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## **Educating Primary Care Providers to understand Takotsubo/ Stress Cardiomyopathy which has a higher incidence in Post- Menopausal Women: A Quality Improvement Project**

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**Educating Primary Care Providers to understand Takotsubo/Stress Cardiomyopathy  
which has a higher incidence in Post-Menopausal Women: A Quality Improvement Project**

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November 29, 2022

## **Abstract**

Takotsubo cardiomyopathy, or stress cardiomyopathy, has been known since the early 1990s, first diagnosed in Japan; however, less awareness and no disease prevention measures have been in effect. It has been well known in the literature review; how many research findings identify postmenopausal women as at higher risk for stress cardiomyopathy. However, this information is still to be better understood by many primary care providers, as they play a pivotal role in decreasing mental or physical stress for a patient in this quality improvement project. The primary goal of the investigator is to analyze the effectiveness of increasing awareness of Takotsubo Cardiomyopathy and its higher incidence seen in Menopausal women to Primary care providers. The site used for conducting the study is the Florida Nurse Practitioner Association platform to its members as the role of Nurse Practitioners in health care delivery is increasing and helping bridge the gap of need for primary care providers.

The method of conducting this quality improvement project involved providing a PowerPoint voiceover presentation on Takotsubo Cardiomyopathy and its higher incidence in menopausal women by voluntary participation in a pretest and posttest Likert questionnaire survey on Qualtrics. No direct person contact was involved in conducting and analyzing the resulting findings in this quality improvement project.

The results analyzed electronically on Qualtrics, which involved a total of 20 pretest survey responses, and 20 posttest survey responses, showed an increase in understanding of the topic. The two tailed paired t test result confirms statistically significant difference in the pretest and posttest, with P value less than 0.0001 based on N (10), T value equal to 6.89.

We can conclude that using PowerPoint voiceover presentation to providers in the Florida Nurse Practitioner association increased the awareness of Takotsubo-cardiomyopathy Cardiomyopathy. This is also a cost-effective, convenient, self-paced method of education that helped raise awareness on the topic to help providers feel comfortable managing, preventing incidence in high-risk groups, and in general, educating their patients on the subject.

*Keywords:* Takotsubo cardiomyopathy, stress cardiomyopathy, menopausal women, broken heart syndrome, PowerPoint voiceover presentation.

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**Educating Primary Care Providers to understand Takotsubo/Stress Cardiomyopathy  
which has a higher incidence in Post-Menopausal Women: A Quality Improvement Project**

**Introduction and Statement of the Problem**

Takotsubo Cardiomyopathy, which presents similar to an acute coronary syndrome, has been seen to have a higher prevalence in postmenopausal women after emotional or physical stress, with reports of catecholamine cardiotoxicity pathophysiology yet not completely understood (Ono & Falcão, 2016), and no preventive measure education to providers. Therefore, educating Providers on Takotsubo or Stress Cardiomyopathy to improve screening in menopausal women is a quality improvement project. Takotsubo cardiomyopathy involves catecholamine cardiotoxicity with a favorable prognosis if diagnosed early, rare but can have life-threatening complications (Ono & Falcão, 2016).

The occurrence of takotsubo syndrome is nine times higher in women of menopausal age than in men; the hospital mortality among patients with Takotsubo cardiomyopathy is 3.5% to 12% (Prokudina et al., 2021). Unfortunately, more accurate data is unavailable due to many undiagnosed cases; mortality during the acute hospitalized phase is around 5% reported based on available documented information (Pelliccia et al., 2017).

Takotsubo cardiomyopathy has a favorable prognosis if diagnosed early; rare but can have life-threatening complications (Ono & Falcão, 2016). In addition, women's experiences and views of Menopause that influence women's daily lives physically, mentally, and socially vary between societies and cultures (Ilankoon et al., 2021). A study conducted in Cleveland Clinic, Florida, also reports that the decrease in estrogen in postmenopausal women who are not on estrogen therapy contributes to the onset of Takotsubo Cardiomyopathy (Kuo et al., 2010). In

addition, the correlation of arrhythmias, anxiety, and depression disorders with increased sympathetic activity and case causes is a cause for takotsubo cardiomyopathy (Garcia & Shea, 2021).

Several studies and case reports on Takotsubo Cardiomyopathy have questions unanswered on its pathophysiology, or the cause for the higher incidence in postmenopausal women, despite reports of emotional and physical stress. Since the start of the DNP program, many providers have approached a better understanding of this topic. Primary care providers must know this condition for early diagnosis and proper management to prevent a bad outcome (Vakamudi, 2016). The cardiologist and primary care provider needs a team approach to this condition for timely and appropriate management (Vakamudi, 2016).

Mental health screening and education in perimenopausal and postmenopausal women could be like getting essential regular lab work, colonoscopy, or breast imaging, which is part of health prevention. Many menopausal women are unaware of estrogen replacement therapy, psychotherapy, exercise, therapeutic effects of antidepressants. More than four studies, including randomized control trials, have shown the impact of estradiol on the management of depressive disorder in premenopausal and menopausal women (Maki et al., 2018). Takotsubo cardiomyopathy, also known as stress cardiomyopathy, with a higher prevalence seen in menopausal women, likely needs areas of mental and physical health to be addressed in early screening tools. Educating both providers and the public is the key to dealing with this issue which may be challenging based on personal culture, beliefs, and access to healthcare or healthcare providers; however, starting with primary care providers who screen and educate patients helps reach out to a great group of people.



