ASSESSMENT OF OBESITY HEALTH RISK KNOWLEDGE AND OBESITY IDENTIFICATION, EVALUATION AND TREATMENT AWARENESS OF NURSE PRACTITIONERS

by

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Obesity is an increasing epidemic affecting more people every day. It is imperative that Nurse Practitioners (NPs) have a firm understanding of the importance of the identification, evaluation and treatment of obesity to control this epidemic. Unfortunately, obesity is commonly under diagnosed. This descriptive, quantitative pilot study was conducted to evaluate NPs’ knowledge of obesity related health risks, and the identification, evaluation and treatment criteria for obesity. The study demonstrates a clear knowledge gap exists related to obesity identification, evaluation, treatment and risk knowledge by NPs. The Obesity Risk Knowledge questionnaire (ORK-10) was used to evaluate risk knowledge of NPs. The ORK-10 is a standardized and statistically significant predictor for obesity risk knowledge. A separate questionnaire based on obesity standards set by the National Institute of Health and Center for Disease Control was developed by the researcher (Farr Questionnaire) to evaluate knowledge of identification, evaluation and treatment of obesity. The study also examined if work environment and experience as an NP had any impact on obesity health risk, identification, evaluation and treatment knowledge. The study concluded that NPs have a less than acceptable knowledge base of obesity risk knowledge, identification, evaluation, and treatment. The study also was able to conclude the length of time as a NP and area of work did not have any statistical significant impact on obesity health risk, identification, evaluation and treatment knowledge.
# ASSESSMENT OBESITY RISK, IDENTIFICATION AND TREATMENT

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Assessment of Obesity Health Risk Knowledge and Obesity Identification, Evaluation and Treatment Awareness of Nurse Practitioners

STATEMENT OF PROBLEM

Obesity is increasing in epidemic proportions throughout the United States. The U.S. Department of Health and Human Services (2013) reported that nationally 65% of Americans are overweight, and the number continues to rise each year. Armstrong, Anderson, Le, and Nguyen (2009) further reported that approximately nine million people in the United States are classified as morbidly obese; thus having a body mass index (BMI) of over 40. In today’s health care arena Nurse Practitioners (NPs) are expected to be a part of the direct care and treatment of these patients. As the public awareness of the NP’s role increases, more and more patients are selecting a NP as a Primary Care Provider (PCP) for screening and treatment of co-morbidities.

Obesity is a major health risk for many diseases (e.g. diabetes and heart disease), that can lead to the development of co-morbidities which can have a significant negative impact on a patient’s life. Research currently suggests that primary care physicians commonly under diagnose obesity and do not have adequate knowledge to evaluate, identify and treat obesity (Melamed, Naker & Vinker, 2009). As NPs’ continue to increase as the primary source of care for patients, it is imperative that they have the knowledge to address this growing problem. There is little research that has been done in the area of NPs’ knowledge regarding obesity risks and their level of awareness of identification, evaluation and treatment.
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**Purpose of the Study**

The purpose of this study was to evaluate outpatient settings NPs’ knowledge regarding the health risks associated with obesity. The study also sought to understand NPs awareness of the identification, evaluation and treatment standards for obesity set by national and world health organizations. Differences were examined to see if length of experience as a NP or practice setting had any impact on knowledge related to obesity health risk, evaluation, identification and treatment.

**Conceptual Framework**

**Theoretical Framework**

The theoretic framework supporting this research will be the Health Belief Model (HBM). The goal of the HBM is to increase awareness of a health threat and give the person a desire to take action against the threat. The HBM was developed in the 1950’s to look at four critical areas of a person’s health-related behavior (“Health belief model”, 2012, para. 4):

1) The severity of a potential illness
2) The person’s susceptibility of the illness
3) The benefits of taking a preventative action
4) The barriers to that action

The HBM states that health enhancement behavior is influenced by a person’s perception of threat caused by the health condition (Pender, 1996). Warner (2010) notes the HBM puts forward the concept of self-efficacy, which is vital for anyone doing health promotion work.
The HBM has six major concepts which are defined as follows: (Health belief model, 2012, para. 8)

1) Perceived susceptibility is a person’s perception that a health problem is personally relevant or that a diagnosis of illness is accurate.

2) Perceived severity is when one recognizes personal susceptibility; i.e.: action will not occur unless the individual perceives the severity to be high enough to have serious organic or social complications.

3) Perceived benefits refer to the belief that a given treatment will cure the illness or help to prevent it.

4) Perceived costs refer to the complexity, duration, and accessibility of the treatment.

5) Motivation includes the desire to comply with a treatment prescribed.

6) Modifying factors to the HBM include personality variables, patient satisfaction, and socio-demographic influences.

Though the HBM has been primarily utilized for the health promotion of patients by providers; the HBM can be applied to increase awareness of providers about potential health threats like obesity (McMullagh, 2009). There has been concern noted in the literature that the HBM does not take into account social or economic factors, and there is an absence of emotional factors that may play a role in the interaction ("Health belief model," 2012). For a pictorial diagram of the Health Belief Model please refer to Appendix A.
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**Significance to Nursing**

NPs face the epidemic of obesity in today’s medical arena on a daily basis. How they evaluate, manage and treat these patients will greatly impact their patients’ outcomes. In order to effectively treat patients, NPs need to fully understand the adverse risks obesity can have on their patient’s health. NPs also need to fully understand the proper evaluation, identification and management of obesity.

**Theoretical Definitions**

For purposes of the study the following terms are defined:

1. *Obesity* is defined as anyone with a BMI 30 or higher (Center for Disease Control, 2012).

2. *Level of knowledge/awareness* is defined as the score the participant receives on the questionnaire which assesses their knowledge of obesity health risks, identification, evaluation and treatment based on national standards set by the Center for Disease Control and National Institute of Health.

