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Lifestyle Modifications to Reduce Hypertension in Obese Patients: A Clinical Practice Guideline

Tiffany Lynn Oates
Walden University

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Walden University

College of Nursing

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Tiffany Oates

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Review Committee

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Dr. Cheryl Holly, Committee Member, Nursing Faculty

Dr. Rosaline Olade, University Reviewer, Nursing Faculty

Chief Academic Officer and Provost

Sue Subocz, Ph.D.

Walden University

2022

Abstract

Lifestyle Modifications to Reduce Hypertension in Obese Patients: A Clinical Practice

Guideline

by

Tiffany Lynn Oates

MSN, Walden University, 2012

ASN, College of Southern Maryland, 2009

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2022

Abstract

In the United States, obesity affects almost 50% of the population with estimates of 60–70% of hypertension in adults attributable to adiposity. The practice gap addressed in this project is a lack of standardized patient education on lifestyle modifications aimed at reducing hypertension in the obese patient, which is the recommended first line of treatment for these patients. The practice focused questions were answered when evidence from the literature supported the implementation of a clinical practice guideline developed from evidence-based literature focused on patient education about lifestyle modification as the initial treatment for the reduction of hypertension in the obese patient. This project followed the Walden University *DNP Project Manual for Clinical Practice Guideline Development*. Three content experts evaluated this guideline for quality and rigor using the Appraisal of Guideline for Research and Evaluation (AGREE) II tool. The overall appraisal score was 83% with each of the six domains scoring above 79%, indicating that this was a high-quality guideline as all domains were scored above 70%. Four end users reviewed content and usability reporting that this guideline provides specific details about lifestyle modifications to recommend and will be helpful in guiding the educational conversations with patients. This newly developed guideline will provide evidence-based lifestyle modification education as a first line of treatment to reduce hypertension in the obese patient, which will address the gap in practice and provide a positive social change in the community by reducing the risk of associated morbidity and mortality and reduce the need for antihypertensive medication while being cost effective and readily available to areas with fewer resources.

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Dedication

This project is dedicated to my husband Randy and my daughters Lily and Violet who have been my absolute biggest supporters through this journey. I would also like to dedicate this to my mother Cheryl, who has been my number one fan and has always been so encouraging when the times got tough. To my dad John, thank you for your unwavering support.

Acknowledgments

I would like to acknowledge and express my deepest gratitude and thanks to Dr. Hayden for always keeping me on track and for also challenging me during this journey. I absolutely could not have done this without you. To my entire DNP committee, I appreciate your mentorship guidance through all steps of this project.

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Section 1: Nature of the Project

In 2018 the adult population in the United States had a 42.4% rate of obesity and a 49.6% rate of hypertension. The estimated annual medical cost to treat obesity related conditions in the United States was \$147 billion in 2008 (Centers for Disease Control and Prevention [CDC], 2021). Looking ahead, researchers predict that by 2030, if obesity trends continue unchecked, obesity-related medical costs alone could rise by \$48 to \$66 billion every year in the United States (Wang et al., 2011). As obesity is a major risk factor for the development of hypertension and with a disproportionate prevalence of obesity among rural U.S. adults, the problem further increases the overall health crises in rural areas, already burdened by fewer resources and greater barriers to health care access compared to urban areas (Lee, 2020). Lowering blood pressure levels is an effective means of reducing the rate of cardiovascular morbidity and mortality (Semlitsch et al., 2021). In adults with hypertension, the initial recommendations for reduction in blood pressure include weight loss and a heart-healthy diet (Arnett et al., 2019). There is only a modest impact on blood pressure reduction with pharmacologic treatment of obesity, demonstrating lifestyle changes may have greater impact on lowering obesity rates and reducing blood pressure (Semlitsch et al., 2021).

In a rural primary care clinic in the Midwest, I identified a practice gap in the lack of standardized patient education for the obese hypertensive client, with providers prescribing an antihypertensive medication as the first line of treatment although Herrod et al., (2017) recommends lifestyle modification as the initial treatment. The gap that I identified showed the importance of the development of a clinical practice patient

education guideline (CPPEG) to fill the gap by providing a standardized patient education guideline for the providers to use as the first line treatment for hypertension in the obese patient. The use of a standardized education plan for medical providers to follow provides patients with evidence-based lifestyle changes that can lower blood pressure, reduce weight, and improve their overall health. This CPPEG will positively affect social change by improving the quality of care medical professionals provide to ensure positive patient outcomes.

Problem Statement

The problem that I identified for this doctor of nursing (DNP) project was the lack of standardized patient education regarding lifestyle modifications aimed at reducing hypertension in the obese patient. In an initial review of the literature, lifestyle modifications were widely accepted and recommended as the first line treatment for hypertension and obesity (Herrod et al., 2017). Lifestyle modifications not only decrease the rates of obesity and reduce blood pressure but can improve a patient's overall health.

With higher risk factors for hypertension and obesity, combined with increased barriers and fewer resources for evidence-based health education, there was a great need to address this problem in the rural health care setting. According to the lead physician in the target setting where this project was implemented, approximately 60% of the patient population were obese patients with a known diagnosis of hypertension. The newly developed guideline includes a standard of care for the nonpharmacologic treatment for the seven medical providers to use with patients having a dual diagnosis of hypertension and obesity.

Korhonen et al. (2020) found that individuals who were started on antihypertensive medications prior to the initiation of lifestyle modifications may substitute the medication for a healthy lifestyle and continue an unhealthy lifestyle or even start engaging in one, which may reduce the effectiveness of pharmacotherapy and can increase obesity. This was concerning because providers at this rural family clinic often immediately start a patient on antihypertensive medications prior to recommending lifestyle modifications. This CPPEG will benefit nursing practice by increasing nurses' knowledge of the recommended first line management for hypertension in the obese patient. In a study by Guirardello (2017), providing standardized evidence-based information not only increased the quality of care provided to patients but also increased nurses' job satisfaction.

Purpose Statement

The gap in practice that I addressed in this DNP CPPEG project was the lack of standardized patient education regarding lifestyle modifications as the first treatment for hypertension in the obese client. In my search of the literature, I found support for lifestyle modifications as the first line treatment for hypertension, but no lifestyle modification standards or guidelines for providers to use in their patient education were found in the search. The previous standard of practice at this rural family clinic was the use of antihypertensive medications as the first line treatment for hypertension in the obese patient.

I used the following practice focused questions to guide this project:

- What evidence from the literature supports the implementation of a CPPEG focusing on standardized guidelines for patient education about lifestyle modification as the initial treatment for the reduction of hypertension in the obese patient?
- What evidence is available for the development of a CPPEG to address hypertension in clients with obesity?

In this CPPEG project, I addressed the lack of evidence-based standardized patient education on lifestyle modification such as a heart healthy diet and exercise as the first line treatment to reduce hypertension in the obese patient. The application of this CPPEG is anticipated to reduce the necessity of starting an antihypertensive medication for newly diagnosed hypertension in the obese patient and either a dose reduction or a reduction in the number of antihypertensive medications prescribed to obese patients already diagnosed and being treated for hypertension, thus providing improved quality of care and patient outcomes.

Nature of the Doctoral Project

For the development of a CPPEG for use by providers to educate obese patients on lifestyle modifications to reduce hypertension, I conducted an extensive literature review to identify peer reviewed articles, in English, from 2017 to present from databases in Walden University's library, including: ProQuest, EBSCO, Cochrane Library, Pub Med and Medline. I also explored the CDC to identify up-to-date evidenced-based information and statistics. The search terms that I used included: *hypertension AND obesity, hypertension AND lifestyle modification, hypertension treatment guidelines*, and

weight loss AND hypertension. I placed the pertinent literature in a literature matrix and graded it according to the grading criteria of Fineout-Overholt et al. (2010).

I developed the lifestyle modification CPPEG following Walden's *Manual for Clinical Practice Guideline Development* and used the Appraisal of Guidelines for Research and Evaluation (AGREE) II model (AGREE Next Steps Consortium, 2013) for guidance. After the I developed the CPPEG, I identified a panel of three experts—one medical doctor, one nurse practitioner, and a master's prepared nursing educator—who reviewed this newly developed guideline using the AGREE tool. The AGREE II tool includes 23 items over six domains, including scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence of this project. Once the appraisals were complete the scores were averaged through the AGREE website (agreetrust.org), I retrieved the final scores, reviewed the results, and made revisions as indicated.

