2018

Educational Module on Health Literacy for Hypertension in the Inmate Population

Pamela Mokoko
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Pamela Mokoko

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Andrea Jennings, Committee Chairperson, Nursing Faculty
Dr. Mercy Popoola, Committee Member, Nursing Faculty
Dr. Faisal Aboul-Enein, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Educational Module on Health Literacy for Hypertension

in the Inmate Population

by

Pamela Mokoko, FNP-C, PMHNP-BC

MS, South University, 2014

BS, Darton State University 2004

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

January 2018

Abstract

Hypertension is a major public health issue in the United States that affects approximately 70 million adults; the high blood pressure of nearly half is considered to be uncontrolled. Uncontrolled hypertension is especially true in the incarcerated population. Due to low health literacy on hypertension in the inmate population, there are recurrent hospital visits, an increase in the admission rate and an increased length of stay in hospitals, all of which may lead to an increase in the cost of healthcare. The purpose of this scholarly project was to develop an expertly reviewed, evidence-based, self-paced, computerized, educational module to promote health literacy on hypertension for inmates within a correctional institution. The module was developed using guidelines offered by the American Heart Association and the 8th National Joint Commission. The readability of the module was at a 5th grade level. The educational module was disseminated to 10 content experts in the field of cardiology and family practice, who work in the correctional institution health service department. The expert evaluated the educational module using a Likert-scale evaluation. An open- and close-ended questionnaire was use to evaluate the module's efficacy and its ability to promote health literacy on hypertension for inmates. Data from the questionnaire were coded according to the experts' response. The data revealed a median of 4.5 out of 5 for all categories which demonstrate the appropriateness of the educational module for inmates. The implications for social change was that inmates could improve their health outcomes by improving their health literacy on hypertension, with the potential to lower healthcare costs.

Educational Module on Health Literacy for Hypertension in the Inmate Population

by

Pamela Mokoko, FNP-C, PMHNP-BC

MS, South University, 2014

BS, Darton State University 2004

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

January 2018

Dedication

The capstone project is dedicated to my husband Stan Mokoko for his unconditional love, inspiration, without his support I never would have made it this far. To my four loving and encouraging boys, Heiresey Mokoko, Eiran Mokoko, Ransen Mokoko, Stan Mokoko Jr, for their love and support to fill in the gap of our daily chores so that I can accomplish my career goal. Thank you and I love you all very much.

Acknowledgments

To my committee chair, Dr. Jennings, I greatly appreciate your expertise, support, patience, encouragement, and guidance for keeping me focused throughout this project. I especially want to thank and appreciate my preceptors CDR Regina Bradley MPH, RN for all the time, mentorship, expertise, support, guidance, patience, and encouragement. I deeply appreciate and thank all my friends for their support, encouragement, patience, understanding and prayers during this long process.

Table of Contents

List of Tables

Section 1: Overview of the Evidenced-Based Project

Introduction

Uncontrolled hypertension (HTN) due to low health literacy is a major problem in correctional institutions (Center for Disease Control, 2012). Patients' knowledge about hypertension, also known as high blood pressure (HBP), is a useful outcome measure in HBP education programs and treatment outcome, since self-management of the condition is a vital part of treatment (Agency for Healthcare Research and Quality, 2012). Hypertension is defined as having a systolic pressure ≥ 130 mmHg and a diastolic pressure ≥ 80 mmHg, while prehypertension is defined as a systolic pressure > 120 mmHg and ≤ 129 mmHg and a diastolic pressure > 80 mmHg (CDC, 2014). According to the CDC (2012), about 70 million American adults have high blood pressure, but only about half of them have their condition under control. As noted by the American Heart Association (AHA, 2014), approximately one in three American adults has prehypertension, defined as blood pressure numbers that are higher than normal, but not yet in the high blood pressure range. High blood pressure costs the nation $46 billion each year, which includes health care services, medications, and missed days of work (CDC, 2012).

According to the Agency for Health Care Research Quality (AHRQ, 2011), health literacy is defined as the capacity to obtain, process, communicate and understand basic health information and services needed to make appropriate health decisions. It is a constellation of skills that constitute the ability to perform basic reading and numerical tasks for functioning in the health care environment and

acting on health care information.

According to WHO (2014), improving the health literacy of those with the worst health outcomes is an important tool in reducing health inequalities; however, few rigorous evaluations of interventions related to health literacy- have been carried out, and they are not definitive. According to the World Health Organization (2014), health literacy definition is a working knowledge of the disease processes, self-efficacy, and motivation for political action regarding health issues. As stated by WHO (2014), low levels of health literacy often mean that a person is unable to manage his/her own health, access health services effectively, and understand the information available to him/her and thus make informed health decisions. WHO (2014) noted that simplifying reading material by using clear language, pictures and symbols is the most widespread initiative reported in the literature to influence literacy levels; yet, there is little evidence that this improves health outcomes. Also, multimedia presentations may improve the knowledge of people with both low and high literacy skills, but such presentations do not appear to change health-related behaviors (WHO, 2014). However, community-based and participatory approaches show some promise; for example, participatory education principles and theories of empowerment, such as the Health Belief Model, appear to help patients access, understand, and use health information for the benefit of their health, thereby promoting self-care management (WHO, 2014).

The idea behind Health literacy builds on the concept that health and literacy are critical resources for everyday living; the level of literacy directly affects our

ability to not only act on health information but also to take more control of our health as individuals, families and communities (Kwan, Frankish & Rootman, 2014). Literacy refers to basic skills needed to succeed in society, while health literacy requires some additional skills, including those necessary for finding, evaluating and integrating health information from a variety of contexts (Kwan et al., 2014). It also requires some knowledge of health-related vocabulary as well as the culture of the health system (Institute of Medicine, 2012). Primary reason to promote health literacy in the population is to improve its medical outcomes (Institute of Medicine, 2012; Kwan et al., 2014).

Problem Statement

According to AHRQ (2012), most inmates with chronic diseases, such as hypertension, have little or no knowledge of the cause of the disease, prescribed medications, or how to prevent disease exacerbation. This lack of knowledge can lead to comorbidities, such as kidney failure, hypertensive retinopathy, cardiovascular disease, and type II diabetes (). Due to low health literacy in the inmate population, hypertension leads to recurrent hospital visits, increases in rate of admissions, increases in length of stay, and thus increased healthcare costs. Approximately 66% of all adults in the United States have limited health literacy, which includes people who have not completed high school, live in poverty, did not speak English before starting school; it also includes racial minorities and older adults. Difficulty reading and comprehending can be embarrassing and stigmatizing for patients who have compensated for their problem over time with a number of

coping strategies. This leads to nonadherence to care plans of in the health care system. Often inmates who are considered non-adherent to a treatment plan are simply not sufficiently health literate to carry out a plan of care or treatment modality for, say, high blood pressure. Moreover, health care clinicians routinely overestimate the ability of inmates to understand medical information, thus leading to poor healthcare outcomes in the correctional community (AHRQ, 2012).

Furthermore, according to IOM (2012), the current methods of communicating with patients in the healthcare system contribute to suboptimal care, particularly for patients with limited health literacy, such as those in the inmate population. Ineffective communication can impair shared decision-making and impede understanding of technical information and explanations of self-care in the inmate population with low health literacy (Weiss, 2011 According to the 2010 U.S. Department of Education National Assessment of Adult Literacy (NAAL), 36% of the adult U.S. population has Basic or Below Basic health literacy levels (National Center for Education Statistics, 2010) Therefore, as noted by IOM (2012), inmates with high blood pressure and limited health literacy were more likely to report that their healthcare provider used words they did not understand. Limited health literacy in hypertension impairs medication communication, jeopardizing patient safety. Unfortunately, the gap between the educational demands of the health care setting and patients' reading ability continues to grow (AHRQ, 2012).

It is well known that health literacy demands of the healthcare system often exceed the health literacy skills of providers (IOM, 2012). When inmates enter a

health care setting, they are confronted with a variety of forms that need to be read: admission paperwork, informational brochures, prescriptions, discharge papers, consent forms, or advance directives, to name a few. The pressures of today's health care environment exacerbate this problem. Because physicians and nurses have less time for patient education, they instruct patients in self-management, often relying on the written word. This leaves patients with poor health literacy at a substantial disadvantage (AHRQ, 2012).

Purpose

The purpose of the scholarly health project was to develop a comprehensive, expert-reviewed and evidence-based, self-paced, computerized, educational module to promote health literacy on hypertension for inmates in a correctional institution. In order to avoid ethical implications surrounding the development of an educational health project for inmates, the health project did not required inmates to be directly involved in the development and evaluation of the educational module. The project developer collaborated with content experts in the field of cardiology and family practice and developed a comprehensive, computerized, educational module on hypertension for inmates. Furthermore, clinical experts in the field of cardiology and family practice, who had experience in working with inmates, were selected to review the educational module and determine its appropriateness for the inmate population.

The most up to date, evidence - based, clinical practice guidelines from the CDC and the Eighth National Joint Committee (JNC 8) 2014, was utilized. With

inmates, the goal was (a) to promote awareness of hypertension, (b) adherence to a treatment plan, (c) self-care management, and (d) health care decision-making of inmates. Health literacy is a critical problem in the prison system. To promote awareness of health literacy on hypertension, it was essential to use an interdisciplinary approach to provide information on hypertension and to promote self-management, using evidence- based literature for a better health outcome (AHRQ, 2012). The module was used to provide educational data on the definition of hypertension, the measurement and treatment of hypertension, medication adherence, and promotion of lifestyle modification such as, the DASH diet, exercise, and stress management. As noted by AHRQ (2010), a systematic, data-driven approach is best in the adoption of best practices for the care of inmates with limited health literacy. The second objective was to have content experts evaluate the self-paced computerized module, in the specific context of whether and to what degree it helps promote awareness of health literacy.

Objectives

The main objective of this capstone project was to produce an expert-reviewed, education module to help address health literacy on hypertension among inmates. Health literacy plays a crucial role in chronic disease self-management, for example, with high blood pressure (Bakeret et al., 2002). To realize the objectives of the capstone project, experts in the field of cardiology and family practice, who had experience in working with inmates, provided an unbiased opinion on the usability, content, and expansion of knowledge of the educational module The inmates

completed a post-educational survey, an expert-rating tool, which was used to determine the module's appropriateness for clinical use. Data were collected and analyzed to determine whether the module meets the educational objective of improving health literacy on hypertension. A standard five-rating Likert scale was used (see Appendix I).

One of the ways to address the anticipated escalation in chronic disease, such as high blood pressure, and the subsequent demands it places on the health care system, was to engage inmates in more effective self-management. According to WHO, (2014), self-management includes all of the tasks that an individual must undertake to live well with one or more chronic conditions; these tasks include gaining confidence to deal with medical management, role management, and emotional management. An emphasis on self-management was well elaborated in the self-paced educational module as evidence from numerous researches suggested that patients who engage in effective self-management generally experience positive health outcomes and place fewer demands on the health-care system (WHO, 2014). In order to manage high blood pressure and other long-term conditions on a day-to-day basis, inmates must be able to understand and assess health information. They also need to adhere to an often complex medical regimen, plan and make lifestyle adjustments, make informed decisions, and understand how to access health care when necessary. A lack of skill in these areas prevents many inmates from engaging in effective self-management. That lack of skill is in most cases due to a deficiency in health literacy.

Practice Significance and Relevance

The health care community, which includes primary care, operates under the assumption that communication and collaboration between provider and patient produce the best patient health outcomes. For this to happen, adequate health literacy is viewed as a key factor in managing personal health (Schloman, 2004). According to HealthyPeople 2020, poor health literacy is a stronger predictor of a person's health than age, income, employment status, education level, and race; improving health literacy is a top national initiative because it is fundamental to improving health outcomes, reducing health care costs, achieving health equity, and reducing health disparities. Improving health literacy with inmates is important because of the high incidence of chronic health conditions, substance abuse, mental illness, sexually transmitted diseases, poor health management and unhealthy lifestyles, all of which have significant public health implications as they return to families and communities (Smith, 2013). Accordingly, jails and prisons are strategically positioned to become actively engaged in implementing interventions to meet the goals of Healthy People 2020 to improve public health.

The health care situation in Europe resembles that inside the U.S. prison system in that both European citizens' and inmates' health care needs are provided for by the government. Yet, as Sorenson et al. (2015) pointed out, even when a person's health care needs are completely met with respect to provision of care, medications, etc., that person still needs to be health-literate. The authors examined the results of a European health literacy survey and found that in Western Europe,

health literacy among the population lagged behind accepted guidelines. The authors also? observed that health literacy education should be a major aspect of any health care provision system. Though they did not consider the U.S. prison population, it is reasonable to conclude that health literacy is just as important for that population as it is for Europe's citizens.

According to Coleman, Hudson, and Maine (2013), an inadequate level of health literacy in a patient population is harmful, but can be mitigated by patient education. However, there is a lack of consensus on the best practices for inculcating health literacy. In a consensus study, the authors gathered the opinions of 23 health care professionals about the best ways to educate patients and improve their health literacy. A consensus was reached on 62 out of 64 items (knowledge, skill, and attitude). The authors observed that theirs was the first study that had attempted to develop a systematic consensus about how to improve patients' health literacy. Since that time, there have been few studies in the field, and none on hypertension mitigation for inmates.

Project Question

In 2010, improving health literacy became a public health goal of the federal government as part of national initiatives (HealthyPeople.gov, 2010). In order to create awareness of health literacy on hypertension for the inmate population, the following practice-focused question was posed: Is a computerized, self-paced, educational module, evaluated by content experts, effective in creating awareness of health literacy regarding hypertension for inmates? To answer the practice question,

the writer developed a self-paced educational module on hypertension, which was evaluated by content experts to determine if, or how well, the module might increase health literacy.

Evidence-Based Significance of the Project

The health project provides every inmate, information on prevention and effective management of the disease hypertension using the Eight National Joint Commission (JNC 8) clinical practice guidelines in collaboration with health care providers and the pharmacist in the federal correctional institution. This project was designed to create awareness of health literacy about hypertension using evidence-based practice, as noted in the JNC 8. This was done by promoting self-management and reducing the complications related to poor health care due to low health literacy. The chronic disease in this case was hypertension. Given the considerable prevalence of hypertension and the complications associated with hypertension, it is important that inmates to be well aware of the significant impact hypertension has on health outcomes and of the need to take the steps needed to reduce potential complications. With increased awareness of health literacy on hypertension, there was an increased demand for efficient healthcare from the inmates. The demand for health improvement has contributed to protocol and policy development in the Federal Bureau of Corrections health system in relation to prevention and management of hypertension, which can lead to better outcomes for inmates diagnosed with, or at risk of, hypertension, thus promoting self-management, disease prevention, and health promotion (CDC, 2012).