3. *Obesity health risk(s)* is defined as health risks an obese person is more susceptible to suffer from as a direct result of their obesity. These health risks have been defined by the National Institute of Health, Center for Disease Control and World Health Organization.

**Research Questions**

1) What is the level of knowledge Nurse Practitioners demonstrate regarding obesity health risks?
2) Does a difference in knowledge and/or awareness of obesity health risks, identification, evaluation and management exist related to the length of time in practice as a NP or area of specialization?

3) What is the level of awareness Nurse Practitioners demonstrate regarding obesity identification, evaluation and treatment according to National Institute of Health (NIH) and Center for Disease Control (CDC) guidelines?
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LITERATURE REVIEW

A review of literature was done related to obesity intervention, provider awareness, obesity treatment guidelines, obesity identification, obesity management and obesity knowledge. The online databases of CINAHL, MEDLINE, ProQuest, and DOCLINE were utilized to include both medical and nursing content. Literature relevant to the study included research from 2000 to 2014. Information from the National Institute of Health (NIH), Center for Disease Control (CDC) and the United States Surgeon General were also utilized. All articles used were peer reviewed and all information utilized was printed in English.

Overview of the Topic and Current State of Obesity

Obesity is defined as anyone having a BMI of greater than or equal to 30 (CDC, 2010). As of 2012 the CDC (2013) published that more than three-fourths of states have an obesity prevalence rate of twenty-five percent or more in their populations. The U.S. Department of Health and Human Services (2013) reported more than two in three adults are overweight or obese. Obesity has drastic effects on the human body impacting almost every body system, which can lead to numerous medical problems for patients. In the forefront of these medical conditions are hypertension, diabetes, hyperlipidemia, and high cholesterol (CDC, 2013). Unfortunately, these medical conditions are being found in younger and younger patients (Spivack et al, 2010). In addition, there is evidence to suggest that morbidly obese patients also suffer from co-morbid psychopathology like depression and low-self-esteem (Kelly, 2004). Rao (2008) also found that 80% of obese children grow up to be obese adults with many co-morbidity issues.
Obesity is not just a physical problem affecting the human body; it is an economic problem as well. Large states, like California, Texas and New York, spend approximately $4 billion dollars on the treatment of health related issues caused by obesity (Armstrong et al, 2009). According to the CDC (2012) the estimated medical cost of obesity in 2008 totaled $148 billion.

**History and Research Methodology Related to Obesity**

Obesity was first quantified as weight/height$^2$ squared by Quetelet in 1835 (Bray, 2009). Prior to that scientist Brillat-Savarin had published a diet-based method for weight loss in 1826 (Bray, 2009). Bray (2009) notes that as early as 1901 scientists identified obesity as a health hazard and associated excess weight around the abdomen as causing a shortened life expectancy. In 1995 the World Health Organization (WHO) stratified obesity in increasing degrees of BMI (Bray, 2009). Only recently has obesity become a popular topic for the medical community as it grows into one of the United States’ major healthcare concerns. The medical community now, more than ever, is seeing the physical and economical strain that obesity has on the human life.

**Provider’s Knowledge Base of Obesity Risks**

In a study by Swift, Sheard, and Ruthford (2007), the researchers surveyed 594 students from nursing, medical and dietetic programs by administering the Obesity Risk Knowledge-10 (ORK-10) assessment. The ORK-10 assesses provider’s knowledge regarding obesity health risk effects. Dietetic students scored the highest on the ORK-10 assessment. The study concluded that a majority of all the responding students felt it was their job as healthcare professionals to address obesity with their patients when it was a
relevant problem. Of the programs surveyed dietetic students were the ones most satisfied with the training they received on obesity health risks.

Spivack et al. (2010) conducted a descriptive study through primary care clinics at the Children’s Hospital of Philadelphia. One hundred and ninety-two surveys were sent to providers in their pediatric primary care network; 80 physicians and seven (7) NPs responded. The questionnaire investigated knowledge of obesity and American Academy of Pediatrics (AAP) guidelines, anticipatory guidance practices at well visits regarding nutrition and exercise, and perceived barriers to childhood obesity treatment and prevention (Spivack et al., 2010). The findings were as follows: only 32% percent of the participants were able to identify the correct percentage of overweight adults in America; only 26% were able to correctly define obesity for children based on the BMI percentile, and only 39% were able to correctly identify the daily amount of exercise children should have according to American Academy of Pediatric (AAP) guidelines (Spivack et al., 2010). The study concluded that primary care practitioners needed to improve their basic knowledge of AAP guidelines for managing overweight patients (Spivack et al., 2010).

Limitations to the study included that it was isolated to one hospital, NP responses were not kept separate from physicians, and the study was limited to pediatric clinics.

In a descriptive study by Miller, Alpert, and Cross (2008), 4980 randomly selected registered nurses from one state in six geographical areas were mailed a survey so researchers could study obesity rates and risk knowledge; 760 responses were received. Almost fifty-four of the participants identified themselves as overweight or obese (Miller et al., 2008). Miller et al. (2008) found that only 41% of participants were able to name
five health risks associated to obesity; 26% of the respondents did not identify diabetes and 90% did not identify hypercholesterolemia. Of the respondents, 96% did identify cardiovascular disease as a health risk due to obesity (Miller et al., 2008). The study concluded that many registered nurses working today identified with being overweight or obese but did not pursue the topic of obesity with their patients during a nursing assessment (Miller et al., 2008). Miller et al. (2008) also found that nurses could benefit from education on the health risks associated with obesity. Limitations to this study were that the study was not solely focused on the knowledge nurses had on obesity risks, and there was no distinction if any of the respondents were NPs.

