Volume 4, No. 7, December 2014

ISSN No. 2231-5454

INTERNATIONAL JOURNAL OF NURSING DIDACTICS

RESEARCH PAPER

Assessing the Quality of Primary Care Provided to an Indigent Population as it Relates to Obesity and Cardiovascular Risk

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DOI: http://dx.doi.org/10.15520/ijnd.2014.vol4.iss7.16.23-45

Abstract: The purpose was to evaluate the quality of primary care services provided to those presenting at a free clinic. The indigent may be at increased risk for cardiovascular disease. This study employed a prospective design. Data were collected for 109 participants. Clients found the quality of care provided to be very good. Although statistically significant changes did not occur between outcomes over time, significant correlations were found between body mass index, blood pressure and glycohemoglobin. These modifiable risk factors may be affected by the provision of quality primary care services provided at free clinics, but are influenced by a variety of confounding variables. This study has led to a variety of conclusions and implications for nursing practice. Nurses play a key role in the provision of quality primary care. By fostering decreased cardiovascular risk, nursing professionals can significantly improve the health status of the indigent and possibly minimize disparities.

Key words: indigent, disparities, primary care, health care outcomes, obesity, diabetes, hypertension

INTRODUCTION:

Free medical clinics play an integral role in the provision of health care to the communities they serve, providing care for the indigent who may have no access to other means of established care (Reynolds, 2009). Many of these services are provided by nurses and nurse practitioners (NPs), as well as by our physician colleagues. There are currently five clinics in the state of New Jersey offering free care to the medically indigent—defined by those individuals lacking third-party health or medical insurance coverage whose income is less than or equal to two hundred percent of the value determined by the U.S. Department of Health and Human Services Income Poverty Guidelines (NJDHHS, 2012). Indigent clients present to free medical clinics with a variety of acute, chronic, and preventative care needs. Most lack the resources to have their health care needs met, are uninsured or underinsured, and are at risk for cardiovascular disease.

There are a number of cardiovascular risk factors affecting the U.S. population with increased risk facing vulnerable populations such as the indigent (Wang & Ramachandran, 2005). Lower socioeconomic groups may continue to experience a greater burden of the disease. Modifiable risk factors such as obesity, hypertension, and diabetes all contribute to a patient's risk as do non-modifiable risk factors such as age, gender, race, and genetic predisposition (Beauchamp, Peeters, Tonkin, & Turrell, 2010; Cravedi, Sharma, Bravo, & Islam, 2012). The comprehensive risk assessment and subsequent health behavior counseling remains paramount in primary care. Nursing interventions such as education on diet, the importance of exercise, and adherence with the plan of care are all integral parts of health promotion and disease prevention and nurses can make positive contributions to these processes (Glasgow, Ory, Klesges, Cifuentes et al., 2005).

The Healthy People 2020 initiatives address a variety of components to improve the overall health status of the population. Cardiovascular health is one integral part of these initiatives. More specifically, the General Health Status initiatives of Chronic Disease, Diet, Physical Activity and Access through education and compliance with the prescribed plan of care functioned as the model framing the purpose of study (Healthy People, 2012). These initiatives cite health outcomes to guide the goals of attaining quality lives free of preventable disease, promoting healthy lifestyles, and eliminating health disparities (Healthy People, 2012). Eating patterns and physical activity have been selected as the practical and relevant foci of health behavior interventions to meet these initiatives. This study directly addresses the goals of Healthy People 2020 through primary care outcomes research.

The Institute of Medicine (IOM) Committee on the Future of Primary Care defines primary care as the multidimensional provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and of the community as a whole (IOM, 2010). Primary care involves several domains. Access, quality of care, quality of interpersonal care, continuity, and coordination of care and services in the management of acute and chronic conditions comprise this definition (Aktan, Fagan, & Sorkin, 2012; Bower, 2003).

Health care outcomes are just one facet of quality care. Quality of care has been described and evaluated in the literature of nursing, advanced practice nursing and related disciplines (Bower, 2003). Specifically, the quality of primary health care has been measured in a variety of

ways—both through provider-driven outcomes as well as by the measurement of patient perception (Bower, 2003).

Exploring three aspects of perception of quality of primary care—interpersonal aspects of care, technical aspects of care, and outcomes of care, researchers surveyed 473 primary care patients. It was found that the opinion expressed by patients on the quality of care they receive was favorable with regard to the various dimensions of care (Haddad, Potvin, Roberge, Pineault, et al., 2000).

Interpersonal attributes patients focused upon related to the manner in which they are greeted, the respect they were shown and the technical aspects provided such as correct diagnosis, tests, treatments, and outcomes (Haddad, Potvin, Roberge, Pineault, et al., 2000). It is, therefore, imperative to include patient perception when evaluating one aspect of quality of care, particularly because some of this work is dated and requires current re-exploration.

