GROUP TEACHING FOR HISPANIC WOMEN
WITH METABOLIC SYNDROME

A DOCTORAL PROJECT
Submitted in Partial Fulfillment of the Requirements
For the degree of
DOCTOR OF NURSING PRACTICE

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May 2016
ABSTRACT

Metabolic syndrome is a non-discriminatory cause of mortality and morbidity. It has the ability to affect the masses, but among the Hispanic female populations, metabolic syndrome has become a significant cause of disease and disability. Within this population are evident health disparities, health knowledge deficits, and a lack of resource utilization. Because of the unique family and cultural dynamics that exist in the Hispanic female population creative educational measures must be developed in order to effectively address metabolic syndrome within this community. Creative educational measures can be paramount in reaching the seemingly unreachable. Whether progressive in nature or antiquated, successful educational interventions necessitate consideration of specific audience dynamics. Creative measures can be specifically developed and modified to fit various hard to reach populations. Group teaching exercises have proven to be effective in many arenas. This doctor of nursing practice project focused on the development of a targeted group education intervention and piloted its use for Hispanic women with or at risk for metabolic syndrome. Metabolic instability was determined by provider referral. This pilot intervention was intended to improve health promoting behaviors and overall health outcomes. After conduction of a purposive recruitment, a teaching intervention was completed and repeated due to low sample size \((n = 3)\). The second intervention also consisted of three participants; total \(n = 6\). In spite of a small sample, participant response to the intervention was promising. Because of the positive
response, the small sample size, and limited data confines further investigation is warranted. Utilization of a group intervention for Hispanic women with metabolic syndrome has the potential to increase self-awareness and self-efficacy, improve health promoting behaviors, and health outcome.
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First and greatest, only by the grace and help of the LORD GOD have I been able to achieve this great accomplishment. “For I know that I have a plan for you,” declares the LORD, “plans to prosper you and not harm you, plans to give you a hope and a future - Jeremiah 29:11.

Since the beginning of my educational career in nursing I have always felt an expectation. ….Completion of the Doctor of Nursing Practice at the CSU consortium has fulfilled this expectation and has brought me a greater understanding of the professional nurse, and our ability to impact the masses without losing site of the individual. This is truly the culmination of my nursing education. I am so pleased and grateful to have had this opportunity for growth.

In acknowledgement of all who have supported me…I am so grateful! To my children, family, and husband I appreciate your sacrifices and support during these busy times. To the CSU DNP faculty, Dr. V. & Dr. W., my project committee, Dr. Winokur & Dr. Hughes, to Sarah, and staff, you emulate professionalism, leadership, and compassion. To Dr. Gorman- a huge THANK YOU for your statistics help! To my girls, Annette, Patricia, Mira, and Cynthia…the best team ever; I could not have made it without you all! To Dr. Winokur …you are the BEST, thank you for your unwavering commitment to the successful completion of my project.
This doctoral project and degree are dedicated to my loving father,

Joseph Allen Gordon Sr.

March 25, 1933 - May 2, 2016

who has always taught me to value and love others without discrimination or condition, to be fair and understanding, to be level headed with an open mind and heart, and to always live a humble and gracious life.

I Love you dearly and forever.

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BACKGROUND

Countless people worldwide are insidiously affected by metabolic syndrome and its potentially fatal complications. Metabolic syndrome is a constellation of cardiovascular disease risk factors, and indicators that are notable causes of preventable mortality and morbidity. According to the National Heart Lung and Blood Institute (NHLBI), a diagnosis of metabolic syndrome is determined by the presence of at least three risk indicators or disease processes (U.S. Department of Health and Human Services [DHHS], 2001). The associated increased cardiovascular risk, morbidity, and mortality of metabolic syndrome are preventable and treatable.

The prevalence of metabolic syndrome within Hispanic populations, especially females, has been rapidly increasing. According to current research, Hispanic females were 26% more likely to develop metabolic syndrome than their male counterparts (Rodriguez, Naderi, Wang, Johnson, & Foody, 2013). Such health disparities are clear indicators of preventative treatment gaps and resource distribution failures.

Preventive measures focused on lifestyle and dietary modifications should always be the principal course of action (Skilton, Moulin, Terra, & Bonnet, 2007). However, when a diagnosis has been made, serious and diligent efforts are necessary to prevent complications, reduce the occurrence of disability, and control the cost of health care. Efficacious treatment and management of the underlying causes of metabolic syndrome can dramatically improve quality of life and reduce the threat of disease related complications such as heart attack, stroke, renal failure, and blindness. These and many other devastating complications are preventable.
Metabolic syndrome, as defined by the Adult Treatment Panel III (ATP III; DHHS, 2001), develops as a result of any combination of three or more cardiovascular indicators or illnesses. Diseases and risk indicators associated with metabolic syndrome include abdominal adiposity, as evidenced by an increased waist circumference of > 35 inches or > 88 cm in women and > 40 inches or > 102 cm in men, insulin resistance or diabetes, hypertension of ≥ 130/≥ 85 mmHg, and dyslipidemia. The presence of metabolic syndrome increases an individual’s likely development of cardiovascular disease, subsequent heart attack, stroke, permanent disability, and possibly death.

Physical inactivity and excess body fat, abdominal adiposity in particular, increase the occurrence of insulin resistance, which leads to preventable adipose storage, and consequential metabolic dysfunction. Treatment goals of metabolic syndrome include the management of non-lipid and lipid risk factors, including the reduction of underlying causes. Increased physical activity and weight loss can be used to effectively manage all risk factors in most individuals, and therefore are the key primary treatment measures of metabolic syndrome (DHHS, 2001).