**Provider Knowledge Base of Obesity Identification, Evaluation and Management**

Many studies were found emphasizing that primary care providers under diagnose of obesity. In a prospective study, Melamed et al. (2009) found obesity was under diagnosed in a large family practice clinic. The study was a cross-sectional design of 289 patients in seven family practice clinics (Melamed et al., 2009). After agreeing to participate in the study participants were weighed and BMI calculated. The results were compared to what was found in the medical records. The researchers found that only 50% patients were correctly identified as obese, and 38.9% were correctly identified from documentation of BMI as overweight patients (Melamed et al., 2009). This study also examined the frequency of the diagnosis of obesity by the primary care providers. The findings indicated that only 24.4% obese patients had obesity listed as a medical diagnosis (Melamed et al., 2009). Limitations to this study included sample size, the
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research was conducted only in seven family practice clinics in Israel and it only involved physicians.

A study by O’Brien, Holubkov, and Reis (2004) researched pediatric prevalence of obesity. The study was a retrospective medical records review of all health supervision visits for children 3 months through 16 years old over a three month period. The researchers found that of the pediatric patients who met the clinical criteria for obesity only 53% of these patients had obesity as a diagnosis on their visit assessment (O’Brien et al., 2004). O’Brien et al. (2004) further explained that the children diagnosed with obesity had no intervention initiated. Limitations to this study were the short time span of the chart review, focused on a pediatric population, and there was no separation of the different forms of providers (physicians, nurse practitioners, physicians’ assistants).

In a study by Park et al. (2011), 506 nurses were surveyed about their knowledge of dietary requirements for patients with obesity, diabetes and cardiovascular disease (CVD). The participants were given a 42-question questionnaire divided into three subcategories (8 on diabetes, 14 on obesity and 20 on CVD). The descriptive study found that 42% of the nurses lacked knowledge about dietary requirements of all three diseases (Park et al., 2011). Correct response rate for questions specific to obesity was only 53% (Park et al., 2011). The study concluded that nurses would greatly benefit from more knowledge on the dietary requirements of patient who have diabetes, obesity and/or CVD (Park et al., 2011). Limitations to this study included being completed in Asia, only focused on dietary requirements and was not solely focused on obesity.
Warber, Warber, and Simone (2000) conducted a research study that targeted 200 adult and family NPs in New England to assess their general nutrition knowledge. The researchers used descriptive design to better understand NP’s nutritional knowledge and rates of nutritional counseling. Sampling was done by selecting every tenth name from a list of 2000 NPs from six New England States. Responses were received from 68 NPs. The study consisted of the participants answering 55 questions to assess basic nutrition knowledge for patients. Scoring was done on a 100-point scale and obtaining a 70% indicated basic nutrition knowledge; 68% of the respondents had scores of less than 70% (Warber et al., 2000). The study also examined how often NPs conducted nutritional counseling and what resources they used for current information about nutrition. The study concluded that NPs lacked sufficient knowledge about nutrition and could benefit from increased awareness (Warber et al., 2000). Limitations to the study were that NPs may have not responded if they lacked sufficient knowledge about nutrition and obesity which could have skewed the results to representing a more knowledgeable population. Other limitations of the study were it was only done regionally in New England and only focused on family practice and adult primary care NPs.

McFarlane et al. (2009) conducted a descriptive study to examine the self-reported capacity, knowledge and skill of Australian general practitioners and pediatricians reported they knew for the treatment of childhood and adolescent obesity. Forty general practitioners and three pediatricians answered the researcher’s survey. McFarlane et al. (2009) reported that most of the participating doctors felt that dietitians were not readily available to assist them in managing overweight and obese pediatric
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patients. The study also found that only 23% of the physicians surveyed reported using published guidelines for the treatment of obesity, and most of the participants reported barriers to being able to identify and manage obese pediatric patients (McFarlane et al., 2009). McFarlane et al. (2009) concluded that many physicians could benefit from increased training in the management of obesity. Limitations to the study included that the study was conducted in Australia where resources and guidelines may differ from what is available in the United States. The study also is limited by the fact it was focused solely on physicians and did not involve any nurse practitioners.

In an exploratory, descriptive study by Hessler and Siegrist (2012) NPs were investigated to determine NPs attitudes towards pediatric obesity and explore their current diagnosis and management practices. The study collected data from 1088 family and pediatric nurse practitioners from the American Academy of Nurse Practitioners (AANP) member list randomly. The survey utilized a 5-point Likert format scale. The first section of the survey focused on NPs attitudes towards pediatric obesity, the second section covered assessment and treatment of obesity and the third section focused on the initiation of treatment for pediatric obesity (Hessler & Siegrist, 2012). Hessler and Siegrist (2012) found that NPs in the sample indicated that pediatric obesity was a clinical problem and in need of treatment, but reported not assessing and treating according to current guidelines. The study also found that NPs surveyed reported very low rates of initiating treatment for pediatric obesity (Hessler & Siegrist, 2012). The study concluded that NPs were in an ideal situation to diagnosis and treat pediatric obesity, but also suggested that NPs need more education on the topic (Hessler & Siegrist,
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2012). Limitations to the study included that it only focused on pediatric obesity and was limited to AANP members only.

In a dissertation by Lundeen (2009) North Dakota Nurse Practitioners (NDNPs) were sent a questionnaire to investigate their knowledge, beliefs and practices regarding obesity. The study questionnaire was sent to 191 NPs who were licensed in North Dakota. Lundeen (2009) discovered that NDNPs had negative attitudes towards patients with obesity and held misconceptions about the disease. The study also found that NDNPs felt they lacked education on obesity treatment and lacked the time and employer support to adequately address and treat obesity (Lundeen, 2009). Limitations to the study were it was only conducted on NPs in North Dakota and much of the focus was on the negative attitude the NPs had on obesity. The study concluded that more research was needed to move towards changing negative attitudes and finding strategies for preventing obesity and increasing care for the disease (Lundeen, 2009).