### **Summary of the literature/Evidence related to the clinical question**

The Literature review focuses on articles to assist with qualitative research for quality improvement for Takotsubo cardiomyopathy, to help what we know and what needs further investigation. The databases used for this literature review include PubMed, CINAHL, Google Scholar, MEDLINE, Springer Online Journals, and Science Direct Journals (5 years ago - present). Studies were limited to the English language; however, research articles conducted in and outside the United States were used. The literature review consists of articles published in the last ten years related to key search words. The keywords and phrases for the following concepts: Takotsubo cardiomyopathy, stress cardiomyopathy, broken heart syndrome, Menopause, educating healthcare providers, PowerPoint presentation.

#### **Takotsubo cardiomyopathy**

Takotsubo cardiomyopathy is reversible cardiomyopathy known for over twenty-five years, resembling a myocardial infarction presentation that affects the left ventricle's apical area (Chlus et al., 2016). Diagnostic criteria for takotsubo cardiomyopathy have specific criteria, which include hypokinesis, akinesis, dyskinesis of the mid-left ventricular segment with or without apical involvement, regional wall motion abnormalities, electrocardiographic 'abnormalities', absence of obstructive coronary artery or absence of angiographic evidence of acute plaque rupture and lack of pheochromocytoma or myocarditis (Andrade & Stainback, 2014). Based on accepted theories, it is believed that catecholamines released in response to physical or emotional stress induce microvascular dysfunction and cardiotoxicity in conjunction with the integration of neuroendocrine physiology, leading to further affecting cognitive centers of the brain and hypothalamic-pituitary-adrenal axis (Akashi et al., 2015). Europe and the United States established an international takotsubo registry in 26 centers to investigate takotsubo

cardiomyopathy clinical symptoms, prognosis, predictors, and outcome. Patients who had acute coronary syndrome were compared, age and sex-matched (Templin et al., 2015). A study of 1750 patients reported a higher prevalence of psychiatric or neurological disorders in patients with takotsubo cardiomyopathy. Also, this condition can cause acute heart failure syndrome, further increasing morbidity and mortality (Templin et al., 2015). The diagnosis of stress cardiomyopathy is many times missed and delayed due to its presentation similar to acute coronary syndrome, and limited understanding of the condition or screening of patients as the healthcare provider should have a high index of suspicion for Takotsubo cardiomyopathy in patients with less or few cardiovascular risk factors and only moderately elevated cardiac enzymes (Chlus et al., 2016). The greater awareness of stress cardiomyopathy makes it possible to deliver more effective practices in healthcare (Chlus et al., 2016). The delay in diagnosing Takotsubo cardiomyopathy will cause further delay and affect the prognosis for related complications such as arrhythmia, intraventricular thrombus, heart failure, and left ventricular outflow tract obstruction (Tanabe & Akashi, 2016). The takotsubo syndrome is nine times higher in postmenopausal women than in men (Prokudina et al., 2021). The occurrence of stress or takotsubo cardiomyopathy is known to be followed by unpleasant events, which could be emotional and physical. One case study from India reported the recurrence of Takotsubo cardiomyopathy in a postmenopausal woman similar to the last event during a stressful event in her life, which clarifies it can reoccur and why awareness is vital to care appropriately (Chacko et al., 2018). The COVID-19 pandemic has caused significant emotional and physical stress related to isolation, and respiratory infection, causing increasing cases of Takotsubo cardiomyopathy (Szarpak et al., 2021). What started in 2019 continues to be the pandemic era of COVID -19, the need for awareness of Takotsubo cardiomyopathy, triggered by emotional and

physical impacts evidenced in the pandemic (Okura, 2021). Despite many early studies suggesting Taco soup will cause cardiomyopathy with a favorable prognosis than acute coronary syndrome, more recent data has reported Takotsubo cardiomyopathy to be not a benign disease as compared with the acute coronary syndrome (Szarpak et al., 2021).

### **Gender role**

One study suggests that premenopausal reproductive factors may play a role in the onset of Takotsubo cardiomyopathy in menopausal women; however, it requires a larger population for further studies (Salmoirago-Blotcher et al., 2016). Cleveland Clinic Florida conducted a study on postmenopausal women on estrogen therapy versus women not on it, which showed evidence of a lack of estrogen replacement in the postmenopausal state which may predispose women to takotsubo cardiomyopathy and suggest the need for further studies to establish the link stronger (Kuo et al., 2010). Menopause involves significant changes in a woman's life, including vasomotor, insomnia, vagina, mood, and age changes physically with muscle aches changing body contour, increase in skin wrinkles (Santoro et al., 2015).

Many studies have identified a higher incidence of Takotsubo cardiomyopathy in postmenopausal women, not just in the United States. One study discusses the relationship between the cardiovascular regulatory system and sex hormones, such as estrogen, that might explain the higher incidence of Takotsubo cardiomyopathy in menopausal women (Nagai et al., 2022). The relationship between the internal cortex in the brain and the autonomic control of the cardiovascular system has been associated with a decrease in estrogen post-menopause likely has a vital role in the overdrive in Takotsubo cardiomyopathy (Nagai et al., 2022).

A more recent Nationwide perspective study collecting data from national inpatient cases from 2011 to 2018, which were about forty-eight thousand hospitalizations with a primary

diagnosis of takotsubo cardiomyopathy, reports findings that confirm the known information of higher incidence of Takotsubo cardiomyopathy but also say for men to have increased mortality risk (Vincent et al., 2022). Another recent study conducted in Jackson Memorial Hospital/the University of Miami, Miami, Florida, reported findings from national inpatient data on Takotsubo cardiomyopathy that men with multiple co- moralties such as atrial fibrillation, Chronic obstructive pulmonary disease, chronic kidney disease, thrombocytopenia have likely increased of cardiogenic shock and mortality, identifying these risk factors and managing them closely will help decrease mortality and morbidity (Vincent et al., 2022). There are clinical demographics that show that women in postmenopausal are inclined to have Takotsubo cardiomyopathy chronically due to a decline in estrogen (Hou et al., 2021).