Previous research demonstrates primary care services are an essential component of improving health care outcomes in vulnerable populations such as the uninsured or underinsured (Mc Cann, 2010). There are a variety of ways one might examine the outcomes of primary care services received. When evaluating health care outcomes as one aspect of assessing for the quality of care provided, exploration of changes or improvements in a clients' body mass index (BMI), blood pressure (BP), and hemoglobin A1C (HgB A1C) over time as they contribute to a population's overall cardiovascular risk. Therefore, this study aims to evaluate quality based on both patient perception and health care outcomes as both are important components of quality care.

There are a variety of health care outcomes which can be measured to address the previously described Health People 2020 initiatives. Obesity, a growing concern in the U. S. and affects the indigent at increasing rates contributing to the morbidity and mortality of this population, is addressed by Healthy People 2020 (Kaluski, Keinan-Boker, Stern, & Green, 2007). A client's BMI is one critical indication of cardiovascular risk. Body mass index is calculated from height and weight. It is an inexpensive, reliable indicator of body fat, is easy to perform, and is useful in screening for categories that may lead to health problems (CDC, 2012). A BMI of 25-29.9 is classified as overweight and over 30 considered obese (CDC, 2012).

Hypertension, another important indicator to assess cardiovascular risk, has been well documented as one of the leading causes of morbidity and mortality in the U.S. (NLMS, 2012). Pre-hypertension has been defined as BP 120-139 for systolic and 80-89 for diastolic. Hypertension has been categorized into stages whereas Stage One is pressure 140-159/90-99 and Stage Two is a systolic greater than or equal to 160 mm Hg and diastolic greater than or equal to 100 (NIH, 2012). Blood pressure is an additional outcome to be explored to address Healthy People initiatives.

Hemoglobin A1C measurement is the standard for monitoring diabetic control. Normal is less than 5.7%, pre-diabetes is 5.7% to 6.4% and diabetes is 6.5% or higher (Miller, 2003). Improving the health of diabetic patients with health disparities depends on the improvement of quality and the reduction of these disparities (Bynum, Fisher, Song, Skinner et al., 2010). Diabetes is another Healthy People initiative incorporated into the present design. Together, these three health care outcomes, BMI, BP, and HgBA1C, will be measured and evaluated as they relate to overall cardiovascular risk in an indigent population and address the study framework.

Disparities in health care quality exist among some racial and ethnic minority groups. Healthy People 2020 initiatives call for an elimination of such disparities (Healthy People, 2012). Limited English proficiency and poverty has been found to be barriers to quality health care (AHRQ, 2008). In using self-report instruments, reliability, validity, number of items, and literacy of participants are essential factors to consider. It is, therefore, the role of the clinician providing services to those at risk for health disparities to exhaust all efforts to bridge the gap of these differences in access and quality. In addition, the means in which the primary care researcher assesses quality must include thoughtful consideration of barriers such as language and literacy and the length of the measures must also be considered as lengthy measures are not realistic to administer in practice-based research (Cravedi, Sharma, Bravo, & Islam, 2012).

In a previously published study by this primary investigator, data on 1963 patient encounters characterized an indigent population who sought primary care services at a free medical clinic and reported that most encounters were related to the management of hypertension (14%) and diabetes (9%) (Aktan, Fagan, & Sorkin, 2012). The next step in this program of research was to collect and analyze outcomes data on the quality of health care services provided. The management of diabetes and hypertension were selected as predictors of cardiovascular risk for the present study based on this data.

Overall, the purpose of study was to evaluate the quality of the primary care services provided to an indigent population. This work is significant due to the rise of cardiovascular disease in the indigent and the previously described links to obesity, hypertension, and diabetes. Nurses and nurse practitioners play a key role in the provision of the quality primary care services at free clinics. This study measured patient perception of care as well as health care outcomes by examining the quality of primary care provided to a vulnerable and unique population. The hypotheses of the present study are as follows: it is expected that the patient-reported quality of primary care services will be very good and that it is expected that a statistically significant decrease in body mass index, blood pressure, and glycohemoglobin will result from clients receiving primary care services provided.

Methods

In this prospective design, the primary investigator, who is also a family NP, recruited study participants through a variety of programs offered by the non-profit agency, interviewed them for cardiovascular risk, and then directly measured the patient outcomes described above.

Specifically, health care outcomes focusing on the cardiovascular risk factors of obesity, hypertension, and diabetes were measured. Trained student nurses and NP students assisted with the measurement of patient outcomes. Recruitment took place at an organization whose programs include a primary care clinic, in-patient and out-patient substance abuse recovery programs, as well as homeless shelters for men, women, and families.