Research Gaps

Although there has been significant research in the area of obesity, there is little research that assesses NPs knowledge in identifying, evaluating and managing obesity or the risks obesity carries. Researchers need to focus on NPs knowledge gap regarding obesity to enhance treatment and education for obese patients.
METHODOLOGY

Design

This pilot descriptive quantitative study used a prospective design to answer the three research questions. A descriptive study was used to understand if there was a need for further research in this area based on the findings.

Sample

The inclusion criteria for the study was NPs who work in an outpatient setting in one of the following categories: primary care, women’s health, retail clinic, community/rural health/tribal clinic, urgent care, visiting/mobile provider, or specialty clinic. To be included in the study the participants must be Board Certified by the American Academy of Nurse Practitioners (AANP), American Nurses Credentialing Center (ANCC), National Certification Corporation (NCC), Pediatric Nursing Certification Board (PNCB), and/or American Association of Critical Care Nurses (AACN). The participants were required to hold a valid unencumbered NP license to practice in at least one state, and work at least fifteen (15) hours per week as a NP involved in direct patient care. There were no inclusion criteria for how the long the participant has been a NP.

Instrument

Three questionnaires were utilized for data collection. They were distributed to participants via Survey Monkey, a secure web based questionnaire portal. Pencil and paper versions of the questionnaire were available at the participant’s request.
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The first questionnaire consisted of demographic questions that all participants were required to complete (Appendix B). The questionnaire asked general demographic questions about the participants and served as an automatic disqualifier if the participant did not meet the inclusion criteria described above.

The second questionnaire assessed the participant’s knowledge of obesity health risks. The tool used for this assessment was the Obesity Risk Knowledge-10 (ORK-10) scale. The ORK-10 is a ten-question true and false answer assessment where one (1) point is given for each correct answer related to obesity related risks (Appendix C). If the participant was unsure of an answer they were given the option to select ‘Do Not Know’; this was to help decrease the distorting effects of guessing. The ORK-10 was evaluated for criterion validity by Swift, Glazebrook and MacDonald (2006) who administered the questionnaire to individuals with no obesity-related expertise (n=230) and to a sample of experts (n=200). Swift et al (2006) found criterion validity was demonstrated by those with educational or vocational expertise in obesity scored significantly higher than non-experts (median 9.0 vs 4.0, Z= -17.364; P>0.001). The Cronbach’s alpha of the total scale was 0.83 in the researcher’s study (Swift et al, 2006). Therefore, the ORK-10 demonstrated good internal consistency and established reliability. Swift, et al (2006) has stated that the ORK-10 can be used to effectively evaluate the health information a person has related to obesity risks. For this study an acceptable score on the ORK-10 was 100%. Permission for use of the ORK-10 was obtained by Judith Swift before use related to this research.
The third questionnaire developed by the researcher, called Farr’s Questionnaire, included assessment questions created to assess participant’s knowledge of obesity identification, evaluation and management standards based on NIH and CDC guidelines (Attachment D). The ten questions were delivered in the same format as the ORK-10. Expert NPs and dietetic professionals evaluated the questions for content validity. Four practitioners: a nurse practitioner, a physician assistant, a general surgeon and a dietician, who work with obese patients, evaluated the questions for content and accuracy. Revisions were made based on feedback received.

The Cronbach’s alpha was conducted on the data collected from participant’s answers after the data collection was completed. The additional questionnaire produced a Cronbach’s Alpha of 0.849, N=10. This demonstrates the questionnaire had a high internal consistency. All information regarding the data analysis was made available to the participant after the data collection period was completed if written request was received.

**Data Collection Procedures**

Potential participants for the study were initially identified by asking various NP groups to contact members via email for participation in the study. The email sent to them included an introduction to the research and an explanation of the research (Appendix E). The email contained a link directing them to an online consent (Appendix F). Once the participant read the consent they were presented with the following statement in the browser window: “By clicking next to ‘I agree to participate’ you are consenting to the research and will be directed to the research questions.” The
participants were then directed to the main survey where they were asked a series of screening questions to confirm eligibility to participate in the study. If they met criteria, participants were then allowed to access the full survey. Potential participants were also recruited using social media groups found on sources like Facebook© and LinkedIn©. Participants recruited this way were given a link to the same online consent mentioned above. A sample size of at least 100 participants was the minimum desired goal of responses. Cook, Health and Thompson (2000) state a response rate of twenty-five percent can be expected from an internet based survey when no email follow-up is done with participants. Initially at least 1000 potential participants were targeted to yield the desired sample.

**Human Subjects Concerns**

An application for approval was submitted to the Oakland University Institutional Review Board (IRB). This process ensured that the standard for the protection of human subjects was maintained through the study. The data was kept confidential and anonymous. IRB approval was granted on July 12, 2012 and the research received an exempt status. Official IRB approval from Oakland University can be found in Appendix G.

The participants were provided full disclosure of the intent of the study and the research questions noted above. The participants were provided with the researchers contact information should they have any questions about the study.
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No identifying demographic data was tied to any of the participant’s questionnaires. The data was kept on a secure web site accessible only by the investigators username and password.

**Data Analysis Technique**

Data analysis began with descriptive statistics. SPSS version 21.0 and 22.0 was utilized for the analysis of all statistics for the research study. The frequency distributions and percentages of mean scores of the ORK-10 and obesity identification, evaluation and treatment assessment were examined. Correct response rates of the ORK-10 and of the additional 10-question questionnaire were calculated as separate mean and median values. Comparison of correct response rates of the subgroups, length of time as a NP and area of work, were tested for distribution. SPSS was programmed to automatically select the test that was most appropriate for the data for nonparametric testing. The statistical significance was set at $p<0.05$. 
RESULTS

Description of the Data Analysis

Six hundred and twenty seven (627) attempts were made for completion of the survey. The primary source of participants came from a secure web link that was provided to various NP groups and organizations across the United States (263 participants). Other sources of participants came from Facebook (144 participants), Michigan Council of Nurse Practitioners (185 participants) and LinkedIn (35 participants). Of the total attempts, four hundred and forty five (445) met criteria for inclusion in the study and completed the ORK-10 and the additional questionnaire. Participants were primarily excluded for not being board certified as a NP (72 participants), not enough hours worked weekly in clinical practice (51 participants) and not working in an area that was under investigation by the study (52 participants).

