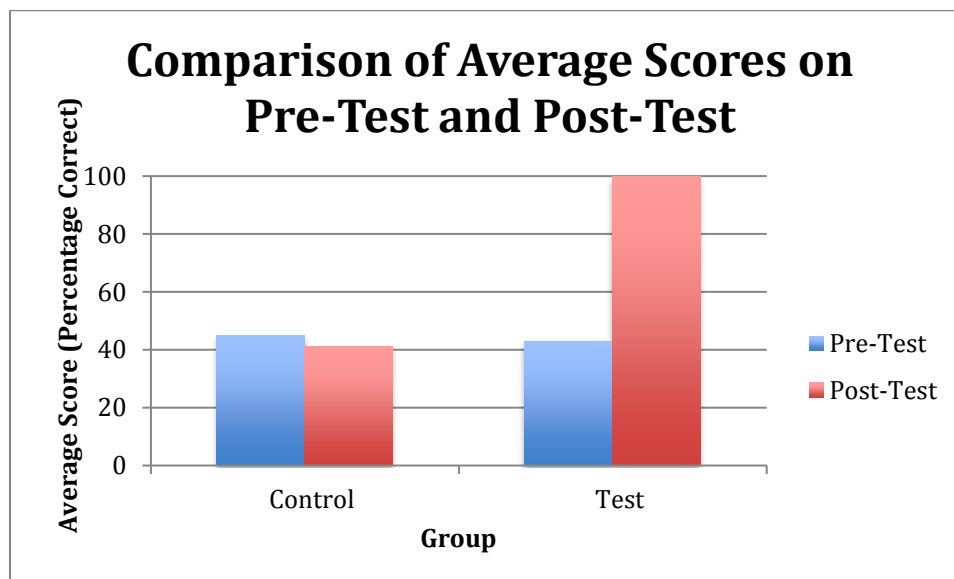
Pre-Test and Post-Test Scores Comparison

Quantitative Assessment: Pre-test and Post-test Scores Comparison		
Control Group		
Participant #	Pre-Test Score	Post-Test Score
Participant #1	50%	50%
Participant #6	50%	34%
Participant #7	50%	34%
Participant #8	34%	34%
Participant #9	67%	34%
Participant #12	50%	34%
Participant #13	67%	50%
Participant #14	67%	50%
Participant #16	67%	50%
Participant #19	34%	50%
Participant #20	17%	17%
Participant #22	17%	50%
Participant #25	50%	50%
Participant #29	34%	34%
Participant #32	34%	50%
Participant #36	34%	34%
Test Group		
Participant #	Pre-Test Score	Post-Test Score
Participant #2	67%	100%
Participant #3	50%	100%
Participant #4	34%	100%
Participant #5	67%	100%
Participant #10	17%	100%
Participant #11	34%	100%
Participant #15	50%	100%
Participant #17	50%	100%
Participant #18	34%	100%
Participant #21	67%	100%
Participant #23	34%	100%
Participant #24	67%	100%
Participant #26	50%	100%
Participant #27	34%	100%
Participant #28	34%	100%
Participant #30	34%	100%
Participant #31	34%	100%
Participant #33	34%	100%
Participant #34	67%	100%
Participant #35	0%	100%

The average group scores for both the control and test groups on the pre-test and post-test were calculated by adding the scores together and dividing that number by the number of participants in the group. The group average pre-test and post-test scores are represented in Figure 1. Participants from the control group averaged a score of 45% on the pre-test and averaged a score of only 41% on the post-test, showing an overall decrease in their scores from pre-test to post-test. Participants from the test group averaged a score of 43% on the pre-test and a score of 100% on the post-test; showing an overall increase in their scores from pre-test to post-test.

Figure 1

Comparison of Average Scores on Pre-Test and Post-Test



Research Question 2

Does the use of the training program designed for this project improve the nursing students' self-perceived competency in addressing challenging behaviors of children with ASD in a health care setting? To answer this question, the participants of this study completed seven

rating scale questions prior to and after receiving training. Participants considered seven statements, shown in Table 4, and were asked to rate themselves on a scale of 1-5 for each statement. Table 5 depicts the rating scale used for this assessment.