After revisions, I shared the CPPEG with a group of four end-users (providers of patients with hypertension who are obese), two registered nurses, a nurse practitioner, and a medical doctor reviewed the newly developed CPPEG for content and useability. Once the CPPEG was validated, I shared the guideline with administration for final approval and eventual implementation. The CPPEG has aided practitioners in correcting the identified gap in practice and will lead to improved patient outcomes by reducing rates of hypertension among the obese patient population using lifestyle modification.

Significance

The stakeholders who will be impacted by this newly developed CPPEG that addresses lifestyle modification to treat hypertension in the obese patient are the medical providers, including nursing staff; the patients with hypertension who are obese; and the community. The medical providers now have an evidence-based, standardized patient education guideline which serves as the initial treatment for hypertension in the obese patient. After initiation of this CPPEG project, the goal is positive patient outcomes with a reduction in blood pressure and weight, and improvement in the overweight hypertensive patients' overall health, improving quality of life. Nurses now have easily accessible standardized information available, which has made it easier to apply evidence-based practice to the care they are providing the patients of the community.

With the reduction of hypertension, despite the economic status of the patient, the community will see a reduction in patient mortality and an increase life expectancy (Sudharsanan, 2019). Acknowledging that rural residents disproportionately possess characteristics including lower education, poverty, and generally a lack of health care resources (Probst et al., 2020), this CPPEG addresses the need for patient education on hypertension in the obese patient which can decrease a patients' mortality. With a lack of health care resources available it was important to take advantage of the time that a patient can come into the clinic. Providing patients with standardized, evidence-based guidelines on lifestyle interventions which can be done at home can empower the patients to take an active role in improving their health.

This project will result in benefits for the general community by including evidence-based information that obese community members can use to empower themselves in the management of hypertension. With the rural setting having fewer resources than the urban setting (Lee, 2020), the reduction of hypertensive obese patients in this community can lead to decreased health care spending. The reduction in the prevalence of cardiovascular diseases, including hypertension, is associated with decreased health care spending (Dieleman et al., 2017). The health care funds that were used for hypertension in the obese patient can then be put toward other medical or mental conditions that are found in the rural setting.

With the high incidence of hypertension in the obese patients at this rural clinic, it was urgent to address the lack of information the providers were using to educate their patients. With standardized evidence-based guidelines, providers now incorporate this information into their patient education, thereby taking advantage of their time with the patients to educate patients on appropriate lifestyle modifications including exercise and the DASH diet (Naci et al., 2019), which can help reduce hypertension and obesity, and can lead to improved health outcomes. Decreased use of antihypertensive medications, weight reduction, improved overall health, and increased quality of life are the benefits expected with implementation of this CPPEG. This project can be transferred to any similar practice without making any changes. A healthy diet and increased exercise can benefit patients from all practice areas. It is widely recognized that the DASH diet is associated with a lower risk of all-cause and cause-specific mortality and the higher the adherence to the DASH diet, the higher the risk reducing association (Soltani et al.,

2020). Vasiliadis and Belanger (2018) stated that maintaining and even increasing physical activity is necessary for an improved health care related quality of life.

The implementation of this CPPEG provides positive social change for people who are hypertensive, empowering them to apply lifestyle modifications which will lead to a decrease in the need for antihypertensive medications and an overall improvement in the quality of the person's life. The development of this CPPEG was aligned with Walden University's mission statement to provide opportunities to a diverse community of career professionals to transform themselves to scholar-practitioners who will allow them to effect positive social change. This CPPEG may be used to create positive social change through the deliberate process of creating and applying ideas, actions, and strategies with the goal to promote the quality of care available to individuals and in the provision of available patient education for the members of this rural community.

Summary

The evidence found in the literature supports the use of lifestyle modifications as the first step in the reduction of hypertension in obese patients. In a systematic review by Treciokiene et al. (2021) interventions on lifestyle modifications that were provider-led had a higher percentage of patients with well controlled blood pressure than found with patient led interventions and based on the results recommended provider-led lifestyle interventions be implemented in daily practice. According to American College of Cardiology, CPPEG lifestyle modification including weight loss, increased physical activity, and adoption of the DASH diet should be initially implemented in all patients with a diagnosis of pre-hypertension or hypertension (Whelton et al., 2018).

In this doctoral project, I bridged the gap of a lack of a standardized patient education guideline as the initial recommended management of hypertension in the obese patient. By developing this CPPEG, I addressed the identified needs and clearly outlined a standardized evidenced based lifestyle modification education plan that providers can use to educate patients. In the next section I discuss the AGREE II model that informed this project, local background, and context, as well as describe my role as the DNP student in this project.

Section 2: Background and Context

The problem that I identified for this DNP project was the lack of standardized patient education available for use by medical providers regarding lifestyle modifications aimed at reducing hypertension in the obese patient.

I used the following practice focused questions to guide this project:

- What evidence from the literature supports the implementation of a CPPEG focusing on standardized guidelines for patient education about lifestyle modification as the initial treatment for the reduction of hypertension in the obese patient?
- What evidence is available for the development of a CPPEG to address hypertension in clients with obesity?

To address the gap and answer the questions, I created a CPPEG for providers to use as first line management for hypertension in the obese patient. In this section I discuss the AGREE II model that informed this project, address the significance of this project to nursing practice, discuss the local background and context for the project, and describe my role as the DNP student in this project.

Concepts, Models, and Theories

A clinical practice guideline (CPG) is a specific clinical recommendation regarding the needs of a specific population that has been compiled from a comprehensive evaluation of up to date and evidence-based knowledge available (Ciquier et al., 2021). The purpose of a CPG is to ensure clinicians have the most current and complete evidence available to adequately inform their decision and guide their clinical

practice (Middleton et al., 2019). Guided by statements from the AGREE II tool, I developed the CPPEG. The International AGREE research team developed this tool to assess the methodological quality and transparency of practice guidelines to be used as the international standard (Brouwers et al., 2016). The quality of newly developed guidelines should be evaluated, and the quality confirmed before being used as a reliable source for decision making. The AGREE II tool has six quality domains, scope and purpose, stakeholder involvement, the rigor of development, clarity of presentation, applicability, and editorial independence (Hoffmann-Eßer et al., 2017) to evaluate the different aspects of the practice guideline.

Shallwani et al. (2019) used the AGREE II tool to perform a quality evaluation of physical activity recommendations for cancer patient guidelines and found that the strengths of current guidelines include identification of scope and purpose and the clarity of the presentation, but improvement is needed in the applicability of the guidelines. After a review of 21 clinical practice guidelines addressing appropriate management of the pediatric diabetic patient using the AGREE II tool, Bhatt et al. (2018) found approximately two thirds of the guidelines reviewed to be of moderate to low quality and the remaining one third higher in quality. Using the AGREE II tool can help identify the quality of guidelines, revise to strengthen the quality, and can be applied to a variety of practice guidelines.

Relevance to Nursing Practice

Hypertension had been a long-recognized issue when, in 1977, Edward Freis, in his seminal trial, demonstrated the benefits of lowering blood pressure (Luscher, 2020).

Drevenhorn (2018) stated that nursing practice in the care of hypertension is comprised of counselling about lifestyle changes, blood pressure measurement, and being a translator for the medical provider. It has been found that dietary sodium excess appears to play a significant role in the pathogenesis of hypertension (Rossier, 2017). These studies demonstrate the importance of nursing education and patient counselling regarding lifestyle changes, especially the DASH diet to help lower sodium intake, with the desired outcome of reducing hypertension (Antonia Rodriguez et al., 2019).

According to the CDC (2021) in 2016 there were 32.8 million physician office visits and in 2018 there were 1.1 million emergency room visits with essential hypertension as the primary diagnosis. The annual number of deaths contributed to essential hypertension per 100,000 people is 11.1 (CDC, 2021). Using the time during office visits in the primary care setting to educate patients on lifestyle modifications to prevent hypertension or reduce their current blood pressures can prevent unnecessary hospitalizations and death due to uncontrolled hypertension. The current state of nursing practice in this area is based on patient education. Nurses' involvement in hypertension prevention and treatment begins by simply taking the patients' blood pressure and offering some education on hypertension (Dennison Himmelfarb & Commodore-Mensah, 2016). Nurses provide the education, counseling, and skill building necessary to ensure patients are undertaking lifestyle changes that may favorably influence their blood pressures and nurses actively engage patients in care using a combination of strategies to prevent, recognize, and respond to adherence problems and thereby maximize long-term control of blood pressure (Dennison Himmelfarb & Commodore-Mensah, 2016), but not

all nurses are current in their knowledge on the importance of dietary and exercise changes. While the expectation found in an in-depth literature review is that nurses will educate the patients on life-style changes, I found no current standardized educational guidelines for patient education on hypertension. Without educational standards, it is up to the individual nurse or the clinic to identify the main lifestyle modification factors that can improve blood pressure and assuring this information is available to the nurses who then can pass it on to the patients.