### **Educating Primary care providers**

Studies report that in most cases, the experience of physical or emotional stress is seen in the patient with takotsubo cardiomyopathy, which they may not share unless questioned by the healthcare provider (Medina de Chazal et al., 2018). In other cases, with minor events, it would go unnoticed if the diagnosis of Takotsubo cardiomyopathy is not thought of and the patient is not questioned (Medina de Chazal et al., 2018). A recent review by the Journal of the American College of Cardiology indicates the incidence of Takotsubo cardiomyopathy "risen from 15-30 per 100,000 per year despite the true incidence unknown as the condition is underdiagnosed in man" of the cases" (Medina de Chazal et al., 2018). Over the years, anxiety, depression, and sexual dysfunction increase so do a decrease in quality of life in female patients with takotsubo cardiomyopathy; hence for appropriate, timely treatment, healthcare providers must be aware of these problems to pay close attention and treatment (Saffari et al., 2017). Healthcare providers must understand stress cardiomyopathy to diagnose appropriately, educate, manage, and help

with future preventive studies. A qualitative study of patients and caregivers' perspectives on educating healthcare providers suggested the critical need to listen to caregivers and patients to make essential changes in future and current healthcare professionals' education (Adam et al., 2021). This is why educating primary care providers with a PowerPoint presentation using voiceover will give them a better understanding of the condition to help better screen patients and future studies by active participation in research and diagnosing patients.

### **PowerPoint presentation**

The University of Manitoba studied the use of PowerPoint presentations using voice-over in comparison to traditional voiceover showed findings that online voiceover screen-captured learning tools like PowerPoint had a more significant impact on their long-term learning (Schönwetter et al., 2016). Although using a suitable form of multimedia for the content is essential, presenting visual content with voiceover slide presentations is very effective and meaningful for educating. Still, it also reports that a video is more effective in demonstrating a process.

The literature review concluded that Takotsubo has been a general condition for over 25 years; however, there is less evidence of awareness of this condition triggered by physical or mental stress. This is a condition with increased incidence in menopausal women. However, cases of men diagnosed with this condition have higher mortality rates. We still have several questions related to Takotsubo Cardiomyopathy unanswered, and primary care providers need to promptly diagnose and care for the population at greater risk. A primary care provider is the person that patient routinely visits and should be aware of the existence of this rare syndrome and early diagnose, treat and prevent reoccurrence in patients with comorbidities or

postmenopausal women. Offering estrogen therapy may prevent Takotsubo cardiomyopathy with risk factors or recent triggers of physical or mental stress, which can be addressed in a primary care setting.

### **PICO Question/Purpose**

Does providing education on Takotsubo Cardiomyopathy help with the increase in awareness of Takotsubo Cardiomyopathy and its higher incidence in Menopausal women?

P - Primary care providers in Florida Nurse Practitioner Association

I - Intervention which involves educating providers with voiceover PowerPoint presentation

C - Comparing current primary care provider understanding of Takotsubo cardiomyopathy by conducting a pretest/posttest educational intervention.

O - Increasing awareness of Takotsubo cardiomyopathy and its prevalence in menopausal women.

Many cases of Takotsubo cardiomyopathy are underdiagnosed due to a lack of proper understanding of the condition, which prevents optimal prevention and management of Takotsubo Cardiomyopathy. The knowledge gaps in understanding the definite pathophysiology, despite reports of emotional and physical stress, cause Takotsubo cardiomyopathy, which has a higher incidence in Menopausal women. It can be addressed by empowering providers of the condition, prevalence, and management to help bridge the gaps in knowledge. Educating both providers and the public is the key to dealing with this issue which may be challenging based on personal culture, belief, and access to healthcare or healthcare providers; however, starting with

primary care providers who screen and educate patients helps reach out to a great group of people.

### **Primary Project Goal and SMART Objectives**

The Primary goal of the DNP project is to provide patient focused care by educating providers on Takotsubo or Stress Cardiomyopathy to improve screening in menopausal women. This Quality Improvement Project. Provider awareness on stress cardiomyopathy helps prevent emotional and physical stressors that cause Takotsubo Cardiomyopathy, thereby improving patient outcomes, especially in known high-risk populations.

1. Develop educational material, which includes PowerPoint with voiceover, to help primary care providers in Florida Nurse Practitioners Association by Sept 2022, to help primary care providers understand Takotsubo/Stress Cardiomyopathy.

2. Developing and conducting Pre- and Post-test to assess the impact of education to Primary care providers Takotsubo/Stress Cardiomyopathy increasing awareness by Nov 2022

3. Increase awareness on Takotsubo/ Stress cardiomyopathy at least 75% among Primary care providers in the Florida Nurse Practitioner Association.

### **Definition of Terms**

The following terms are important definition of terms in the quality improvement project to increase awareness on takotsubo/ stress cardiomyopathy in Primary care providers, Menopause, Takotsubo/Stress Cardiomyopathy Primary Care Providers, and awareness.

Takotsubo Cardiomyopathy, also known as stress cardiomyopathy, or broken heart syndrome, has a presentation similar to the acute coronary syndrome. It has been seen to have a higher prevalence in postmenopausal women after emotional or physical stress, with reports of catecholamine cardiotoxicity pathophysiology yet not completely understood (Ono & Falcão, 2016). The permanent cessation of ovarian function, diagnosed after 12 months of amenorrhea, is called Menopause, with a mean age of 51 (Greendale et al., 1999).