**Problem Statement**

Presently, there is a deficit of self-management skills, resource utilization, and knowledge pertaining to the severity and impact of metabolic syndrome on health status and quality of life within Hispanic female populations of the United States (Rodriguez et al., 2013). Social, educational, and financial disparities among Hispanic American females have contributed to numerous actual and perceived barriers that exist within this complex community of women. Essentially, these barriers translate into a present and notable health disparity. Although many Hispanic women are sincerely concerned about
their health status, some experience extreme difficulty finding reasonable and creative ways to overcome these barriers to becoming successful self-care managers.

This project's objectives, aimed at the empowerment and education of middle aged Hispanic women were developed to foster accountability for individual health status and wellness. In addition, this intervention was expected to encourage participants to adopt healthy lifestyles, and to become active members of their healthcare team. This doctor of nursing project focused on the development of an educational teaching program related to metabolic syndrome for middle aged Hispanic females within a free community healthcare clinic.

**Purpose Statement**

The purpose of this project was to develop and pilot an alternative method of patient education for Hispanic women between the ages of 40-64 years old who have or are at risk for metabolic syndrome.

**Supporting Framework**

The utilization of a theoretical framework secures the integrity of any endeavor, whether it is a study, improvement project, or educational plan. Nola Pender’s health promotion model (HPM) as a theoretical framework focuses on the client’s ability to affect a positive change in his or her health status (Pender, Murdaugh, & Parsons, 2006). What is health and who determines its value? One’s perception of health is ultimately defined by the individual, their lived experiences, and their personal and social beliefs. Healthcare providers set limitations and standards as measurements of healthfulness, when in fact these measures, in many instances are meaningless to the client. Individuals must be presented with the knowledge and tools to help develop their own sense of
personal health accountability. Use of the HPM as a theoretical framework was beneficial to increase the efficacy and successful execution of this intervention.

**Health Promotion Model**

**Model description.** Derived from Becker’s health belief model (Duffy, 1988), Nola Pender’s HPM is depicted in Figure 1. The HPM was designed to take into account the complete human condition while pursuing the greatest level of personal health. The human condition is comprised of multifaceted individual and extraneous interactions between and amongst others and the environment (Pender et al., 2006). Pender’s framework was intended to be utilized as a guide to motivate individuals to improve their health via deliberate action. With a holistic perspective, the HPM integrates the social cognitive and expectancy-value models.

*Figure 1. Conceptual model for Nola Pender’s health promotion model.*
The social cognitive model is a frequently used theoretical behavior change model. Although broad, it is structured and offers flexibility to both provider and client. The belief is that behavior is a product of complex interactions of the self and the environment.

This model assumes all humans are capable of *symbolization*, the ability to translate transient experiences into internal models to direct future behavior; *forethought*, the ability to anticipate consequences and plan according to goals; *vicarious learning* through observation of others, the ability to produce and regulate behavior based upon acquired rules; *self-regulation*, the management of behavior based upon internal standards; and *self-reflection*, the ability to consider and modify personal thought processes (Pender et al., 2006).

The expectancy-value model describes behavior as “rational and economical” (Pender et al., 2006). This model has two main precepts: that a person will continue with a particular action if it produces positive personal outcomes and upon the accessibility of information. Hence, a person is only likely to engage in a behavior change if they deem the outcome to be of some personal value.

**Model concepts.** Pender’s HPM is comprised of several concepts pertinent to the promotion and maintenance of health. Within this model are three main concepts: *individual characteristics and experiences*, which are related to prior behaviors and personal dynamics such as biological, psychological, and sociocultural factors; *behavior-specific cognitions and affect*, which pertains to perceived benefits and barriers to action, perceived self-efficacy, activity related affect, interpersonal and situational influences from family and peers; and *behavioral outcomes*, which includes the commitment to a
plan of action, competing demands, and ultimately the adoption of health promoting behaviors (Pender et al., 2006).

In Pender’s HPM, individual characteristics and experiences are related to unique individual life experiences that affect behavior. These life experiences are of particular significance to health behavior and subsequent health promotion activities. Prior related behaviors are believed to affect the likelihood of successful engagement of health promoting behaviors, both directly and indirectly. In short, some habits are hard to break. Outcome expectations, emotional connections to prior behaviors, and previous change attempts undeniably affect future efforts. Personal factors have consistently been found to determine the manner in which individuals approached health matters and potential threats (Pender et al., 2006).

Behavior-specific cognitions and affect are variables with particular motivational value. Measurement of these variables is essential to determine the efficacy of the intervention. Perceived benefits of an action are the anticipated benefits associated with participation in health promoting behaviors. These perceived benefits can develop from personal or observed experiences, and be intrinsic or extrinsic. As with perceived benefits, perceived barriers to action are instrumental to determine an individual's degree of engagement.

Perceived barriers can be related to lack of education, perceptions of inconvenience, loss of time, cost, and difficulty of the proposed behavior change. Perceived self-efficacy is an individual’s perception of their personal ability to successfully manage health and the proposed lifestyle modification. Confidence in personal abilities and the perception of success will inevitability lead to the long term
adoption of thriving behaviors. *Activity related affect* are the feelings associated with the behavior which influences an individual's ability to strive, achieve, and ultimately maintain the desired behavior.