Another significance of the project was related to the national initiatives of health promotion and disease prevention launched by the U.S. Surgeon General in 2010 (HealthyPeople.gov, 2010). The three national initiatives, the Patient Protection and Affordable Care Act (PPACA), the National Action Plan to Improve Health Literacy, and Healthy People 2020 a national initiative, were set as national goals and objectives, to be updated every 10 years (HealthyPeople.gov, 2010). Healthcare cost of inmates is a primary driver of state and local corrections budgets, with 9 to 30% of corrections costs associated with health care. Since launching PPACA (2010), considerable attention has been focused on how health reform will impact correctional health care costs as well as uninsured offenders upon release into their communities. Improving health literacy on high blood pressure is a critical element of PPACA, since it was designed to help reduce health care costs, improve health outcomes, reduce health disparities, and achieve health equity (HealthyPeople.gov, 2010)

Implications for Social Change in Practice

For an Advanced Practiced Registered Nurse (APRN) who functions as a leader and as a change agent, quality improvement is critical. The DNP-trained nurse has a core role of influencing policies that could improve care at a system level and thus improve patient? outcomes (Terry, 2012). The self-paced educational module on hypertension was designed and developed for quality improvement using clinical skills, knowledge, and expertise to improve outcomes. According to the AHA, 2012), the literature suggested that lack of knowledge among the inmate

population made education and awareness of preventive measures critical. Health promotion and providing prevention measures to the community form the core role of a DNP-trained nurse. The information in the modules could be used to effect change among the target population and in the health care system overall. The project to create a health literacy tool? on hypertension sought expand the nursing practice by providing a model for nurses working in the prison setting. While a chronic disease, hypertension is preventable through health literacy and lifestyle modifications (Rigsby, 2011).

The modules provided information on preventive measures and management of hypertension among inmates. The information also empowered and motivated inmates to make good health decisions. While collaborating with other healthcare providers, a self-paced, computerized program consisting of 10 modules was designed to create or raise awareness of health literacy on hypertension while improving healthy lifestyles. Those already diagnosed with hypertension could practice self-management by adhering to treatment regimen and keeping up with scheduled clinic visits. There is a potential positive social change in these health outcome improvements.

Context for the Doctoral Project

As stated in AACN (2006), DNP graduates used the context of the educational module to meet the essentials of synthesizing concepts including psychosocial dimensions and cultural diversity related to clinical prevention and population health in developing, implementing, and evaluating interventions to

address health promotion, disease prevention, improve health status, access to healthcare and gaps in care of individuals aggregates, or populations. For example, inmates with low health literacy on hypertension. Limited health literacy is a cause of high disease burden or poor disease control, which is associated with a worse health trajectory. Improvement in health outcomes for hypertension can be achieved only with health professionals, such as a DNP graduates, who are trained to develop efficient health projects and deliver client-centered care in an interdisciplinary fashion, using evidence-based literature, quality improvement approaches? and informatics. To uphold this principle, a computer-based, self-paced, educational module was developed to create awareness among inmates of health literacy about high blood pressure.

Assumptions

A fundamental assumption, as with all studies where experts are consulted for their views, was that said experts are indeed conversant in the field and situation in question. In this case, the project developer assumed that the professionals consulted to evaluate the module had sufficient experience and knowledge; their self-reported professional credentials were accepted. A further assumption was that the content expert answered the questions posed to them forthrightly and honestly, with a minimum of personal bias. Lastly, it was assumed that the methodology will be sufficient to answer the capstone question.

Limitations

Limitations are inherent in the methodological choice for this study. The

project–developer-constructed health literacy module has not been validated by other? research. Thus, the approval or disapproval of the module by the study participants served as a validation or repudiation of its potential use in research.

Furthermore, the number of experts reviewing the educational module was small and represented only a portion of the experts available in the health care community. Also, there was no practical way to directly measure the health literacy of inmates, either before, after, or without the module's administration. Access was severely restricted and ethical considerations would have risen from any direct contact with them.

Definition of Terms

The following definitions will help in understanding the nature of the project.

Chronic disease: It is a human health condition or disease that is persistent or otherwise long lasting in its effects or a disease that comes with time. The term chronic is often applied when the course of the disease lasts for more than three months. Examples are hypertension, DM, Asthma, HIV and Mental illnesses (Choucair & Palmer, 2004)

Chronic care management: Is the way to manage chronic disease in a health care setting or community-based clinic (Choucair & Palmer, 2004)

Correctional institution: The term correctional institution is intended to denote, as a minimum, the institutions that hold people who have been sentenced to a period of imprisonment by the courts for offences against the law (CDC, 2012).

Health: Health is defined as a state of complete physical, mental and social

well- being and not merely the absence of disease and infirmity (WHO, 2010).

Health literacy: Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (AHRQ, 2010).

Hypertension: According to AHA (2015), hypertension is a common condition in which the long-term force of the blood against the artery walls is high enough that it may eventually cause health problems, such as heart disease.

Hypertension management: Is the process of treating hypertension with continued follow up care. This includes the process of education about medication and their side effects, lifestyle modification and continuity of care (AHA, 2015)

*Inmates***:** For the purposes of this study, persons confined in a correctional institution.

Literacy can be defined as "an individual's ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and to develop one's knowledge and potential" (WHO, 2014).

Evidenced-based guidelines: A set of recommendations that can be used by clinicians that outline treatments and care for specific medical conditions (Sox & Stewart, 2015). These recommendations are based on the best research at the time the guidelines are being developed. They should include an accurate representation of the literature (Sox & Stewart, 2015).

Healthcare professionals: Clinicians involved in patient care directly or indirectly, including registered nurses, advanced practice nurses, physician's assistants, medical doctors and osteopathic doctors of medicine. These professionals are responsible for direct patient contact and care consistent with the management of hypertension.

Summary

Hypertension is a health problem for the population at large. In order to properly manage one's hypertension, it is necessary to develop health literacy. Yet, many persons with hypertension do not have it treated and/or do not make the needed lifestyle alterations. This includes the incarcerated prison inmate population. This of this purpose project has as its purpose to improve the health literacy of inmates regarding hypertension by consulting content experts to evaluate a project developer-constructed health literacy module. These experts were given open-ended questionnaires along with the module and asked to evaluate it according to several criteria. The project developer then evaluated the answers to systematically identify the strong and weak points as well as the overall efficacy of the module.

Add preview of Sections 2-5.

Section 2: Review of the Scholarly Evidence

The purpose of this section was to (a) review the literature on promoting health literacy on hypertension, because of the importance of improving health literacy on hypertension for inmates in a correctional institution and (b) review the literature on the selected theoretical framework because it was a basis for the project. Reviewing the scholarly evidence helped identify interventions to create awareness of health literacy on hypertension using a computerized self-paced, educational module.

The following databases were searched from 2011 to 2016: CINAHL Plus with full text, PubMed, CINAHL & MEDLINE, Science Direct, Annual Reviews, and ProQuest. The following search terms were used: *hypertension/hypertension, the Eighth Joint National Committee (JNC 8), hypertension and inmates with hypertension, management of hypertension in the prison system, care of inmates with chronic disease, chronic disease management, patient education ON HTH and management of hypertension, preventive services in the prison, health literacy, health literacy in the inmate population, health belief model, health literacy and culture, health outcomes for inmates with hypertension, interventions to prevent hypertension, access to healthcare in the prison, prison and health education.* I used the Boolean operators, to optimize the results.

Using the databases listed above, the search terms revealed 1,513 articles. Two limiters were then set: a 2001–2016-time frame and only peer-reviewed articles. This limited search yielded 414 articles of which approximately 40 met the specific criteria and were then analyzed.

The literature reviewed for the project health literacy on hypertension reveal that hypertension is a major chronic health problem in the prison system. Reviewing the literature provided information on evidence-based interventions needed for the project. It also helped identify factors that affect the inmate`s ability to continue to practice self-management, disease prevention, and health promotion. Research has shown that most inmates have high blood pressure and other comorbid due to poor health literacy on hypertension. The project seeks to create awareness of health literacy on hypertension. The project is expected to advance nursing practice with a self-paced, computerized, evidence-based educational module, which will promote awareness of hypertension and interventions to prevent and promote health in the prison.

General Literature

Improvement of health literacy on hypertension requires a comprehensive and multimodal approach to be successful in achieving prevention and management of high blood pressure in the prison system (AHA, 2012). According to Healthy People 2020, cultural and socioeconomic factors may contribute to low health literacy, for example, people with poor English language proficiency, limited access to education, and people of low socioeconomic status are most likely not to be health-literate. As noted by AHRQ (2010), poor health literacy is most pronounced among patients with chronic medical conditions, such as hypertension, which are commonly seen in geriatric populations.

Paasche-Orlow et al. (2010) compared health literacy levels in hypertensive

patients and found that nearly 80% of participants with a high school education or less developed poorly controlled hypertension and complications due to higher rates of non-adherence to medications and medical treatments and misunderstandings of lifestyle modifications. The purpose of this study was to identify a correlation between educational levels and health literacy; the findings were that low educational levels tended to correlate with low levels of health literacy.

In a similar study, Aboumatar, Carson, Beach, Roter, and Cooper (2013) evaluated a population of patients who had hypertension in regard to their health literacy before and after participation in intervention groups, which were classified as intensive or minimal. Aboumatar et al.'s (2013) purpose was to compare the efficacy of these two types of interventions (intensive/minimal) to see how they affected patient decision-making. The researchers found that those patients with lower health literacy were less able to make decisions on their healthcare than those who had higher health literacy, and that this effect existed both before and after the interventions were administered, and with both the minimal and the intensive interventions (Aboumatar et al., 2013). The interventions, in all cases, did provide an improvement in the patients' ability to make informed healthcare decisions (Aboumatar et al., 2013).

Levels of health literacy in a given population may be connected to that population's overall literacy and socioeconomic status. For example, Li et al. (2013) conducted a survey of hypertension knowledge in a rural province of China. The researchers found very low levels of such knowledge (scores in the 20-30% range on

the survey), which they hypothesized were due to the population's general lack of literacy and education. They observed that many respondents appeared to have only a vague understanding of what hypertension was and the risks associated with it (Li et al., 2013). They also observed that this was a generally poor population with limited access to health care facilities. For the present study, Li et al. (2013) suggests a connection between literacy and health literacy.

Babaee et al. (2014) performed an experimental study to examine the outcomes of a group hypertension education program. Patients were randomly selected and their blood pressure knowledge and lifestyle scores were evaluated. Each patient initially received individual education sessions with a cardiology resident regarding diet, medication regimen, and exercise habits. Patients were then put into group education classes offered monthly for three months. Follow up included rechecking blood pressure knowledge; the data collected revealed an increase in patients' hypertension knowledge and a decrease in negative health behaviors as reported by study participants, such as consuming a sodium-rich diet, medication non-compliance, and physical inactivity. Researchers concluded that the hypertension education increased awareness and self-management behaviors. Evidence presented in this study emphasizes the important role education plays in improving patients' perceptions about their medical condition and their lifestyle's contribution to hypertension management.

Lauziere, Chevarie, Poirier, Utzschneider, and Belanger (2013) highlighted a relationship between decreases in blood pressure measurements and the patients'

participation in an interdisciplinary-led hypertension class. A team of healthcare professionals, which included a nurse practitioner, pharmacist, registered dietician, and physiotherapist, provided dedicated educational modules that addressed different aspects of hypertension management. Each group session focused on a topic taught by each healthcare professional, for example, the pharmacist taught one class on medication adherence, while the dietician taught a class on sodium reduction. Researchers noted a decrease in systolic blood pressure readings in the patient group who attended the classes versus the control group. Through providing an interdisciplinary team approach, patients benefited from receiving information in a group setting versus their counter parts who did not participate in the classes.

Specific Literature

As stated by WHO (2014), low levels of health literacy often mean that a person is unable to manage his/her own health, access health services effectively, and understand the information available to him/her and thus make informed health decisions.

Prison inmate populations: A study was conducted by Harzkle et al. (2011) to determine the most leading chronic disease in the prison system in the inmate population for quality improvement. Hypertension was found to be the leading chronic health condition affecting 18.8% of the 234,013 inmates studied from 2010 to 2011 in a Texas prison. The number of inmates with hypertension was 3 times higher compared with inmates who had asthma, diabetes, ischemic heart disease, chronic obstructive pulmonary disease, and cerebrovascular disease (Harzkle et al., 2011). It

was implied that a large number of inmates in the State and Federal prison have hypertension, compare with the general population (Wilper, Woolhandler & Himmelstein, 2009)

Prison inmate populations have distinct health problems due to confined and close quarters. This means that infectious diseases are particular hard to control (Varan, Mercer, Stein, & Spaulding, 2014). Varan et al. examined the prevalence of Hepatitis C in prison inmates since 2001. Specifically, they investigated seroprevalence, not direct manifestation of the condition. They found that said prevalence was considerably higher in the prison inmate than the general population but that the difference had been lessening over time (Varan et al., 2014). The authors had no way to compare equivalent groups of inmates and the general population insofar as hepatitis C susceptibility was concerned, but observed that the higher prevalence they had observed could be due to the communicable nature of the disease (Varan et al., 2014). Prisons appear to be inherently unhealthy places. An interesting finding was that of Dumont, Allen, Brockmann, Alexander, and Rich, J. D. (2013). They observed that racial disparities in mortality rates among the general population (i.e., whites tended to live longer than blacks and Hispanics) did not exist among prison populations. In other words, inmates died at the same rates regardless of ethnicity (Dumont et al., 2013). The authors also observed that the inmate population, both prison and jail, was unhealthier than the general population. This suggests that socioeconomic factors as well as the inherent unhealthy nature of incarceration trump any racial disparities in health outcomes (Dumont et al., 2013).

As noted by Kinner, Streitberg, & Butler (2014), significant numbers of inmates have chronic diseases such as hypertension, but do not comply with plans of care due to low health literacy re hypertension. According to the National Commission on Correctional Health Care (2013), inmates are to be provided evidence-based health care services; they are to be encouraged to adhere to treatment plans, and services are to be provided to link inmates to community-based health care services to sustain health literacy and promote self-management.

Inmates have a constitutional right to have their healthcare needs met, and standards of chronic care should be aligned with the same level of care provided to the general public (Heiss & Schoenly, 2014). Many correctional facilities do not have a chronic care management plan in place, which makes managing inmates with chronic diseases such as hypertension difficult. Increased prevalence of hypertension in the prison system calls for efficient management to reduce health care costs and complications (Heiss & Schoenly, 2014). Mark and Turner (2014) highlighted the concern that prison facilities are not viewed as part of the healthcare delivery system. As noted by Mark & Turner (2014), in 2012, 11.6 million inmates were admitted to prison, and the prison facilities are liable to meet the health care needs of inmates in their custody.

Adherence to treatment for hypertension patients: In a study conducted by Weiss, Hart, McGee & D'Estelle (2011), to examine medication adherence in the inmate population with hypertension in six different prison. It was noted that approximately 50% of inmates did not properly adhere to their medications; many

patients do not take prescription medications as directed by missing or changing doses, and up to 60% may even discontinue medication use three months after beginning the prescription; patients with a sixth-grade reading level or below have the greatest difficulty understanding prescription medication instructions. As noted by Weiss et; al (2011), the greater the complexity of the medication regimen, which is affected by the number of medications prescribed and the number of daily doses for each medication, the greater the risk for misunderstanding instructions and not following them correctly.