Primary care providers are a team of providers in charge of a group of patients, which could involve physicians, nurse practitioners, or physician assistants for several thousands of patients (Bodenheimer, 1999). Primary care providers care for acute medical needs with coordinate help care between providers, managing chronic disease management, and patient education (Bodenheimer, 1999). The knowledge generated with the interaction of an agent and its environment, being up to date with what is going on, is awareness (Locke, 2002). Understanding the information meant to be conveyed to individuals is essential and valuable to the performance and success of a collaboration (Locke, 2002).

### **Conceptual Underpinning and Theoretical Framework of the Project**

The importance of using a theoretical framework by identifying the necessary elements for the intervention of the quality improvement project provides a framework for the successful working of the project. The Health Promotion Model (HPM) is one of the most used models to promote health and change unhealthy behaviors. The Health Promotion Model is based on the social cognitive theory that incorporates factors such as perceived benefits, barriers, and self-efficacy that influence engagement in health promotion behaviors which will be used to guide



the DNP project (Khodaveisi et al., 2017). The HPM created by Pender consists of many variables that are a great source of interventional content and strategy used for the quality improvement project to increase awareness of Takotsubo or stress cardiomyopathy in primary care providers. Some theoretical propositions of this model are that staying committed to a plan of action is likely to result in the desired behavior (Tk & Chandran, 2018). Another proposition of HPM is that a person can change cognitions, affect, situational influences interpersonal influences to create an incentive for health-promoting behavior (Tk & Chandran, 2018). They are using the Health promotion model assumptions that the provided PowerPoint presentation with voiceover on Takotsubo cardiomyopathy will promote health status by benefiting from individual experiences to predict health-promoting behaviors among patients at risk for takotsubo cardiomyopathy also, managing emotional and physical stressors that could impact the condition (Shahriari et al., 2021). Using the principle of Penders HPM, that is, if a behavioral change is stimulated, the results will be positive health outcomes (Shahriari et al., 2021), the PowerPoint presentation with voiceover is introduced to primary care providers. HPM is concentrated on achieving higher levels of well-being and self-accomplishment, which is the goal of the DNP project of increasing health promotion measures by raising awareness among primary care providers. There are various factors considered in the HPM, such as situational, interpersonal, biological, and demographic factors; behavioral factors are a person's self-motivation in participation in the educational activity (Galloway, 2003). There are also situational factors related to the surrounding environment, interpersonal factors influenced by expectations from others, age, gender, income, ethnicity, racial, and varied educational background, which also influence achieving the goal in the HPM model (Galloway, 2003). Using the Principles influencing the HPM, the DNP project, pretest, posttest, and educational material

are planned to be created for health promotion. Another component of HPM is cues of action, which can be challenging to implement and measure (Galloway, 2003), which will be implemented in the DNP by reminders on FLANP committee forums. Pender's tenets involve that providers' quality of care can be improved by preventing delays in preventing and managing chronic health conditions to enhance the quality of life. The goal of the problem statement discussed is to decrease physical and emotional stress to prevent Takotsubo cardiomyopathy. Choosing Pender's model, with the proposal to communicate with this model and considering the influential and underlying factors, draws a channel for providers' participation in making better decisions (Habibzadeh et al., 2021). HPM perceives the benefits of intervention as both tangible and intangible. The same individuals may have a solid connection to the topic with a more significant impact on intervention (Galloway, 2003), which is education using PowerPoint with voiceover. In the DNP quality improvement project, influential factors are likely those caring for menopausal women or those who had experiences caring for patients with Takotsubo or stress cardiomyopathy. HPM identifies potential barriers as the provider's desire to participate varies, the convenience factor, which could be a value issue, or natural barriers such as a lack of facilities to complete the education or surveys (Galloway, 2003), which is to have limitations to access to the content for the project provided to the providers to increase awareness will be considered. In conclusion, the HPM theory by Pender helped create the theoretical framework to guide the DNP project by raising awareness in primary care providers on stress or takotsubo cardiomyopathy.

### **Organizational Assessment**

The primary goal of the investigator was to analyze the effectiveness of increasing awareness of Takotsubo Cardiomyopathy among Primary care providers. The Proposed site for

conducting the study is Florida Nurse Practitioner Association members, as the role of Nurse Practitioners in health care delivery is increasing and helping bridge the gap of need for primary care providers. It is reported that organizational reforms are required for appropriately utilizing the increasing Nurse Practitioner workforce in Health Care System (Poghosyan et al., 2017). FLANP is an actively dedicated group of Nurse Practitioners and health care advocates who are working to improve access to health care for Florida's population. A SWOT analysis was conducted to provide solid groundwork for evaluating the site's strengths, weaknesses, opportunities, and threats.

### **SWOT Analysis**

**Strength** – Florida Association of Nurse Practitioners is a group of dedicated Nurse Practitioners who advocate for patient centered health care. The organization helps increase knowledge of healthcare policy in terms of the practice of Nurse practitioners with patient centered healthcare goals. The size of this organization is one of its strengths, as it allows for increasing awareness among Nurse practitioners all around Florida. The main strength of this organization is that it promotes education, research, and advocacy for patient centered care (FLANP, n.d.). FLANP is a group that provides continuing education opportunities to Nurse practitioners. Another strength is that one of the policies of the FLANP is to educate not just the providers but the public on health issues to promote health care and contain costs in the health system (FLANP, n.d.).

**Weakness** – The potential liability or hindrance in implementing this quality improvement project is the members are not aware of the need to train and participate in it. The lack of understanding of the true intentions behind this project and the impact it can have by increasing awareness in patient-centered care, whether in mental health or menopausal women or

managing comorbidities. The mode of increasing being a voice-over PowerPoint and the time constraint of the completion of the project caused potential delay due to lack of motive to open an email or questionnaire as it being web-based connections with providers. Some Providers may not have the time to complete it based on their workload. The uncertainty of each Provider's workload in the Florida Nurse Practitioner Association may affect the response to the survey on truly understanding the impact of education.