Data from the demographic questions was evaluated to examine primary work environments and length of time as a NP for the participants. A majority of participants worked in specialty clinics (29%), primary care (25%) and family practice (22%). Most participants indicated they had been in practice as a NP for 0-5 years (35%). Appendix H displays the overall percentage breakdown of qualified participants for work environment and years as a NP.

ORK-10 Results Analysis

The mean score on the ORK-10 for all participants was 76% and the median score was 80%. The minimum score on the ORK-10 was 40% and the highest score was 100%. Appendix I outlines the frequency distribution for all OAK-10 responses and descriptive
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statistics of the ORK-10 for participants and as a distribution of subgroups investigated. Approximately one third (36.4%) of participants scored 70% on the ORK-10. The next most common score was 80%; which was 22.9% of participants. Only 2.5% of participants scored a perfect score (100%) on the ORK-10.

Retail clinic participants had the highest mean score of 80% for the ORK-10; but only represented 3% of all participants. The highest percent of participants stated they were working in internal medicine and family practice; their mean score on the ORK-10 were both at 77%. The lowest mean score on the ORK-10 came from visiting NPs (3% of participants) with a score of 74.29%.

Scores on the ORK-10 ranged from 40% to 100%. The only score of 40% came from one participant who stated they worked in an emergency department or urgent care setting.

Length of time as a NP did not demonstrate to positively or negatively affect a participant’s score on the ORK-10.

Farr Questionnaire Results Analysis

The mean score for the Farr Questionnaire (FQ) for all participants was 75.8% and the median score was 80%. The minimum score for the FQ was 40% and the maximum score was 100%. Appendix J outlines the frequency distribution for all FQ responses and descriptive statistics of the FQ for all participants and as a breakdown of all subgroups investigated. As a whole, approximately one third (33.9%) scored 80% on the FQ. The next most common score on the FQ was 70%; which was 25.6% of participants. Only 4% of participants scored a perfect score (100%) on the FQ.
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Visiting provider participants had the highest mean score of 78.57% for the FQ; but represented only 3% of all participants. Internal medicine which had the highest percentage of participants (25% of participants) mean score was 74%. Family practice which had the next highest number of participants (22% of participants) had a mean score of 78.5%. The lowest mean score on the FQ came from retail clinic participants (2% of participants) with a mean score of 72.3%.

Scores for the FQ ranged from 40% to 100%. Three of the subgroups investigated (family, internal medicine and specialty clinics) had participants who scored a 40%. All of the subgroups but rural health and visiting providers had participants who scored a perfect score (100%).

Nonparametric testing was done for the FQ in all of the subgroups studied. Time spent as a NP was evaluated to see if it affected the score of the FQ. Nonparametric testing found that time as a NP did not affect any of the subgroups except family practice and specialty clinic participants. This may suggest that these two groups have a better understanding of obesity identification, treatment and management.

Further statistical analysis was conducted using a Kruskal-Wallis test on the family practice and specialty clinic participant subgroups. In the family clinic subgroup a significant result was found ($H(4) = 11.258, p<.05$), indicating that the groups (time as a NP) differed from each other, thus suggesting time as a NP may affect knowledge in these two subgroups.
DISCUSSION

The purpose of this study was to investigate the knowledge of obesity health risks, identification, evaluation and treatment by NPs. As a pilot study the study findings, based on responses to assessments delivered to qualified NPs, validated the previous research from Hessler and Siegrist (2012) and Lundeen (2009) that NPs have a decreased knowledge regarding the identification, evaluation, management, and risks of obesity. There were some interesting findings though of the research conducted with this survey.

Question 1, “What is the level of knowledge Nurse Practitioners demonstrate regarding obesity health risks?” noted interesting findings. The mean score of the ORK-10 of all subgroups investigated was within 4% of the overall mean score for all subgroups of 77%. Retail clinic NPs had the highest mean score on the ORK-10 79% meaning they were the highest educated related to obesity. The top responders to the questionnaire were specialty clinic NPs with a mean score on the ORK-10 of 76%. The top mean score then was followed by family practice and internal medicine NPs 77%. The lowest mean score was visiting provider NPs at seventy-four percent (74%). Median score for all combined subgroups on the ORK-10 was 80%. The highest median score on the ORK-10 was 80% and was in family, internal medicine, retail, specialty, rural and pediatrics subgroups. The lowest median score was 70% and came from the visiting provider’s subgroup.

These scores reflected the same outcomes as the mean scores. Although 77% mean and 80% median scores indicate that NPs have basic knowledge of correctly identifying risks associated with obesity, there is still a need for more education in this
ASSESSMENT OBESITY RISK, IDENTIFICATION AND TREATMENT

area since NPs are often the first providers to care of many of these patients. Education in the area of obesity risks, identification, evaluation and management is especially important. These findings supported previous findings from Hessler and Siegrist (2012) and Lundeen (2009). As a provider it is essential for NPs to be able to correctly identify risks associated to obesity, so they in turn can effectively and accurately educate their patients on the risks of obesity as well as treatment.