Additionally, data on participant perception were collected using a 3-item, self-report, paper and pencil quantitative instrument with items devised from the non-profit's agency mission statement with careful attention to previously addressed concerns over language and literacy. Items such as whether the indigent were treated with dignity and respect, were satisfied with the health care services received, and overall rating of the quality of health care received were posed using a 1-5 Likert scale. All adults aged eighteen and older who could read and understand English, regardless of medical history or which of the six described programs they were involved with, comprised this sample of convenience. All that were eligible were invited to participate and all who were invited to participate enrolled in the study. Those who completed both phases of the study were included in this analysis.

Initially, informed consent was obtained and demographic and outcomes data were collected. On the subsequent visit to the primary care clinic, participants were then asked to complete the self-report quality of care instrument. At study enrollment and again during each encounter, individual health behavior counseling was provided related to eating patterns and physical activity in accordance with Healthy People 2020 initiatives by the NP. More specifically, clients were counseled on the importance of consuming whole grains, fruits, vegetables, low-fat or fat-free dairy products, and lean meats. They were further instructed on the importance of limiting caloric intake as well the intake of trans and saturated fats, cholesterol, added sugars, and sodium. Regular moderate to vigorous physical activities and muscle-strengthening activities were further encouraged as per Healthy People 2020 guidelines. Finally, at three month intervals, outcomes data were then re-measured by the research team as this is the standard period of time for HgBA1C assessment. This combination of participant and provider assessment was designed to result in a thorough, multi-faceted assessment of the quality of primary health care services provided to the community served.

Institutional Review Board permission was received to ensure protection of human subjects. SPSS Version 19 was used for data analysis. Demographic data were analyzed using descriptive statistics. Regression analysis, chi square analysis, paired samples, and t-tests were performed to analyze study hypotheses.

RESULTS:

The sample of convenience consisted of 109 adults aged 19-78 with X= 39; SD = 11.6. Fifty-five percent were female and forty-five percent male. Sixty-seven percent were black, twenty-seven percent Caucasian, and four percent Latino. Sixty percent of the sample had systolic BP greater than 120 and forty percent had diastolic BP greater than 80. Forty-four percent of the clients had BMI greater than 30 and forty-three percent HgBA1C greater than 5.7. Fifty-five percent of the sample was in recovery from drugs and nineteen percent from alcohol.

The results of the quantitative analysis of the self-report instrument demonstrate means for the three items posed were 4.5, 4.4, and 4.4 respectively so that the first hypothesis was supported with scores ranging from 2 (fair) to 5 (excellent). Chi square analysis did not demonstrate a statistically significant change in BMI (normal, overweight, obese), BP (normal, pre-hypertensive, hypertensive), and HgB A1C (normal, pre-diabetic, diabetic), nor did t-tests show statistically significant differences. Although additional hypotheses were not supported, some other statistically significant correlations were found. A summary of pre- and post- data and statistically significant correlations are provided in Tables 1 and 2.

DISCUSSION:

Overall, the participants surveyed cited that the quality of primary care services that they received were at least very good by self-report measurement. This was an important facet of the study as the intent was to examine satisfaction with quality of care received at one of five free medical clinics in the state. Satisfaction with care, as well as health care outcomes, is a critical element of high quality primary care (Haddad et al., 2000; Bower, 2003). The factors associated with dissatisfaction with care were not explored. This is recommended for future inquiry.

Additionally, this relatively young sample of participants seeking health care services at an indigent primary care clinic was found to be obese. Many were also pre-diabetic, diabetic, pre-hypertensive, or hypertensive. The health care outcomes measured over a three month period in this study did not improve significantly. A statistically significant relationship was found, however, between BMI and systolic and diastolic BP and HgBA1C and therefore may, in fact, indicate that increased BMI may increase a young, indigent patient's risk for hypertension, diabetes, and overall cardiovascular risk. Further exploration is recommended.

There are a number of factors which contribute to non-support of hypotheses. Fifty-five percent of the participants were in recovery from addictive substances. Therefore their primary focus was recovery, lacking the time necessary for regular exercise, diet, and lifestyle modification encouraged during the primary care visits provided. Second, this primarily non-white sample is already at risk of obesity, diabetes, and hypertension due to genetic, economic and other environmental risk factors. An additional confounding variable is the donated food served in the soup kitchen where the participants are provided free meals. These are often fried, have high sodium content and lack sufficient fresh fruits and vegetables. Further, those who could not read and understand the English language were excluded from this study. It would be useful to evaluate health care outcomes and perceived quality of care in this subset of the indigent population as well. Finally, the time frame of the study may not have been of adequate duration to result in statistically significant findings as it is likely that long time

periods may be necessary for statistically significant changes in outcomes to have been demonstrated.