Table 4

Assessment Statements

Statement 1	I have a strong understanding of what autism spectrum disorder is.
Statement 2	I am knowledgeable about strategies for communicating with individuals with autism.
Statement 3	I am able to identify potential triggers of challenging behaviors for individuals with autism.
Statement 4	I can make modifications to the environment to help make an individual with autism more comfortable.
Statement 5	I am comfortable caring for individuals with autism that may display aggressive behaviors.
Statement 6	I am confident in my ability to handle challenging behaviors that an individual with autism may have.
Statement 7	I am knowledgeable about techniques that can de-escalate challenging behavior of an individual with autism.

Table 5

Rating Scale

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

The average rating score for each statement was calculated by adding the ratings together and dividing by the number of participants in each group. The change in average was calculated by subtracting the pre-test average rating from the post-test average rating for each statement. Table 6 summarizes the average rating scores for each assessment statement for both the control and test groups on the pre-test and post-test. Both the control group and the test group showed a positive change from their pre-test ratings and their post-test ratings. The control group showed

a minimal positive change in average scores for each statement between the pre-test and post-test from 0-0.60 points. Figure 2 shows a comparison between average rating scores for each statement on the pre-test and post-test for the control group. The test group showed a significant positive change in average scores for each statement between the pre-test and post-test from 1.05-2.05 points. Figure 3 shows a comparison between average rating scores for each statement on the pre-test and post-test for the test group.

Table 6**Average Rating Scores**

Average Rating Scores							
Control Group							
	Statement 1	Statement 2	Statement 3	Statement 4	Statement 5	Statement 6	Statement 7
Pre-Test	3.25	3.25	3.5	3.6	3.5	3.5	3.3
Post-Test	3.8	3.8	4.1	4.1	3.6	3.5	3.75
Change in Average	+0.55	+0.55	+0.60	+0.50	+0.10	0	+0.45
Test Group							
	Statement 1	Statement 2	Statement 3	Statement 4	Statement 5	Statement 6	Statement 7
Pre-Test	2.65	3.35	2.4	2.7	2.1	2.7	2.6
Post-Test	4.65	4.4	4.45	4.45	3.85	3.95	4.1
Change in Average	+2.00	+1.05	+2.05	+1.75	+1.75	+1.25	+1.50