The connection between treatment adherence and proper hypertension management is well established. For example, Panjabi, Lacey, Bancroft, and Cao (2013) examined a population of hypertensive inmate who were undergoing triple-drug therapy, a regimen that required strict adherence to medication guidelines. They found that less than strict adherence significantly adversely affected patient outcomes (Panjabi et al., 2013). The authors observed that for some patient cohorts, the requirement of taking three different medications may have decreased their regimen compliance. They suggested that combining dosages (two or more medications in a single pill) might help to ameliorate this effect (Panjabi et al., 2013). The overall message is that treatment adherence increases as treatment becomes simpler (Panjabi et al., 2013).

Educational Module: Chu-hong et al (2015) conducted a quantitative study in China that divided three types of education modules among 360 hypertensive patients. Group one was given reading materials to read on an individual basis.

Group two received a monthly educational lecture, while Group three attended monthly interactive workshops. Results from the two-year intervention revealed that normal blood pressure readings, BMI and serum lipid reduction occurred statistically higher in the groups who either received education through workshops or lectures. The group who received only reading materials for self-learning experienced the least improvement in hypertension management. This study demonstrates the positive patient outcomes associated with group education interventions; the evidence strongly suggests that simply handing educational reading materials are not enough to help patients understand lifestyle modifications and hypertension management.

North and Palmer (2015) compared the outcomes associated with a diabetic education class versus the standard clinic follow up method. The retrospective study compared two groups of male veteran patients who were diagnosed with diabetes mellitus type 2. Prior to the intervention, hemoglobin A1c tests, systolic blood pressure readings, and weight were recorded and retested following the four-month study period. Though there was not statistically significant difference in systolic blood pressure readings between the two patient groups, the diabetic patients who attended the group education class experienced a significant improvement in their post intervention hemoglobin A1c and weight reduction. The researchers attributed the comprehensive nature of the group education class to the success in improve patient self-care behaviors. When compared to simple written instructions given to patients, group education exhibits more benefits in providing patients a more interactive approach to learning how to improve their skills to manage their chronic

disease process.

Park et al., (2011) implemented a health education and exercise program for South Korean hypertensive patients living in a residential facility. The aim was to improve quality of life and hypertension management. The program combined exercise classes and hypertension education and was delivered over twelve weekly sessions. The results showed a marked decrease in systolic blood pressure readings and an increase in self-efficacy for physical activity in the experimental group versus the control group who did not participate in the classes. The study provides insight into the impact of multidisciplinary teams and group education classes to help encourage positive health modifying behaviors. Class participants benefited from interacting with their peers and were motivated in maintaining an active lifestyle, which helped decrease systolic blood pressure readings.

Trogdon, Larsen, Larsen, Salas, and Snell, M. (2012) examined the cost-effectiveness of a hypertension-monitoring education program. The program helped 151 patients to decrease their blood pressure measurements within healthier levels. When calculating all study participants in one year, researchers discovered 0.3 cardiovascular events such as stroke and acute myocardial infarctions were avoided and predicted a savings of $767 per well-controlled hypertensive patient. The authors concluded that their hypertension education program was a cost-effective strategy that could prevent cardiovascular consequences in addition to the fiscal burden that accompanies poorly controlled hypertension. The recent literature presents a strong case in favor of group education interventions for chronic disease management.

Benefits from the quantitative studies exhibit that systolic blood pressure readings have improved after patients have received an interactive, group education module. The group education intervention shows promise and motivates patients to improve their self-care behaviors. These studies also emphasize a team-based approach in delivering the education material to patients. The literature supports the need to provide additional educational resources outside of providing the standard handouts given during scheduled appointments. Time spent during Primary Care appointments are not enough to sustain and motivate our patient population to change their attitudes toward managing their hypertension. Through participating in a group atmosphere, the interactive element and social aspect with the healthcare team will increase motivation and help guide patients to take their blood pressure measurements more seriously. When patients change their attitudes and improve their lifestyle, we expect to see a marked improvement in our hypertension performance measures in the dashboard.

Shoemaker (2015) conducted a descriptive pilot study on stress management to prevent hypertension, using a convenience sample of incarcerated mothers in a mother–infant unit in a selected Ohio prison who participated in an educational module that included a pretest and posttest. As noted by Shelton & Wakai (2015), a questionnaire was use to gather demographic and content knowledge on the educational module's topics on the prevention of chronic disease such as high blood pressure, stroke and other heart disease due to stress. An evidence based educational module was presented in a total of four 1-hr sessions over a 4-week period of time.

The health education and promotion module (HEPMod) program was developed and use to impact the incarcerated mother's knowledge acquisition and coping skills using Pender's theory of health promotion (Pender, Murdaugh, & Parsons, 2011). Factors such as perceived barriers to the benefits of health promotion education activities were considered through open discussion with the administrative staff of the mother–infant unit and with an agency offering infant development education to the mothers. Despite consideration of several topics to be included such as healthy family meals on a budget, sexually transmitted infection awareness and prevention, and exercise for health and family fun, the consensus from community experts was that stress reduction and coping would be most helpful in the prevention of chronic disease

The HEP-Mod program included four sessions, each one hour in length over a period of 4 weeks. Each session included didactic content followed by a question and answer period. Content focused on identification of stress, and the use of coping strategies such as diet and exercise. Participants also received standardized handouts related to stress and coping based on information provided by several sources. Results of the personal knowledge survey posttest indicated increased knowledge of all participants on the topic of stress reduction and coping to prevent chronic disease. Participants were able to give examples of new knowledge or concepts with the common theme from stress reduction handouts. This new knowledge can be applied to the inmates' coping while incarcerated and leading to coping successfully once they are released back into the community.

Conceptual Model

The conceptual framework for the project was the Health Belief Model (HBM). The HBM was first developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels, who were working in the U.S. Public Health Services. HBM is a popular model applied in nursing, especially in issues focusing on patient compliance and preventive health practices. The model derives from psychological and behavioral theory as its foundation. The two components of health-related behavior are; the desire to avoid illness, or conversely get well if already ill; and, the belief that a specific health action or lifestyle modification will prevent, or cure illness. Ultimately, an individual's course of action often depends on the person's perceptions of the benefits and barriers related to health behavior. The HBM posits that a person's belief in the efficacy of healthcare treatments is a major factor in whether the person will avail himself/herself of such treatments as they become available. The primary construct of HBM is perceived susceptibility to illness, its perceived severity, perceived benefits of treatment, and perceived barriers such as level of education (Will & Culbert, 2010). The Health Belief Model (HBM) of behavioral change theory attempts to explain and predict health behaviors.

As noted by Ryan (2011), there are five concepts of HBM. The use of the concept of the model focuses on the attitudes and beliefs of the inmate. One of the concepts of the model is perceived susceptibility, it reflects on the personalized risk based on an inmate`s features or behavior. An example is an inmate who is unaware of family history of hypertension. Such an inmate may not consider himself at risk

for hypertension and may engage in risky behavior such as substance abuse, poor diet, or lack of stress management.

According to the HBM, the concept of perceived severity refers to the perceived dangers and risks of not controlling the condition. An inmate who does not perceive the risk of stroke or heart attack as a significant threat may not be inspired to seek or adhere to a treatment plan. The other side of the coin is perceived benefit, reflected in inmates believing in the efficacy of the interventions to reduce risk or seriousness of impact of hypertension. The inmate may not be as receptive to teaching, if he believes he will not benefit from interventions.

Perceived barriers are opinions regarding the tangible and psychological costs of the advised action (Will & Culbert, 2010). The inmate may feel a lack of self-efficacy in managing his condition. The inmate's perception that he cannot affect his own health outcomes may in and of itself be a barrier to effective treatment. Therefore, effective promotion of health literacy includes making the patient aware that he has the power to affect his own health.

The model also provides the concept of "Cue to action," which refers strategies to activate readiness. This is done by providing "how-to information", promoting awareness, and creating reminders. The health project on health literacy regarding hypertension provide opportunities for training, guidance in performing interventions presented in the self-paced educational module on hypertension.

Table 1

Hochbaum, Rosenstock and Kegels' Health Belief Model for Hypertension

Concept	Definition	Application
Perceived Susceptibility	Inmate's opinion of chances of getting a condition	Define population(s) at risk, risk levels; personalize risk based on a person's features or behavior; heighten perceived susceptibility if too low.
Perceived Severity	Inmate's opinion of how serious a condition and its consequences are	Specify consequences of the risk and the condition
Perceived Benefits	Inmate's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take; how, where, when; clarify the positive effects to be expected.
Perceived Barriers	Inmate's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives, assistance.
Cues to Action	Strategies to activate "readiness"	Provide how-to information, promote awareness, reminders.
Self-Efficacy	Confidence in one's ability to take action	Provide training, guidance in performing action.

Research Gap

It is shown in the literature that health literacy can improve patient outcomes, and this is particularly true for patients with hypertension, as self-management of the condition is paramount. In the prison inmate population, hypertension is a major issue due to its prevalence. As with the population at large, the HBM suggests that increasing the degree to which inmates believe they can manage their conditions improves their health care outcomes, particularly in detecting and treating hypertension.

In promoting health literacy, many educational strategies have been

implemented in order to increase at-risk populations' awareness of hypertension and other chronic diseases. These have included educational modules such as the one to be examined in the study. It has not been examined in the literature, however, what such modules should contain when administered for the education and health literacy of the inmate population. This lack of understanding is the research gap, which the project developer hopes to fill with the study.

Horne & Weinman (2012) used this theory to quantify patients' personal beliefs about the necessity of their prescribed medication and their concerns about taking it and to assess relations between beliefs and reported adherence among 324 patients from four chronic illness groups (asthma, renal, cardiac, and oncology). The findings revealed considerable variation in reported adherence and beliefs about medicines within and between illness groups. Most patients (89%) believed that their prescribed medication was necessary for maintaining health. However, over a third had strong concerns about their medication based on beliefs about the dangers of dependence or long-term effects. Beliefs about medicines were related to reported adherence: higher necessity scores correlated with higher reported adherence and higher concerns correlated with lower reported adherence. For 17% of the total sample, concerns scores exceeded necessity scores and these patients reported significantly lower adherence rates. Stepwise multiple linear regression analysis showed that higher reported adherence rates were associated with higher necessity concerns difference scores, a diagnosis of asthma, a diagnosis of heart disease, and age.

In a similar research, Kamran, Sadaghieh, Biria, Malpour & Heydari (2014) used the HBM framework to determine the factors of adherence to hypertension medication based on health belief model (HBM). A total of 671 hypertensive patients participated in the study (169 were males and 502 were females). The prevalence of adherence was 24% (161/671) % in the study population. Respondents with regular physical activity and nonsmokers were more adherent to hypertension medication when compared to respondents with sedentary lifestyle and smoking ($P < 0.01$). Based on HBM constructs, the respondents who perceived high susceptibility, severity, benefit had better adherence compared to moderate and low susceptibility, severity, and benefit. The prevalence of adherence to hypertension management was low in study population, this due to inadequate perceived susceptibility, perceived, severity, perceived benefit and poor lifestyle factors. Improving adherence in hypertension patients need to recognize the value and importance of patient perceptions medications.

Summary

The literature review identified barriers that affect health literacy of hypertension in the prison system and how the health belief model (HBM) can be used to create awareness of health literacy in the prison system. According to Ryan (2012), the theory aids in directing the provision of person-centered interventions, which are directed to increase knowledge and beliefs, self-regulation skills and abilities, and social facilitation. Using a theoretical framework improves clinical nurse practice by focusing assessments, directing the use of best-practice

interventions, and improving patient outcomes. Using theory fosters improved communication with other disciplines and enhances the management of complex clinical conditions by providing holistic, comprehensive care.

Section 3: Methodology

Project Design/Methods

The purpose of the health project was to develop a comprehensive, expert reviewed and evidence based, self-paced computerized educational module to promote health literacy on hypertension for inmates in a correctional institution. This section focus on a review of scholarly evidence. The educational module`s content drew from the Eight National Joint Commission (JNC 8) clinical guidelines established by AHA) and the Centers for Disease Control and Prevention (CDC) in 2014. The joint project brought together some leaders in the management of hypertension. The panel of experts appointed to JNC 8 were selected from more than 400 nominees based on expertise in hypertension, primary care, including geriatrics, cardiology, nephrology, nursing, pharmacology, clinical trials, evidence-based medicine, epidemiology, informatics, and the development and implementation of clinical guidelines in systems of care. The panel also included a senior scientist from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), a senior medical officer from the National Heart, Lung, and Blood Institute (NHLBI), and a senior scientist from NHLBI who withdrew from authorship prior to publication. (AHA, 2014).

The experts' strong recommendations on the management and prevention of hypertension were useful given the lack of health literacy on hypertension and disease prevention in the inmate population.

Creation of the module

The plan was to create a user-friendly, intranet-based, self-paced, educational module to address inmates' health literacy on hypertension, especially those at risk of, or diagnosed with, hypertension. In order to avoid ethical implications surrounding the development of an educational health project for inmates, the health project did not require inmates to be directly involved in the development and evaluation of the educational module. Evidence-based information on hypertension was compiled; the Simple Measure of Gobbledygook (SMOG) was used to guide the module's readability level. Without adequate literacy skills, individuals cannot read health-related materials. The module on hypertension was written at a fifth-grade readability level. Developing an educational module required the use of short sentences with simple messages (Artinian et al., 2010). To test what they learned from the module, inmates were asked to answer three to five questions about each objective. The answers were provided to the inmates for self-evaluation.

The module was developed in collaboration with the project team, which has extensive knowledge of managing and preventing hypertension. The committee of health care professionals consisted of an interdisciplinary team made up of a pharmacist, a nurse practitioner and the clinical director of the health service department in a correctional institution. Stanley Fontu, MD, Mohamed Ahmed, Pharm-D, and Angela Purvis, FNP-C, and myself were actively involved in planning, developing, and implementing the educational module. Dr. Fontu has 20 years' experience in the treatment and management of hypertension; he is the clinical director in the southern region of the bureau of prisons and has 20 facilities under his

direction. He is a board certified Family Practice physician. Dr. Fontu is actively involved in the management of hypertension and spends several hours a week providing evidence based clinical and didactic education across multiple settings. He plays an important role in the development of content and guidance related to the pharmacological aspects of the education. Additionally, Angela Purvis serve in a role that supports the development of the evidence based material that was presented to the experts. She was actively involved in the development of topic selection and end product review. The development of the content was under the direction of the project developer.As the principal educational project developer, I identified strategies on how to accomplish the project, such as planning and design/development, as well as an evaluation plan, which was critical to sustain the project. I am a board-certified nurse practitioner in both family practice and Psychiatry, with over 15 years' experience in the treatment of the chronic diseases, specifically hypertension. As a leader in my field of practice of primary care and mental health in an outpatient clinic, I am actively involved in the development and implementation of educational lectures for undergraduate and new graduate nurses in management of chronic disease such as hypertension. My clinical experience is significant. I continue to practice in the clinical setting of a correctional institution, with an average of 20-30 inmates under my care on a daily basis. My responsibilities include developing, implementing, and monitoring plans for chronic diseases patients who require extensive education in self-care and disease prevention. Thus, I

am well versed and up-to-date on the barriers and restrictions seen in the treatment of this patient population.