The 2018 Hypertension Guidelines of the European Society of Cardiology and European Society of Hypertension disregards the recommendation of initial treatment of hypertension with lifestyle modifications and recommend two antihypertensive medications as the initial treatment of hypertension with no mention of lifestyle modification (see Mancia, 2019). Current medical practice at this clinic is more in line with the recommendations above as antihypertensive medication is the first line treatment for hypertension, not lifestyle recommendations. These recommendations vary from the 2017 American College of Cardiology recommendations which are to first initiate lifestyle modification, including weight loss, increased physical activity, and adoption of the DASH diet, with a diagnosis of prehypertension or hypertension (Whelton et al., 2018). Although there are recommendations that encourage lifestyle modifications, there were no guidelines for patient education regarding the prevention and treatment of hypertension. Through this doctoral project, I filled the gap-in-practice revealed in the literature by creating standardized evidence-based patient education for blood pressure improvement through lifestyle modification such as the DASH diet and routine exercise.

Local Background and Context

The setting for this project was a rural primary care clinic in the Midwest. The city in which the clinic is located has a population of 2,691 people with a density of 2.7 square miles. In terms of racial makeup, the region is 91.1% White. Other races include African Americans who make up 0.28%, Native Americans who make up 0.94%, Asian Americans 0.038%, and the remaining 7% from other races. This primary care clinic is attached to a small 12 bed hospital that services the surrounding rural towns as the only emergency room and inpatient hospital within 32 miles. There are seven medical providers in the clinic who treat any of the patients who come for an appointment. The mission statement of the clinic is that they are dedicated to the long-term health of the community.

Approximately 65% of the patients at this clinic are hypertensive and of these patients, approximately half are on multidrug therapy for hypertension. Through medical documentation review and discussion with staff I discovered that lifestyle modification education or dietary counseling is rarely discussed with the patients during their visits to the clinic despite reports of poor dietary and exercise habits. There are no standards of care to include lifestyle modifications or teaching materials available to the patients in this clinic. When a patient is diagnosed with hypertension or initially started on an antihypertensive medication, a follow up appointment is recommended, but if the patient does not make the appointment there is no system in place to keep the patients accountable with their follow ups.

The Surgeon General's Call to Action to Control Hypertension is a federal initiative that seeks to avert the negative health effects of hypertension across the United States by identifying interventions that can be implemented, adapted, and expanded across diverse settings (U.S. Department of Health and Human Services, 2020a). The Office of Disease Prevention and Health Promotion creates and sponsors a program called Healthy People. Healthy People identifies public health priorities to help individuals, organizations, and communities across the United States improve health and well-being with the most recent version being Healthy People 2030, the initiative's fifth iteration. The initiative builds on knowledge gained previously over the span of 40 years (U.S. Department of Health and Human Services, 2020b). Hypertension can be a risk factor for other chronic illnesses and therefore one of the goals of Health People 2030 provides strategies to help people eat healthier, lose weight, and get more physical activity which can reduce the risk of high blood pressure, which may in turn reduce the risk of coronary artery disease, stroke, heart failure, and kidney disease (U.S. Department of Health and Human Services, 2020b).

Role of the DNP Student

Having recently moved from a very urban area in a large metropolitan city on the East Coast to this Midwestern rural area, I have experienced what I consider a culture shock. On the East Coast, it seemed that many people enjoyed exercising and eating a healthier diet than what I have seen in this rural area. During my first week at this rural clinic as the new medical provider, I was taken aback by the sheer number of patients with hypertension who were also obese. During my orientation at the clinic, many of the

patients who were seen were hypertensive and obese, but very little lifestyle modification education was encouraged or provided.

My role in this project was to develop a CPPEG that provided a guideline for the health care staff to use to provide evidence-based lifestyle modification education to the patients regarding hypertension. I conducted a literature review and developed a literature matrix (see Appendix A) to analyze the literature using Melynk et al.'s (see Appendix B; 2010) grading criteria. From the graded evidence, I followed Walden University's *Clinical Practice Guideline Manual* and was guided by the AGREE II grading tool (see Appendix C; Brouwers et al., 2016) in my development of a CPPEG (see Appendix D). I selected a group of three content experts and provided them with an introductory letter (see Appendix E), the Disclosure for Anonymous Questionnaires from Walden's Institutional Review Board, the literature matrix, the newly developed CPPEG, and the AGREE II scoring instrument and instructions (see Appendix F). I made guideline revisions based on the AGREE scores (see Appendix G) using the AGREE II Instrument. Once the consensus was reached among the content experts, I selected a group of end-users (two registered nurses, a nurse practitioner, and a medical doctor at the clinic) and asked them to evaluate the newly developed CPPEG for content and usability. Finally, I compiled a summary of findings based on the AGREE scores provided by the AGREE website (agreetrust.org), based on answers provided by the panel.

My motivation for this project was based on personal experience living an active and healthy lifestyle. My husband and I are relatively healthy, exercise regularly, and do not have a diagnosis of hypertension. Unfortunately, my father did not participate in a

healthy diet or routine exercise and suffered from hypertension which required him to take daily antihypertensive medications. After he suffered from a transient ischemic attack, which luckily had no long-term effects, he realized he needed to change his lifestyle to continue to live a long and healthy life. My father started walking every morning and eventually lost about 40 pounds. He has been able to reduce his blood pressure significantly and reduce the number of antihypertensive medications that he takes. He still requires one daily antihypertensive medication, but he is significantly healthier now after he made lifestyle modifications. Being a witness to the lifestyle modifications he made and watching his health improve was very encouraging and a testament to the benefits of making such an important improvement in one's health.

As a long-distance runner married to an Olympic weightlifting coach, there was a possibility for personal bias based on my personal experiences and values. Having personal experience in healthy eating and routine exercise, I see firsthand the results of positive lifestyle modification and its benefits on the human body. The CPPEG was developed based on evidence-based peer-reviewed literature and evaluated by a panel of experts and stakeholders, which decreased the potential for bias from my personal experiences and opinion.

Summary

The lack of education and follow up on lifestyle modification in the target clinic can be attributed to the lack of a standardized guideline on lifestyle modifications to reduce hypertension. Developing a CPPEG guided by the AGREE II tool, I produced a standardized teaching tool to advance nursing practice and fill the gap in practice that has

been revealed in the literature by providing an evidence-based resource for medical providers to use to assist them in patient education regarding lifestyle modification for the outcome of improved patient outcomes and quality of life. In Section 3, I discuss an overview of the practice-focused questions and sources of evidence, including methods that I use in my collection and analysis of the evidence for my DNP project.

Section 3: Collection and Analysis of Evidence

For this DNP project, I identified a problem regarding the lack of standardized patient education regarding lifestyle modifications aimed at reducing hypertension in the obese patient. Hypertension has been a long-recognized issue that affects people all over the world. Nurses and other clinical staff play an important part in the education and counseling of patients to assist them in making necessary lifestyle changes to improve their health. In this section I clarify the purpose of this project, identify the sources of evidence, and outline the procedures used for the collection of evidence in this doctoral project to address the practice-focused question.

Practice-Focused Question(s)

At this rural primary care clinic in the Midwest, I identified a gap between theory and practice as the lack of standardized patient education for the obese hypertensive client; providers prescribed an antihypertensive medication as the first line treatment while Herrod et al. (2017) recommends lifestyle modifications as the first line of treatment. This clinic had a higher-than-average number of obese hypertensive patients, with 65% of their patient population on antihypertensives. Rural areas, including this clinic, have relatively fewer resources and more barriers to health care access compared to urban areas (see Lee, 2020), which increased the need for a CPPEG focused on lifestyle modification.

