

Research Proposal

Proposed Research Topic: Cardiometabolic self-management education in a rural Oklahoma community free clinic for the uninsured

Research Question: Does cardiometabolic self-management education by rural health care professionals improve clinical indicators in adult, rural-dwelling, uninsured patients of a nurse-practitioner managed free clinic?

Purposes: The purpose of this study is to evaluate whether a nurse practitioner-led educational intervention improves clinical indicators for cardiometabolic syndrome (CMS) for a rural-dwelling, low literacy, uninsured patients of a nurse-practitioner managed free clinic.

Problem and Significance: According to National Health Care Disparities Report (AHRQ, 2009), rural Americans have a greater chronic disease burden and are less likely to have access to health care providers. Cardiometabolic syndrome is a clustering of interrelated risk factors that promote the development of atherosclerotic vascular disease and type 2 diabetes mellitus (Ashen, 2008). Cardiometabolic syndrome is associated with a three to fivefold greater risk for the development of T2DM (Wilson, et al, 2005). Diabetes and CMS are evolving as global epidemics. In the United States, diabetes affects 20 million people, with 47 million afflicted with the CMS (Nicasio, et al, 2005). According to the National Health Statistics Report (2009), males and females 40–59 years of age were about three times as likely as those 20–39 years of age to meet the criteria for metabolic syndrome. These results demonstrate that metabolic syndrome is prevalent and that it increases with age and with BMI. The prevalence rate for the complex, chronic disease of diabetes is 17% greater in rural areas than urban, and diabetes has been ranked as the third highest rural health concern (Gamm, Hutchison, Linnae, Dabney, & Dorsey, 2003).

In rural areas access to diabetic education is limited, and rural health care providers may have difficulty obtaining current diabetes management information. Diabetic education from urban areas who participate in programs to improve diabetes knowledge of rural healthcare providers have successfully trained these providers to create self-sustained programs for diabetic self management programs (Irons, et al., 2007).

Free clinics, along with public hospitals, community health centers, local health departments and rural health clinics are considered to be part of the “safety net” of health care providers for uninsured Americans. Recent data estimate that free clinics, by utilizing the volunteer services of health care professionals and other community volunteers, serve more than 3.5 million uninsured individuals annually and are thus significant providers of safety net health care. Dedicated volunteer health care professionals in partnership with interested community members accomplish this task. Revenue is provided principally by in-kind donations of goods and services and local-level fundraising efforts (Nadkarni and Philbrick, 2005).

In recent years it has become evident that access to health care is more problematic for the uninsured population in rural areas of the United States. In 2009, the Hope Clinic (a free clinic in Southeastern Oklahoma addressing the needs of the underserved) identified 54% of the patients at the clinic having body mass index greater than 30, 19% of the clients were diagnosed with cardiometabolic syndrome and 20.6% diagnosed as prediabetic. In 2007, the Oklahoma State Department of Health *State the State Report* showed that the overall rate of uninsured adults in the state is 20.7%. A 2004 Oklahoma Health Care Insurance and Access Survey showed that this rate varied by region, with the highest uninsured rate of 23.6% occurring in the predominantly rural Southeast Region of the state—the area in which Atoka County is located.

Rural residents, especially those not living adjacent to an urban area, are at greater risk of being uninsured; statistics show that one out of every three rural families has at least one uninsured member. Thus, the susceptibility of rural *families* to medical costs is much greater than data on individual uninsurance suggest.

Oklahoma has an extensive network of free clinics, and the majority of these are located in the urban areas of Oklahoma City and Tulsa. The Health Alliance for the Uninsured (HAU), a non-profit organization supporting the free clinic network in urban Oklahoma County, partners with various urban organizations to assist free clinics in developing chronic disease management programs and improving other services. In partnership with the Health Alliance for the Uninsured (HAU), a program will be developed and tested to determine if a nurse practitioner-led educational intervention addresses the needs of the underserved, rural population.

Although there is nothing novel in the concept of education intervention, little is known about the effectiveness in improving clinical indicators of glycemic control when education is provided by rural health care professionals in a free clinic setting.