Figure 2

Control Group: Average Rating Scores Comparison

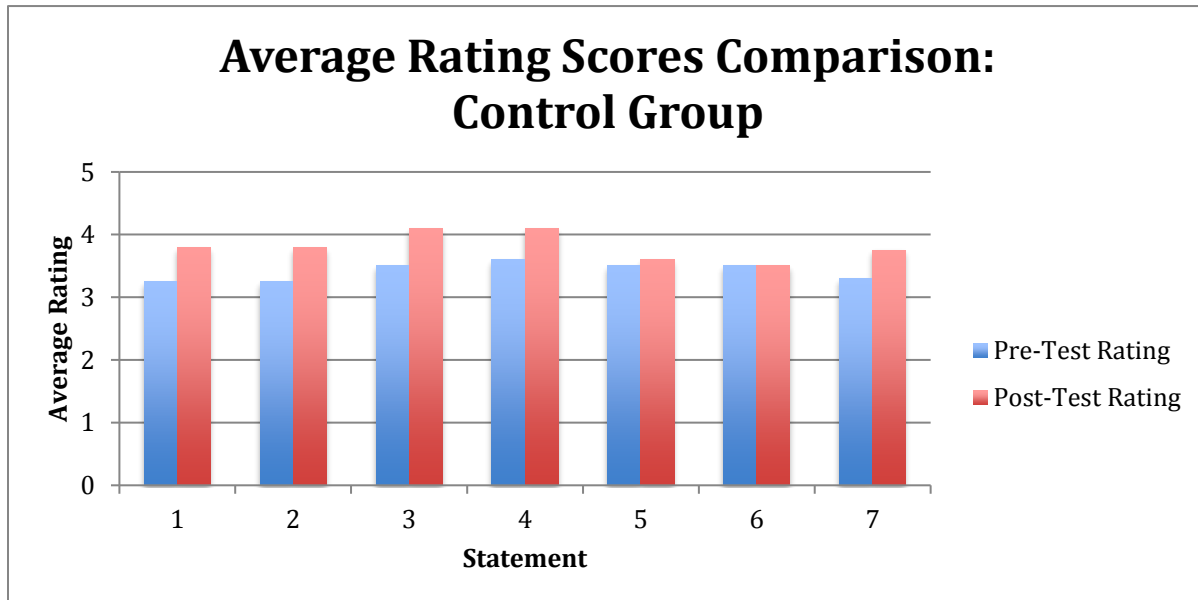
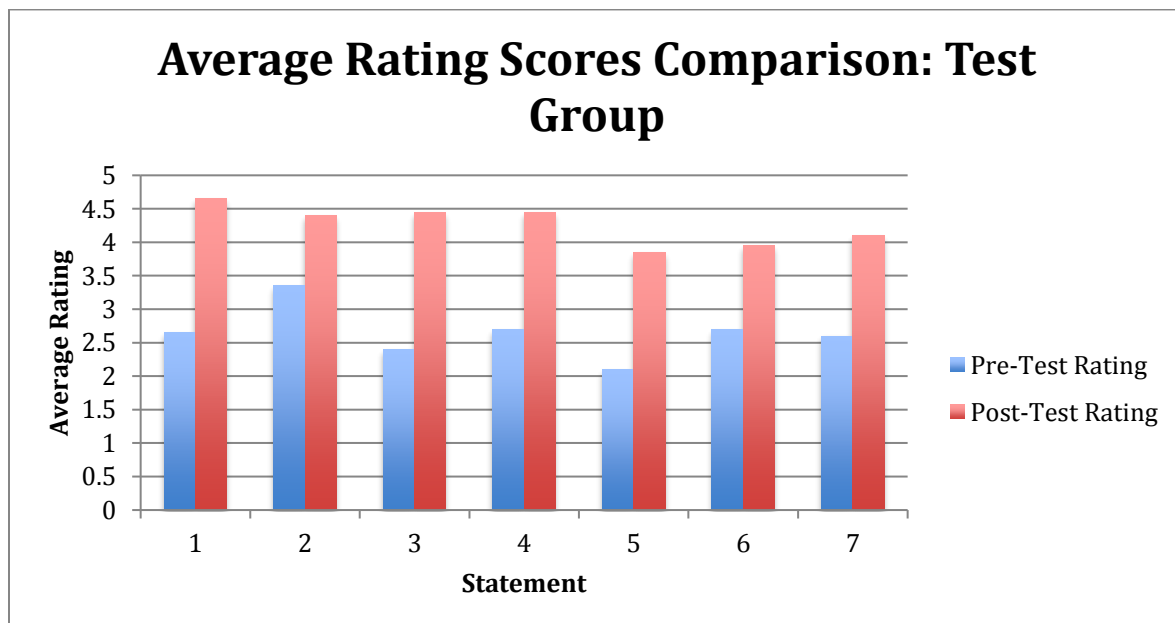


Figure 3

Test Group: Average Rating Scores Comparison



Training Evaluation Interview Results

The training evaluation interviews completed by four participants from the test group were examined for common themes. All four participants felt that the material presented in the training was relevant to their work and was presented in clear and easy to understand manner. The four participants all commented that they felt the training was very informative and that the information presented in the training was “eye-opening.” All four of the participants felt that the role-play scenarios were the most helpful and the part of the training they liked the most. All four participants commented that they would have liked the training to be longer and that they would want more time dedicated to the demonstration of the behavioral techniques included in the presentation.

Chapter 5: Discussion

Interpretation of Findings

As a result of my research, I hoped to answer the following questions:

1. Does the use of the training program designed for this project increase nursing students' knowledge and understanding of autism spectrum disorder?
2. Does the use of the training program designed for this project improve nursing students' self-perceived competency in addressing challenging behaviors of children with ASD in a health care setting?