To fulfill the purpose of this project, the practice focused questions that guided the project were:

- What evidence from the literature supports the implementation of a CPPEG focusing on standardized guidelines for patient education about lifestyle modification as the initial treatment for the reduction of hypertension in the obese patient?
- What evidence is available for the development of a CPPEG to address hypertension in clients with obesity?

Sources of Evidence

Sources of evidence that I used in the development of my CPPEG were evidence-based articles that I identified through an in-depth literature review of peer reviewed journal articles published within the past 5 years (2016–2021) and graded using the grading criteria by Melnyk and Fineout-Overholt (2015). These articles answered the practice focused question by providing evidence that supports a standardized guideline for patient education on a heart healthy diet and an exercise regimen aimed at the reduction of blood pressure in hypertensive patients. The selected articles provided a way to address the question in such a way that provides the patients with quality education which can ultimately increase quality of life through the reduction of their blood pressure through lifestyle modifications.

Evidence Generated for the Doctoral Project

Participants

The AGREE II framework recommends between two to four appraisers to enhance the reliability of the assessment (Brouwers et al., 2017); I selected three expert panelists to evaluate this newly developed CPPEG using the AGREE II scoring

instrument to confirm the quality of the new CPPEG. I chose expert panelists because of their familiarity with the uniqueness of rural medical care, their experience treating hypertension in the obese person, and their interest in preventative medicine and nonpharmacologic medical treatments. Patient education is a topic that affects each of these panelists in different ways. The panelists included a medical doctor who is the lead physician in the rural clinic and who has the final say in what patient education guidelines are adopted in the clinic; the nursing educator who has a master's degree in nursing and oversees the education of all nursing staff at the local hospital; and finally a nurse practitioner who works at a rural clinic who has an interest in the holistic treatment of chronic illnesses and focuses much of her practice on patient education. All three of the panelists have shown their support of this CPPEG project with verbal affirmations and excitement over more holistic treatments to include in their plans of care for hypertensive patients. There were four end users including two registered nurses, a nurse practitioner, and a medical doctor who reviewed the CPPEG and provided feedback on the content and usability. They will be the medical staff who will implement this CPPEG in their daily practice, being stakeholders who will implement the CPPEG, their input was valuable.

Procedures

I developed CPPEG based on current, evidence-based literature, and presented it to the expert panelists for evaluation and review using the AGREE II Instrument (The Agree Enterprise Trust, 2009). The AGREE II tool, a valid and reliable tool that provides a strategy to determine what information should be included in the CPPEG (The Agree

Enterprise Trust, 2009), guided the panelists in their evaluation of the CPPEG based on six domains including scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial evidence (see Brouwers et al., 2016). I used the results from the expert panelists to make revisions and once a consensus was agreed upon, shared the revised CPPEG with the group of end users to review for content and usability within this health care clinic. The content experts were asked to complete a summary evaluation of the project, process, and my leadership. Then I schedule a presentation of the final CPPEG to the clinic administration for final approval and implementation.

Protections

There were no identified ethical risks involved in the completion of this Patient Education CPPEG. Ethics approval was obtained from the Walden University Institutional Review Board (11-01-21-0245945), along with written agreement from the clinic. All three expert panelists received the preapproved Disclosure to Expert Panelist form with an accompanying letter introducing the form. The reviewers were not financially compensated for their participation, and they remained anonymous, only being identified through numbers and not names. The site location and name have remained masked. All electronic records, including the results from the AGREE website, are stored in a password protected file, that only I have access to, where they will be maintained for 5 years and then be deleted.

Analysis and Synthesis

I organized and synthesized the literature retrieved from the extensive literature search on a literature matrix and graded it using the grading criteria of Melnyk and Fineout-Overholt (2015). The system I used to record, track, organize, and analyze the evidence from the content experts was the AGREE trust website (Brouwers et al., 2016). The expert panelists entered their scores on the AGREE website and the site analyzed the scores and developed a report which provided an overall assessment of the CPPEG. A percentage was provided for each of the six domains of the AGREE II model and limitations were identified. After the results were compiled, I examined the scores and made modifications to the CPPEG as necessary before presenting the CPPEG to the end users. I then analyzed and synthesized the end users' feedback, reviewed their comments, and made modifications as needed. Once the necessary alterations were made based on the results of the AGREE website and feedback from panelists and end-users, the final report was compiled. I performed a thematic analysis from the responses of the content experts on the summary evaluation, reported the results in my final report, and will use them to improve my CPPEG development and leadership skills.

Summary

As evidenced in the literature, lifestyle modifications, specifically the adoption of an exercise routine aimed at weight loss and the DASH diet, have been shown to help reduce hypertension in the obese person (Whelton et al., 2018); however, a gap existed in that medical providers did not have a standardized guideline for patient education on lifestyle modification that was available for use as the first line non-pharmacological

treatment of hypertension. I addressed this gap in practice through the newly developed CPPEG by providing a standardized evidence-based guideline for patient education that health care staff can use, better preparing them to teach lifestyle modifications to reduce blood pressure and can subsequently answer the practice focused questions. The CPPEG's quality has been shown through the score of each of the six domains of the AGREE II tool. In the next section I discuss the findings and implications, recommendations, and the strength and limitations of the project.

Section 4: Findings and Recommendations

The local problem I identified for this DNP project was the lack of standardized patient education guidelines available for patient education on lifestyle modification as the initial recommended treatment for hypertension. The gap in practice was the lack of a standardized guidelines available which focused on evidence-based lifestyle modification methods to reduce a patient's blood pressure.

The practice focused questions I used to guide this project were:

- What evidence from the literature supports the implementation of a CPPEG focusing on standardized guidelines for patient education about lifestyle modification as the initial treatment for the reduction of hypertension in the obese patient?
- What evidence is available for the development of a CPPEG to address hypertension in clients with obesity?

The purpose of this project was to create a CPPEG for all providers to use as first line management for hypertension education in the obese patient.

Sources of evidence that I used in the development of the CPPEG were evidence-based articles that I identified through an in-depth literature review restricted to peer reviewed journal articles published within the past 5 years (2016–2021) and graded using the grading criteria by Melnyk and Fineout-Overholt (2015). These articles provided evidence that supports a standardized guideline for patient education on a heart healthy diet and an exercise regimen aimed at the reduction of blood pressure in hypertensive patients and provided current, peer-reviewed information to provide quality education for

patients which can ultimately increase quality of life through the reduction of their blood pressure through lifestyle modifications. Other sources of evidence that I generated through the project included the AGREE scores, the end users' reviews, and the summative evaluation by the content experts.

Findings and Implications

Three panelists provided evaluations of this newly developed CPPEG on the AGREE II website. The results addressed the six domains and the 23 items within those domains. High quality guidelines are those with domain scores that are all greater than 70% (AGREE enterprise, n.d.); the results from the expert panel for this CPPEG evaluation were all above 70%. Domain 1, scope and purpose scored a 93%; Domain 2, stakeholder involvement, scored 89%; Domain 3, rigor of development, scored 90%; Domain 4, clarity of presentation, scored 98%; Domain 5, applicability scored 79%; Domain 6, editorial independence, scored 86%; and the overall appraisal score was 83%.

One reviewer commented that the patient education section was very clear and easy to understand. Another that the CPPEG made it clear what the options for initial treatment were for hypertension in the obese patient, and that avoidance of medication was one of the goals; thirdly, the health benefits of lifestyle changes were clearly described, but no risks were discussed regarding these lifestyle modifications.

I did receive a few unanticipated scores, each of which I will clarify. Under Domain 1, regarding if the clinical questions were covered by the guideline, the clinical questions were fully discussed in the paper, but they were only briefly mentioned in the CPPEG due to the purpose and format of the CPPEG; the literature supports the use of a

standardized guideline which was developed based on current, peer-reviewed evidence and validated by a group of content experts through the AGREE II website. When asking if the views of the target population had been sought, under Domain 2, the views of the health care staff who will be educating patients using this clinical practice guideline was obtained through questionnaires prior to development of the guideline; stakeholder views were gathered through the AGREE scores and end-users' reviews. When asked if the guideline has been externally reviewed by experts prior to its publication, that is what the process with the AGREE II tool and this expert panel accomplished. In Domain 3, the criteria for selecting the evidence and the strengths and limitations of the body of evidence were clearly described throughout the body of the paper, but were not discussed in the CPPEG, again related to the purpose and format of the CPPEG. The literature overviews were provided to the content experts in the literature matrix.