Content of the Module

The module consisted of topics such as definition of high blood pressure, Stages of blood pressure as recommended by the Eighth Joint National Committee (JNC 8), for the prevention and treatment of high blood pressure. The module also includes information on health promotion and disease prevention subtopics, to promote self-care management such as DASH diet, exercise, maintaining healthy BMI, stress management, avoiding smoking, Importance of prescriptive medication adherence, alcohol and high blood pressure. Knowledge gained from the module will be tested using a set of three to five questions at the end of each learning objective. (See Appendix A for details)

Learning objectives of the Health project on Hypertension

The learning objectives of the health project listed below were used to develop the educational module. To test health literacy on hypertension, the inmates answered three to five questions on each objective. (See Appendix A for details of the educational module and objectives). Inmates were expected to benefit from the health literacy module on hypertension by becoming knowledgeable about the following:

Objectives:

A. Complete physical assessment

1. Complete medical history- Hypertension specific during initial intake.

2. Complete physical examination, including documentation of abnormal blood pressure findings.
3. Identify appropriate Diagnostic Testing (Obtaining Vital Signs, Labs, EKG).

B. Definition of Hypertension and Risk factors

1. Define High blood pressure.
2. Identify risk factors of high blood pressure.
3. Identify the two kinds of hypertension.
4. Identify Hereditary and lifestyle risk factors.

C. Measurement of High blood pressure

1. Recognize proper techniques and positions in measuring blood pressure.
2. Identify the recommended blood pressure cuff.
3. Identify lifestyle behaviors to avoid prior to Blood pressure measurement.

D. Blood pressure numbers and what they mean

1. Define Systolic and Diastolic Blood pressure.
2. Recognize resting Heart rate.
3. Explain cause of increase in systolic pressure.
4. Identify reasons to measure blood pressure.
5. Identify unit use in measuring blood pressure.

E. How is high blood pressure Diagnosed?

1. Understand the appropriate method of diagnosing high blood pressure.
2. Explain the importance of systolic and diastolic blood pressure.
3. Risk of elevated systolic or diastolic blood pressure.

F. Categories and Stages of High Blood pressure

1. Identify stages of high blood pressure according to AHA and JNC8.
2. Identify various values and stages of high blood pressure.
3. Know normal blood pressure value.

G. How Do You Feel with High Blood Pressure?

1. Identify symptoms of High blood pressure.
2. Gain knowledge on monitoring and management of blood pressure.
3. Identify when to call 9-1-1

H. Dangers of High Blood Pressure if not controlled

1. Identify diseases cause by high blood pressure
2. Identify symptoms of CHF
3. Identify systems of MI.

I. High blood pressure and metabolic syndrome (insulin resistance syndrome High blood glucose (sugar). Examine the implications of high blood pressure and;

1. Low levels of HDL ("good") cholesterol in the blood.
2. High levels of triglycerides in the blood.
3. Large waist circumference or "apple-shaped" body.
4. High blood pressure.

J. Lifestyle modification to control High blood pressure.

1. Gain knowledge of lifestyle modification.
2. Effects of smoking on high blood pressure.
3. Effects of sodium and salt on sodium on blood pressure.
4. Effects of cardio exercise on blood pressure.

K. Medications Used to Control Hypertension?

1. Identify the classifications of hypertensive medications.
2. Identify use of the different hypertensive medications.

L. Medications that increase and Medications that decrease blood pressure?

Evaluate medications that increase and medications that decrease blood pressure.

As illustrated in the literature review, the need for education in the area of management of hypertension is well documented among all health care providers. This project is tailored to inmates in a state or federal correctional institution. The literature review demonstrated gaps in health literacy on hypertension. One of the most successful approaches identified by experts in education is the use of continuing educational modules. This process allows the opportunity to reach a vast array of inmates in large numbers across institutions. There are several formats available for

the development of continuing education. The format chosen for this project was an intranet computerized self-paced module. This format provided a constructive, organized and easily referenced module that can be used by inmates and clinicians throughout the health-care spectrum.

However, if the content is not evidenced-based and clinically relevant, content expert will not validate the continuing educational module. The content of the module focus on educational instructions that align with the current standards of practice and clinical guidelines offered by the AHA and CDC (see Appendix A).

The module was reviewed and evaluated by 10 chosen content experts; they were required to provide feedback using the expert-rating tool. The committee developed this expert tool since no current standardized tool exists in the educational or clinical setting. Each expert was asked to complete a Likert scale (rating tool) to confirm the appropriateness and validity of the project. The following criteria were needed to deem the evaluator an expert:

Experts Identification and Solicitation

1. Experts must be board-certified in a selected specialty (i.e., Family Practice,)
2. Experts must be involved in the daily care of chronic disease such as hypertension (i.e. stroke Congestive Heart Failure.
3. Experts must have prescriptive authority and be actively involved in the treatment of hypertension
4. Experts must have experience in academia or be involved in continuing education in some capacity.

Population and Sample

The sampling method was purposive. Given the nature of the project, the sample populations were experts in the field of various medical disciplines that are responsible for the daily care of patients at risk or diagnosed with hypertension. The experts were chosen according to specific project developer`s selected criteria; this is a common method when potential participants are small in number and must meet exclusive criteria (Creswell, 2013). Ten experts in total participated in the health project. Six of these experts were specific to disease prevention and management of hypertension. The remaining experts were chosen from outside the specialty to ensure other specialties such as diabetes management team, are represented in the evaluation of the educational module. The sample size is the point at which data saturation should be approached. The goal was to evaluate the content and presentation of the educational module and to determine its appropriateness and level of quality in providing health literacy on hypertension in the inmate population.

Data Collection

The 10 experts were provided the educational module for review and all 10 experts responded to the survey. A detailed description of the intended focus of the project was provided to each expert before his or her enrollment. The experts were asked to review the module and return the expert tool once the review is completed. The tool consists of questions that focused on the content of the educational module to ensure its appropriateness and quality (see Appendix C for more information regarding expert tool). The experts were asked to return the responses within 30 days

of receiving the educational module and response form. They were advised to use encrypted email to return the answered questionnaire. Once a form is received, it was labeled with the appropriate response number and locked in a secured location. The responses were not opened until all responses were received. This observation was reasonable for ensuring the correct data is extracted and recorded appropriately. This ensured the answers are inputted as they appear on the response form. Each answer was uploaded into an Excel file that was secured with password protection.

Protection of Human Subjects

Protection of human subjects was not an issue with this project given the educational focus, however strict protocols was observed for the experts reviewing the project. The experts or participants were asked to sign and return (electronically) an informed consent form and were not allow to participate without the completion of that form. Participants were fully briefed on what is expected of them. They were assured that their participation is voluntary and can be withdrawn at any time, with no adverse consequences or penalties.

The expert review process occurred without the use of any personal information and no information was retained following the return of the rating tool. No inmate was use, since the health project is specifically, to develop an educational module to promote health literacy on hypertension for inmates, to be evaluated by content expert. Privacy and confidentiality of all participants was strictly maintained. At no time was it possible to identify the participants by examining the results of the health project. The project developer documented that, personal and contact

information for the participants or experts will be destroyed upon completion of the questionnaire analysis phase.

The project developer safeguards the data. Electronic data was stored on a password-protected computer to which only the project developer had access. Written data, such as project developer notes, was stored in a locked file cabinet to which only the project developer has access. All data, physical and electronic, will be destroyed/erased five years from the completion of this study.

The content experts in this study were professionals who has experience working within the federal prison system as physicians, nurse practitioners, pharmacist or healthcare administrators. An e-mail was drafted by the project developer to communication with supervisors of individual prisons within the system (wardens or other administrators) explaining the purpose of this study and asking for permission to contact potential participants or experts by email. An informed consent form was attach to the invitation letter for the health project.

Upon receiving consent via email with electronic signatures, the module and the questionnaire was forwarded to the participants. Participants were informed that completed questionnaire were to be received within four weeks of my forwarding the module to them. Participants were allowed to retain the module for future study and reference, should they so desire.

The project developer seek approval for the study from the IRB at Walden University as well as similar approval from the study site. The latter process was relatively quick; because the project developer did not contact or otherwise use

prison inmates as sources of data. Nonetheless, Walden IRB approval was obtained according to the policy and procedure of Walden University prior to commencement of the health project. The IRB approval number was 09-14-17-0620141.

Data Analysis

The project developer collected, scored and organized data to facilitate the data analysis. Participants responded to the questionnaire using a 5-point Likert scale A Five-point Likert scale was used, with scores ranging from 1 (*disagree very much*) to 5 (*agree very much*).

Once all the experts complete the rating of the educational module. A standard descriptive analysis was used to summarize the data obtained from the experts' evaluations of the educational module.

Rationale

The usefulness of the module could only be directly measured by identifying a population of inmates with hypertension, measuring their health literacy, then providing them with the module and re-measuring their health literacy. This method could only be carried out by professionals who worked directly in the prison system and is therefore outside the scope of the project developer`s abilities and resources. Thus, the opinions of content experts (the prison health system professionals who will be the participants in the study) will be the data to be gathered, rather than a quantitative before-and-after measure of the inmates' health literacy.

This is a valid form of inquiry, in that research that seeks to predict an effect or measure the efficacy of a tool is fundamentally quantitative in nature (Creswell,

2013). The ingoing premise of the health project was that a properly constructed health literacy module can improve the health outcomes of inmates with hypertension. While the study cannot directly prove or disprove that, it can provide a further examination of the situation of inmate hypertension health care and health literacy, which as the review of the literature showed, is lacking in the literature.

Project Evaluation

The project was evaluated based on the responses of the chosen content experts in the selected specialties. The aim of this project was to design and develop a quality educational module that is suitable for inmates to improve health literacy on hypertension. The responses from the experts served as a foundation that guides change to the project. The expansion of knowledge for inmates is an important goal of continuing education. This expansion of knowledge can only be obtained with quality, evidenced-based education. The success of this project was hinge on the approval and acceptance of the content from the experts in the field. The evaluation occurred in phases that include a formative evaluation, process evaluation, impact evaluation and outcome evaluation (Friis & Sellers, 2009). The formative evaluation allowed for modifications and improvement during the course of the development stages (Friis & Sellers, 2009). This occurred over the course of the educational module. The process evaluation allowed for reflection on the target population and the validity and consistency of the information being provided (Friis & Sellers, 2009). This phase was emphasized by the experts' responses in the project. As for the impact evaluation, this measured the impact on the inmates that receive the

educational module and the expansion of knowledge that may occur (Friis & Sellers, 2009). Identification of this process occurred once the content was established and the experts agreed that the module is worthy of submission (Friis & Sellers, 2009). Finally, the outcomes evaluation focus heavily on the experts' feedback on the educational module (Friis & Sellers, 2009). This included any recommendations that were made during the course of the evaluation. Collectively, this information serves as an evaluation plan that works over the continuum and expands beyond the prison setting.

Summary

In this quantitative study, the opinions of health care professionals were obtained regarding a project developer-constructed health literacy module designed to improve the health literacy of correctional institution inmates regarding hypertension. A sample of 10 experts who are practicing professionals in the correction institution healthcare provision field was obtained. The sample of content experts were provided with the health literacy module and asked to fill out an open and close-ended questionnaire regarding its usefulness and efficacy. The use of experts ensures the project meets the goal of a high quality, evidenced based module. The project developer used a Likert scale to evaluate the responses from the content expert in order to answer the project questions. Questions such as the feasibility of expanding health literacy on hypertension for inmates using the developed educational module on hypertension was included in the survey.

Section 4: Findings, Discussion and Implications

Summary of Findings

The goal of this peer-reviewed project was to develop a comprehensive, self-paced, computerized, educational module to improve inmates' health literacy on hypertension. This module was developed collaboratively to expand the knowledge of inmates who may have, or be at risk for, hypertension. The need for quality, evidenced-based educational modules is highlighted in the literature, particularly in the specialty of hypertension (CDC, 2012). I ensured that the module was clear and concise and that it represented up-to-date evidence. Once developed, it was given to experts for assessment: five physicians, four nurse practitioners and one physician assistant, all of whom met the criteria listed in the previous section. A Likert scale was used to assess its content and usability (Appendix I). The Likert scaling system for this project was as follows: 1 (*complete disagreement*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), 5 (*strongly agree*).

The 10-question evaluation form was designed to assess the project's content and instructional method (Appendix I). The data obtained from the evaluation tool confirmed the appropriateness and quality of the project, while illustrating its importance in the education of health care professionals.

. All ten evaluations were returned within 30 days. Table 1 lists the questions, including type, median value, and the experts' rating for each question (given as a percentage).

Table 2

Experts' Responses to Evaluation of Educational Module (N=10)

Question	Question type	Median & Standard Deviation*(std)*	1 (*complete disagree-ment*) %	2 (*disagree*) %	3 (*neutral*) %	4 (*agree*) %	5 (*strongly agree*) %
The content is clear and concise	Content	4.5 0.59 *(std)*	0	0	0	50	50
The content is capable of expanding health literacy on hypertension for inmates.	Content	4.5 0.59*(std)*	0	0	0	50	50
The content is appropriate for clinicians in general and specialist.	Content	4.0 0.40*(std)*	0	0	20	50	30
As an expert in the prevention and management of hypertension, would you recommend this education to your institution for inmates?	Content	5.0 0.50*(std)*	0	0	0	40	60
The content demonstrates the importance of using life style modification to prevent and manage. hypertension.	Content	4.0 0.40*(std)*	0	0	10	50	40
The content clearly outlines the implications	Content	3.0	0	30	30	30	10

of uncontrolled hypertension.		0.30*(std)*					
The instructional methods were well organized.	Methods	5.0 0.50*(std)*	0	0	0	20	80
The instructional methods illustrate the concepts well to include medical and economic implications of uncontrolled hypertension.	Methods	5.0 0.50*(std)*	0	0	0	20	80
The teaching strategies were appropriate for the activity.	Methods	5.0 0.50*(std)*	0	0	0	10	90

Expert Evaluation Data

Content. The content questions 1–7 measured the experts (N =10) opinion on the educational modules effectiveness and appropriateness for clinical practice and knowledge expansion. Of the ten experts, 50% with mean of 5.0 and (N = 5) and standard deviation (std) of 0.50, *agreed* that the educational was clear and concise and capable of improving health literacy on hypertension. The remaining five experts or 50% (N = 5) with mean of 5.0 and standard deviation of 0.50, responded with an opinion that they *strongly agreed* with the modules ability to expand the knowledge and viewed it as clear and concise. Question 3 demonstrated a different distribution in the answers and included an opinion that were *neutral* in two 20% (N = 2) of the experts, with a mean of 2.0 and std 2.0, while (N = 5) 50% of the experts with mean of 5.0 and std 0.50, *agreed* that the content was consistent with the current practice

standard and treatment guidelines. The remaining 30% (*N* = 3) experts with mean of 3.0 and std of 0.30, *strongly agreed* in their responses. Questions 4 and 5 demonstrated a correlation in the responses with 40% (*N* = 4) with mean of 4.0 and std of 0.40, *agreeing* with the contents appropriateness for general and specialty practice and their willingness to recommend the educational module to other correctional institution. The remaining 60% (*N* = 6) experts with mean of 6.0 and std of 0.60, *strongly agreed* with this assertion. Questions 6 and 7 of the evaluation tool demonstrated a significant variation in the opinions provided by the experts. Question 6 examined the expert's opinion on the educational modules ability to demonstrate importance of using life style modification to prevent and manage hypertension in the prison system. One expert 10% (*N* = 1) rendered the opinion as *neutral;* while 50% (*N* = 5) with a mean of 5.0 and std of 0.50 rendered the opinion that they agreed that the education demonstrated the importance of self-promotion and life style modification. Four 40% with a mean of 4.0 and std 0.40 (*N* = 4) , indicated that they *strongly agreed* with the educational modules ability to demonstrate the importance of these medications to prevent complications of uncontrolled hypertension. The seventh and final question provided incite on the improvements that may be needed within the educational project. The question addresses the consequences of uncontrolled hypertension and weather the implications are clearly outlined. The experts provided opinions that demonstrated a need for additional improvements in this area of the content. A total of 30% (*N* = 3) of the experts with a mean of 3.0 with std of 0.30, provided opinions in that fell below the level of acceptance and *disagreed* with the

modules ability to clearly state the medical and economic implications. In contrast, only 10% (*N* = 1) of the experts *strongly agreed* with the modules ability to state this content, while 30% (*N* = 3) *agreed* the module was adequate in this content section. The remaining 30% (*N* = 3) experts opined that the module was neutral in this regard.