Implementation: This observational, prospective study will screen male and female patients with three or more components of metabolic syndrome including body mass index $>25\text{kg/m}^2$, elevated TG, low HDL, elevated fasting blood sugar, elevated hemoglobin A1C. Components of the NCEP-ATPIII definition of metabolic syndrome will be used for this study. There will be two phases of the project: (a) development of program content and materials, and collaboration of five disciplines: family nurse practitioner, dietician, physical therapist, and licensed counselor and (b) and testing the educational interventions with data collection and analysis.

(a) Development: From June 2009 until September 2009, there will be much time devoted to the development of the program content which will include meetings with multidisciplinary team.
(b) Testing: From September to March 2010, two sessions per month of at least 60 minutes covering several topics including, diet, and exercise and behaviour modification. The sessions will have a flexible structure, sensitive to cultural differences and expectations.

Approval will be obtained by the IRB of Texas Woman's University; written and verbal consents will be given. Once written consent is obtained, a history and physical examination will be performed. Anthropometric measures including height, weight, and body mass calculations will also be obtained. Blood pressure will be taken manually in a sitting position using a mercury sphygmomanometer and an appropriate sized cuff will be used after five minutes of rest. If blood pressure is elevated on the initial visit and there is no preexisting hypertension; confirmation will be based on the initial visit reading and two follow-up visits with at least two blood pressure measurement at each visit. Other lab which will be used to aid in the study will be triglycerides, HDL, total cholesterol, fasting blood glucose, HGA1C; initially, then at 3 and 6 months.

Class 1: The first class will consist of an overview of CMS, health promotion, modifiable risk factors, how CMS is diagnosed and the effect of CMS on the target rural area. A pretest will be given; a fifteen question questionnaire that tests adults' metabolic related knowledge. Items will be scored as correct or incorrect. A quality of life questionnaire and a physical activity frequency questionnaire will also be given to each participant. The patients will also be asked to collect a 24 hour food diary and return at the next meeting for the dietician to review. Each participant will receive a notebook with handouts given at each session. Handouts will be provided at an eighth grade reading level.

Class 2: Dietician will present this meeting with written and verbal recommendations regarding lowering fat intake, healthy cooking, counting calories, carb counting, dining out wisely and portion size. There will be individualized dietary recommendations for pursuing reduction in their weight.

Class 3: Physical therapist will address the importance of exercise, general instructions will be given before starting exercise program, exercise dos and don'ts, introducing exercise into daily activities, and written recommendation for physical activity for each patient and achieving their goal.

Class 4: Behavior modification and stress reduction will be discussed. A licensed counselor will explore ways of dealing with stress. Discussion this class also on common dietary mistakes, healthy shopping and reading labels.

Class 5: Dietician will review portion control, discuss caloric counting and modifying recipes. There will be time allotted for shopping at the nearby store and choosing wisely foods wisely by reading labels.

Class 6: A panel discussion with disciplines will be arranged at this meeting to allow for questions and answers, a post test will be given, interactive group sessions based on behavioral counseling and focusing on putting healthy lifestyle changes into practices.

Evaluation:

Objective 1: To identify the prevalence of impaired glucose metabolism (IGM) in patients seen in a rural free medical clinic for the uninsured population in Southeastern Oklahoma who present with three or more components of the metabolic syndrome. Uninsured patients at the Hope Medical Clinic will be screened for components of metabolic syndrome. The patients will then be evaluated for eligibility. Components of the NCEP-ATPIII definition of metabolic syndrome will be used for this study. Inclusion parameters include medically uninsured adults ages 18-64 who meet 3 out of 5 criteria for CMS as specified in ATPIII-NCEP. Exclusion criteria will include individuals with type 2 diabetes; heart, kidney or liver disease; pregnancy; and individuals receiving steroids on routine basis.

Objective 2: To develop and test whether a nurse practitioner-led educational intervention addresses the needs of underserved rural adults with CMS. Evidence-based studies have demonstrated that the primary interventions for CMS involves lifestyle modifications that focus on weight reduction through increased physical activity, with increased calories expended, and reduced calorie intake (LaMonte, et al, 2005).

End Products: The goal of this project is to assist the uninsured, low literacy, rural population to improve their quality of life and prevent or postpone the development of complications related to the CMS through educational intervention. What will be gained will be a healthier community.

References

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