The procedure for updating the guideline is provided in the CPPEG as it clearly states that the CPPEG will need to be reevaluated every 3 years or when new recommendations for lifestyle modifications for the treatment of hypertension are available. Under Domain 5, I am unable to foresee any barriers the staff will face in implementing the guideline but did state that providers should address barriers as they arise and before implementation. No tools will be required for the implementation of the CPPEG. The CPPEG itself is the only tool needed. There is no cost expected with the implementation of this project, aside from printing copies of the guideline for use by the staff. Finally, Domain 6, addressing the competing interests of guideline development group members, is not applicable because there were no other members of the

development group and no funding requested or received, therefore there are no identified competing interests or external invested interest in this project.

One concern voiced was that the CPPEG does not discuss barriers such as patient noncompliance with recommendations such as reducing poor diet choices versus adopting a healthy diet; this is not the purpose of this CPPEG. The goal of this CPPEG is to compile information to provide obese patients with hypertension the most up to date recommendations, increase the accessibility of evidence-based information, and encourage them to make lifestyle changes to help manage their hypertension. Discussing patient noncompliance with these recommendations should be addressed on an individual basis if the provider sees it as an issue; this is beyond the scope of this CPPEG. Patients who make some, or even just one, of the recommended changes will be celebrated, as it is important to celebrate the small changes.

After review of the AGREE II scores, I provided the above explanations to the expert panel for further clarification; after review of the clarification, all three of the content experts reported that the guideline met the criteria. I then presented the newly developed CPPEG to the end users for evaluation of content and usability. The feedback from the end users was overwhelmingly positive, with reports that this CPPEG is easy to read and understand and it provides specific details about what changes are recommended for lifestyle modifications. Two of the nurses reported that having this guideline available will be helpful in guiding the patient education conversation. One of the medical assistants who provides education to patients said that she was unaware of many of these recommendations and that she is going to make some of these lifestyle modifications to

lower her blood pressure so that she can be an example in encouraging the patients to engage in improved lifestyle modifications.

The expert panel, who are all stakeholders and will be affected by the implementation of this guideline, completed the summative evaluation (see Appendix H). The consensus of the summative evaluation results was exceedingly positive. All three expert panelists reported that there was good communication throughout this project. One of the expert panelists reported that they were pleased to be a part of this committee as this is a project that will directly affect their daily practice. They stated that it was helpful to be able to request changes in the development of the guideline before the implementation occurred. The expert panelists also mentioned that the entire process appeared well organized, which made overcoming unexpected challenges as direct and uncomplicated as possible.

The implications resulting from these findings support lifestyle modifications as the first recommendation in the treatment of hypertension in the obese person. Similar to Bray et al. (2018), my guideline supports lifestyle modifications as an effective method for weight loss which leads to a reduction in hypertension. This guideline is important to practice because keeping patients educated with the most up to date and evidence-based information is essential in helping patients help themselves with lifestyle modifications to improve their quality of life. This guideline will better prepare providers to follow evidence-based practice recommendations and arm the patients with beneficial information that can change the trajectory of their health and wellness. One comment from an expert panelist was that this is a very detailed guideline that could be

implemented for use immediately but would be improved if recommendations were addressed on the recommended timing of follow-up visits after the initiation of this guideline. The implementation of this guideline can improve the health of not only patients at this practice, but the whole community as well.

An increase in accessibility to evidence-based knowledge for providers which provides a free or low-cost tool for patients to help reduce their blood pressures can create a positive social change, especially for this community which is very rural and has few resources. Better control of blood pressure through lifestyle changes can lead to improved quality of life, decreased health care costs, and reduced risks of morbidity and mortality from hypertension. Another potential positive social change will be the ripple effect that can occur when we provide patient education on lifestyle modifications. Once patients make the recommended changes and can see and feel a positive improvement, they are more likely to share with others the positive effect the changes made. This can spread the current recommendations for patient education on lifestyle modifications through the community by word of mouth, which can in turn help other people manage their hypertension, creating a widespread positive social change.

Recommendations

The gap in practice for this DNP project was the lack of a standardized guideline for lifestyle modification recommendations for the treatment of hypertension. I addressed this gap by developing of a CPPEG for providers (see Appendix D) as a resource for evidence-based patient education information. This newly developed CPPEG should be implemented at the target facility as soon as possible to provide the recommended first

line treatment information for the numerous patients with hypertension who are obese. Once I have full approval from the administration, I will make the CPPEG readily available to the health care staff. I will be working with the staff to provide in-services and training, not only to educate them on the guideline but to answer questions and address concerns from the staff regarding the guideline. I will create a prompt in the medical record that when a diagnosis code of I10- (hypertension) is entered, it will automatically populate the new guideline recommendations. This will assure access to the guideline recommendations are readily available while conducting the patient visit when pertinent. With the recommendations autopopulating in the chart during the visit, the staff providing the education will be able to document the personalized patient education that was provided during the appointment directly in the medical record, possibly reducing documenting time as well as a more accurate record of what education was provided to the patients. My main goal for this CPPEG is that it will become an accepted guideline in multiple facilities to improve the up-to-date education recommendations provided to the hypertensive patient who is obese on evidence-based lifestyle modifications as first treatment for their hypertension. This can be achieved by my sharing the information with a variety of providers through publications and presentations.

I will begin the recommended implementation of this guideline by presenting the standardized education guideline to the staff and allowing them to become familiar with the new updated education and recommendations to help increase their confidence in lifestyle modification changes as a treatment for hypertension in the obese person. Next, the patient education guidelines will be implemented by the nurses. Visit times are

expected to slightly when the providers first introduce the new education, but as staff become more comfortable and fluent in providing the information in the guideline, the education time is expected to return to normal.

Strengths and Limitations of the Project

The focus of this DNP project was to fill a gap in practice which was the lack of education on lifestyle modifications being provided to obese patients as the first treatment for hypertension. One strength from this newly developed CPPEG is that I compiled current evidence-based information for several different areas of lifestyle modifications into one guideline. This is a strength because the reduction and treatment of hypertension is multifaceted and not solely dependent on one or two areas of lifestyle; this guideline addresses many of these areas which can contribute to hypertension. Another strength of this guideline is the staff portion of the guideline, which brings this same information, but with more detail, so that every staff member is providing the patients the same education and information each time a patient comes for a visit. This can help prevent mixed messages and outdated information from being presented to the patients.

One of the limitations for this DNP project was that it was carried out amid a pandemic and many of the clinical staff have been reading, learning about, and keeping up with the changes of the COVID-19 virus; therefore, they have reported less time to keep themselves up to date with current evidence-based information for other conditions. This is a limitation because, although the staff were not previously educating the patients with up-to-date recommendations, now their focus is on the COVID-19 virus and its frequent changes. This affected the timing by extending the schedule for carrying out this

project. The staff's knowledge on the treatment of hypertension needed to be measured and analyzed prior to working on the guideline so the guideline would address not only the evidence-based lifestyle modification recommendations, but also address the specific knowledge limitations from the health care staff, such as what body mass index is considered overweight and what blood pressure is considered hypertensive. Another limitation was time constraints. During the first half of this program, I had a very flexible schedule at my job and reliable childcare with my mother who lived one mile away from me. Then, about 8 months ago I moved across the country for a fantastic job opportunity. This current position is not as flexible, and I have no family to help me with picking my children up from school or taking them to activities. It has been especially challenging with most of my clinical hours being done since I have moved. I have a very supportive husband, but with both of us working, it has been a real struggle to keep up with our family obligations while still making a point to spend quality time with our children after such a big change with the move.

Through this experience, and through the suggestions from the expert panel, my recommendation for a future project would be the development of a similar CPPEG that addresses the prevention of hypertension and obesity with lifestyle recommendations geared toward children and adolescents.

Summary

Three expert panelists evaluated the newly developed CPPEG using the AGREE II appraisal instrument and all three favored the CPPEG with scores greater than 70% in all six domains. The feedback received from the expert panelist and end users was

positive and encouraging. The implications resulting from these findings support lifestyle modifications as the first line of treatment for persons who are obese and have hypertension. This CPPEG will be implemented at the target facility as soon as possible to address the gap by providing the recommended first line lifestyle modification for patients with hypertension who are obese. In Section 5, I discuss the dissemination of this project as well as an analysis of myself as a scholar, practitioner, and project manager.