*Interpersonal influences* are the thoughts, beliefs, or attitudes of others related to the proposed behavior. These peer, familial, and provider perceptions, including social support, norms, and modeling unequivocally influence the initiation and adherence to a behavior change. *Situational influences* are personal perceptions of any factor or situation capable of influence that either facilitates or hinders the proposed behavior change (Pender et al., 2006).

Behavioral outcomes include the commitment to a plan of action, immediate competing demands and preferences, and finally health promoting behaviors. As the commitment to a plan develops, a sentiment of self-assurance and confidence ensues. In spite of a commitment to the plan, immediate competing demands and personal preferences may derail the sincerest intention to initiate a health behavior modification. Opposing external and environmental demands, such as family or work responsibilities, may inhibit an individual's ability to successfully adopt and maintain the desired behavior. Personal preference, previous and interfering actions may prove caustic, causing great internal discord and ultimately guilt (Pender et al., 2006).

**Literature Review of the Health Promotion Model**

The health promotion model has been utilized by providers to support, empower, and promote healthful behaviors. A literature search and review yielded numerous illustrations of the application of Pender’s HPM. Recent research has demonstrated the
value and functionality of the health promotion model as a catalytic framework in the promotion of health related behaviors in diverse populations of individuals.

Srof and Velsor-Friedrich (2006) utilized the health promotion model to assist teens with the transition from parent-directed healthcare management to self-directed healthcare. In this integrative review, researchers examined the application of Pender’s HPM in adolescents as it related to health promoting behaviors such as diet modification and physical activity levels. This review of studies reinforced self-efficacy as an indicator for health promoting behavior. In spite of this apparent association, Srof and Velsor-Friedrich (2006) emphasized a need for further investigation.

Hong, Lusk, and Ronis (2005) applied the hearing protection model derived from Pender’s HPM to their study to determine whether ethnicity was a hearing protection behavior indicator among Blacks and Whites. With careful analysis and attention to detail, Hong et al. (2005) determined there to be no significance in the relationship between ethnicity and the use of hearing promoting behaviors. In this study, researchers found that their use of the hearing protection model did not yield the same efficacy for Blacks as it did for Whites as a predictor for hearing health promoting behavior. They subsequently resolved that more culturally appropriate tools are needed to adequately measure the variables of interest (Hong et al., 2005).

Duffy (1988) applied Pender’s HPM to study 262 Hispanic women between the ages of 35 to 65 years old. The focus of her study was on self-esteem, locus of control, health status and the impact that these factors had on health promoting behaviors. Her study partially supported the health promotion model’s concepts that individual health perceptions, health status, and self-esteem influenced health behaviors. Duffy (1998)
further explained that positive interpersonal interactions cultivated self-actualizing behaviors, but did not find that demographic variables were significant in determining health promoting behaviors (Duffy, 1988).

Keep (2013) explored the factors that affected low income Hispanic mothers' and daughters' commitment to a plan of physical activity. She evaluated the relationship between exercise self-efficacy, activity related affect, and the effects of social norms on participants’ commitment to a plan for physical activity. Keep (2013) utilized Pender’s HPM as a theoretical foundation to develop several hypotheses in relation to the above said concepts. She concluded that social norms and exercise self-efficacy were not significant determinants of the participants' commitment to the plan. However, she did find that active mothers were twice as likely to have active daughters as compared to their sedentary counterparts (Keep, 2013).

Model Application

Application of Pender’s health promotion model as a theoretical framework in this pilot teaching program promoted individualized participant success (Figure 2). Provision of essential disease education, including risk factors, complications, prevention, and health modifying activity encouraged and empowered participants to engage in healthful behaviors. Health promotion and disease prevention in this middle aged population of Hispanic females is crucial. Because of the lack of knowledge pertaining to health promoting behaviors, social factors, familial and community tendencies, and dynamics, middle aged Hispanic women are likely to benefit greatly from a focused group teaching intervention (Marquez & McAuley, 2006; Schwingel et al., 2015).
Figure 2. Conceptual model for adaptation of Nola Pender's health promotion model.

Application of Pender’s HPM (2006) in the Hispanic female population aged 40-64 years old within the free community clinic setting was expected to produce a positive impact on the degree of engagement in health promoting behaviors. Ultimately, improved health status was anticipated as a result of decreased incidence and severity of metabolic syndrome. In the project, individual characteristics and experiences described participants’ personal factors such as age, gender, acculturation (Barrera, Toobert, Strycker, & Osuna, 2012), language, and personal and sociocultural experiences. Personal and sociocultural experiences are beliefs related to an individual’s unique life experiences that shape values, define one’s perception of social norms, and subsequently influence behavior.

Behavior specific cognitions are the perceived benefits, perceived barriers, perceived self-efficacy, and interpersonal and situational influence. Perceived benefits and self-efficacy are the factors that motivate, yet are duly affected by interpersonal and situational influences. A lack of confidence coupled with past disappointments, perceived
failures, limited resources and support has the ability to sabotage any effort. The use of a group teaching intervention was utilized to empower and provide internal knowledge and resources to an underserved and vulnerable population.

Project outcomes included a commitment to health promoting behaviors (self-determination and confidence), successful management of competing demands (family, time, and cost), and engagement in an exercise and nutritional plan (increased physical activity and healthy eating). Ultimately, a tangible decrease in the rates of metabolic syndrome in the Hispanic female population aged 40-64 years old within this free community healthcare setting was expected to be witnessed as evidenced by increased number of exercise days, weight loss, decreased waist circumference, and body mass index (BMI).
REVIEW OF LITERATURE

Overview

A review of the literature was conducted utilizing the databases PubMed, CINAHL, and the Cochrane Library. Article inclusion criterion included English, scholarly, peer reviewed publications. Key search terms included metabolic syndrome, Hispanic females, Hispanic females with metabolic syndrome, diabetes, obesity, and health promotion in Hispanic women. Additional resources were located via use of study citations.