The first question from this study was answered by examining the results from the quantitative assessment. The results from the quantitative assessment show significant improvement among those from the test group. These results support the use of this training program as an effective way to increase nursing students' understanding and knowledge of autism spectrum disorder. By comparison, the results from the quantitative assessment from the control group show that the participants' scores either remained the same or decreased after the standard curriculum instruction they received.

The second question from this study was answered through examining the results from the qualitative assessment. Several inferences can be drawn from the results of the test groups' ratings and the control groups' ratings. The majority of participants from the test group rated themselves between 1 and 3 on the scale for each statement on the pre-test. After receiving the training, the majority of participants from the test group rated themselves 4-5 on the scale, reflecting perception of increased competence. The test group showed overall improvement in ratings for each question after receiving training. These results demonstrate that the training

program was effective in improving nursing students' self-perceived competency in addressing challenging behaviors of children with ASD in health care settings.

The results of the qualitative assessment for the control group showed little to no improvement in their ratings for each question following the standard curriculum instruction about autism spectrum disorder they received. The control group participants rated themselves higher than the test group participants on each question during the pre-test assessment with the majority of these participants rating themselves between 2 and 4 for each of the questions on the pre-test. Following the standard curriculum instruction, the majority of the control participants still rated themselves between 2 and 4 on the scale for each question.

Limitations

One limitation of this study that may affect validity is the small sample size. A sample size of 36 participants is minimal and provides entry level data. Although the sample size is small, the results do provide support to the need for training nurses to work with individuals with ASD as is demonstrated in the literature.

A second limitation to this study was that all the participants in this study were recruited from the same location. The convenience sample for this study was recruited through Rochester Community and Technical College's (RCTC) practical nursing program. The results of this study cannot be generalized to nursing students from other nursing programs. The results of this study may also be biased since all the participants came from one college's nursing program.

Another limitation that could have impacted the results of this study was time constraints. The training program implemented during this study took place during a 2-hour class period which limited the amount of material included in the training program. Ideally, the training

program would have taken place over several class periods or during a full day training.

Although, the overall results of this study indicate that this training program was effective and beneficial for the nursing students who participated, the full impact of this training program cannot be represented here.

Next Steps in Research

A similar study conducted with a larger sample size would be beneficial. It would also be beneficial to extend this study to students from multiple different nursing programs. The next steps in research would be to begin to look at related fields that have a high likelihood of encountering individuals with ASD, such as emergency medical services (EMS), physician assistants, and nursing assistants, and their training associated with Autism Spectrum Disorder.

Closing Remarks

As the prevalence of children diagnosed with Autism Spectrum Disorder (ASD) continues to rise, the importance of providing professionals in health care and educational settings with training for working with individuals with ASD also continues to rise. Although there is significant support for training nurses to work with children with ASD throughout the literature, there are currently no formal training programs or guidelines for caring for children with ASD required in most nursing education curricula. This study supports the value of training nursing students to work with children with ASD in health care settings. Full potential of this initiative will be realized through continued data collection and further examination for planning of a formal comprehensive addition to nursing curricula.

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Appendix A: Informed Consent

Dear Participant,

I invite you to participate in a research study entitled: Preparation of Nursing Students to Address Challenging Behaviors of Patients with Autism Spectrum Disorder in Health Care Settings. I am currently enrolled in the Early Childhood Special Education program at St. Cloud State University and am in the process of completing my master's thesis. You were selected as a possible participant because of your enrollment in the practical nursing pediatrics course at Rochester Community and Technical College. The purpose of this study is to evaluate the effectiveness of a training program designed to instruct nursing students in working with individuals with Autism Spectrum Disorder who may display challenging behaviors as a patient in the hospital setting.

Your participation in this research study is completely voluntary. If you choose to participate, you will be asked to complete the following tasks: a demographic information survey, a pre-test, a short training that will occur during your scheduled class time, a post-test, and a possible small group interview (if randomly selected). Your participation in this research study will have no effect on your grade for your course. Students who choose not to participate in this study will receive an alternative instruction during the class time that the training will take place.