Section 5: Dissemination Plan

The problem I identified for this DNP project was the lack of lifestyle modification recommendations for the initial treatment of hypertension in the obese patient. I created a CPPEG to address this problem. My next step is to disseminate this patient education guideline on lifestyle modifications as the first line of treatment for hypertension in the obese patient.

For dissemination to the target clinic, I will first present the CPPEG to administration and the medical team to introduce the potential benefits, not only to the patients but for the staff as well. During this presentation, I will discuss the potential for improved patient outcomes, quality of life, and patient satisfaction, as well as for cost savings. The guideline will need to be approved through the medical director, office manager, and staff educator before implementation. Once they are all familiar with and agreeable to the implementation of this guideline, I will present the guideline to the staff through both printed handouts and staff in-services, which will be repeated multiple times to ensure all staff are able to attend and encouraged to return for additional presentations to ask questions and/or provide feedback.

Once a date is set for implementation the staff providing the education will be provided the guideline to use as a resource for patient education for the obese patient with hypertension. This clinic would benefit from a smart phrase on their electronic medical record, a saved phrase that provides standard documentation for an electronic medical record. This prompt would serve as a reminder on the key points of education, as well as

to adequately document the specifics of the education that has been provided to the patient.

Based on the objective of this guideline, the audience, and venues most appropriate for dissemination of this project would be family practice, primary care, and internal medicine offices. This guideline is a reference for the clinical staff who provide direct patient education on the treatment of hypertension in the obese patient; it is not appropriate in the acute care setting because the acute care setting, such as an urgent care or hospitals, is generally focused on stabilizing a patient for discharge with instructions to follow up with their medical provider. One method for the dissemination of this CPPEG that would enable reaching the broader nursing profession would be through the local branch of my state's nurse practitioner association. This CPPEG can be presented and discussed at local meetings with other nurse practitioners who come from multiple areas of health care. Additionally, publication opportunities will reach a much wider audience. An appropriate journal for publication would be the widely read *The Journal for Nurse Practitioners*, an official publication of the American Association of Nurse Practitioners. This journal is well known and provides articles that demonstrate the role that policy plays in shaping practice and delivering outcomes (Elsevier, 2022), therefore, I will query this journal for consideration of publication.

Analysis of Self

Working as a registered nurse on a critical care stepdown unit, I would say that I was content; I thought that I would be on that unit for a long portion of my career. As I rose through the clinical ladder and took on more of a leadership role on the unit, my

desires changed. I went back to school to earn my master's of science in nursing in leadership and management and then continued for my DNP because I wanted to effectively make changes on my unit and at my place of work, changes to not only improve patient care, but also improve the workflow for the nursing staff. This is where I realized just how much leadership, whether positive or negative, directly affects the nursing staff. As I began working more closely with the nursing staff and the nursing educators, I realized there was a huge gap in practice between the up-to-date knowledge necessary to provide evidence-based education and the actual level of evidence-based knowledge that many of the staff possessed.

Throughout this project and the development of this CPPEG, I have been placed in roles that are new to me. In my professional role, I was never the person to spearhead the creation of a guideline, as I have usually been the person to proofread guidelines and recommend changes before implementation. This new role has been challenging for me as a practitioner, but it has also been very beneficial to me. This has been a challenge because during the creation of the patient education guideline it became obvious that a guideline for the nursing staff was needed to increase their knowledge and confidence in the patient education standards, which is vital for the successful implementation of this project. This experience has been beneficial to me because by taking on roles outside of my comfort zone, I was put into a position where I needed to learn new skills and adapt my previous methods to successfully achieve this goal.

The journey to my DNP degree has been full of wonderful experiences that will have a lasting effect on both my personal and professional life, as well as some very

challenging times and frustrating experiences. Throughout my scholarly career, I have been extremely focused on taking the knowledge I learned in each class and during my practicum hours and finding ways to directly apply it to my professional practice. This was particularly important to me because I feel strongly that most, if not all of, what we learn in school can be applied to our professional practice for the benefit of not only patients, but ourselves as well. I feel that when knowledge learned in one aspect of our lives is applied to all aspects of our life, we continue to grow as individuals and professionals.

This road has also reaffirmed my passion for staff education, but at the same time has identified a need for mentoring of the clinical staff that I plan to explore after graduation. This project has afforded me the opportunity to be a project manager and main creator of this newly developed guideline. The AGREE II website was somewhat challenging, but fortunately, the AGREE company provides many great videos to its users that offered help with the navigation of the website, which I found extremely helpful. It was very enlightening to see the results of the expert panel's assessment of this CPPEG and be able to identify areas where changes were needed or areas that would benefit from clarification.

The completion of this project was overall remarkably successful and left me feeling invigorated going forward. I did face some challenges along the way, both academically and personally. The main challenge I faced was a mixture of personal and academic because with taking two credit classes along with my project class, moving across the country in the middle of a semester, and starting a new job in a completely new

field of medicine, I had some time management struggles. I tend to be very organized and goal-oriented and trying to find adequate internet connection in hotel rooms with two tired children on our trip to our new state, just to get a discussion done on time, was absolutely a struggle. Even once I was mostly settled in my new home, I still struggled to find the right time to do my school tasks.

A solution that I found was to become even more detail oriented and organized. I created a calendar with all the due dates of my assignments and scheduled certain times each day when I would work on my academics along with what goal I wanted to accomplish that day, whereas before, I had a calendar with my due dates only and always found time to get my things done without setting daily goals. Another solution that I found was to maintain good communication with my professors during times of stress and time management difficulties. This helped relieve any additional anxiety that I was feeling at that time from being late for deadlines.

An insight that I gained during this process was to set aside time every day with specific goals to accomplish. This created a strategy of small achievements that led to completion of the whole task within the required amount of time and helped reduce anxiety associated with a timely submission. Insights gained into my personal obligations including my family, my career, and adjusting to the move was that I can be stressed, put under pressure, and occasionally overwhelmed, but that with a great support system, self-discipline, and organization I am able to successfully navigate the different directions and demands required of me. Finally, I really feel that the roles I have taken on during this academic journey have helped elevate me in both my professional and personal life. I feel

that I have had multiple eye-opening experiences during this DNP journey and that I have become a better leader, educator, and health care provider because of each experience I have faced and overcome.

Summary

Hypertension and obesity are both very common chronic health conditions, with almost half of the population being affected by either hypertension or obesity (CDC, 2021). Both hypertension and obesity have contributing factors that can be changed with proper lifestyle modification that can reduce both the rates of hypertension and obesity. The purpose of this doctoral project was to develop a CPPEG for providers to use to educate hypertensive obese patients on lifestyle modifications as the first line treatment of hypertension. The CPPEG includes up to date and evidence-based information to act as a reference for the staff who provide hypertension education to patients. The implementation of this newly developed CPPEG will fill the gap in practice by providing a standardized evidence-based education teaching tool for lifestyle modifications for treatment of hypertension in the obese patient. Lifestyle modifications and nonpharmacologic education is especially important in the more rural areas generally having fewer available resources. The evaluations from the expert panel were reassuring as they concluded that this evidence based CPPEG would provide improved patient outcomes with the information presented in the guideline, as well as believing that the guideline was ready to be implemented immediately. Providing patients ways to improve their blood pressure with nonpharmacologic options can arm them with evidence-based information that can have lasting improvements to their overall quality of life.