Further searches were performed using the key terms: pathophysiology of metabolic syndrome, etiology of metabolic syndrome, exercise beliefs and motivation in Hispanic women, metabolic syndrome treatment through exercise and weight loss, acculturation, Nola Pender’s HPM, and health promotion model in Hispanic females with metabolic syndrome. Initial literature searches were conducted without year limitations, but subsequent searches were limited to the years 2010-2015.

Metabolic Syndrome

Metabolic syndrome increases the risk of cardiovascular disease (Athyros et al., 2009; Cornier et al., 2008; DHHS, 2001; Olde, Alpert, & Dalusung-Angosta, 2013). The National Heart Lung and Blood Institute ATP III (DHHS, 2001) and Olde et al. (2013) contended that metabolic syndrome was not one disease process but a constellation of risk factors leading to cardiovascular disease and other illness. Although the pathophysiology of metabolic syndrome has not yet been fully understood, it is known that insulin resistance, genetic susceptibility, abnormal adipose tissue function, and
obesity are amplified by environmental factors (Athyros et al., 2009; Cornier et al., 2008; Olde et al., 2013).

Recent epidemiological statistics from the Centers for Disease Control and Prevention revealed that an astounding 34% of adults 20 years old and over met the criteria for a diagnosis of metabolic syndrome (Ervin, 2009). Other interesting statistics gleaned from this study included the findings that adults aged 40-59 years were three times more likely than those 20-39 years old to develop metabolic syndrome and Hispanic females were 1.5 times as likely to develop metabolic syndrome than non-Hispanic white females (Ervin, 2009).

Cornier et al. (2008) and Olde et al. (2013) explored the association between low socioeconomic status and the increased prevalence of metabolic syndrome in minority female populations. According to research conducted by Cornier et al. (2008), 30.9% of Mexican American females in their sample \( n = 1171 \) met the NHLBI ATP III (DHHS, 2001) guidelines for metabolic syndrome.

Metabolic syndrome is potentially deadly, and greater so in the absence of prompt treatment and preventive measures. Cornier et al. (2008) and Ervin (2009) addressed several other conditions associated with metabolic syndrome: proinflammatory and prothrombotic states, reproductive disorders, cancer, polycystic ovarian syndrome, and non-alcoholic fatty liver. The prevalence of metabolic syndrome in the United States and around the world is quickly rising, placing many at risk of developing complications, avoidable illness, disease, and disability (Cornier et al. 2008; Olde et al., 2013).
Pathophysiology

The pathophysiology of metabolic syndrome is complicated and is associated with a cluster of ailments which, in combination, lead to an increased risk of cardiovascular disease (Cornier, et al. 2008; Olde et al., 2013; Psaty, Lumley, & Furberg, 2006). Insulin resistance and abdominal adiposity are two commonly reoccurring conditions referred to in the literature that are implicated in the etiology of metabolic syndrome (Athyros et al., 2009; Cornier et al., 2008; DHHS, 2001; Olde et al., 2013; Psaty et al., 2006). The progressive components of the metabolic cascade ail all systems of the body.

Insulin Resistance and Diabetes

Insulin resistance is the precursor of diabetes and leads to increased abdominal adiposity. Insulin resistant individuals with near ideal blood sugars may be unaware of the ensuing threat of disease occurring within their bodies. Insulin resistance is the impaired glucose metabolism or intolerance that can present as β cell dysfunction, altered protein synthesis, amino acid uptake, triglyceride lipolysis, as well as multi-organ and system dysfunction (Cornier et al., 2008). Characteristically, insulin resistance is common among sedentary, obese individuals who consume a high fat diet (Cornier et al., 2008).

Obesity

Obesity, in essence, is the fuel in the metabolic fire of insulin resistance and is pertinent in the pathophysiology of metabolic syndrome (Athyros et al., 2009; Cornier et al., 2008; DHHS, 2001; Olde et al., 2013; Psaty et al., 2006). Increased adipose stores precipitate free fatty acid turnover and boosts the rates of stored adipose triglyceride lipolysis (the process of lipid breakdown into glycerol and free fatty acids). Insulin
usually inhibits lipolysis, but in the presence of insulin resistance an increase of free fatty acids flood the plasma (Cornier et al., 2008).

Free fatty acids increase liver excretion of very low density lipids, production of glucose, and triglycerides. This is associated with decreased levels of high density lipids and reduced sensitivity to insulin. As insulin resistance increases, so does the presence of free fatty acids, which leads to a cyclic confrontation of waning health (Cornier et al., 2008).

Visceral adiposity, an observed characteristic of metabolic syndrome, is intensely associated with increased free fatty acid circulation and insulin resistance (Cornier et al., 2008). Visceral adipocytes not only possess a greater sensitivity to catecholamine-stimulated lipolysis, but are responsible for the release of pro-inflammatory cytokines, which may alter the mechanism of action of insulin throughout the body (Cornier et al., 2008). In a metabolically healthy individual insulin acts as a vasodilator, assisting in the regulation of blood pressure. This mechanism can be impaired by insulin resistance and lead to hypertension.