Opportunities – The Florida Association of Nurse Practitioners provides opportunities to connect and conduct the quality improvement project among its members in Florida. The site offers feedback from Primary care providers across Florida who are motivated to grow in knowledge and provide patient centered care. Opportunity to test the effectiveness of new educational technology at a self-driven pace. There is an opportunity to encourage providers for further research and education, which is also a goal of the Florida Association of Nurse Practitioners. Possibility to create a continuing education credit for Primary care Providers.

Threats – There are always some threats related to an organization, so does this potential site have. One of the major threats is the lack of timely response to the pretest, posttest, and completing the voiceover PowerPoint presentation as it is a self-paced study which could affect the results based on the provider availability. Most Nurse practitioner association members are educators, along with being primary care providers, and may have time constraints to complete the requirements of the QI project. The lack of approval for credited hours for continuing education.

**Table 1**

*SWOT ANALYSIS; Florida Association of Nurse Practitioners Association (FLANP)*

Strength	Weaknesses	Opportunities	Threats
Dedicated Nurse Practitioners who advocate for patient centered healthcare	Time constraints of the providers	Wide range of feedback across Florida	Time constraints of the DNP project completion
Committed to increasing knowledge of Nurse Practitioners	Lack of awareness of the need for education on this topic	Technology-driven education at a self-driven pace	Lack of approval for credited hours for continuing education
FLANP aims to educate the public along with provider education on health issues to promote preventive health and contain costs increase in healthcare		Potential for impact on around 1000 Nurse Practitioners and Nurse Practitioner Student members	

### **Methodology**

The primary goal of the investigator is to analyze the effectiveness of increasing awareness of Takotsubo Cardiomyopathy among Primary care providers. The Proposed site for conducting the study is Florida Nurse Practitioner Association members, as the role of Nurse Practitioners in health care delivery is increasing and helping bridge the gap of need for primary care providers. It is reported that organizational reforms are required to appropriately utilize the increasing Nurse Practitioner workforce in the Health Care System (Poghosyan et al., 2017). FLANP is an actively dedicated group of Nurse Practitioners who are health care advocates working to improve access to health care for Florida's population. The organization has over a thousand Nurse practitioners, and Nurse practitioner students who participate in the project will likely benefit by increasing awareness of Takotsubo cardiomyopathy.

By June 2022, completion of writing a proposal to submit for approval. This will contain the timelines for completion at each level, site, pretest, and posttest, and formulated with PowerPoint for educating Primary care providers on the topic in English. After which, the primary researcher, with the guidance of preceptor and faculty, created educational material, PowerPoint with a voiceover, for this project. The Health Promotion Model theory will guide the Educational Materials and the pretest-posttest by Nola Pender (Tk & Chandran, 2018). The IRB approval proposal must be submitted and obtained by July 20, 2022. A Pre- and Posttest survey questionnaire was also created to assess the impact of education to Primary care providers on Takotsubo/Stress Cardiomyopathy for IRB approval. Implementation phase in which educational content, pretest, and posttest were made available to the Florida Nurse Practitioner association in Oct 2022 via organizational email, and the academic forum provided by the Florida Association of Nurse Practitioners. The Pretest and Posttest survey questions were created based on the subheadings covered in the PowerPoint voice-over presentation. The Likert Questionnaire scale was used to assess the pretest and posttest knowledge. The PowerPoint voice-over presentation is around 20 minutes, which is available to do at a self-pace.

### **Protection of Human Subjects**

All members of the Florida nurse practitioner association including practicing nurse practitioners and this practitioner students we'll have access to the educational material on the Education forum. The project we'll have a introduction with detail purpose of the study steps required to complete For this project which includes pre-test prior to watching the PowerPoint with voiceover and posttest survey after. The participation and this project are completely voluntary, and participants will receive no compensation or incentives to participate in this

quality improvement project. No, in person contact during this project all data collection will be done electronically on Qualtrics. Participants will be advised that all information will remain anonymous and identities will be protected, along with Institutional Review Board (IRB) approval. The Florida nurse practitioner association confirmed they did not require IRB approval. IRB approval obtained from Florida International University review board. No patients are involved in this project. An IRB Exempt Project Completion Report Form will be done at the end of the project.

### **Data collection**

The Quality improvement presentation was provided to the Florida Nurse Practitioner association in Oct 2022, with voluntary participation providing pretest survey to complete prior to watching the PowerPoint presentation with voiceover. The data collection for this quality improvement project is obtained using a five-point Likert scale rating awareness as strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and disagree. The participants of the survey and all data collection of pretest and posttest is done on Qualtrics electronically. The posttest survey Likert scale questionnaire is completed after the participant voluntarily does the pretest questionnaire and watches the self-paced educational presentation. The posttest involves the same questions asked in the pretest five-point Likert scale by which the increase in awareness is evaluated. The pretest and posttest surveys are posted with clear instructions and the presentation. The survey questions were put together to assess each participant's awareness of takotsubo cardiomyopathy, presentation, risk factors. All data regarding participant knowledge, perceptions and practice on the topic of education will be collected anonymously. Only investigators have access to the collected data. Data is stored and analyzed via Qualtrics online system.