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Appendix A: Literature Matrix using Melnyk, Mazurek, and Fineout-Overholt’s Tool

Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions/Recommendations for future research/practice	Grading the Evidence
Adair, T., & Lopez, A. D. (2020). The role of overweight and obesity in adverse cardiovascular mortality trends: an analysis of multiple cause of death data from Australia and the USA. <i>BioMed Central Medicine</i> , 18(1), 199. https://doi.org/10.1186/s12916-020-01666-y	N/A	What is the role of overweight and obesity in their recent CVD mortality trends by using multiple cause of death?	Analysis of trends in CVD mortality and MCODE rates in the US. Cross sectional study using data from an administrative database, which analyzed 57 studies.	The US is facing a public health crisis related to overweight and obesity, which has likely been a key driver to the arrest of the long-term decline in CVD mortality rates. In the United States, both male and female overweight and obesity related mortality as any CVD were found to be increasing at about 2% per annum in 2017.	The markedly higher levels of obesity among the lower socioeconomic groups in high-income countries and suggests that health strategies and policies need to be more cognizant of broader structural determinants of poor health behaviors such as employment, housing, social and economic stress, and the overall management of time within families	5
Antonia Rodriguez, M., Friedberg, J. P., DiGiovanni, A., Binhuan Wang, Wylie-Rosett, J., Sangmin, H., & Natarajan, S. (2019).	Transtheoretical model	Can hypertension be managed effectively with lifestyle and drug treatment using DASH diet?	This is a randomized clinical trial. There was a control group that was described as the usual care group. There were a total of 533 participants, with the tailored behavioral intervention group	Results suggest that the use of a tailored TTM-based intervention can improve adherence to the DASH dietary pattern. Over a 6 month intervention period, a significant difference in the	Tailored behavioral intervention (TBI) is more effective than usual care in increasing individuals’ DASH score. The Non tailored intervention is not more effective than usual care in	2 <i>(table continues)</i>

<p>A tailored behavioral intervention to promote adherence to the DASH diet. <i>American Journal of Health Behavior</i>, 43(4), 659–670. https://doi.org/10.5993/AJHB.43.4.1</p>			<p>with N=176, the non tailored intervention group with N=177, and the usual care group with N=180</p>	<p>DASH scores were identified with a .69 point increased with the tailored behavioral intervention group, whereas both the non tailored intervention group and the usual care group showed a decrease in the DASH score at 0.17 and 0.76 respectively.</p>	<p>increasing individuals' DASH score and stage of change. These results suggest that tailored interventions based on the TTM may successfully improve adherence to complex dietary recommendations requiring multiple behavioral changes.</p>	
<p>Arnett, D. K., Blumenthal, R. S., Albert, M. A., Buroker, A. B., Goldberger, Z. D., Hahn, E. J., Himmelfarb, C. D., Khera, A., Lloyd-Jones, D., McEvoy, J. W., Michos, E. D., Miedema, M. D., Muñoz, D., Smith, J. S. C., Virani, S. S., Williams, S. K. A., Yeboah, J., & Ziaecian, B. (2019). 2019 ACC/AHA guideline on the primary</p>	<p>N/A</p>	<p>Most ASCVD events are avoidable through primordial prevention and control of cardiovascular risk factors.</p>	<p>Randomized controlled trials (RCTs), systematic reviews of RCTs, meta-analyses, and large, United States–based, high-quality cohort studies, as well as observational studies and systematic reviews of observational studies, were evaluated for their content on the prevention of ASCVD outcomes related to the following 9 topic areas: risk assessment, diet, exercise/physical activity, obesity and</p>	<p>Recommendations for guidelines directed therapy are only effective when adopted by both patient and prescriber. The analysis of risk factors showed that most ASCVD events are avoidable through primordial prevention (the prevention of risk factor development) and through control of traditional cardiovascular risk factors. The primary risk factors include tobacco use, obesity, physical activity, diet, diabetes, and hypertension. These risk factors become</p>	<p>The development of a primary-prevention guideline strives to provide clinicians with the information they need to help their patients reduce their risk of ASCVD and encourage them to make healthier lifestyle changes when needed.</p>	<p>1 <i>(table continues)</i></p>

<p>prevention of cardiovascular disease: Executive summary: A report of American College of Cardiology/American Heart Association task force on clinical practice guidelines. <i>Journal of the American College of Cardiology</i>, 74(10), 1376–1414. https://doi.org/10.1016/j.jacc.2019.03.009</p>			<p>weight loss, type 2 diabetes mellitus (T2DM), blood cholesterol, hypertension, smoking cessation, and aspirin use</p>	<p>problematic when a patient’s 10 year ASCVD risk percent is between 5% and 7.5%, which is considered borderline risk and is recommended to discuss moderate intensity statin therapy at that time.</p>		
<p>Binka, E., & Brady, T. M. (2019). Real-world strategies to treat hypertension associated with pediatric obesity. <i>Current Hypertension Reports</i>, 21(2), 1. https://doi.org/10.1007/s11906-019-0922-2</p>	<p>N/A</p>	<p>Do CVD risk factors associated with obesity in childhood increase the risk of long-term CVD morbidity and mortality.</p>	<p>Literature Review</p>	<p>Central to the management of obesity-related hypertension is a multifaceted approach targeting lifestyle modifications and weight loss. Several mechanisms have been proposed to explain the pathophysiology behind obesity-related hypertension. Central to these theories is dysregulation of</p>	<p>While lifestyle modification is the first line treatment for obesity-related hypertension, as this targets the primary cause for increased CVD risk, this alone is often not sufficient. Therefore, a multifaceted team-based approach that may include pharmacologic therapy</p>	<p>7 <i>(table continues)</i></p>

				adipocyte homeostasis and activation of the SNS. Unfortunately, while lifestyle modification is the first line treatment for obesity-related hypertension, as this targets the primary cause for increased CVD risk, this alone is often not sufficient	is essential for effective management of obesity-related hypertension. Two thirds of the pediatric T2DM guidelines were moderate to low quality and the remaining third ranked higher in quality	
Bhatt, M., Nahari, A., Wang, P., Kearsley, E., Falzone, N., Chen, S., Fu, E., Jeyakumar, Y., Zukowski, J., Bandfield, L., Thabane, L., & Constantine Samaan, M. (2018). The quality of clinical practice guidelines for management of pediatric type 2 diabetes mellitus: A systematic review using the AGREE II instrument. <i>Systematic Review</i> , 7(193)	N/A	The objective of this systematic review was to evaluate overall quality of CPGs for the management of pediatric T2DM using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) tool. There were 21 clinical practice guidelines included in this systematic review.	Systematic Review	The analysis revealed that “Rigour of Development” and “Editorial Independence” were the lowest scoring domains on the AGREE II for the majority of guidelines, whereas “Clarity of Presentation” was the highest scoring domain. This was a qualitative systematic review as it rated the quality of the 21 clinical practice guidelines that were analyzed.	Overall, two thirds of the pediatric T2DM guidelines were moderate to low quality and the remaining third ranked higher in quality. Low quality was especially due to the scores for the “Rigour of Development” domain, which directly measures guideline development methodology.	5 <i>(table continues)</i>

2018. https://doi.org/10.1186/s13643-018-0843-1						
Bray, G. A., Heisel, W. E., Afshin, A., Jensen, M. D., Dietz, W. H., Long, M., Kushner, R. F., Daniels, S. R., Wadden, T. A., Tsai, A. G., Hu, F. B., Jakicic, J. M., Ryan, D. H., Wolfe, B. M., & Inge, T. H. (2018). The science of obesity management: An endocrine society scientific statement. <i>Endocrine Reviews</i> , 39(2), 79–132. https://doi.org/10.1210/er.2017-00253	N/A	Can obesity be controlled better controlled with diet, exercise, lifestyle, behavioral, surgical, or medication changes.	Opinion/Statement of an endocrine society.	Obesity is lower when there are more opportunities for physical activity as part of everyday life. Worksite health promotion programs that improved physical activity and/or nutrition were effective in reducing body weight and BMI	Control of obesity is the most important public health strategy for the prevention of chronic health diseases such as HTN and diabetes	7
Dieleman, J., Squires, E., & Bui, A. (2017). Factors associated with increases in US	N/A	How are 5 factors— population growth, population aging, disease prevalence or incidence, service utilization, and	Systematic Review	Health care spending increased by \$933.5 billion from 1996 to 2013. Across all health conditions, the greatest annualized growth	Understanding the factors associated with health care spending increases, and their variability across conditions and types of	5 <i>(table continues)</i>

health care spending, 1996-2003. <i>Journal of the American Medical Association</i> , 318(17), 1668-1678. http://doi.org/10.1001/jama.2017.15927		service price and intensity— associated with health care spending increases This study relied on 2 main data sources: the US Disease Expenditure 2013 project and the Global Burden of Disease 2015 study.		rates were in emergency department care and retail pharmaceutical spending, at 6.4% and 5.6%, respectively. The condition with the greatest absolute increase in spending was diabetes, which increased at an annualized rate of 6.1% or \$64.4 billion	care, can inform policy efforts to contain health care spending.	
Drevenhorn, E. (2018). A proposed middle range theory of nursing in hypertension care. <i>International Journal of Hypertension</i> , 2018(2858253). https://doi.org/10.1155/2018/2858253		What are nonpharmacologic Interventions in Prevention and Treatment of Hypertension. The exact number of included articles was not states, but Table 1 shows there were 1,347 relevant findings through searches made in five different databases.	Systematic Review	Nursing in hypertension care has been shown to comprise counselling about lifestyle changes, blood pressure measurement, and being a translator for the physician	Studies of nursing in hypertension care were analyzed and show that integrating behavioral models and patient counseling techniques can give nurses structure for a patient consultation which results in nurses being more patient-centered in their counselling	5
Guirardello, E. de B. (2017). Impact of critical care environment on burnout, perceived quality of care and safety attitude of the nursing team.	N/A	To assess the perception of the nursing team about the environment of practice in critical care services and its relation with the safety attitude,	Cross-sectional study	This study shows that environments favorable to the professional practice, with perceived autonomy, good professional relationships and	The findings evidence that environments favorable to the nursing team's professional practice can result in lower levels of emotional exhaustion, a higher	6 <i>(table continues)</i>