Methods. A total of three questions were dedicated to the instructional methods of the educational module. Questions 1 and 2 provided similar data from the experts and 20% (*N* = 2) revealed *agree* with the organization and concepts of the module, while the remaining 80% (*N* = 8) *strongly agreed* with the modules organization and concepts as it was presented. The final question addressed the overall teaching strategies used for the education. A total of 90% (*N* = 9) *strongly agreed* that the strategies used were appropriate for the module and content. Only 10% (*N* = 1) responded with an *agreed* response in this section of the data.

In summary, the experts provided data that demonstrated the appropriateness of the health literacy on hypertension educational module. With the exception of question seven, the experts overall agreed or strongly agreed with the content of the educational module. The experts did not deem the medical implication content adequate and additional revisions will be needed prior to the implementation of the final project. The data analyzed supports the content of the module in all other aspects and support the education of inmates.

Implications

Policy impact. The DNP-prepared nurse practitioner is in a unique position to guide and disseminate the need for improved health care policies in the health literacy on hypertension arena (AACN (2006). Their ability to critically evaluate the literature, health care policy and clinical practice can be used to formulate the best practices and steer the health care policies being developed. The ability to disseminate this information using the totality of the evidence, while meshing daily clinical practice, provides a perceptive that has a direct impact on how this policy should be developed. Several correctional institutions across the country are lacking the necessary health care policies that improve the health literacy on hypertension to inmates (CDC, 2011). According to a report by the National Institute of Corrections (2012), in 1998, most states spend an average of $7.15 per day per inmate on health care. Some factors that have contributed to the rise in corrections health care costs include services and treatment for chronic diseases such as hypertension, Diabetes, Hepatitis C, HIV/AIDS, mental health problems and the aging inmate population. DNP prepared Nurse can collaborate with state legislators and corrections officials to implement innovative solutions to help manage this unprecedented growth. Some examples of cost-saving measures is the availability of educational modules to promote health literacy on chronic diseases such as hypertension while fostering lifestyle modification for disease prevention. As noted by the National Commission of Correctional Health Care (NCCHC, 2012), the importance of providing inmates with adequate health literacy and health care is not only critical to improve health

outcomes, but also that of the local communities that receive released prisoners. Health officials recognize that there is a significant threat to public health in the communities' inmates return to if inmates are not aware of their condition and are not provided necessary health education and health care while incarcerated. Untreated, high blood pressure is one of the most common chronic illnesses among inmates. The condition can eventually require expensive health care services for coronary heart disease, kidney failure, stroke and blood vessel disease. Improving health literacy on high blood and blood pressure control is associated with a substantial reduction in heart disease and stroke, which may lead to a decrease in health care cost.

In the National Commission on Correctional Health Care report, "*Prison Health Care": A Blueprint for Transforming Prevention, Care, Education, and Research,*" experts and policy makers recognized the need for quality evidenced-based education (NCCHC, 2012). This project was the first step in that process and provide a foundation for lawmakers and state representatives as they consider health care policy changes in promoting health literacy on chronic diseases such as hypertension. Ensuring that inmates are educated in the most up-to-date approach and materials is imperative for the improvement of patient outcomes, specifically in the inmate population (NCCHC, 2012). Given the current health concern and mortality associated with hypertension, it is imperative that inmates are provided quality education and supported with appropriate health care policy (Friis & Sellers, 2009).

The national attention and the abundant literature base surrounding promoting education on hypertension illustrate the need for quality continuing educational modules on health literacy on hypertension to all correctional institution, specifically for inmates (NCCHC, 2012). I will disseminate the project to state and federal health care policy makers to demonstrate the need for health care policies that support the mandate nationally. The educational module will be used as a framework for correctional institution that don't currently have educational module on health literacy on hypertension for inmate. This will shape the health care policy arena and shift the political awareness toward promotion of education on health literacy on hypertension for inmates.

Clinical practice. The clinical practice of hypertension continues to evolve with the recent changes in the practice guidelines established by the Center for Disease Control and Prevention and the AHA (AHRQ, 2012). The uses of educational modules allow inmates to educate themselves on hypertension and life style modification that have proven to improve health outcomes (AHRQ, 2012). As inmates gain knowledge on health literacy on hypertension and lifestyle modification, they are able to participate in health care decisions making by collaborating with their health care provider to improve health. This project applies the most up-to-date evidenced based guidelines and presents them in an expert-reviewed educational module that can be use by inmates to improve health and promote better collaboration with health care providers in clinical practice.

Research. Evidenced-based research in the management of hypertension in the community started to advance following the JNC 8 clinical guidelines offered in 2014, however prior to the 2014 report there was very limited effort placed on the proper staging and management of hypertension (AHA, 2012). In 2011, the Institute of Medicine's report determined that a lack of education was one of the primary reasons for uncontrolled hypertension (CDC, 2012). The CDC linked this to several factors in the research, however one of the most significant findings was the limited education and knowledge possessed by patients (CDC, 2012). This project provides a comprehensive educational module with a focus on promoting health literacy on hypertension, self-management and lifestyle modification.

Research will need to continue once the project is completed. This includes the implementation and evaluation of the projects content in a sample of inmate. Research will examine if the module stimulates learning and improves the knowledge of inmate (learner). Once this research is completed and demonstrates an expansion in knowledge in the health care setting in the prison system these findings will be disseminated to federal and state lawmakers. The intent and goal again will be to have this educational module distributed as a mandatory continuing educational module for inmates, however without further research it is unlikely this will be credible to persuade lawmakers. The additional research will also allow for the perspective of the inmates versus the current experts' view. Additional adjustments may be needed before wider distribution occurs.

Social change. Low health literacy on hypertension is at an all-time high in

the prison systems in the United States (CDC, 2012). The social impact of low health literacy on hypertension has created concern at both the state and federal levels (CDC, 2012). Mortality and morbidity continues to rise as a result of this misappropriation (CDC, 2012). Inmates need to be educated on the most up--to-date evidence to promote self-care management to improve health outcomes. The assessment and identification of potential problems such as low health literacy on hypertension was the first step to advocate for improve health care, prior to the initiation of the health project. Without proper education, the identification process can be complicated (AHRQ, 2012). If inmates do not recognize these potential problems it can place the inmates, and the society at further risk. The expansion of knowledge allows the inmates the opportunity to make decisions regarding hypertension and lifestyle modifications without the feeling of fear and apprehension (Lewis et al., 2015). The education of inmates has proven over decades to improve inmates' health outcomes especially after incarceration and create a shift in mortality and morbidity in other chronic illness including heart disease, diabetes and cancer (IOM, 2011). This project, once fully implemented, provides the foundation needed to achieve the expansion of knowledge to protect inmates, and society as a whole.

Project Strengths and Limitations

Strengths. The evidenced-based educational module is easy to read and can be accessed on any device that supports a Microsoft Word and PDF format. Experts in the field of hypertension have reviewed the module and the content was affirmed. Therefore, the educational module demonstrates the content needed to improve the

knowledge of clinicians. The evaluation process allowed the experts to review the module anonymously. This prevented any bias in the answers and allowed them to fill out the evaluation tool without any preconception. This process allows the project to move toward the next level and evaluate the impact on the health of inmates that will be implemented post incarceration.

Limitations. The main limitation in the project's development was its inability to evaluate a sample of clinicians that are not considered experts. It does not examine the actual knowledge expansion that is expected to occur in this population. This project only demonstrates viewpoints of the expert and how they perceive the content of the project. The measurement of knowledge expansion is going to be an important part of the next phase of the projects success. The actual measurement of knowledge expansion will further prove the appropriateness and quality of the project and reaffirm the projects benefit.

Recommendations for Remediation of Limitations in Future Work

Future work will need to include a separate measurement of the nonexperts' opinion of the educational module and its content. Measurements will also need to include pre and post testing of knowledge to accurately establishes the modules validity and worth from a nonexpert standpoint. The data collected during this process will further affirm the modules ability to improve the knowledge base of health literacy on hypertension for inmates.

Analysis of Self

As a practitioner. The conclusion of the DNP project offered areas of improvement for me as a practitioner. The use of evidenced based practice is essential to ensure patient outcomes are maximized (IOM, 2011). This project allowed me the opportunity to take evidence-based guidelines and apply them to the educational process, which in turn, resulted in a change in practice within the clinical setting. The translation of evidence into practice is only achievable when the practitioner takes the necessary steps to review the literature and recognize the changes that need to be made (Curran, 2014). This is something that became very evident during this initial phase of the project development. During the course of the project, I was able to translate the most up-to-date evidenced based guidelines into my daily practice. The augmentations in my knowledge base translated to the treatment of my patients and further research will be needed to determine the direct impact.

As a scholar. As a scholar, the DNP project presented me with an opportunity to learn and grow during this 3-year process. The ability to evaluate the literature and translate it into evidenced-based knowledge and education was an essential part of this projects development. The scholarly inquiry necessary to produce a quality educational module cannot be understated. This inquiry process led to an additional knowledge base in my field and directly affects my patient's outcomes and health.

As a project developer. As a scholar, the DNP project presented me with an opportunity to acquire leadership skills during the development phase; implementation phase and evaluation of the DNP project cannot be understated. The project development required vigorous leadership and organizational skill. The leadership needed to manage and align all the stakeholders, project members and content reviewers was one of the biggest accomplishments of the entire project. This process defined me as a leader and without proper leadership this process could not have been achieved. During the entire project development, my hands on approach provided stakeholders, project members and content reviewers with the support and leadership needed to ensure a successful project outcome.

Future Professional Development

The advancement of the DNP project has already had a significant impact on my personal professional development. The growth of the proposal and educational module provided a significant learning experience for me professionally. The enhancement in my own education and understanding of the importance of improving health literacy on hypertension process was augmented by the evidenced-based literature reviews. This process made me attentive to some of the most up to date evidence that can now be provided to inmates at risk or diagnosed with hypertension. In addition, during the process of completing the DNP project there was an increased awareness of the gaps and barriers present in the health literacy on hypertension in the inmate population. These gaps and barriers are addressed in the educational module which will be disseminated to a larger audience moving forward

cannot be understated. This inquiry process led to an additional knowledge base in my field and directly affects my patient's outcomes and health.

Section 5: Dissemination Plan

Introduction

The dissemination of the DNP project will be a process that occurs once the project is implemented fully. One of the observed weaknesses of the project in its current form is its inability to measure the actual knowledge expansion from the non-expert clinician perspective. The larger portion of the project will occur following the academic setting and will be implemented on a much larger scale, yielding a larger data set. This data will be analyzed in similar fashion as the expert reviewed portion of the project. Ultimately, the project will be dissemination using a written document format to state and federal lawmakers in a face-to-face presentation. The intent and goal of this presentation will be to promote the use of a self-paced computerized educational module to promote health literacy on hypertension for the inmate community for a better health outcome in the prison system.

Furthermore, the project will be presented to multiple healthcare and educational organizations. This would include organizations such as National Commission on Correctional Health Care Association, American Nursing Association, The American Academy of Nurse Practitioners and American Nurses Credentialing Center. If accepted, this educational module will be disseminated to multiple correctional institutions throughout Nation. This will provide the education needed to enhance health literacy on hypertension to the inmate community.

Summary and Conclusions

The DNP project presents an evidenced-based educational module that focuses on promoting health literacy on hypertension for inmates. The experts in hypertension reviewed this project and the content was affirmed by their responses on the evaluation tool provided. The median score for questions 1 and 2 was 4.5, while questions 4, 5, 8, 9 and 10 scored a median score of 5.0. The lower of the two median scores (4.5 and 3.0) occurred on questions 3, 6, and 7, which will be addressed in the next phase of the project. The median and raw scores demonstrate a clear understanding of the content while enhancing the validity of the projects purpose.

In summary, the DNP project will provide value to inmates and to the health care community in correctional institution. The inmate population is often complex and may require education on health promotion and disease prevention throughout their period of incarceration. Without a proper knowledge base, health outcomes can suffer, leading to a further burden on society (CDC, 2012). Education on health literacy on hypertension and the expansion of knowledge on health promotion have proven to improve health outcomes in other chronic conditions including heart disease, diabetes and several forms of cancer (CDC, 2012). Significant emphasis is being placed on health literacy on hypertension and the need to be aware of the most up-to-date evidence has never been more imperative. The use of a quality evidenced-based educational module will assist the inmates in healthcare decision-making and allow them to collaborate with their healthcare provider to promote optimal health

(CDC, 2012). Thus, producing a more informed inmate base to improve health outcomes though the duration of being incarcerated.

References

Aboumatar, H. J., Carson, K. A., Beach, M. C., Roter, D. L., & Cooper, L. A. (2013). The impact of health literacy on desire for participation in healthcare, medical visit communication, and patient reported outcomes among patients with hypertension. *Journal of General Internal Medicine*, *28*(11), 1469-1476.

Affordable Care Act, Public Law 111-148. 2010. Retrieved from http://www.healthcare.gov/law/full/index.html

Agency for Healthcare Research Quality (2012). Self-Management Support. Retrieved 06/12/13 from http://www.ahrq.gov/professionals/prevention-chronic-care/improve/self-mgmt/index.html

AHRQ.gov (2010) Health Literacy: Hidden Barriers and Practical Strategies. Retrieved from http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/tool3a/index.html

AHRQ .gov (2010). Using Health Literacy Tools. Retrieved from http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/pcmh-crosswalk.pdf

American Association of Colleges of Nursing (2006). *The essentials of doctoral education for advanced nursing practice.* Washington, DC: Author.

