Does a Sarcopenic Obesity Education Program Significantly Improve Nurse Practitioner (NP) Students' Knowledge of Sarcopenic Obesity at a Midwestern University?

Rochella Nze, DNP, MN, MSN, ARNP, FNP-BC

Maryville University, Catherine McAuley School of Nursing Online DNP Nursing Program

ABSTRACT

Background: Sarcopenic obesity knowledge and awareness among nurse practitioner students have not been documented. Sarcopenic obesity is not included as a recommended topic in nurse practitioner curriculum programs. Obesity is of epidemic proportion in the United States. Nearly seventy percent of Americans is overweight and one of three is obese. Sarcopenic obesity is associated with age-related chronic diseases, loss of lean muscle mass and weight challenges for the elderly population.

Objective: The purpose of the project was to identify the level of knowledge and awareness of sarcopenic obesity among nurse practitioner students at a Midwestern university.

Design: The project was a quantitative, descriptive, cross-sectional study using an anonymous, online, one time use survey questionnaire. The survey included a pre-test, educational power-point presentation and a post-test. Pretest and posttest scores identified the effect of the presentation to determine the level of knowledge and awareness of sarcopenic obesity among the nurse practitioner students at a Midwestern university.

Results: A paired *t*-Test calculated the significant difference in group mean knowledge scores on a 21-item instrument before and after the power point presentation. A significant difference was found ($t(61) = -18.092$, $p < .000$). Scores on the post-survey test were higher ($M = 14.15$, $SD = 2.654$) than the pre-survey test ($M = 7.31$, $SD = 2.155$). Posthoc power of significance was .8845. The educational intervention essentially doubled mean scores from a pre-test average of 34.8% to a mean score of 67.4%. Cronbach's alpha = .644 on the 21-item research tool.

Conclusions: Use of an educational power-point tool is an effective method to increase the level of knowledge and awareness of sarcopenic obesity in the Family Care, Adult/Gerontology Primary and Acute Care focus of concentration nurse practitioner curriculum. Further scale refinement and validation of the research tool are warranted from results of the study.

INTRODUCTION

Obesity has reached a level of epidemic proportion in the United States (Flegal et al., 2010). More than one-third of adults in the United States is obese (Ogden et al., 2014). Sarcopenic obesity is associated with the adult aged 65+ years of age. The significance of an increasing prevalence of obesity, body fat composition, visceral adiposity and specifically, sarcopenic obesity poses implications for increased co-morbidities. The 2008 Advanced Practice Registered Nurse (ARNP) Consensus Model: Licensure, Accreditation, Certification, and Education listing of competencies does not contain the topic of obesity; obesity screening assessment tools, such as BMI or isometric grip strength, and the topic of obesity is not listed amongst topics under discussion techniques for sensitive issues of specific competencies (Thomas, 2013).

SPECIFIC AIMS

- To identify the level of knowledge and awareness of sarcopenic obesity among NP students in an effort to improve clinical outcomes of the elderly obese patient.
- To determine the significance of an educational power point presentation on sarcopenic obesity in improving the level of knowledge and awareness of the topic.

METHODS

Review of Literature

- A systematic search of the following databases: Cochran, CINAHL, Pub Med, Science Direct, Midline, and ProQuest.
- Studies in the English language were located.

Research Method/Design

- The study is a descriptive, quantitative, cross-sectional nursing research comprising a single, one time study to predict the level of knowledge and awareness of sarcopenic obesity among nurse practitioner students.
- Study design is a selected experimental design (survey research) whereby a pre-test and post-test were administered to the NP students via Qualtrics.
- Both the pre-test educational power-point and post-test were conducted in one encounter.
- Content knowledge of sarcopenic obesity included nominal and ordinal level of measurement questions (Yes/No, True/False, and Multiple Choice).

Data Collection

- The survey was emailed and collected during the Summer and Fall of 2014 (four month period).
- Participants anonymously and confidentially completed the survey.
- Demographics of each participant were collected (nominal and ordinal data), such as age groupings, race/ethnicity, RN education, years employed as RN.
- Content knowledge of sarcopenic obesity included nominal and ordinal level of measurement questions (Yes/No, True/False, and Multiple Choice).

Statistical Analysis Tests

- SPSS 19 was used from Qualtrics software system
- Effect Calculator was used to calculate effect size
- Power Calculator was used to determine power level of significance
- Power of level of significance of independent variable was determined posthoc
- Descriptive statistics were reported for frequency and percentage
- Chi-Square test of association between variables of survey and demographics
- Paired *t*-Test of pre-test and post-test scores was performed
- Cronbach's alpha of research tool (survey questionnaire)

RESULTS

- A twenty-one item survey was administered to a group of Np students at a Midwestern university to assess the level of knowledge of sarcopenic obesity.
- An overall mean score of 7.3/21 (34.76%) correct responses was observed. The range of scores was from a low of 3 (14% correct) to a high of 18 (86% correct) on the 21-item survey.
- A paired *t*-Test calculated the significant difference in group mean knowledge scores on the 21-item instrument before and after an educational power point presentation. A significant difference was found ($t(61) = -18.092$, $p < .000$)
- Scores on the post-test were higher ($m = 14.15$, $SD = 2.654$) than scores on the pre-test ($m = 7.31$, $SD = 2.155$). The educational intervention essentially doubled the mean scores from a pre-test average of 34.8% to a mean score of 67.4%.
- The research intervention tool/independent variable was strongly significant, with a power level of significance of .8845 determined by posthoc analysis.
- Cronbach's alpha reliability was .644, below expected value of .70.