**Hypertension**

Hypertension, the insidious killer, finds its position amongst this compilation of debilitating diseases. Classified as primary (essential) or secondary, hypertension affects all body systems. Free fatty acids also play a role in the pathophysiology of hypertension. Not only do they possess vasoconstrictive properties but can potentially activate the sympathetic nervous system (SNS), raising blood pressure (Cornier et al., 2008). Free fatty acid activation of the SNS and the rennin-angiotensin-aldosterone system often lead
to renal dysfunction, sodium and water retention, and consequently blood pressure dysfunction (McCance & Huether, 2006).

**Dyslipidemia**

Cholesterol is comprised of several components and possesses great health implications. Measurement can be utilized to determine health risk probability, cardiac, and metabolic health (DHHS, 2001). Target ranges for the cholesterol panel are as follows: LDL < 100, HDL > 40, and total cholesterol < 200 (DHHS, 2001). LDL cholesterol is a major indicator of coronary heart disease, making it the primary focus of dyslipidemia treatment (DHHS, 2001).

**Hispanic Female Population**

The Hispanic female population is a unique and complex group of individuals. Within this populace are strong familial and community ties that powerfully influence personal behavior and lifestyle choices. Behavioral and lifestyle preferences are paramount in the determination of health status. Hispanic women within the 40-64 year old age group generally participate in gender based and household activity (Schwingel et al., 2015). These behaviors pose a significant effect on this population’s ability to achieve and maintain metabolic health.

The concept of familialism is evident in the way Hispanic women are culturally assimilated in the precepts that the family comes first and takes precedence over personal needs and even health (Schwingel et al., 2015). Madeline Leininger introduced the concept of transcultural nursing in the theory of culture care diversity and universality, in which she discussed the practice of familialism (Leininger, 2002). Within this theory she explored the delivery of culture specific care via the recognition of cultural values,
beliefs, and practices (Leininger, 2002). Because of the strong familial commitment and community ties, family or peer involvement may be utilized to improve program adherence, and overall personal goal achievement (Schwingel et al., 2015).

**Acculturation**

Acculturation is the process of cultural change, adaptation, and the adoption of the dominant culture ("Acculturation," 2013). Numerous studies explored the effects of acculturation on the Hispanic female population. This research consistently linked higher levels of acculturation with increased prevalence of obesity (Barcenas et al., 2007; García et al., 2012; Ham, Yore, Kruger, Heath, & Moeti, 2007), tobacco use (Ham et al., 2007; Marquez & McAuley, 2006), and decreased physical activity levels (Ham et al., 2007).

**Health and Exercise Beliefs**

There is a common belief within the middle aged Hispanic female population that wellness is determined only by God, leaving no need for deliberate health promoting behavior or action. Many Hispanic women within this age group are home makers and care givers. If work outside of the home is necessary, laborious and physically challenging jobs are usually obtained (Ham et al., 2007; Marquez & McAuley, 2006). Because of the physical nature of work and home lives, there is often a decreased perception of exercise and fitness needs (Ham et al., 2007; Marquez & McAuley, 2006).

**Metabolic Syndrome**

Hispanic females are among the fastest growing group afflicted by metabolic syndrome. A compilation of comorbidity, lifestyle preferences, cultural boundaries, and a lack of healthcare knowledge place this group at substantial risk for the development of metabolic syndrome and, unfortunately, treatment failure (Ham et al., 2007).
Gallo, de los Monteros, Ferent, Urbina, and Talavera (2007) discussed the sociocultural, socioeconomically, and educational barriers that Hispanic females must contend with during their efforts to achieve wellness. Similar ideas were conveyed by Rodriguez et al. (2013) and Ramphal, Jun, and Sumhiro (2014). These authors consistently resolved that the populations of Hispanic females living in the United States shared a commonality in that their burden of poor health was disproportionate in comparison to men and women of other ethnic groups (Gallo et al., 2007; Ramphal et al., 2014; Rodriguez et al., 2013).

**Goals and Objectives**

The primary objectives of this educational group teaching plan for middle aged females with metabolic syndrome in the community clinic setting was to decrease the rates of metabolic syndrome by increasing participant knowledge, accountability, and utilization of health promoting behaviors such as purposeful physical activity and healthful dietary changes. The objectives of this pilot educational plan for a group teaching intervention included:

- Development of a culturally acceptable teaching plan for middle aged (40-64 years old) Hispanic females with metabolic syndrome.
- Increased understanding of culturally appropriate variations of the dietary approach to stop hypertension (DASH) and Mediterranean diets.
- Increased individual energy levels and improved perceived quality of life.
- Increased participant understanding of disease process and possible complications of metabolic syndrome.

Additional aims post pilot for future study included:
• Increased purposeful physical activity for fitness.

• Improved nutritional status in this population by replacing consumption of refined carbohydrates, fats, sodium, nutrient rich fresh fruits and vegetables, lean proteins, and complex carbohydrates.
METHODS

Early development of study methods, setting, population, and evaluation are imperative to the successful completion of a project. This section addresses and describes the setting, sample, procedures, and evaluation plan in which this project was conducted.

Ethical Considerations

Ethical considerations associated with this pilot project were straightforward. The project was first presented to the clinic for administrative and clinical board approval. The project was cleared to proceed in both instances in the full scope of the project. Subsequently, California State University Los Angeles (CSULA) IRB approval was sought and a waiver of consent was obtained, limiting the scope of the intended project. Limitations set in place from CSULA IRB prohibited the use of any active fitness participation, participant demographic information, anthropometric measurements, or any other personal data.