Baker, D.W., Gazmararian, J.A., Williams, M.V., Scott, T., Parker, R.M…. Peel, J. (2002). Functional health literacy and the risk of hospital admission among Medicare managed care enrollees. *American Journal of Public Health.* 92(8):

1278-1283.

Baker, L., Wilson, F., Kars, M (2013). The readability of medical information on InfoTrac: Does it meet the needs of people with low literacy skills? Retrieved from https://www.cdc.gov/healthliteracy/pdf/simply_put.pdf

CDC.gov (2012). High blood pressure. Retrieved from http://www.cdc.gov/bloodpressure/

Coleman, C. A., Hudson, S., & Maine, L. L. (2013). Health literacy practices and educational competencies for health professionals: A consensus study. *Journal of Health Communication*, *18*(sup1), 82-102.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. City, State: Sage Publications.

Dewalt, D., Broucksou, K., Hawk, V., Brach, C., Hink, A., Rudd, R (2010) Developing and testing the health literacy universal precaution toolkit. Retrieved from http://sfxhosted.exlibrisgroup.com/waldenu?sid=google&auinit=DA&aulast=DeWalt&atitle=Developing+and+testing+the+health+literacy+universal+precautions+toolkit&id=doi:10.1016/j.outlook.2010.12.002&title=Nursing+outlook&volume=59&issue=2&date=2011&spage=85&issn=0029-6554

Dumont, D. M., Allen, S. A., Brockmann, B. W., Alexander, N. E., & Rich, J. D. (2013). Incarceration, community health, and racial disparities. *Journal of Health Care for the Poor and Underserved*, *24*(1), 78-88.

HealthyPeople.gov (2010). Social determinants of health. Retrieved from

https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

Heiss, L., & Schoenly, L., (2014). Chronic illness in the correctional setting. Retrieved from http://www.cenurse.com/content/ce524/chronic-illness-in-the-correctional-setting

Horn, R., Wienmn J (2012). Patients' beliefs about prescribed medicines and their role in adherence to treatment in chronic physical illness. *Journal of Psychosomatic Research, 47* (6), 555 – 567.

IHI.org (2015). Blood pressure visual aid for patient. Retrieved from http://www.ihi.org/resources/Pages/Tools/BloodPressureVisualAidforPatients.aspx

Institute of Medicine (2012). Health literacy: A prescription to end confusion. Washington, DC: National Academies Press.

Institute of Medicine (2014). Clinical Practice Guidelines We Can Trust. Washington, DC: National Academies Press; 2014. Retrieved from http://www.iom.edu/Reports/2011/Clinical-Practice-Guidelines-We-Can-Trust.aspx

James, A., Oparil, S., Carter, L., Cushman, C., Dennison-Himmelfarb, C., Handler, J., Lackland, T., LeFevre, L., MacKenzie, D., Ogedegbe, O., Smith, C., Svetkey, P., Taler, J., Townsend, R., Wright, T., Narva, S., Ortiz, E. (2014). Evidence-Based Guideline for the Management of High Blood Pressure in Adults Report from the Panel Members Appointed to

the Eighth Joint National Committee (JNC8). *JAMA. 2014;* 311(5): 507-520. doi:10.1001/jama.2013.284427

Koh, H.K., C. Brach, L.M. Harris, & M.L. Parchman. 2013. A proposed 'health literate care model' would constitute a systems approach to improving patients' engagement in care. Health Affairs, 32(2), 357-367.

Kwan, B., Frankish, J., Rootman (2014). The development and validation of measures of "health literacy" in different populations. Vancouver: University of British Columbia Institute of Health Promotion Research & University of Victoria Centre for Community Health Promotion Research.

Li, X., Ning, N., Hao, Y., Sun, H., Gao, L., Jiao, M., ... & Quan, H. (2013). Health literacy in rural areas of China: hypertension knowledge survey. *International Journal of Environmental Research and Public Health*, *10*(3), 1125-1138.

Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice*, *13*(6), 522-526.

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage Publications.

Nash, D. B., Reifsnyder, J., Fabius, R. J., & Pracilio, V. P. (2010). *Population health: creating a culture of wellness.* Sudbury, MA: Jones & Barlett Learning.

National Association of Counties. 2012. County jails and the Affordable Care Act: Enrolling eligible individuals in health coverage. Washington, D.C.: Author. Retrieved from http://nicic.gov/ Library/026253

National Center for Education Statistics (2010). *The health literacy of America's Adults:*

Results from the 2003 National Assessment of Adult Literacy. Washington, DC: U.S. Department of Education.

National Commission on Correctional Health Care. (2014). Correctional health care. Retrieved from http://www.ncchc.or/filein/Guidance/Hypertension-2014-pdf

Nielsen-Bohlman, L., Panzer, A. M., & Kindig, D. A. (Eds.). (2012). *Health literacy: a prescription to end confusion*. City, State: National Academies Press.

Paasche-Orlow, K., Schillinger, D., Green, M., Wagner, H. (2010). How healthcare systems can begin to address the challenge of limited literacy. *Journal of General Internal Medicine, 21*(8), 884–887.

Panjabi, S., Lacey, M., Bancroft, T., & Cao, F. (2013). Treatment adherence, clinical outcomes, and economics of triple-drug therapy in hypertensive patients. *Journal of the American Society of Hypertension*, *7*(1), 46-60.

Pender, N., Murdaugh, C., & Parsons, M. A. (2011). *Health promotion in nursing practice* (6th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Price, C. (2009). Former prison inmates at increased risk for hypertension. *Archives of Internal medicine, 169. 687-693*

Rabin, R (2009). Jail time increases odds of hypertension, a researcher finds. Retrieved from http//www.nytimes.com/2009/04/16/health/14heart.html? _r=0

Robert, V. (2012). Inmate Co-Pay Finds Support in the Courts: National Commission on Correctional Health Care: Legal Affairs. Retrieved from http://www.ncchc.org/pubs/CC_archive/co-pay.html

Shoemaker, J. (2015). Development and Implementation of the Health Education and Promotion Module for Incarcerated Mothers: Knowledge Gains and Future Implications. *SAGE Open Nursing Volume* 3: 1–11. DOI: 10.1177/2377960817699623

Smith, A. (2013, Month). Health and incarceration: A workshop summary. Washington, DC: The National Academies Press. Retrieved from http://www.nap.edu/catalog.php?record_id =18372

Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., ... & Falcon, M. (2015). Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). *The European Journal of Public Health*, ckv043.

U.S. Department of Health and Human Services. (2010). National action plan to improve health literacy. Washington, DC Author.

Varan, A. K., Mercer, D. W., Stein, M. S., & Spaulding, A. C. (2014). Hepatitis C seroprevalence among prison inmates since 2001: still high but declining. *Public Health Reports*, *129*(2), 187-195.

Walden University (2015). DNP Project Process Guide. Retrieved 09/27/2015 from https://drive.google.com/file/d/0B4XiaHN6ICGIQWo1TUV5ZHJ5OEk/view?pli=1

Weiss, B.D., Hart, G., McGee, D.L., & D'Estelle, S. (2011). Health status of illiterate adults: Relation between literacy and health status among persons with low literacy skills. *Journal of the American Board of Family Practice, 5*(3), 257-264.

Woods, L., Lanza, S., Dyson, W., & Gordon, M (2013). The role of prevention in promoting continuity of health care in prison reentry initiatives. *American Journal of Public Health, 103 (5), 830-838*

World Health Organization (2014). Preventing chronic diseases, a vital investment. Retrieved from www.who.int/chp/chronic_disease_report/en/

Appendix A: A Self-paced computerized module on health literacy on hypertension in the inmate population

Pamela Mokoko DNP-S, MSN, APRN, FNP-C, PMHNP-BC, RN

Objectives: Inmate will gain health literacy on:

A. *Complete assessment of physical health*
   1. Complete medical history- Hypertension specific during initial intake.
   2. Complete physical examination, including documentation of abnormal blood pressure findings
   3. Identify appropriate Diagnostic Testing (Obtaining Vital Signs, Labs, EKG)

Test your health literacy knowledge on Hypertension

   a. When should you get screen for hypertension
   b. Why should you provide medical history?
   c. Name three co-morbidities or medical problems
   d. What do you expect from your clinician if your blood pressure is elevated?

B. *Hypertension and Risk factors*

1. Define High blood pressure
2. Identify risk factors of high blood pressure
3. Identify the two kinds of hypertension
4. Identify Hereditary and lifestyle risk factors

Test your health literacy knowledge on Hypertension

   a. What is high blood pressure
   b. What are the risk factors of high blood pressure?
   c. What are the two types of high blood pressure?
   d. What is essential high blood pressure?
   e. What is secondary high blood pressure?

C. *Measurement of High blood pressure*

1. Recognize proper techniques and positions in measuring blood pressure.
2. Identify the recommended blood pressure cuff.
3. Identify lifestyle behaviors to avoid prior to Blood pressure measurement.

Test your health literacy knowledge on Hypertension

a. How is the recommended blood pressure cuff identified?
b. What position should you take when checking your blood pressure?
c. How is your blood pressure affected if you cuff is too big or too small?
d. Should you drink coffee or smoke cigarette prior to checking your blood pressure?

D. Blood pressure numbers and what they mean

6. Define Systolic and Diastolic Blood pressure.
7. Recognize resting Heart rate.
8. Explain cause of increase in systolic pressure
9. Identify reasons to measure blood pressure.
10. Identify unit use in measuring blood pressure.

Test your health literacy knowledge on Hypertension

a. What is systolic blood pressure?
b. What is diastolic blood pressure?
c. When is your heart resting?
d. What does measuring blood pressure means?
e. What will cause elevation of the systolic blood pressure?
f. What unit is used to measure high blood pressure?

E. How is high blood pressure Diagnosed?

I. Understand the appropriate method of diagnosing high blood pressure.
J. Explain the importance of systolic and diastolic blood pressure.
K. Risk of elevated systolic or diastolic blood pressure.

Test your health literacy knowledge on Hypertension

a. Which of these is more important- Systolic or Diastolic and why?
b. What number will give you a diagnosed of high blood pressure?
c. What is the risk of an increase in 20mmHg systolic and 10mm Hg diastolic?
d. Which number is more important?

F. *Categories and Stages of High Blood pressure.*

4. Identify stages of high blood pressure according to AHA and JNC8.
5. Identify various values and stages of high blood pressure

6. Know normal blood pressure value

Test your health Literacy knowledge on Hypertension

1. Name the five stages of blood pressure
2. What is a normal blood pressure?
3. What is Hypertensive crisis
4. What does a blood pressure higher than 180/110 mean?
5. What is stage 2 hypertensions and what is the parameter?

G. How Do You Feel with High Blood Pressure?

4. Identify symptoms of High blood pressure.
5. Gain knowledge on monitoring and management of blood pressure.
6. Identify when to call 9-1-1

Test your health literacy knowledge on Hypertension.

a. Why blood pressure is called "the silent killer"?
b. Yes, or No, is there a cure for high blood pressure?
c. Can you control your high blood pressure?
d. How can you protect yourself from high blood pressure?
e. What are the symptoms of severely high blood pressure?
f. What should your health care provider do if your blood pressure is Systolic blood pressure (SBP) is 120–139 mm Hg or Diastolic blood pressure (DBP) is 80–89 mm Hg.
g. What should your health care provider do if your blood pressure is SBP is 140–159 mm Hg or DBP is 90–99 mm Hg?
h. What should your health care provider do if your blood pressure is SBP is 160 mm Hg or DBP is 100 mm Hg?

H. Dangers of High Blood Pressure if not controlled

1. Identify diseases cause by high blood pressure
2. Identify symptoms of CHF
3. Identify systems of MI

Test your health literacy knowledge on Hypertension

a. Name three diseases cause by high blood pressure
b. What is congestive heart failure?
c. What is PVD?
d. What is a heart attack?

e. How does high blood pressure cause Kidney failure?

I. *High blood pressure and metabolic syndrome (insulin resistance syndrome)* ***Inmate will gain the concept the effects of high blood pressure and;***

1. High blood glucose (sugar).
2. Low levels of HDL ("good") cholesterol in the blood.
3. High levels of triglycerides in the blood.
4. Large waist circumference or "apple-shaped" body.
5. High blood pressure

Test your health literacy knowledge on Hypertension.

a. Name three organs that can be damaged by high blood pressure
b. What is metabolic syndrome?
c. How is metabolic syndrome diagnosed?

J. Lifestyle modification to control High blood pressure.

1. Gain knowledge of lifestyle modification.
2. Effects of smoking on high blood pressure.
3. Effects of sodium and salt on sodium on blood pressure.
4. Effects of cardio exercise on blood pressure.

Test your health literacy knowledge on Hypertension.

1. Name 3 lifestyle changes to make to improve or avoid high blood pressure?
2. How does smoking affect blood pressure?
3. Why should we reduce salt or sodium in our diet?
4. What kind of exercise should you do?
5. How many minutes and how many days a week should you exercise?

K. Medications Used to Control Hypertension?

1. Identify the classifications of hypertensive medications.
2. Identify use of the different hypertensive medications.

Test your health literacy knowledge on Hypertension

a. Name the five groups of medication for the treatment of high blood pressure (Antihypertensive medications).
b. When diuretic remove excess water from your body, what happens to your blood pressure?
c. Which medication for high blood pressure is good for people with diabetes and why
d. Which high blood pressure is good for people with irregular or rapid heart rate?
e. For those patient who already had a heart attack, which blood

pressure medication is recommended and why?

L. Medications that elevates blood pressure?

Inmate will gain knowledge on medications that increase and medications that decrease blood pressure

Test your health literacy knowledge on Hypertension

a. What are the illegal drugs that can raise blood pressure?
b. Name one decongestant or cold medication that can raise blood pressure
c. What are NSAID and how does it affect blood pressure if taken excessively.

Appendix B: Self-Paced Educational Module on Hypertension

Screening inmates for Hypertension (High blood pressure)

Inmates should be screened for hypertension by the bureau of prison`s health care providers during intake and periodic physical examinations, evaluations during sick call, and chronic-care clinic evaluations (National Commission on Correctional Health Care, 2014). Elevated readings should be reconfirmed on repeat visits.

Blood pressure control is achieved by lifestyle modifications and, as necessary, pharmacologic treatment. All inmates should be advised during intake and periodic examinations to adopt lifestyle changes that will reduce their risk factors for cardiovascular disease, regardless of their current blood pressure.

What is Hypertension?

Hypertension is the medical term for high blood pressure. Most people with hypertension feel fine and may not even know that they have high blood pressure. High blood pressure has been called "the silent killer," because it may be life threatening if left untreated. However, with proper care, hypertension can be adequately treated in most patients. Most people with high blood pressure (about 95%) have essential hypertension, meaning the cause is not known. The other 5% have secondary hypertension, which means a specific cause can be identified.
High Blood Pressure (or hypertension) is a chronic increase of blood pressure to levels above normal; blood pressure is the force exerted by blood against artery walls. It is very common and affects as many as 74 million Americans.