There are no known risks to participation in this study beyond those encountered in everyday life. Your responses will remain confidential and be kept under lock and key. To ensure confidentiality, all participants will be randomly assigned a number to represent them; all

data will be reported using these randomly assigned numbers. No one other than the researcher will know your individual responses or your randomly assigned numbers.

If you have any questions concerning this project, feel free to contact me (wipa1002@stcloudstate.edu), my supervisor, JoAnn Johnson (jojohanson@stcloudstate.edu), or speak with your course instructor. Information on the rights of human subjects in research is available through the St. Cloud State University website under the Institutional Review Board. Results from this study may be requested by emailing me directly. Please return this form to your course instructor.

Acceptance to Participate:

Your signature indicates that you are at least 18 years of age, you have read the information provided above, and you have consent to participate. You may withdraw from this study at any time without penalty after signing this form.

Print Name: _____

Signature: _____

Date: _____

Decline to Participate:

If you would **not** like to participate in this research study, please print your name on the following line and return to your instructor.

Print Name: _____

Appendix B: Demographic Information Survey

Participant Information

Circle your responses to the following questions.

1. What is your age?

- a. 18-24 years old
- b. 25-34 years old
- c. 35-44 years old
- d. 45-54 years old
- e. 55-64 years old
- f. 65-75 years old
- g. 75 years or older

2. What is your ethnicity?

- a. White
- b. Hispanic or Latino
- c. African American
- d. Native American
- e. Asian
- f. Pacific Islander
- g. Other

3. What is the highest level of education you have completed?

- a. High school graduate
- b. Some college, no degree
- c. Associate's degree
- d. Bachelor's degree
- e. Master's degree
- f. Ph.D.
- g. Other

4. What is your gender?

- a. Female
- b. Male

5. Indicate your level of experience working with individuals with autism.

- a. None
- b. 1-4 months
- c. 5-11 months
- d. 1-2 years
- e. 3-4 years
- f. 5 or more years

Appendix C: Autism Information Test: Pre- and Post-Test

1. The current prevalence rate for children identified with autism is?
 - A) 1/52
 - B) 1/100
 - C) 1/68
 - D) 1/36
2. What is Autism Spectrum Disorder (ASD)?
 - A) Neurodevelopmental disorder characterized by repetitive behaviors.
 - B) Psychological developmental disorder characterized by mood swings.
 - C) A mental health disorder characterized by withdrawal behavior.
 - D) A psychosocial disorder characterized by altered neurotransmitter levels.
3. Which of the following is **NOT** included under the diagnosis of ASD
 - A) Pervasive Developmental Disorder-Not Otherwise Specified
 - B) Childhood Disintegrative Disorder
 - C) Oppositional Defiant Disorder
 - D) Asperger's Syndrome
4. Which of the following communication characteristics is associated with ASD?
 - A) Switching sounds in words ("wish washer" for "dish washer")
 - B) Poor eye contact
 - C) Distortions of vowel sounds
 - D) Slurred speech
5. Which of the following behavioral characteristics is **NOT** associated with ASD?
 - A) Odd food preferences
 - B) Resistant to change
 - C) Excessive day time sleepiness
 - D) Unusual sensitivity to certain stimuli

6. How many severity levels are defined by DSM-5 for ASD?

A) 2

B) 3

C) 4

D) 6

Appendix D: Self-Perceived Competency Rating Scale

Please circle your response to each of the following questions

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

1. I have a strong understanding of what autism spectrum disorder is.

1 2 3 4 5

2. I am knowledgeable about strategies for communicating with individuals with autism.

1 2 3 4 5

3. I am able to identify potential triggers of challenging behaviors for individuals with autism.

1 2 3 4 5

4. I can make modifications to the environment to help make an individual with autism more comfortable.

1 2 3 4 5

5. I am comfortable caring for individuals with autism that may display aggressive behaviors.

1 2 3 4 5

6. I am confident in my ability to handle challenging behaviors that an individual with autism may have.

1 2 3 4 5

7. I am knowledgeable about techniques that can de-escalate challenging behavior of an individual with autism.

1 2 3 4 5

Appendix E: Interview Questions

Training Evaluation Interview Questions

1. Do you feel that the topics covered in this training were relevant to your work?
2. Was the information in this training presented in a way that was easy to understand and follow?
3. What did you like most about this training?
4. What components of this training could be improved?
5. How will you apply what you learned in this training to your work?
6. Any additional comments?