ANALYSIS

		N	Correlation	Sig.
Pair 1	PRETOTAL & POSTOTAL	62	.247	.053

Table 2

Paired Samples t-Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 PRETOTAL - POSTOTAL	-6.839	2.978	.378	-7.595	-6.083	-18.092	61	.000

Table 3

Paired Samples t-Test Statistics

Reliability Statistics

Cronbach's Alpha	N of Items
.644	21

Calculate *d* and *r* using means and standard deviations

Calculate the value of Cohen's *d* and the effect-size correlation, r_{Y1}, using the means and standard deviations of two groups (treatment and control).

Cohen's $d = M_1 - M_2 / s_{pooled}$
where $s_{pooled} = \sqrt{[(s_1^2 + s_2^2) / 2]}$

$r_{Y1} = d / \sqrt{(d^2 + 4)}$

Note: d and r_{Y1} are positive if the mean difference is in the predicted direction.

Group 1	Group 2
M_1 14.15	M_2 7.31
SD_1 2.654	SD_2 2.155
Compute	Reset
Cohen's *d* 2.82947	effect-size *r* 0.81659

DISCUSSION

- Level of knowledge and awareness of sarcopenia obesity amongst NP students improved and may affect clinical outcomes of the elderly obese patient.
- The significance of an educational power point presentation on sarcopenic obesity may improve the level of knowledge and awareness amongst NP students in the areas of Family Care, Adult/Gero Acute and Primary Care focus of concentration in the educational curriculum.
- Betty Neuman's Systems Theory is the theoretical framework used in promoting primary prevention resulting from the intervention of an educational presentation, to increase the level of knowledge and awareness of sarcopenic obesity. This model reflects education as primary prevention consistent with the need for an intervention to promote knowledge prior to and following an educational presentation.
- The need for inclusion of the topic of sarcopenic obesity in the focus of concentration in NP educational curriculum design is warranted.
- The top four of interest in the study results showed: Only 5 of 96 (5%) participants were familiar with the diagnosis of SO and only 2 of 96 (2%) reported that SO was included in their curriculum.
- Eleven of 96 (11%) participants did not consider obesity to be at the level of an epidemic in the USA.
- Twenty-two students (22%) did not know the definition for overweight.

Limitations:

- Implication to improve survey tool for future studies by improvement of Cronbach's alpha for assurance that the measurement of reliability for all items measuring the same concept (sarcopenic obesity).
- Content validity (item-item) from expert panel by revising and removing questions, and limiting number of items within the survey.
- Researcher-generated, new instrument with no established level of reliability or desired level attained. Thus, research tool requires further review and refinement.

IMPLICATIONS for NURSING PRACTICE

- The need for inclusion of the intervention tool (upon further content validity) as a method to increase NP students' knowledge and awareness of sarcopenic obesity while caring for the elderly, obese population.
- The need for inclusion of the topic of sarcopenic obesity in NP curriculums for the appropriate specialty concentrations was demonstrated as warranted and reflective of sample's cross sectional demographics of NP student concentration/specialty focus.
- Recommendations are to consider utilizing the tool (upon further scale refinement and validation for content validity) as an adjunct online learning tool, an adjunct podium lecture tool and/or a component of the core NP adult care specialty curriculum.
- Betty Neuman's System Model contains ten basic assumptions, and the researcher utilized assumption seven: primary prevention as it relates to general knowledge that is applied in identification and reduction or mitigation of possible or actual risk factors associated with environmental stressors (sarcopenic obesity) to prevent possible reaction (co-morbidities). The goal of health promotion/knowledge is included in primary prevention (Alligood & Tomey, 2013).

IMPLICATIONS for FUTURE RESEARCH

- Concentration of two of the eight essentials of doctorate education: III. Clinical scholarship and analytical methods for evidence-based practice and V. Health care policy for advocacy in health care (AACN.NCHE, 2006).
- Promotion of healthy lifestyles amongst the obese elderly population in Florida (special interest groups of researcher's state of residence) as a health policy advocate.
- Scale validity of the intervention tool to allow for replication with advanced practice nurses, (beyond NP students) to increase knowledge/awareness transferrable into clinical practice.
- Further establishment of content validity using item by item survey questionnaire analysis.
- Survey of a broader region of the United States of NP students for instrument reliability (internal consistency of research tool/intervention).
- Content validity from a panel of expert for all items in survey questionnaire related to sarcopenic obesity, to identify what needs to be known and assure all survey items will not be redundant in content and structure.

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CONTACT

rnze1@live.merryville.edu ; rochella.a.nze@gmail.com

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