Nurses and nurse practitioners participate in the provision quality primary care services at free clinics. It has been reported that patients were more satisfied with care received by NPs and that quality of care was better for NP consultations in their meta-analysis of 11 trials and 23 observational studies (Horrocks, Anderson, & Salisbury, 2002). Research has found no differences between groups in health status, disease-specific physiologic measures, satisfaction or use of specialist, emergency room or inpatient services when comparing care provided by NPs or physicians over two years in a sample of 406 adults (Lenz, Mundiger, Kane, Hopkins, et al., 2004). Further previous empirical works demonstrated that NP co-management is associated with better quality of care for geriatric conditions in community-based primary care than usual care in a sample of 1,084 older adults (Reuben, Ganz, Roth, McCreath, et al., 2013). Although statistically significant changes did not occur over time in the present study, significant relationships were found between BMI and BP and BMI and HgBA1C. Therefore, the results of this study provide an additional contribution to the literature on the effectiveness of the NP role in the primary care setting.

By fostering the reduction of cardiovascular risk by facilitating improvement of clients BMI, BP, and HgB A1C, nursing professionals can significantly improve the health status of the indigent, minimizing or possibly eliminating health disparities and cutting health care costs. Further research into the impact on the best-practice interventions for cardiovascular disease as it impacts the indigent is suggested as this was not explored in the present study. It is through health care education, the provision of healthy nutritional options, and the encouragement of regular physical activity that the fostering of the reduction of cardiovascular risk would be possible.

Evidence has shown that primary care services, such as wellness and preventative care, diagnosis and management of chronic conditions such as diabetes can be provided by NPs as safely and effectively as by our physician counterparts[25]. Additionally, the nurses' role in primary care has recently gained recognition with the public as the demand for primary care has increased (Laurant, Reeves, Hermens, Braspenning, et al., 2005). It has further been reported that a number of health care reform initiations are predicated on NPs filling a range of new roles in both primary care and disease prevention (Aiken, 2011). In order to meet these demands, nurses and NPs must remain engaged in participating in research and incorporating evidence into practice to decrease morbidity and mortality. By collecting, organizing, and analyzing health care outcomes, nurses and NPs can remain active in achieving optimal wellness for the indigent.

Limited access to or participation in health promotion and disease prevention strategies, medical noncompliance, and lack of continuity of care due to racial and ethnic disparities are well-known concerns when planning for and providing health care services to the indigent (Aktan, Fagan, & Sorkin, 2012). Evaluation of quality of care is beneficial in planning to effectively meet the acute and chronic health care needs of an indigent population. Due to the fact that over eighty percent of those characterized through this previous research study reported their racial background as non-white, it is important for the health care team to address these disparities. The IOM has called for increased efforts by health care organizations to acquire and report these data (IOM, 2010). The current study promoted a timely compliance with this recommendation.

Community health centers are on the frontline of providing primary care to the under-served and racial/ethnic minorities and, in 2004, approximately 13.1 million uninsured poor Americans received health care at community health centers (Maizlish & Herrera, 2006). Further, the number of uninsured and underinsured in the U.S. is growing and challenges of their health care needs are complex (Silberberg, Yarnall, Johnson, Sangvai, et al., 2007). Therefore, a large proportion of these Americans are at risk of not having their primary care health needs met. The prevention of cardiovascular risk is just one subset of these evolving health care needs to be addressed in our current health care system.

It has been found that few organizations take a systemic approach to quality improvement carefully considering how this information can affect care (Maizlish & Herrera, 2006). The results of this study will contribute to the literature of nursing, advanced practice nursing and related disciplines on the importance of and benefits in assessing the quality of primary care health services provided to the indigent. By evaluating factors such as patient satisfaction with care, health care outcomes, and other Healthy People 2020 indicators related to chronic disease, diet, and physical activity, the overall quality of health care provided to indigent populations can truly be improved. Further exploration of Healthy People 2020 indicators is suggested as each have an effect on the indigent and may relate directly to cardiovascular risk (Healthy People, 2012). Nurses, advanced practice nurses, and nurse researchers must continue to play an integral role in these processes.

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Table 1: Pre- and post- outcomes data

Outcome	Time 1	Time 2
Systolic BP	123.2	123.4
Diastolic BP	75.6	77.4
BMI	30.8	30.7
HgBA1C	5.89	5.93

Table 2: Statistically significant correlations

Outcome	Result
BMI and systolic BP	(r=.302; p=.002)*
BMI and diastolic BP	(r=.234; p=.015)**
BMI and HgBA1C	(r=.353; p=.002)*

*statistically significant at the 0.01 level; **statistically significant at the 0.05 level