There Are Two Kinds of Hypertension

- Essential Hypertension (known as primary) is high blood pressure for which a specific cause is unknown. 90-95% of hypertension cases fall into this category.

- Secondary Hypertension is high blood pressure that is a symptom of an identified medical problem, such as kidney disease. If the medical problem is fixed, the high blood pressure decreases.

Risk factors that make hypertension more likely

- Smoking
- High cholesterol
- Diabetes
- Older than 60
- Male of any age
- Women after menopause
- Family history of heart disease

Test your knowledge on Hypertension

1. What is high blood pressure?
2. What are the risk factors of high blood pressure?
3. What are the two types of high blood pressure?
4. What is essential high blood pressure?
5. What is secondary high blood pressure?

Causes of Hypertension

Exact causes not known but there are some risk factors: Hereditary factors: race, age **(Men at greater risks, African Americans more than Caucasians).** Environmental and life style factors: salt, weight, stress, and alcohol, lack of exercise.

Test your knowledge on Hypertension

1. Name one hereditary risk factor for high blood pressure
2. Who is at greater risk?
3. Name three lifestyle risk factor

How Blood Pressure is measured

Measuring blood pressure means measuring the pressure needed to force blood through the blood vessels-first whole the heart is pumping (called *systolic* pressure),

and then while the heart is at rest (called *diastolic* pressure). A normal blood pressure reading might be 120/80, said as "120 over 80." The top number is the systolic pressure, and the bottom number is the diastolic pressure.

Hypertension detection begins with the proper measurement of blood pressure. Measurements are optimally taken with a mercury sphygmomanometer; otherwise, a recently calibrated aneroid manometer or validated electronic device can be used. Diagnostic measurements of blood pressure should not be taken when inmates are acutely ill or taking antihypertensive drugs, following the recent consumption of caffeine or use of nicotine, or during other situations in which the reading may be falsely elevated or depressed from baseline. Blood pressure should be measured using the following guidelines:

- **Inmates should be seated in a chair with their backs supported and their arms bared and supported at heart level.** Ideally the inmate should sit quietly in this position for at least five minutes before blood pressure is measured. Inmates ideally should refrain from smoking, eating, or ingesting caffeine during the 30 minutes prior to the measurement.
- **Under certain circumstances, measuring blood pressure in the supine (lay on your back) and standing positions may be helpful diagnostically**, for example, with older persons or with persons who have coexisting cardiovascular disease, congestive heart failure, peripheral arterial disease, or diabetes**.**
- **The appropriate cuff size must be used to ensure accurate measurement:** 12–14 cm wide for an average adult, 15 cm wide on an obese arm. The bladder within the cuff should be about 80% of the circumference of the arm, almost long enough to encircle the arm. Cuffs that are too short or too narrow may give falsely high readings. The recommended blood pressure cuff size is determined by arm circumference, as recommended by the American Heart Association.

- **The blood pressure should be taken in both arms at least once.** The normal difference in blood pressure between arms is 5 mm Hg or less, and sometimes as much as 10 mm Hg. Subsequent readings should be measured on the arm with the higher pressure. A pressure difference of more than 10–15 mm Hg between arms suggests arterial compression or obstruction on the side with the lower pressure and warrants further evaluation.

Test your knowledge on Hypertension

1. How is the recommended blood pressure cuff identify?
2. What position should you take when checking your blood pressure?
3. How is your blood pressure affected if you cuff is too big or too small?
4. Should you drink coffee or smoke cigarette prior to checking your blood pressure?

Blood pressure numbers and what they mean

Your blood pressure is recorded as two numbers:

- **Systolic blood pressure** (the upper number) indicates how much pressure your blood is exerting against your artery walls when the heart beats.
- **Diastolic blood pressure** (the lower number) indicates how much pressure your blood is exerting against your artery walls while the heart is resting between beats.

While the diastolic blood pressure stays at about the same level all the time, the systolic blood pressure changes frequently, depending on day-to-day activities and stress.

Why blood pressure is measured in mm Hg

The abbreviation mm Hg means millimeters of mercury. Why mercury? Mercury was used in the first accurate pressure gauges and is still used as the standard unit of measurement for pressure in medicine.

Test your knowledge on Hypertension

1. What is systolic blood pressure?
2. What is diastolic blood pressure?

3. When is your heart resting?
4. What does measuring blood pressure means?
5. What will cause elevation of the systolic blood pressure?

How is high blood pressure Diagnosed?

An occasional elevated number may not indicate high blood pressure. It takes several repeatedly elevated pressures to diagnose hypertension. According to American heart association, it is diagnosed if blood pressure remains elevated in three consecutive office visits. When blood pressure is too high (either systolic or diastolic, or both) and remains high, blood cannot flow freely through the arteries and the heart has to pump harder.

Hypertension is diagnosed with an accurately measured systolic blood pressure (SBP) of 140 mm Hg or greater *or* a diastolic blood pressure (DBP) of 90 mm Hg or greater. A lower diagnostic threshold for intervention is indicated for persons with diabetes and/or renal disease: SBP of 130 mm Hg or greater *or* a DBP of 80 mm Hg or greater.

Which number is more important?

Typically, more attention is given to systolic blood pressure (the top number) as a major risk factor for cardiovascular disease for people over 50. In most people, systolic blood pressure rises steadily with age due to the increasing stiffness of large arteries, long-term build-up of plaque and an increased incidence of cardiac and vascular disease.

However, elevated systolic or diastolic blood pressure alone may be used to make a diagnosis of high blood pressure. And, according to recent studies, the risk of death from ischemic heart disease and stroke doubles with every 20 mm Hg systolic or 10 mm Hg diastolic increase among people from age 40 to 89. A person has hypertension when either systolic or diastolic blood pressure is at or above 140/90 mmHg.

Test your Knowledge on Hypertension

1. Which of these is more important- Systolic or Diastolic and why?
2. What number will give you a diagnose of high blood pressure?
3. What is the risk of an increase in 20mmHg systolic and 10mm Hg diastolic?

Categories and Stages of High Blood pressure (JNC 8, 2014)

There are five categories of blood pressure as recognized by the AHA and the Eighth National Joint Commission:

Table 3 (*National institute of Health, 2014)*

Classification of Blood Pressure	Systolic (mmHg)	Diastolic (mmHg)
Normal	<120	<80
Prehypertension	120-139	80-89
Stage 1	140-159	90-99
Stage 2	160-179	100-109
Stage 3	>180	>110

- **Normal blood pressure**

  Congratulations on having blood pressure numbers that are within the normal (optimal) range of less than 120/80 mm Hg. Keep up the good work and stick with heart-healthy habits like following a balanced diet and getting regular exercise.

- **Prehypertension (early stage high blood pressure)**

  Prehypertension is when blood pressure is consistently ranging from 120-139/80-89 mm Hg. People with prehypertension are likely to develop high blood pressure unless steps are taken to control it.

- **Hypertension Stage 1**

  Hypertension Stage 1 is when blood pressure is consistently ranging from 140-159/90-99 mm Hg. At this stage of high blood pressure, doctors are likely to prescribe lifestyle changes and may consider adding blood pressure medication.

- **Hypertension Stage 2**

  Hypertension Stage 2 is when blood pressure is consistently ranging at levels greater than 160/100 mm Hg. At this stage of high blood pressure, doctors are likely to prescribe a combination of blood pressure medications along with lifestyle changes.

- **Hypertensive crisis**

  This is when high blood pressure requires emergency medical attention. If your blood pressure is higher than 180/110 mm Hg and you are NOT experiencing symptoms such as chest pain, shortness of breath, back pain, numbness/weakness, changes in vision or difficulty speaking, wait about five minutes and take it again. If the reading is still at or above that level, you should CALL 9-1-1 and get help immediately. Learn more about the two types of hypertensive crises.

Test your health Literacy on Hypertension

1. Name the five stages of blood pressure
2. What is a normal blood pressure?
3. What does a blood pressure higher than 180/110 mean?
4. What is stage 2 hypertensions and what is the parameter?
5. What is stage 2 hypertensions and what is the parameter

How Do You Feel with High Blood Pressure? (AHA, 2014).

There's a reason it's often called the "silent killer". Most of the time, high blood pressure (HBP or hypertension) has no obvious symptoms to indicate that something's wrong. The best ways to protect yourself are being aware of

the risks and making changes that matter to control high blood pressure.

High blood pressure often has no signs or symptoms (CDC, 2012)

- Nearly 20% of people with high blood pressure one out of every five don't even know they have it.
- High blood pressure develops slowly over time and can be related to many causes.
- High blood pressure cannot be cured. However, it can be managed very effectively through lifestyle changes and, when needed, medication.
- You might develop severe headache, confusion, or dizziness if your blood pressure is dangerously high.
- **Know your numbers** ***the best way to protect yourself is to learn where you stand by measuring your blood pressure.
- **Recognize your risks**

  Being aware of your risk factors the physical and lifestyle attributes that can make you more likely to develop high blood pressure can help you identify changes you can make to avoid the threats to your health that can result from your blood pressure being too high for too long.

Test your knowledge on Hypertension

1. Why is blood pressure called "the silent killer"?
2. Yes, or No, is there a cure for high blood pressure?
3. Can you control your high blood pressure?
4. How can you protect yourself from high blood pressure?
5. What are the symptoms of severely high blood pressure?

How blood pressure is monitored (AHA, 2014).

According to the guidelines of the AHA and the bureau of Prisons,
Inmates diagnosed with hypertension should be monitored through individualized follow-up evaluations with a frequency dependent on the inmate's medical history, cardiovascular risk factors, symptoms, and degree of hypertension detected. Lifestyle

changes are the first line of treatment for hypertension. The following guidelines should be considered for monitoring inmates' blood pressure:

- **If SBP is <120 mm Hg and DBP is <80 mm Hg:** Inmates in this range should have their blood pressure rechecked at their next periodic physical examination.
- **If Systolic blood pressure (SBP) is 120–139 mm Hg or Diastolic blood pressure (DBP) is 80–89 mm Hg: Inmates in this range who do not have cardiovascular disease or risk factors** should be given information and education about lifestyle modification, and should have their blood pressure rechecked in 1 year.
- **Inmates in this range who do have cardiovascular risk factors** should be reevaluated with repeated blood pressure measurements during the next 6 months; if elevated blood pressure is confirmed by these readings, the inmate should be referred to a clinician for classification and baseline evaluation.
- **All inmates** whose blood pressure is in this range or higher should also be screened for diabetes.
- **If SBP is 140–159 mm Hg or DBP is 90–99 mm Hg:** Inmates in this range should have their blood pressure rechecked within 2 months; if hypertension is confirmed, they should be referred to a clinician for classification and baseline evaluation.
- **If SBP is 160 mm Hg or DBP is 100 mm Hg:** Inmates in this range should have their blood pressure rechecked within 1 month or as soon as medically indicated; if hypertension is confirmed, they should be referred to a clinician for classification and baseline evaluation.
- **If SBP is 180 mm Hg or DBP is 110 mm Hg:** Inmates in this range should be evaluated for signs or symptoms of acute target organ damage (see Hypertensive Crises in Section 5 below). Symptomatic inmates should be managed as a hypertensive emergency case or hypertensive urgency case. If the inmate is asymptomatic, he/she should be referred to a clinician

immediately for confirmation of blood pressure elevation and initiation of antihypertensive therapy (usually with two drugs—a thiazide, plus either a beta blocker or an ACE inhibitor as first choices.)

Test your knowledge on Hypertension

1. What should your health care provider do if your blood pressure is Systolic blood pressure (SBP) is 120–139 mm Hg or Diastolic blood pressure (DBP) is 80–89 mm Hg.
2. What should your health care provider do if your blood pressure is SBP is 140–159 mm Hg or DBP is 90–99 mm Hg?
3. What should your health care provider do if your blood pressure is SBP is 160 mm Hg or DBP is 100 mm Hg?
4.

Dangers of High Blood Pressure if not controlled

Target Organ Damage: Heart Attack and Angina, Heart Failure, Brain, Kidneys, Eyes.

High blood pressure (HBP or hypertension) puts your health and quality of life in danger. The question is, **can hypertension cause other problems?**

When your blood pressure is too high for too long, it damages your blood vessels and LDL cholesterol begins to accumulate along tears in your artery walls. This increases the workload of your circulatory system while decreasing its efficiency. As a result, high blood pressure puts you at greater risk for the development of life-changing and potentially life-threating conditions. Left uncontrolled or undetected, high blood pressure can lead to:

- **Heart attack**: High blood pressure damages arteries that can become blocked and prevent blood from flowing to tissues in the heart muscle. A heart attack, also called myocardial infarction (MI), occurs when a blood vessel that leads to the heart muscle becomes blocked. Often, the heart gives a warning that something is going wrong by producing angina, or chest pain). Nitroglycerin

is taken by mouth to control the chest pain. If chest pain occurs and blood pressure is not controlled, this is a risk of heart attack and death.

- **Stroke**: High blood pressure can cause blood vessels in the brain to burst or clog more easily. A stroke occurs when tiny vessels in the kidneys become blocked, or when too much pressure causes the arteries to burst and bleed into the brain. Without a supply of blood, and the oxygen and nutrients it provides, brain tissue dies. The functions controlled by that part of the brain are lost. The effects of a stroke, therefore, cover a wide range: minor disabilities, paralysis on one side of the body, difficulty breathing, or death.
- **Congestive Heart failure**: Increase workload from high blood pressure can cause the heart to enlarge and fail to supply blood to the body. Congestive heart failure (CHF) means that not enough fluid is being eliminated from the body, and excess fluid is ending up in the lungs and around the heart. Because high blood pressure forces the heart to work harder to pump blood to the rest of your body, the heart weakens over time. The heart muscle ultimately works less efficiently, losses it elasticity, and becomes enlarged in an effort to "keep up." A person with CHF becomes short of breath (sometimes with a cough), Experiences weakness, and retains fluid around the ankles. Without medical intervention, the heart will stop working.
- **Kidney disease or failure**: High blood pressure can damage the arteries around the kidneys and interfere with their ability to effectively filter blood. Kidney failure occurs when tiny vessels in the kidneys become blocked. Because the kidneys shrink and become irregular, they can no longer cleanse the body of wastes. As kidney failure increases, the body is slowly poisoned, and dialysis or organ transplantation may be necessary.
- **Vision loss**: High blood pressure can strain or damage blood vessels in the eyes.
- **Sexual dysfunction**: This can be erectile dysfunction in men or lower libido in women.

- **Angina**: Over time, high blood pressure can lead to heart disease or microvascular disease. Angina, or chest pain, is a common symptom.
- **Peripheral artery disease (PAD)**: Atherosclerosis caused by high blood pressure can cause a narrowing of arteries in the legs, arms, stomach and head, causing pain or fatigue.

Test your knowledge on Hypertension

1. Name three diseases cause by high blood pressure
2. What is congestive heart failure?
3. What is PVD?
4. What is a heart attack?
5. How does high blood pressure cause Kidney failure?