Other ethical considerations included addressing the existing language barrier. All materials were prepared in English and translated into Spanish via certified translation service. Presentation of the course was also conducted in English and translated into Spanish by clinic staff. All course materials were also provided in Spanish.

Setting

The setting for which this pilot project was conducted was a multidisciplinary free community clinic, Volunteers in Medicine (VIM), serving the under and uninsured residents of Indio, Coachella Valley, and the surrounding areas. All clinic staff, including providers, clinicians, front, and back office assistants, were volunteers, with exception of the clinical director, coordinator, and one full time office assistant. This clinic provides
primary care and specialty care services including orthopedics, gynecology, internal medicine, and dental care. Clinic patients visit for an array of ailments, but especially for the management of chronic disease such as hypertension, diabetes, dyslipidemia, arthritis, and thyroid dysfunction.

**Sample**

The population of interest were middle aged Hispanic females aged 40-64 years, with or at risk for metabolic syndrome, and receiving care at VIM. There were no other exclusionary parameters set that limited the participation of any individual willing to attend. Presently, Hispanic female patients receiving primary care at VIM belong to a population of women at high risk for developing metabolic syndrome and its complications as determined by provider referral.

A majority of these women demonstrated most if not all of the criteria necessary to obtain a diagnosis of metabolic syndrome: They possessed limited resources, education, disease knowledge and understanding, and experienced a lack of social support for fitness endeavors. Achievement of successful individual disease management within this population is an ongoing challenge and requires continued increased participant knowledge, confidence, self-efficacy, self-awareness, and self-determination.

**Instrument**

Instrument selection is essential to the accurate collection and analysis of data. In this project, several instruments were selected in an attempt to fully understand the health promotion and learning dynamics that surrounded the Hispanic female population between the ages of 40-64 years old. However, due to limited IRB approval, only the following pre-posttest was reported.
A pre and posttest (Appendix A) was developed based upon seminar content that the educator had amassed. Questions were developed utilizing current disease and evidence-based treatment knowledge and written using no more than a fifth grade reading level. This pre and posttest was identical and consisted of 10 true or false questions. This test was intended to measure the efficacy of the educational intervention.

The pre and posttest contained questions such as: “Diabetes, hypertension, high cholesterol, and obesity are indicators of metabolic syndrome, true or false?,” and “I can improve my health by eating healthy, true or false?” This test was administered by clinic staff to participants both before and after the intervention as a means to evaluate the efficacy of the course and the intervention.

**Procedures**

After the pilot project development was completed, all potential ethical considerations were addressed. Recruitment commenced shortly thereafter and the full project implementation plan was initiated.

**Recruitment**

A purposive convenience sampling method was utilized to recruit interested participants. Referrals from other participants, providers, and office staff would have been accepted and enrolled if inclusion criteria were met. No subsequent provider, participant, or staff referrals were submitted.

Participant procurement methods included provider and participant referral and also the use of flyers (Appendix B) printed in both English and Spanish. The flyer included pertinent information including date, time, contact information, address, and a brief description of planned seminar events. Potential participants were asked to have
provider or physician approval as evidenced by signed health clearance form (Appendix C). This same form also served as a method for providers to refer their patients for the class.

A sample of 20-25 participants was expected, but up to 40 would have been accepted to participate in the class. The intervention was conducted in full on two separate occasions due to a small initial sample size. The initial sample consisted of three participants, as did the second (total n = 6).

**Disclosures and Pretest**

Prior to course content introduction, all participants were informed that their declination to attend the seminar would exclude them from the project, but would in no way affect the procurement of routine health care services. All attendees opted to stay for the duration of the intervention. After disclosure of intent and participant role in this doctor of nursing practice project, a brief overview of the intervention and the role of the educator were discussed.

The pretest for education evaluation was administered by clinic staff. Questions were read aloud in Spanish, as some participants were unable to read in either English or Spanish. After the pre-test was completed, participants were invited to attend a group seminar that lasted no longer than 1.5 hours in its entirety.

**Intervention**

Utilization of a group teaching methodology in this population at VIM was not unheard of, but a group seminar format for patient education had not been used in the past. Learning was fostered via the use of active member participation, open discussion, and the use of various learning techniques aimed at meeting the intended outcomes.
The seminar was held in the VIM community room. It consisted of a brief introduction, and description of metabolic syndrome, including the importance of the ability to successfully self-manage health, personal management strategies, and lifestyle modifications. All information was presented in no more than a fifth grade reading level in English and translated into Spanish. Throughout the seminar, participant questions were welcomed and addressed immediately to facilitate participation.

Nutrition content was then presented and participants were invited to discuss healthy culturally accepted food alternatives. Visual aids included patient appropriate medical posters in Spanish that illustrated food comparisons, as well as sugar and fat contents of commonly eaten foods and beverages. These displays were available for discussion and on display throughout the afternoon. Handouts in English and Spanish were available for later review. In addition, calendars with stickers, a healthy Latina cookbook in Spanish, and activity logs were provided to participants to encourage physical fitness and dietary modification.

Instruction was followed by a twenty minute body weight exercise and stretching demonstration to promote daily in home physical activity, and to build exercise confidence and competence. This physical activity demonstration was conducted by a certified group fitness instructor and was intended to address actual and perceived barriers. This section was completed as a part of a larger intervention in consideration of the CSULA IRB limitations.

This component posed great value and warrants serious consideration. Decreased physical activity, whether attributable to family obligations or personal insecurities, is an illustration of perceived barriers and lack of self-efficacy. The situational influences of
Pender’s model and are clear indicators of the need for alternative measures. After completion of the teaching seminar, participants were asked to complete the posttest, which was identical to pretest completed prior to the beginning of the seminar. Time was then spent engaging with the participants, answering questions, and encouraging future change.