The second research questions, “Does a difference in knowledge and/or awareness of obesity health risks, identification, evaluation and management exist related to the length of time in practice as a NP or area of specialization?” found that there was no statistical significance related to time or area of specialization when examining the nonparametric testing on ORK-10 results. This was an interesting finding since it might appear logical that the longer an NP is in practice or the area she/he specializes in would positively impact knowledge of obesity. This is most concerning since it reinforces that obesity is not being stressed during education for new NP graduates and also that conferences and continuing education opportunities are not taking the seriousness of obesity and the role of NPs in the health risks, identification, evaluation and management for obesity. There needs to be a concerted effort by NP organizations to emphasize the necessity of more comprehensive information about obesity, especially since NPs are vastly becoming the first line providers for many of these patients. There is no literature published in this area related to NPs so more research would be needed to indicate how to improved the knowledge base of obesity for NPs
The third question, “What is the level of awareness Nurse Practitioners demonstrate regarding obesity identification, evaluation and treatment according to National Institute of Health (NIH) and Center for Disease Control (CDC) guidelines?” analyzed responses from the Farr Questionnaire (FQ). The mean score of the FQ for all subgroups investigated was within 4% of the overall mean score of 75%. Family practice, emergency room and visiting provider NPs had the highest mean score of 78%. Median score for all combined subgroups on the FQ was 80%. The highest median score on the FQ was 80% and was in family, emergency room, specialty, and visiting provider subgroups. The lowest mean score was from retail clinic NPs at 74%. The lowest median score was 70% and came from the internal medicine and retail clinic subgroup. These results support the findings of Hessler and Siegrist (2012) that NPs are in an ideal setting to treat obesity, yet lack the required education to successfully and effectively treat the disease.

One interesting finding of the FQ that differed from the ORK-10 results was that family practice participant’s scores were statistically higher \((p<0.05)\) for NPs who had been practicing six to ten years (6-10 yrs) verses zero to five years (0-5 yrs). The FQ questions focused on NIH and CDC guidelines. This may suggest that these results are more readily available to NPs who have been working in family practice setting. However, more research would need to be done with the tool to determine if the findings are replicable.

Another interesting finding from the FQ was that specialty clinic participant’s scores were statistically higher \((p<0.05)\) from zero to five years (0-5 yrs) verses six to
ten years (6-10 yrs). This may suggest that newer NPs are more likely to practice in specialty clinics where the NIH and CDC guidelines are emphasized. Again, more research would need to be done with the tool to determine if the findings are replicable. These findings though are quite different from NPs in the family practice setting where results on the FQ improved with practice.

The research discussed in this paper supports the two studies (Hessler & Siegrist, 2012; Lundeen, 2009) that NPs lack knowledge in the identification, evaluation, treatment and risk knowledge of obesity. The new tool, FA, indicated interesting findings related to knowledge regarding length of time in practice as well as specialty area, which were not supported by the ORK-10 questionnaire. This finding would need to be explored more to see if these results are replicable. If they are replicable, then it is important to understand what the reason for this variation is. More controlled sampling in replicated studies may also help clarify if time as a NP does impact performance on the questionnaire since findings were different in the two largest practice setting subgroups (family practice and specialty clinics).

**Study Limitations and Recommendations**

The major limitation of this study was the unequal distribution of sampling from various settings NPs practice, participation numbers were very high in the areas of internal medicine, family practice and specialty clinics but low in retail health and visiting providers. To better understanding NPs knowledge of obesity, it would be helpful for future investigators to investigate each specialty individually to better understand the knowledge level of obesity. Other limitations include not being able to distinguish the
exact amount of time in practice for the NPs since the years were in cohorts and not specific to the exact year.

Summary

Obesity is an epidemic that is currently sweeping across our nation and having a drastic effect on health care. As one of the fastest growing population of providers, NPs need to have a strong knowledge base to identify, evaluate and manage diabetes in their patients. Obesity is a disease that should be addressed with a patient no matter the clinical setting; it is not just a medical issue left for primary care to manage. This pilot study aimed to understand if there was a knowledge gap within the NP population related to obesity. The study demonstrated there is an obvious knowledge gap within the NP population. The challenge will be how to facilitate filling this gap with the required knowledge. Future studies could include a pre and post test design for administering the ORK-10 and FQ to participants with implementation of an educational program about obesity. Future research may also want to examine the frequency that providers address obesity in the clinical setting and if it correlates to knowledge level about obesity.

Research that relates to obesity is relatively new in the clinical setting, as compared to other topics such as cardiovascular disease and diabetes, and more research on obesity needs to be closely studied to help improve provider’s awareness of the obesity epidemic. Provider awareness of obesity risks, identification, evaluation and treatment needs to improve in this country to change the epidemic in obesity that is currently happening.
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References


ASSESSMENT OBESITY RISK, IDENTIFICATION AND TREATMENT


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Appendix A

The Health Belief Model

("Health belief model", 2012)
Appendix B

Demographic Questionnaire/Exclusion Criteria

1) Are you currently board certified as a Nurse Practitioner? Yes/No
   *If yes please choose your accrediting body:*
   a. American Academy of Nurse Practitioners (AANP)
   b. American Nurses Credentialing Center (ANCC)
   c. National Certification Corporation (NCC)
   d. Pediatric Nursing Certification Boards (PNCB)
   e. American Association of Critical Care Nurses (AACN)

2) Are you currently licensed to practice as a nurse practitioner in at least one state? Yes/No

3) Do you participate at least fifteen (15) hours a week as a nurse practitioner with direct patient care? Yes/No

4) Do you practice as a Nurse Practitioner that falls into one of the following categories? Yes/No
   *If yes choose the area where you spend a majority of your time working:*
   a. Primary Care (Internal Medicine)
   b. Family Medicine (adult and pediatrics)
   c. Pediatrics only
   d. Women’s Health/OB-GYN
   e. Retail Clinic (MinuteClinic/Walgreens Take Care Clinic/Target Clinics, etc)
   f. Community/Rural Health Clinic/Tribal Health
   g. Urgent Care/Emergency Medicine
   h. Visiting/Mobile Provider
   i. Specialty Clinic (urology, surgery, pain management, ENT, derm, etc).