### Data Result and Analysis

The main goal of this project of this project was to increase awareness on the topic, which was analyzed using the data results on Qualtrics. 10 questions were used to determine the awareness on stress cardiomyopathy and its higher incidence in postmenopausal women. This was measured using a 5-point Likert scale. a total of 20 providers answered all items on the pretest and posttest. A graphic display of the responses of each question with percentage value, color coded Likert scale values. The data analysis shows post interventional response strongly agree with the highest percentage score in each of the ten questions, ranging from 89% to 63%. This determines the increase in understanding on each question post educational intervention. Eight out of the ten questions had over 84% strongly agree on the understanding of the topic. The significance of statistical difference in both pre- and post-test was further studied using the paired t test since the same group of participants were used to survey and analyze pre and post-test result.

**Table 1**

*Survey Questions and Participation*

Questions	Pre-test response	Post-Test Response
I understand the term Takotsubo cardiomyopathy	20	20
I understand the risk factors of Takotsubo cardiomyopathy	20	20
I feel comfortable identifying high risk population for Takotsubo Cardiomyopathy	20	20
I identify the population that need early screening and prevention of Takotsubo Cardiomyopathy	20	20
I know the Diagnostic criteria for Takotsubo Cardiomyopathy	20	20
I am aware of the need for research on preventive measures for Takotsubo Cardiomyopathy	20	20
I understand the need to increase awareness on caring for high-risk population	20	20
I understand the need for initiating appropriate consultants for the prevention of Takotsubo Cardiomyopathy	20	20



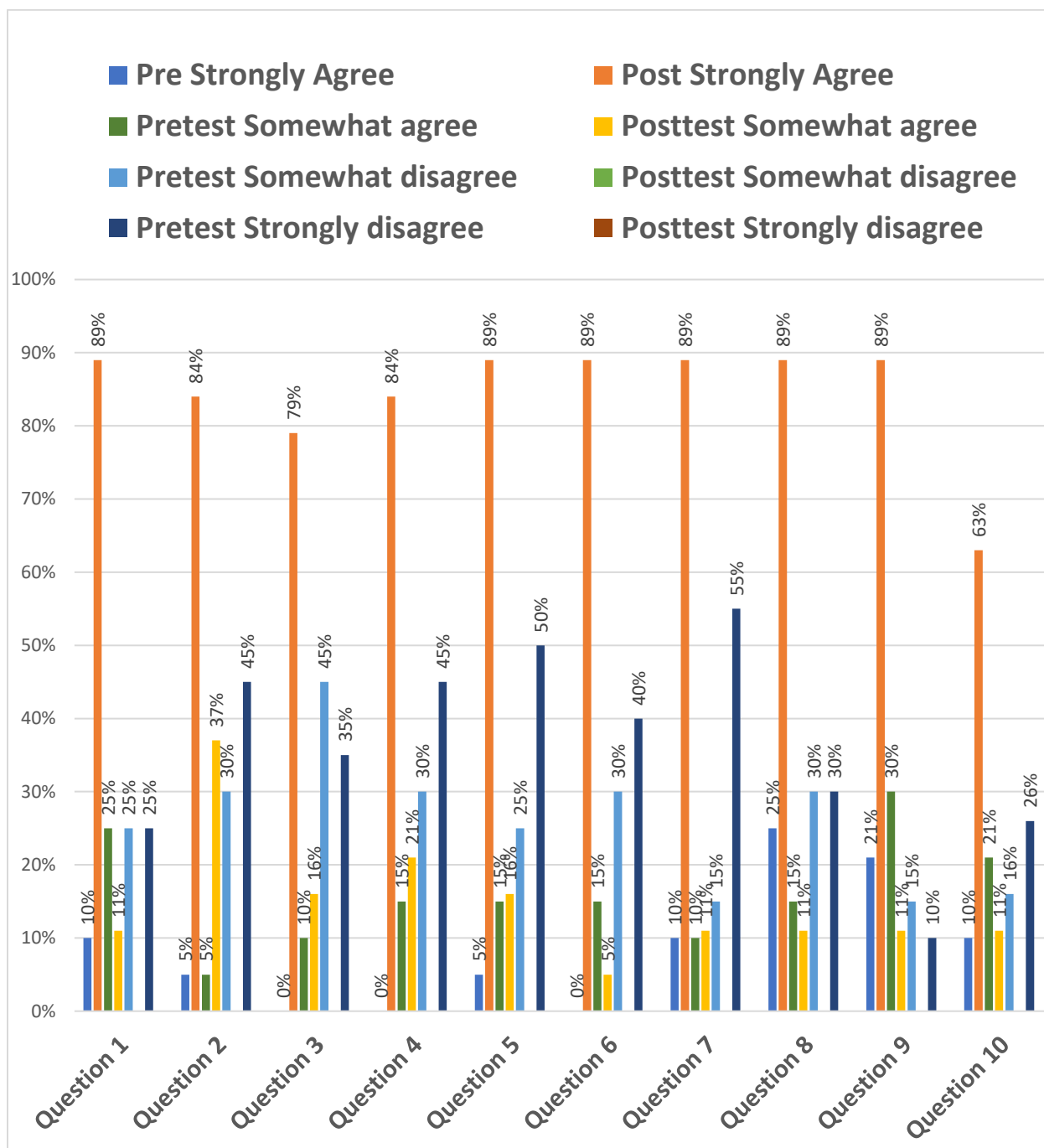
In general, I feel comfortable talking about Takotsubo  
Cardiomyopathy with my patients

20

20

**FIGURE 1**

*Pre and Post test Likert scale Data Analysis*



### Awareness Paired t test results

A two tailed Paired t test was used to Understand the statistical significance of increase and awareness from the pre and post-test survey scores. The results showed the two tailed P value to be 0.0001, this difference is considered to be extremely statistically significant .95% confidence interval of this difference was from minus 2.182 minus 1.105. The pretest mean is 2.005 and the posttest mean is 3.65, n (10). The intermediate value is used in the paired test results, with t value equal to 6.8. This is presented in the table below.