Your best protection is knowledge, management and prevention

- Know your numbers - The best way to know if you have high blood pressure is to have your blood pressure checked.
- Understand the symptoms and risks - Learn what factors could make you more likely to develop high blood pressure and determine your risk for serious medical problems.
- Make changes that matter - Take steps to reduce your risk and manage blood pressure. Make heart-healthy lifestyle changes, take your medication as prescribed and work in partnership with your doctor. (exercise 5 days a week for at least 30minutes, eat foods low in salt or sodium)

High blood pressure and hypertensive crisis.

In most cases, the damage done by high blood pressure takes place over time. If your blood pressure readings suddenly exceed 180/110 mm Hg, wait five minutes and test again. If your readings are still unusually high, call 9-1-1 immediately especially if you are experiencing chest pain, shortness of breath, back pain, numbness/weakness, vision changes or difficulty speaking. You could be experiencing a hypertensive crisis.

High blood pressure and metabolic syndrome (insulin resistance syndrome)

Metabolic syndrome is a group of risk factors, including high blood pressure, that raises risk of heart disease, diabetes, stroke and other health problems. It is diagnosed when any three of these risk factors are present:

- High blood glucose (sugar)
- Low levels of HDL ("good") cholesterol in the blood
- High levels of triglycerides in the blood
- Large waist circumference or "apple-shaped" body
- High blood pressure

Test your knowledge on Hypertension

1. What happens if your pressure is high for too long?
2. What are healthy lifestyle changes?
3. Name three organs that can be damaged by high blood pressure
4. What is metabolic syndrome
5. When is metabolic syndrome diagnosed?
6. When do you call 9-1-1

Lifestyle modification to control high blood pressure (Woods, Lanza, Dyson & Gordon, 2013).

Lifestyle changes are the first line of treatment for hypertension. Below are what you can do to help control hypertension:

1. **Lose weight**: Losing weight may lower your blood pressure to a normal level, or may reduce the amount of blood pressure medication that you need to take. In fact, being overweight can make it more difficult for blood pressure medication to work. Check with a health care provider to determine and ideal body weight.
2. **Exercise (aerobic) regularly**: Aerobic exercise makes the heart blood vessels function more effectively and can help you lose weight. Walking or riding a stationary bicycle for at least 30 minutes, 3-5 times a week, are good aerobic

choices. Avoid muscle-building exercises such as weight lifting, because they may actually increase blood pressure. Check with a health care provider before starting any exercise program. Begin exercise slowly and increase the level of exercise gradually. Don't overdo it!

3. **Reduce sodium (salt) in your diet**: Eliminating added salt from your diet is an important way to lower blood pressure. Restrict sodium intake to 3-4 grams per day (about 11/2- 2 teaspoons of salt), including the salt you add to food and the salt that's already in food. Commercially prepared food (processed meat, flavored rice mixes, instant pasta mixes, and many snacks and crackers) contain a large amount of salt. Check the nutritional information on the back of packages.
4. **Eat Foods with Less Fat**: Foods high in fat are also high in calories, which can lead to weight gain. In addition, some sources of fat (animal fats, in particular) are also high in cholesterol. A high-cholesterol diet can cause plaque buildup inside blood vessels, which raises blood pressure and leads to other serious conditions.
5. **Stop Smoking**: Smoking damages and constricts blood vessel and is, by itself, a risk factor for stroke and heart disease. In fact, smoking a cigarette within 20 minutes of your blood pressure being taken can actually cause a higher reading
6. **Avoid Extra Caffeine**: Drinking more than 2 or 3 cups of coffee or other caffeinated beverage each day may raise blood pressure. Caffeine can quickly raise blood pressure, but it generally does not keep it elevated. Try substituting decaffeinated coffee, tea, or soda.
7. Making lifestyle changes like these not only helps lower your blood pressure, but it can be a source of pride as you take charge of your health. Consult with a health care provider on how to plan and proceed with these changes.

Test your knowledge on Hypertension

1. Name 3 lifestyle changes to make to improve or avoid high blood pressure?

2. How does smoking affect blood pressure?
3. Why should we reduce salt or sodium in our diet?
4. What kind of exercise should you do?
5. How many minutes and how many days a week should you exercise?

What Medications Can Be Used to Control Hypertension? (Panjabi, Lacey, Bancroft, & Cao, 2013).

- Your doctor may prescribe medications if lifestyle changes alone do not control your blood pressure, or if your blood pressure is exceptionally high.
- Your health care provider will explain the medication, including the side effects, and will closely monitor how well it controls your blood pressure. Be sure to ask any questions you might have!
- Most people have few, if any, side effects from blood pressure medications. However, if different or worse symptoms appear after taking the medication, tell a health care provider right away.
- High blood pressure medication only works when it's taken as directed. *Never* stop taking a medication without a doctor's consent. Abruptly stopping blood pressure medication can cause a sudden, life-threatening increase in blood pressure. Follow the instructions and take your medication at the same time every day.

In selecting an effective blood pressure medication for you using the guidelines from AHA, your doctor will consider factors such as race, sex, age, and other medical conditions you might have. There are several major groups of blood pressure medications:

Diuretics, or "water pills" (such as hydrochlorothiazide), remove excess fluid from the body, which means less work for the heart. Diuretics also remove salts from the body. While it is helpful to remove excess sodium, some diuretics also remove

potassium. To avoid losing too much potassium, patients using diuretics should be sure to eat and adequate amount of fruits and vegetables. Diuretics can be extremely effective and are often the first medication used to treat hypertension.

Beta-blockers are also frequently used as early treatment for high blood pressure. Some beta-blockers are used to treat high blood pressure when the patient has had a heart attack or has other heart-related problems such as angina, heart beat irregularities, or palpitations. Some beta-blockers cannot be used with asthma patients because they may worsen wheezing and breathing problems.

ACEIs (angiotensin converting enzyme **inhibitors**) are particularly effective for diabetics because they help slow the progression of kidney damage. ACEIs are also used in cases of congestive heart failure and to decrease the development of heart failure.

Calcium Channel Blockers are often used in patients with angina, rapid heart rate, and erratic heart rate.

Test your knowledge on Hypertension

1. Name the five groups of medication for the treatment of high blood pressure (Antihypertensive medications).
2. When diuretic remove excess water from your body, what happens to your blood pressure?
3. Which medication for high blood pressure is good for people with diabetes and why
4. Which high blood pressure is good for people with irregular or rapid heart rate?
5. For those patient who already had a heart attack, which blood pressure medication is recommended and why?

What medications can raise blood pressure?

Be aware that certain medications can raise blood pressure, and/or interfere with your blood pressure medication:

- Decongestants or cold preparations containing pseudoephedrine or phenylpropanolamine such as Robitussin
- Nonsteroidal anti-inflammatory drugs (NSAIDs) including ibuprofen (Motrin), naproxen (Anaprox), sulindac (Clinoril), piroxicam (Feldene), indomethacin (Indocin), and others. Some cold medicines also contain NSAIDs.
- Steroids, antidepressants, birth control pills, and many illegal drugs, such as cocaine, PCP, and all drugs similar to amphetamines.

If you have high blood pressure, be sure to check with your health care provider before taking other medications.

Test your knowledge on Hypertension

1. What are the illegal drugs that can raise blood pressure?
2. Name one decongestant or cold medication that can raise blood pressure
3. What are NSAID and how does it affect blood pressure if taken excessively.

Causes of Treatment Failure ("Resistant Hypertension") AHRQ .gov, 2010)

An important concept to remember about high blood pressure

1. Nonadherence to Therapy
    - Inmate concerned about confidentiality
    - Inadequate inmate education
    - Lack of involvement of the inmate in the treatment plan
    - Adverse effects of medication
    - Organic brain syndrome
2. Pseudo-resistance
    - "White-coat hypertension" or clinic elevations
    - Incorrect blood pressure cuff size (e.g., use of regular cuff on large arm)

3. Drug related causes
    - Doses too low
    - Wrong type of drug
    - Inappropriate combinations
    - Drug interactions and actions including:

      NSAIDs; oral contraceptives; amphetamines, including appetite suppressants; decongestants); antidepressants; adrenal steroids; licorice (may be found in chewing tobacco); dietary supplements containing ephedra, ma huang, or bitter orange; cocaine; cyclosporine; tacrolimus; and erythropoietin
4. Associated Conditions
    - Smoking
    - Increased obesity
    - Excessive alcohol use
5. Volume Overload
    - Excessive salt intake
    - Renal insufficiency
    - Inadequate diuretic therapy (eg, using a thiazide instead of a loop diuretic where creatinine is >2)
    - Fluid retention from reduction of blood pressure
6. Secondary Hypertension
    - Renovascular hypertension
    - Pheochromocytoma
    - Primary aldosteronism

Test your Knowledge on Hypertension

1. What is nonadherent to treatment?
2. Name two reasons some inmates are nonadherent
3. What is resistant high blood pressure?

4. What are some of the reasons for uncontrolled high blood pressure if when taking antihypertensive medications?

Points to Remember…

There are 3 very important concepts to remember about hypertension (Coleman, Hudson, & Maine, 2013):

1. Controlling blood pressure is something that you will need to do for the rest of your life. You can help control high blood pressure by eating sensibly, exercising regularly, and not smoking.
2. If you need medication to control your blood pressure, it should be taken every day, and at the same time every day**.** Be aware of side effects that might be related to the blood pressure medication you are taking. Remember that certain drugs may interact with blood pressure medication, or may themselves cause blood pressure to go up.
3. Controlling blood pressure may help you avoid several serious conditions- stroke, heart attack, kidney failure, and blindness **(**IHI.org, 2015). Seek medical attention immediately if you develop any symptoms of dangerously high blood pressure, such as:

- Severe headache, confusion, or dizziness
- Severe chest or back pain
- Severe shortness of breath
- Weakness or numbness in the arms and legs
- Coughing up blood or nose bleeds
- Visual disturbances

References

American Heart Association (2014). Why High blood pressure is a "Silent Killer". Retrieved from http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/UnderstandSymptomsRisks/Why-High-Blood-Pressure-is-a-Silent-Killer_UCM_002053_Article.jsp#.WPmDhFPyvwc

AHRQ .gov (2010). Using Health Literacy Tools. Retrieved from http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/pcmh-crosswalk.pdf

CDC.gov (2012). High blood pressure. Retrieved from http://www.cdc.gov/bloodpressure/.

American Association of Colleges of Nursing (AACN) (2006). *The essentials of doctoral education for advanced nursing practice.* Washington, DC: Author.

Coleman, C. A., Hudson, S., & Maine, L. L. (2013). Health literacy practices and educational competencies for health professionals: A consensus study. *Journal of Health Communication*, *18*(sup1), 82-102.

Institute of Medicine (2014). Clinical Practice Guidelines We Can Trust. Washington, DC: National Academies Press; 2014. Retrieved from http://www.iom.edu/Reports/2011/Clinical-Practice-Guidelines-We-Can-Trust.aspx

IHI.org (2015). Blood pressure visual aid for patient. Retrieved from

http://www.ihi.org/resources/Pages/Tools/BloodPressureVisualAidforPatients.aspx

National institute of Health (2014). The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood. Retrieved from www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm.Pressure. NIH Publication No. 04-5230.

National Commission on Correctional Health Care. (2014). Correctional Health care. Retrieved from htt://www.ncchc.or/filein/Guidance/Hypertension-2014-pdf.

Panjabi, S., Lacey, M., Bancroft, T., & Cao, F. (2013). Treatment adherence, clinical outcomes, and economics of triple-drug therapy in hypertensive patients. *Journal of the American Society of Hypertension*, *7*(1), 46-60.

Woods, L., Lanza, S., Dyson, W., & Gordon, M (2013). The role of prevention in promoting continuity of health care in prison reentry initiatives. *American Journal of Public Health, 103 (5), 830-838*

Appendix C: Conceptual Theoretical Model

The Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's opinion of chances of getting a condition	Define population(s) at risk, risk levels; personalize risk based on a person's features or behavior; heighten perceived susceptibility if too low.
Perceived Severity	One's opinion of how serious a condition and its consequences are	Specify consequences of the risk and the condition
Perceived Benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take; how, where, when; clarify the positive effects to be expected.
Perceived Barriers	One's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives, assistance.
Cues to Action	Strategies to activate "readiness"	Provide how-to information, promote awareness, reminders.

Self-Efficacy	Confidence in one's ability to take action	Provide training, guidance in performing action.

Appendix D: Health Literacy Module on Hypertension Evaluation Form

An Evidenced-Based Self-paced educational module to Improve health literacy on hypertension for inmates.

Activity Title: Comprehensive Health literacy on hypertension Educational module

Date:

As an expert in the field of hypertension management, please review the educational material and answer the following questions to the best of your ability. The comment section is to only be used should an answer to the question fall below# 3.

Agree Disagree

Content

1. The content is clear and concise 1 2 3 4

2. The content is capable of expanding health literacy knowledge on hypertension for inmates.... ..... 1 2 3 4

3. The content is consistent with the current practice standards and treatment Guidelines 1 2 3 4

4. The content is appropriate for patients in general and inmates specifically. 1 2 3 4

5. As an expert in management of hypertension, I would recommend this education to my colleagues/institution..... 1 2 3 4

6. The content demonstrates the importance of utilizing life style modification in the management of chronic disease such as hypertension.....1 2 3 4

7. The content clearly outlines the clinical consequences of uncontrolled hypertension 1 2 3 4 5

Instructional Methods

1. The instructional material was well organized..... 1 2 3 4

2. The instructional methods illustrated the concepts well..... .....1 2 3 4

3. The teaching strategies were appropriate for the activity.....1 2 3 4 5

Comments:

Appendix E: Recruitment Letter

Pamela Mokoko FNP-C, PMHNP-BC
165 Willow Oak Drive.
Richmond Hill, GA. 31324

To Whom It May Concern:

My name is Pamela Mokoko. I am currently a doctoral student at Walden University. I am in the process of completing the university requirements, which includes a final DNP project. This project focuses on the development of an educational module that looks to improve the knowledge of hypertension for inmates utilizing an evidenced-based model. The title of the project is "Self-paced Educational Module on Hypertension". You have been identified as an expert in the field of Primary care, specifically, management of hypertension. I am writing to see if you would be willing to take part in evaluating this project's content. The process involves reviewing of the educational module and responding to a rating scale, using an encrypted personal email, the "expert-rating tool" will be email to the project developer. This rating tool will be use to provide descriptive statistics in the body of the project. No further data collection will be needed once this rating tool is completed and returned. Since the Project developer is looking for 10 content experts in the field of Primary care and specifically, management of high blood pressure, not everyone who meets criteria will be selected. If all volunteers meet the criteria for selection, the first, 10 volunteers who respond to this invitation and the consent form, will be selected to participate in the health project. The Project developer will follow up with all volunteers to let them know whether or not they were selected for the study. A consent form to participate in the health project is attached to this invitation letter. I would be happy to discuss the project further should you have any questions or concerns. I can be reached at pamela.mokoko@waldenu.edu or via

phone at 916-225-1246. I appreciate your time and consideration in this matter. I look forward to your response.

Sincerely,

Pamela E. Mokoko