5) How long have you practiced as a Nurse Practitioner?
   a. 0-5 years
   b. 6-10 years
   c. 10-15 years
   d. 15-20 years
   e. Greater than 20 years

6) What was the primary specialty track of your schooling/training as a NP?
   a. Acute Care
   b. Adult
   c. Family
   d. Gerontology
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e. Midwifery
f. Women’s Health
g. Pediatric
h. CRNA
i. Other (specify)

If you have answered NO to any of the questions 1 thru 4, we appreciate your interest but you will not be able to participate in the rest of the survey.
Appendix C

Obesity Risk Knowledge-10 (ORK-10) Assessment and Answers

(Correct answers in **BOLD**)

Please answer the following questions as True, False or Do Not Know

1) A person with a beer-belly shaped stomach has an increased risk of getting diabetes. **True**

2) Obesity increases the risk of getting bowel cancer. **True**

3) An obese person who gets diabetes need to lose at least 40% of their bodyweight for clear health benefits. **False**

4) Obese people can expect to live as long as non-obese people. **False**

5) Obesity increases the risk of getting breast cancer after menopause. **True**

6) Obesity is more of a risk to health for people from South Asia (e.g. India and Pakistan) than it is for white Europeans. **True**

7) There is NO major health benefit if an obese person who gets diabetes, loses weight. **False**

8) Obesity does not increase the risk of developing high blood pressure. **False**

9) It is better for a person’s health to have fat around the hips and thighs than around the stomach and waist. **True**

10) Obesity increases the risk of getting a food allergy. **False**
Appendix D

Farr Questionnaire and Answers

(Correct answers in **BOLD**)

Please answer the following questions as True, False or Do Not Know

1) The standard equation for calculating a patient’s BMI is mass (kg) / (height (m))^2. **True**

2) Obesity is classified as a BMI of 25 kg/m^2. **False**

3) Men who have a waist circumference of greater than 40 inches, or women with a waist circumference of greater than 35 inches have an increased risk of developing dyslipidemia, hypertension, cardiovascular disease and diabetes because of excess abdominal fat. **True**

4) Weight loss therapy is recommended for patients when their BMI ≥ 25 and/or when they have a high-risk waist circumference. **True**

5) A daily calorie reduction of 1000-2000 calories is required to lose the recommended 1 to 2 pounds per week. **False**

6) The National Institute of Health (NIH) recommends an initial weight loss goal of 20% of body weight from baseline over six months. **False**

7) For patients with a BMI ≥ 30 the NIH recommends patients attempt weight loss with diet and exercise for six months prior to starting pharmacotherapy. **True**

8) Weight loss surgery is indicated for patients when they have a BMI ≥ 40 or have a BMI ≥ 35 and serious comorbid conditions. **True**

9) Patients with active substance abuse and/or have a history of anorexia nervosa or bulimia nervosa can be treated for obesity following the same guidelines as other patients. **False**

10) Physical activity should not be an initial party of weight loss therapy, and should only be encouraged after the patient has been successful with dietary modifications. **False**
Dear Nurse Practitioner,

My name is Kyle Farr and I am a DNP student at Oakland University. I am sending this e-mail in request that you fill out a simple survey that will take no more than 20 minutes of your time. The survey is in partial fulfillment of my doctorial studies. The purpose of this study is to evaluate Nurse Practitioners (NP) knowledge regarding the health risks associated with obesity and their awareness of the identification, evaluation and treatment standards for obesity set by national and world health organizations. Findings will shed light on the level of knowledge NPs have about obesity and help direct further research and educational needs. The study will also help pilot a tool that could be used to assess NPs obesity risk knowledge and awareness of identification, evaluation and management of obesity. As a primary care provider your input into this research is vital to understanding obesity and the treatment of obese patients. Just as importantly, this research will help us understand how to better prepare future nurse practitioners to care for the unique and challenging patients.

Your responses will be kept completely confidential with no linkages to any identifying information such as your name, email address or IP address. All data will be stored in a password protected electronic format accessed in aggregate form by only the researchers. If you would like to discuss the research further or if you would prefer to fill out a paper and pencil survey instead of online survey, please feel free to contact me through my e-mail address listed below. This research has been reviewed according to Oakland University IRB procedures for research involving human subjects. At any time during this process, if you decide to not continue, there are no negative consequences.

If you agree to participate in this research, the link below will take you to the consent. Please read carefully before consenting. Again, I want to thank you for taking the time out of your busy schedule to participate in this research.

Sincerely,

Kyle Matthew Farr, MSN, NP-C
DNP Student
Oakland University, Rochester, MI 48309
kmfarr@oakland.edu

Link: Will be available once study is published and opened on Survey Monkey
Appendix F

Consent to Participate

Assessment of Obesity Health Risk Knowledge and Obesity Identification, Evaluation and Treatment Awareness of Nurse Practitioners

Principal Investigator: Kyle Matthew Farr, MSN, NP-C
Doctor of Nursing Practice candidate
School of Nursing, Oakland University

INTRODUCTION/PURPOSE:
You are being asked to participate in a research study about obesity. The purpose of this study is to evaluate Nurse Practitioners (NP) knowledge and awareness regarding the health risks associated with obesity including the identification, evaluation and treatment standards for obesity set by national and world health organizations. It is hypothesized that there may be a lack of knowledge among NPs related to health risks for obese patients. It is also hypothesized that there is a lack of awareness of the identification, evaluation and management of obesity among NPs. Increased awareness of obesity may promote nurse practitioners to increase their knowledge about obesity resulting in increased treatment of health risk for these complex patients. I am working under the direction of my chairperson, Barbra Penprase, PhD, RN, CNOR.