**Table 2**

*Awareness paired t test results*

	Pre-test	Post-test	T value	P -Value
Mean	2.005	3.650	6.892	0.0001
Standard Deviation (SD)	0.268	0.530		

### Discussion

Pretest and Posttest Likert scale questionnaires based on the PowerPoint presentation subheading was used to analyze the increase in awareness. Pretest and posttest questionnaires had similar questions to assess the knowledge of the provider participants before and after the presentation provided. The presentation was open to all Florida nurse practitioner members with voluntary recruitment to participate in the pretest before watching the presentation and post test after watching the presentation. There was a total of 20 pretest responses and 20 posttest survey responses. Zero responses strongly agreed on understanding Takotsubo cardiomyopathy before the educational intervention, which indicates the lack of awareness prior to the educational intervention. responses that strongly agreed on understanding Takotsubo cardiomyopathy post

i.e., 89.5% increase in awareness on the topic after the participant viewed the PowerPoint presentation with voice over. It was also seen that there was zero strongly disagree, somewhat disagree, or neither agree nor disagree on the post test survey questionnaire, which shows that there was no participant that did not benefit from this quality improvement project. The results are clearly indicative of an effective educational response of understanding on the topic after PowerPoint presentation with voice over. The result also indicates that there were no participants that "strongly agreed" on the knowledge of the topic, which confirms the lack of awareness on this topic prior to this quality improvement project initiative. The two tailed paired t test result confirms statistically significant difference in the pretest and posttest, with P value less than 0.0001 based on N (10), T value equal to 6.89.

### **Limitations**

Some limitations identified to the quality analysis of this quality improvement project include the neutral response of "neither agree nor disagree." It is also known that participants generally tend to pick the option to agree to complete a survey as a familiarity bias. One study does show the validity of the Likert scale test to be less reliable than the non-Likert scale, as the non-Likert scale was 93% reliable, while the Likert-type scale had 89% (Louangrath, 2018). The lack of funding or CE credits, time constraint of the project limits participation in the project, thereby making the sample size smaller.

### **Implications for Practice**

Nurse Practitioners as primary care providers deliver ongoing care to their patients with referrals and episodic care (Poghosyan et al., 2017); as they have a huge role to play in patient

care and providing an appropriate referral, the expected proposed result from the project of increasing awareness on Takotsubo cardiomyopathy among primary care providers should improve quality of care by Nurse Practitioners. The organization offered for this study aims to increase knowledge on healthcare policy on Nurse Practitioner practice and patient-centered health care and remove barriers to Nurse Practitioner practice to gain access to quality health care for Floridians (FLANP, n.d.). This Quality improvement project aims to achieve the patient-centered healthcare goal, to help focus on high-risk populations like women in Menopause, and men with multiple comorbidities, and to address their emotional and physical stressors appropriately and timely.

The Quality improvement project on educating primary care providers about Takotsubo-cardiomyopathy and its higher incidence in menopausal women to primary care providers provides an increased opportunity to improve outcomes of this population through early prevention and avoiding reoccurrence. The data collected shows evidence-driven projects showing improved nursing practice. As Nurse practitioners, we constantly strive to provide the best care possible to our patients and be resource person for them to practice preventive medicine and thereby avoid adverse effects. In addition, the pandemic and increase in cases of stress cardiomyopathy have increased the need for providers to manage patients' mental and physical stressors and educate their patients.

PowerPoint, with a voiceover platform to increase awareness on the topic, has shown to be effective by increasing provider education, improving the health of people, and reducing the cost of healthcare. The dissemination of information on the results will include submission to the Florida Nurse Practitioner Association, which will again increase the participation of more Nurse practitioners in this project. A patient-centered approach focusing on bringing attention to the

mental and physical stress reduction for menopausal women is also a goal achieved by this quality improvement project where nurse practitioners were educated on research-based findings to identify, diagnose, prevent and manage Takotsubo Cardiomyopathy.

### **Conclusions**

The PowerPoint with a voice-over presentation on Takotsubo Cardiomyopathy and its higher incidence in menopausal women voluntary participation in a pretest and posttest Likert questionnaire survey was done as a quality improvement project. This Quality Improvement project met its goal of increasing awareness among primary care providers despite having no direct personal contact. It conducted and analyzed the resulting findings in the voluntary quality improvement project. The results analyzed electronically on Qualtrics, which involved 20 pretest survey responses and 19 posttest survey responses, showed a definite increase of over 85% in agreement on understanding the topic in each question. The education of more providers on this topic is not just cost-effective, convenient, self-paced method of teaching, and it will help providers educate patients and screen high-risk populations. The increase in awareness will improve patient adverse effects and generate more research and prevention of this condition, with increased focus to identified high risk population starting in a primary care setting.