**Risks and Benefits**

Many benefits and few risks were associated with this group teaching intervention. It was expected that participants would develop self-health management knowledge and skills, the ability to make high-quality life-style choices, and improve overall health and quality of life. All registered participants received a yoga mat and a $10 Target gift card as an incentive for their participation. Risks included only the possibility of fatigue.

**Evaluation and Data Analysis**

To properly assess the pre and posttest, statistical data was evaluated using SPSS version 21. Pre-posttest data was statically analyzed utilizing a paired samples t-test. In addition to the paired sample t-test, a post hoc analysis was completed to determine an adequate sample size for future endeavors.
RESULTS

In order to assess the efficacy of the educator and the intervention, participants’ scores on a 10-item test were compared from pre- to posttest. The number of questions answered correctly was combined, yielding an index with possible scores ranging from 0 (all questions answered incorrectly) to 10 (all questions answered correctly). A paired samples t-test revealed no statistically significant change in participants’ scores from pretest ($M = 9.00$) to posttest ($M = 9.67$; $t (5) = 1.58$, $p = .18$, $d = .95$). $SD$ was 0.81 and 0.57 respectively. Pre-posttest data is notated in Appendix D.

Because of the extremely small sample size and the large effect size observed (Cohen’s $d = 0.95$), it was decided to run a post hoc power analysis to determine how many subjects would have been needed to have an 80% chance of finding an effect this large to be statistically significant at the 0.95 level of confidence. The power analysis revealed that a sample of just 28 subjects would have been needed.

Further, examination of the individual questions revealed pronounced ceiling effects, with 7 of the 10 questions being answered correctly by every participant at pretest. This suggests that the questions may have been too easy for participants.

Taken together, these data suggested that a real change in participants’ knowledge likely took place, and the lack of statistical significance here was attributable primarily to the limited size of this sample. Further research with a larger sample would likely find the change in scores to be significant, particularly if more challenging questions are employed to help minimize the ceiling effect observed.

In spite of being statistically insignificant, this pilot intervention for Hispanic women with metabolic syndrome proved itself to be significant at an individualized level.
Many participants verbalized an increase in exercise days per week and improved nutritional and healthful lifestyle choices. In addition, clinic staff have commented on obvious improvements in certain participants’ weight, appearance, and overall disposition since course attendance. Both clinic staff and participants have verbalized excitement and a desire to continue this form of education as a permanent intervention at VIM.
DISCUSSION

Although full pilot project approval was obtained from VIM, the CSULA IRB waiver of consent created data collection limitations. All participant information was excluded. For the purposes of this doctoral project, only data pertinent to the evaluation of the educator and intervention was included.

It was determined that, although many of the participants understood some components of diseases such as diabetes, hypertension, and dyslipidemia, it seems that the severity and personal health implications of these illnesses may be underestimated as a whole. Because baseline knowledge was sufficient, the lack of implementation demonstrates the presence of preexisting barriers.

Participants did have knowledge pertaining to lifestyle choices but few understood the impact of their personal health practices. This information was ascertained during open discussion time despite the inability to adequately measure these factors due to CSULA IRB limitations. Cultural factors and competing responsibilities are undoubtedly related to this lack of healthful lifestyle implementation, affecting the value of change and its dedicated efforts.

The motivation to change or an individual’s personal stage of change (Johnson et al., 2014) is also pertinent to the efficacy of the intervention as a whole. The degree to which each participant is willing to alter his or her lifestyle has an immense effect on the strength of the intervention. Personal engagement is a factor that cannot be lightly dismissed. With this in consideration, it is probable that an initial screening of potential participants would be appropriate prior to future intervention guest selection to improve overall and individual outcomes.
Implications

There are several implications that arose from the initiation of this intervention. It seems that a group teaching intervention can prove to be effective in Hispanic women with and at risk for metabolic syndrome. Although this project was initiated as a pilot study, it is evident that this population can benefit from a targeted educational program. The small sample size of both interventional groups inhibits generalizability, but it was clear that the participant response was positive and warranted further investigation. As a result of the intervention, some participants verbalized feelings of empowerment, most but requested to attend future interventions, suggesting the introduction of actual fitness sessions.

Cultural Considerations

Hispanic American females belong to a dynamic group. There are many commendable personal and cultural characteristics present within this population of women. However, some cultural values can inhibit a provider’s ability to adequately address individual and community health concerns. These populations of women are close knit in family and community, modest, and have a high level of respect for those in perceived authority. Their value of family, culture, and community can in many instances take precedence over personal needs. To be effective, providers and healthcare professionals must also value these same beliefs, learning to teach and embrace the culture with honorable intention.

Limitations

Obstacle and limitation evaluation can aid in the development and revision of an intervention. In this pilot study there existed several obstacles and limitations. First, the
Hispanic female populations are close knit and very modest making it difficult to build a trusting rapport. Providers must demonstrate a sincere interest in the individual and the community in order to overcome this obstacle.

In this population, there is also a sense of respect for those in perceived authority which can create gaps in understanding. These gaps occur as a result of the patients’ hesitancy in asking questions and requesting clarification. Other limitations included the language barrier, as all of the participants possessed only a very limited understanding of the English language. Home obligations and conflicting roles of the participants made attendance difficult for several prospective guests. In addition, the difficulties encountered with IRB approval affected the scope of the intended project and the severely limited the time for adequate sample recruitment.