PROCEDURES:
After reviewing the consent and agreeing to participate in the research, you will be directed to an online survey pertaining to your knowledge regarding obesity. The first part of the survey will focus on demographic information about yourself and your practice. After completing this section, if you are not prompted to the next step of the survey, I wish to thank you for your participation. If you are prompted, the assessment portion of the survey will consist of two distinct sections in the questionnaire. The first section will assess your knowledge of obesity health risk knowledge using the Obesity Risk Knowledge (ORK-10) tool. The ORK-10 consists of ten (10) True/False/Do Not Know questions about obesity health risks. The second section consists of ten (10) questions in the same format as the previous section and is to assess your knowledge of obesity identification, evaluation and treatment based on NIH and CDC guidelines. The survey should take no more than 20 minutes to complete. You may complete the survey in a setting of your choice. We ask that you not talk with others about this survey, and complete the survey in one sitting without interruption to prevent threats to validity. The completed survey will be filled out via a secure Internet based survey application. At the participant’s request to the researcher, via email or phone call, a pencil and paper version...
ASSESSMENT OBESITY RISK, IDENTIFICATION AND TREATMENT

of the study can be provided. You may contact the researcher at: kmfarr@oakland.edu or at 269-352-8031.

RISKS/INJURY:
All information will be seen only by the researchers conducting this study. There are no anticipated risks to being in this study. There are no physical or emotional risks to you by being in this study. You are free to stop answering the questions and/or participating in the study at any time during the session. You may contact me by e-mail if you have any questions. There are no social risks to this study. The only foreseeable risk would be if someone could match your answers directly to you. This risk has minimized by the steps taken to protect your identity so that once it is received your survey cannot be traced back to you. The Internet survey tool does not track any IP addresses or collect any personal information from your personal computer.

No funds have been set aside for medical treatment in the case of injury related to research; however, by agreeing to this form you are not waiving your rights to seek compensation in event of injury or negligence.

BENEFITS OF PARTICIPATION:
There are no direct benefits to being in this study. However, understanding the knowledge and awareness, among Nurse Practitioners regarding obesity may promote nurse educators to increase content related obesity health risks, identification, evaluation and management within advanced nursing practice curriculums, and encourage Nurse Practitioners to seek continued education on this topic.

COST OF PARTICIPATION:
There is no cost to being in this study.

COMPENSATION:
No honorarium is offered for participation in this study.

VOLUNTARY PARTICIPATION/WITHDRAWAL:
Being in this study is voluntary; you are free to stop participating at any time without any repercussions. You do not have to answer any question that you do not want to in the questionnaire; the only required questions will be the eligibility questions asked prior to beginning the survey.

QUESTIONS:
If you have any questions about this study, during participation or in the future, you may contact Kyle Farr, MSN, NP-C at (269-352-8031) or email at kmfarr@oakland.edu any time or Dr. Barbra Penprase, Chair of the committee for this study and Oakland University School of Nursing Associate Professor, at (248) 370-4486 or e-mail at penprase@oakland.edu
ASSESSMENT OBESITY RISK, IDENTIFICATION AND TREATMENT

For questions regarding the rights of human subjects in research, you may contact Oakland University Institutional Review Board at (248) 370-2762.

CONFIDENTIALITY:
All information is kept confidential. Your name will not be on any paper or electronic document. All Internet based questionnaires will collected using a secure Internet based web site. No IP addresses will be saved. All paper questionnaires will have a code number so that no one can identify who filled it out. Paper forms will be kept in a locked file cabinet, at the primary researchers residence, that only the researchers can access.

CONSENT TO PARTICIPATE IN RESEARCH STUDY:
Consent to participate in research study: By clicking on I Agree to Participate on the Internet based consent or by filling out the survey and mailing it back to the researcher, it will indicate to us that you have read the information above, your questions have been answered, and you have agreed to be in this study.

If you are filling out a pen and paper copy of the research
Consent to Research: By filling out the survey and mailing it back to the researcher, it will indicate to us that you have read the information above, your questions have been answered, and you have agreed to be in this study.
Appendix G

Institutional Review Board for the
Protection of Human Subjects
Office of Grants, Contracts & Sponsored Research
Rochester, Michigan  48309-4401
(248) 370-4898   Fax: (248) 370-2973

July 10, 2012

Professor Barbara Penprase
School of Nursing

Reference:    IRB application #5117, “Assessment of Obesity Health Risk Knowledge and Obesity Identification, Evaluation and Treatment Awareness of Nurse Practitioners” (Kyle Farr)

Dear Professor Penprase:

The Institutional Review Board (IRB) responsible for the review of research involving human participants has reviewed your application referenced above and determined that the project, as currently described, is exempt from federal regulation as defined in 45CFR46.101(b)(2). Your application will be kept in our active file for three years. Prior to the end of the third year, you will be receiving an Exempt Application Status Update Form to complete and return back to us.

The exemption is made with the understanding that NO changes may be made in the procedures to be followed until after such modifications have been submitted to the IRB for review and approval. Do not collect data while the modified application is being reviewed. Data collected during this time can not be used.

If a consent form is required for the project, researchers must retain a copy of the informed consent form in their files for three years and must provide a copy of the consent form to the subject.

Any unanticipated problems involving risks to human subjects or serious adverse effects must be promptly reported to the IRB.

When project is completed, please download the IRB Exempt Application Completion Form from the Human Subjects site at the Research webpage, complete and email it to me so that I can change the status of the application. Thank you.

Sincerely,

Judette Haddad, PhD, CIP
Regulatory Compliance Coordinator
### Appendix H

**Demographic Results from Study**

**Work Environment of Qualified Participants**

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<td>Family Medicine</td>
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<td>Pediatrics only</td>
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<td>Specialty Clinic</td>
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**Years of Practice of Qualified Participants**

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## Appendix I

### ORK-10 Results and Descriptive Statistics

#### Frequency Distribution-ORK-10 All

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#### Descriptive Statistics- All Results

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### Descriptive Statistics-Women’s Health/OBGYN

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### Descriptive Statistics-Visiting Provider

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### Appendix J

**Farr Questionnaire Results and Descriptive Statistics**

#### Farr Questionnaire- Frequencies All

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#### Descriptive Statistics- All Participants

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