Appendix F: Role-Play Scenarios

- Scenario #1: The lab technician is on their way down to see your patient; they will be there in the next 5-10 minutes. They have requested that you prep the patient for them. Your patient must have a tourniquet on their arm and their skin must be cleaned before the lab technician arrives.
 - Low Functioning: This child is a 6 year old with Autism Spectrum Disorder who is nonverbal. This child has a history of displaying self-stimulating behaviors and hitting others when anxious. This child has high levels of sensitivity to different textures and to touch. This child often responds well when they are given lots of positive reinforcement and when their attention is redirected to positive sources of stimulation. This child is highly motivated funny noises and silly faces.
- Scenario #1: The lab technician is on their way down to see your patient; they will be there in the next 5-10 minutes. They have requested that you prep the patient for them. Your patient must have a tourniquet on their arm and their skin must be cleaned before the lab technician arrives.
 - High Functioning: This child a 14 year old with Autism Spectrum Disorder who has strong expressive language skills. This child has a history of eloping and damaging property when presented with non-preferred tasks. Offering choices is very effective with this child.
- Scenario #2: You have just been alerted that you have 10 minutes to get your patient down to X-ray as they decided to move their appointment an hour ahead of when it was

scheduled. Before you can leave for X-ray, your patient must be given their daily medication. Your patient must be in wheelchair to go down to X-ray.

- Low Functioning: This child is a 10 year old with Autism Spectrum Disorder with limited expressive language skills. This child has a history of displaying aggressive behaviors (hitting and biting). This child has a history of displaying aggressive behaviors when presented with a medication to take, seeing a medication bottle, or hearing words associated with medication (meds, medication, pill, etc.). It is most effective to redirect this child's aggressive behaviors when they do occur. This child is highly motivated by singing songs.
- Scenario #2: You have just been alerted that you have 10 minutes to get your patient down to X-ray as they decided to move their appointment an hour ahead of when it was scheduled. Before you can leave for X-ray, your patient must be given their daily medication. Your patient must be in wheelchair to go down to X-ray.
 - High Functioning: This child is an 8 year old with Autism Spectrum Disorder who has strong expressive language skills. This child has a history of throwing objects and having tantrums during transition times especially when there are sudden changes to the schedule. Occasionally this child becomes aggressive during tantrums. This child needs proper warnings before transitions. Using visuals and providing predictability is very effective with this child.
- Scenario #3: You have just arrived at X-ray with your patient. As you go to check-in, you are informed that they are backed-up and you must wait for your turn. It will be at least a 10 minute wait.

- Low Functioning: This child is a 5 year old with Autism Spectrum Disorder who speech is very difficult to understand. This child has a history of self-injurious behavior and kicking others. Common triggers for this child's behavior are not being understood and unstructured time. This child is highly motivated by attention.
- Scenario #3: You have just arrived at X-ray with your patient. As you go to check-in, you are informed that they are backed-up and you must wait for your turn. It will be at least a 10 minute wait.
 - High Functioning: This child is a 12 year old with Autism Spectrum Disorder who has strong expressive language skills. This child is very obsessed with time and will often act out in order to get attention, especially during down time. If this child is given attention for acting out, the behavior will quickly escalate.

Appendix G: Resource List

Autism Speaks Website: <https://www.autismspeaks.org/family-services/tool-kits>

- [ATN/AIR-P Guides to EEGs for Parents and Providers](#)
- [ATN/AIR-P Blood Draw Tool Kit](#)
- [ATN/AIR-P Visual Supports and Autism Spectrum Disorder](#)
- [Challenging Behaviors Tool Kit](#)