**Implications for Future Interventions**

Implications for prospective efforts will aid in the further development of efficacious methods of culturally appropriate education. Because of the positive response to the group teaching intervention, future endeavors are welcomed by the clinic and participants. In subsequent interventions, broader objectives and additional information that demonstrates participant progress should be collected. Additional objectives may include:

- Decreased metabolic syndrome in middle aged (40-64 years old) Hispanic female population in this community clinic setting
- Decreased weight by 2% in the first 3 months after initial teaching
- Decreased BMI
- Increased purposeful activities to at least 3 days per week in the first 2 months
**Instruments**

The dynamics within the Hispanic female population necessitates deeper insight into the manner in which instruction is effectively presented. Not only is the quality and manner in which the information is presented important but, also the personal and cultural beliefs of each individual. Although an evaluation of the education was completed via the pre-posttest additional information is necessary.

Use of instruments such as the Health Promoting Lifestyle Profile II (HPLP II; Adult Version) and the Language Acculturation Scale for Mexican Americans will provide pertinent information related to health promoting lifestyle activity and acculturation level respectively. Identification and evaluation of cultural and personal beliefs can provide relevant participant information that can be utilized to guide and ensure the success of future interventions.

**Health Promoting Lifestyle Profile II**

Nola Pender’s HPLP II (Adult Version) is an instrument utilized to measure health promoting behaviors. It is a 52 item survey consisting of questions related to lifestyle choices. The HPLP II has been validated amongst several different languages including Spanish (Pérez-Fortis, Ulla Díez, & Padilla, 2012). Information gleaned from this tool composes an accurate description an individual’s health promoting behaviors.

**Language Acculturation Scale for Mexican Americans**

The Language Acculturation Scale for Mexican Americans is a valuable tool in accounting for the extent to which an individual has been acculturated to the dominant culture. It was developed by Marin and Marin (1991), who have discussed the significance of acculturation as a modifier of behavior.
Other Considerations

Further refinement of the intervention is indicated. As noted previously the pre and posttest can be modified to increase question difficulty to help improve the accuracy of the evaluation. In addition, prior assessment of potential participants’ readiness to change may be justified as a means of screening. Overall evaluation of patient success would be best accomplished by measurement of changes in physiologic function. Modification of these aspects prior to additional efforts may collectively improve participant outcome as well as the accuracy of the data. With consideration of the small sample size recruitment modifications may be in order. In addition to a greater time allowance, other methods may be needed in order to achieve the desired sample of at least 28 participants.

Conclusion

The metabolic syndrome is a serious disease. The most notable factor related to metabolic syndrome is that it is preventable. Insulin resistance, diabetes, dyslipidemia, hypertension, and obesity are components affected by lifestyle modification. Physical activity and healthy dietary choices are considered the first line intervention and preferred treatment. Within Hispanic female populations there continues to be great health disparities and the need for alternative treatment modalities for the treatment of metabolic syndrome and its risk indicators. A group teaching intervention can be effective in affecting a positive change in this community.
REFERENCES


APPENDIX A

PRE-POSTTEST

This pretest is being done to determine your understanding of factors responsible for metabolic syndrome and early heart disease. This class will provide information about metabolic syndrome. After the class, you will be asked to complete another test to measure the helpfulness of the class.

Please DO NOT to put your name or any personal information anywhere on this form. You DO NOT have to complete the pre or posttest to attend the class. Your ability to obtain healthcare at the clinic is NOT related to their willingness to attend or participate in the class. Completion of these forms and handing them in demonstrate your consent to participate in this study.

1. Diabetes, hypertension, high cholesterol, and obesity are indicators of metabolic syndrome.
   
   [ ] True  [ ] False

2. Metabolic syndrome leads to heart disease.
   
   [ ] True  [ ] False

3. People with metabolic syndrome are at risk for heart attack, stroke, and kidney failure.
   
   [ ] True  [ ] False

4. I can improve my health by eating healthy.
   
   [ ] True  [ ] False

5. I can improve my health with exercise.
   
   [ ] True  [ ] False

6. If I exercise, then I can eat whatever I want.
   
   [ ] True  [ ] False

7. If my blood pressure is under control, then I can stop taking my medication.
   
   [ ] True  [ ] False

8. Weight loss will help improve all of the diseases involved in metabolic syndrome.
   
   [ ] True  [ ] False

9. If I take diabetic medication, then I do not have to watch my diet.
   
   [ ] True  [ ] False

10. I have the power to improve my life and health.
    
    [ ] True  [ ] False
CHRISTINA MORRIS: 951-229-6240
SIRROMANIT@YAHOO.COM

SATURDAY OCT. 9, 2015

TIME: 1PM-3:00PM

You are invited to learn how to keep you and your family healthy!

- Learn about diabetes, hypertension, and weight management.
- Have fun while learning about the benefits healthy lifestyle choices.
- A yoga mat and $10 dollar Target gift card will be provided to attendees!
- Please RSVP!!!
APPENDIX C

PROVIDER REFERRAL AND AUTHORIZATION FORM

Group Teaching for Hispanic Women with Metabolic Syndrome

I ______________________________ recommend and clear ____________________________ for participation in the above said group intervention. I hereby state that the above said individual is in adequate health at the time of this visit to participate in the lesson in an __ unrestricted __ restricted manner. If restricted include restrictions:

Provider name print: __________________________       Date ________________
Signature: _______________________________
## APPENDIX D

### PRE-POSTTEST RAW DATA

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