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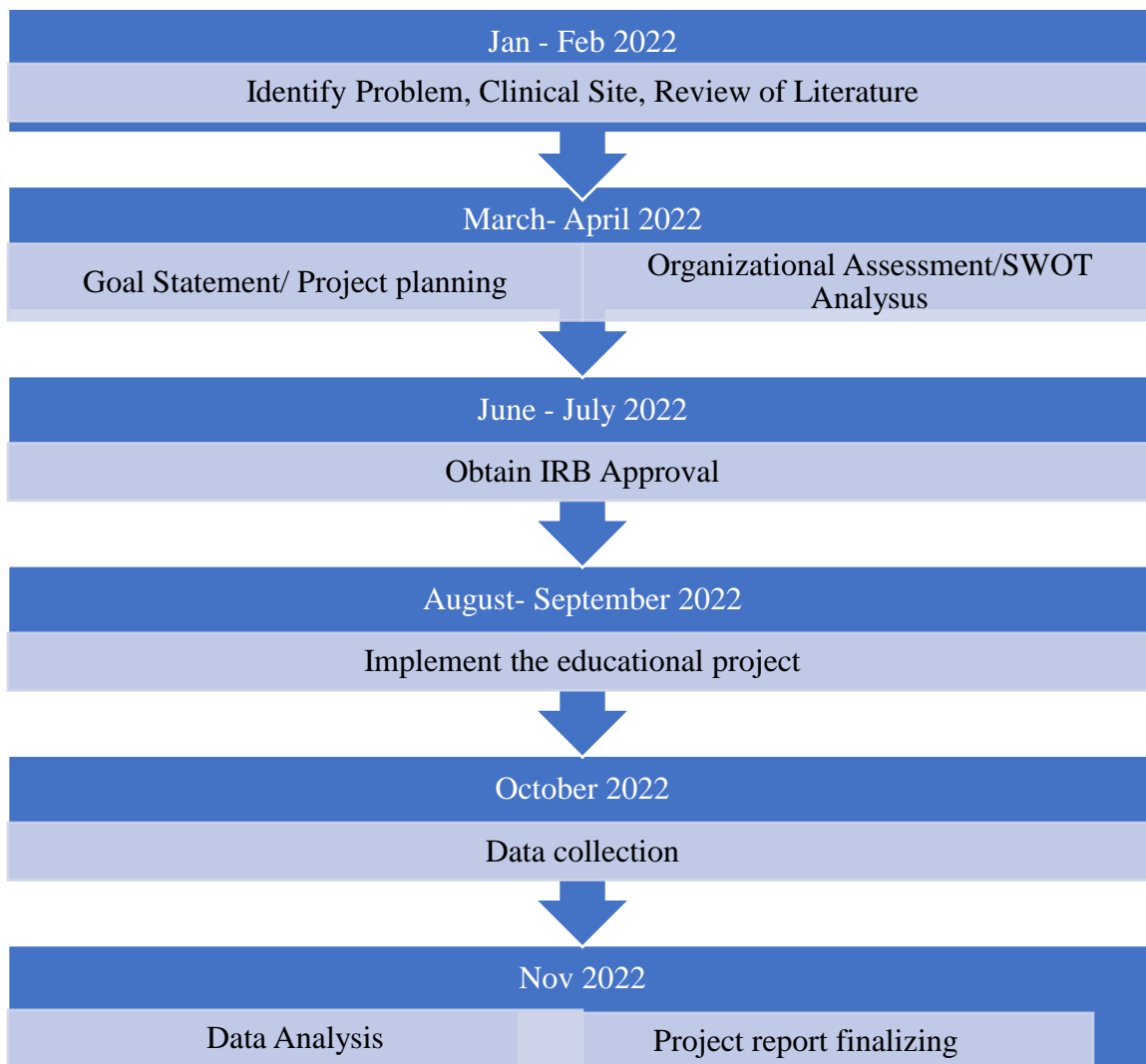
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**Appendices**

**Project Timeline**



### **Data collection tool**

### **Pretest Likert Questionnaire**

Pre-Test	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. I understand the term Takotsubo cardiomyopathy					
2. I am familiar with the presentation of Takotsubo cardiomyopathy					
3. I understand the risk factors of Takotsubo cardiomyopathy					
4. I feel confident Identifying high-risk population for Takotsubo Cardiomyopathy					
5. I understand the population that needs early screening and prevention of takotsubo cardiomyopathy					
6. Diagnostic criteria's for takotsubo Cardiomyopathy					
7. I am familiar need for research on preventive measures on Takotsubo Cardiomyopathy					
I.					
8. Increase awareness on caring for high-risk population of post-menopausal women					
9. I am familiar of calling appropriate consultants for prevention of Takotsubo Cardiomyopathy					

10. In general, I feel comfortable talking about Takotsubocardiomyopathy with my patients					
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### Posttest Likert Questionnaire

Post-test	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1.I understand the term Takotsubo cardiomyopathy					
2. I am familiar with the presentation of Takotsubo cardiomyopathy					
3.I understand the risk factors of Takotsubo cardiomyopathy					
4.I feel confident Identifying high-risk population for Takotsubo Cardiomyopathy					
5.I understand the population that needs early screening and prevention of takotsubo cardiomyopathy					
6. Diagnostic criteria's for takotsubo Cardiomyopathy					
7. I am familiar need for research on preventive measures on Takotsubo Cardiomyopathy					

8. Increase awareness on caring for high-risk population of post-menopausal women					
9. I am familiar of calling appropriate consultants for prevention of Takotsubo Cardiomyopathy					
10. In general, I feel comfortable talking about Takotsubo cardiomyopathy with my patients					




## Internal Review Board Approval Letter



**Office of Research Integrity  
Research Compliance, MARC 414**

### MEMORANDUM

**To:** Dr. Dana Sherman  
**CC:** Riya Jacob  
**From:** Maria Melendez-Vargas, MIBA, IRB Coordinator   
**Date:** July 20, 2022  
**Protocol Title:** “Does providing education to primary care providers, increase their awareness on Takotsubo cardiomyopathy and its higher incidence in Women; Quality Improvement Project”

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

**IRB Protocol Exemption #:** IRB-22-0339      **IRB Exemption Date:** 07/20/22  
**TOPAZ Reference #:** 112079

As a requirement of IRB Exemption you are required to:

- 1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
- 2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
- 3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

**Special Conditions:** N/A

For further information, you may visit the IRB website at <http://research.fiu.edu/irb>.

MMV/em