Lee, B. Y., Bartsch, S. M., Mui, Y., Haidari, L. A., Spiker, M. L., & Gittelsohn, J. (2017). A systems approach to obesity. <i>Nutrition Reviews</i> , 75(suppl 1), 94–106. https://doi.org/10.1093/nutrit/nuw049	N/A	5 key efforts to implement a systems approach for obesity prevention	Literature Review	obesity epidemic has continued to spread worldwide, suggesting that policies and interventions to date have not been fully effective. The characteristics of the obesity epidemic suggest it is a systems problem that could benefit from a systems approach	A systems approach to obesity entails 5 key strategies: a global approach; interdisciplinary collaboration; utilization of new systems methods; modifications of existing methods; and bridging research, education, policy, and action	7
Lee, M. (2020). Obesity among U.S. rural adults: Assessing selection and causation with prospective cohort data. <i>Health and Place</i> , 61. https://doi-org.ezp.waldenulibrary.org/10.1016/j.healthplace.2019.102260	N/A	Does living in a rural area increase the risk of increased body weight after account for selection bias and whether people with obesity select into rural counties	Fixed effects regression model	People with obesity are somewhat less likely to migrate AND there is an association between obesity in the rural setting compared to the urban populations	There is a bidirectional relationship between rural residence and obesity. Recommended to retain and attract younger workers who tender to be physically healthier	6
Luscher, T. (2020). Unanswered questions in hypertension: Prematurity and long-term	N/A	Is there a Risk of hypertension into adulthood in persons born prematurely The sample size was further analyzed using a population-	Prospective Cohort Study	Preterm birth appears to be associated with increased risk of hypertension into early adulthood. 1.5% of people were identified with hypertension at a	Persons born prematurely may need early preventive evaluation and long-term monitoring for the development of hypertension	4 <i>(table continues)</i>

trajectories, masked and white coat hypertension. <i>European Heart Journal</i> , 40(16), 1527-1530. https://doi.org/10.1093/eurheartj/ehaa275		based study of 4,193,069 singleton live births.		median age of 30 who were born full term, in comparison to those who were born preterm (below 37 weeks) and extremely preterm (birth at 22–27 weeks) were 1.28% and 2.45% respectively		
Mancia, G. (2019). Initial combination treatment in the 2018 ESC/ESH hypertension guidelines. <i>Anatolian Journal of Cardiology</i> , 22(3), 100–101. https://doi-org.ezp.waldenulibrary.org/10.14744/AnatolJCardiol.2019.03292	N/A	Guidelines only	Lit Review	New guidelines for Europe	Initial treatment for HTN was changed to two antihypertensive medications	7
Naci, H., Salcher-Konrad, M., Dias, S., Blum, M. R., Sahoo, S. A., Nunan, D., & Ioannidis, J. P. (2019). How does exercise treatment compare with antihypertensive medications? A	N/A	Is there a relationship in the effect of exercise regimens and medications on systolic blood pressure (SBP). There were 391 RCTs included in this study.	Random-effects network meta-analysis.	Assuming equally reliable estimates, the SBP-lowering effect of exercise among hypertensive populations appears similar to that of commonly used antihypertensive medications.	Findings confirm modest but consistent reductions in SBP in many studied exercise interventions across all populations	1 <i>(table continues)</i>

<p>network meta-analysis of 391 randomized controlled trials assessing exercise and medication effects on systolic blood pressure. <i>British Journal of Sports Medicine</i>, 53(14), 859–869. https://doi.org/10.1136/bjsports-2018-099921</p>				<p>In total, 39,742 participants were included in RCTs testing the SBP-lowering effects of medications and exercise interventions. While 29,281 participants were included in medication trials, 10,461 were included in exercise RCTs. Populations receiving medications achieved greater reductions in SBP compared with those participating in physical activity interventions (−3.96, 95% CrI −5.02 to −2.91).</p>		
<p>Pantalone, K. M., Hobbs, T. M., Chagin, K. M., Kong, S. X., Wells, B. J., Kattan, M. W., Bouchard, J., Sakurada, B., Milinovich, A., Weng, W., Bauman, J., Misra-Hebert, A. D., Zimmerman, R. S., & Burguera,</p>	<p>N/A</p>	<p>To determine the prevalence of obesity and its related comorbidities among patients being actively managed at a U.S. Academic medical center, and to examine the frequency of a formal diagnosis of obesity,</p>	<p>Cross-sectional summary</p>	<p>Patients within higher BMI categories had a higher prevalence of comorbidities. Less than half of patients who were identified as having obesity according to BMI received a formal diagnosis via ICD-9 documentation, but the percentage of patients that received a formal obesity diagnosis via</p>	<p>The disease of obesity is very prevalent yet underdiagnosed in our clinics. The under diagnosing of obesity may serve as an important barrier to treatment initiation.</p>	<p>6 <i>(table continues)</i></p>

<p>B. (2017). Prevalence and recognition of obesity and its associated comorbidities: cross-sectional analysis of electronic health record data from a large US integrated health system. <i>BMJ open</i>, 7(11), e017583. https://doi.org/10.1136/bmjopen-2017-017583</p>				<p>ICD-9 documentation was 15% higher among patients with a diagnosis of diabetes compared with those not having a diagnosis of diabetes</p>		
<p>Plumettaz, C., Viswanathan, B., & Bovet, P. (2020). Hypertension prevalence based on blood pressure measurements on two vs. one visits: A community-based screening program and a narrative review. <i>International Journal of Environmental Research</i></p>	<p>N/A</p>	<p>Assessment of the difference in the prevalence of hypertension in community surveys when blood pressure (BP) was measured on two vs. one visits and its impact on hypertension awareness, treatment and control proportions</p>	<p>Narrative review of the literature</p>	<p>Only 64% of untreated participants with high BP still had high BP at the second visit. The prevalence of hypertension in the whole sample decreased by 13% (from 33.8% to 29.5%) when BP was measured on two vs. one visits</p>	<p>The prevalence of hypertension can be markedly overestimated in community surveys when BP is measured on two vs. one visits.</p>	<p>7</p> <p>(table continues)</p>

<p><i>and Public Health</i>, 17(24). https://doi.org/10.3390/ijerph17249395</p>						
<p>Probst, J. C., Zahnd, W. E., Hung, P., Eberth, J. M., Crouch, E. L., & Merrell, M. A. (2020). Rural-urban mortality disparities: Variations across causes of death and race/ethnicity, 2013–2017. <i>American Journal of Public Health</i>, 110(9), 1325–1327. https://doi.org/10.2105/AJPH.2020.305703</p>	<p>N/A</p>	<p>To examine rural-urban disparities in overall mortality and leading causes of death across Hispanic (any race) and non-Hispanic White, Black, American Indian/Alaska Native (AI/AN), and Asian/Pacific Islander populations.</p>	<p>Retrospective analysis of age-adjusted death rates for all-cause mortality and 5 leading causes of death (cardiovascular, cancer, unintentional injuries, chronic lower respiratory disease, and stroke) by rural versus urban county of residence in the United States and race/ethnicity for the period 2013 to 2017. The data was collected from the National Vital Statistics System underlying-cause-of-death files, accessed through the Wide-ranging Online Data for Epidemiologic Research (WONDER) Web site of the CDC</p>	<p>Rural populations, across all racial/ethnic groups, had higher all-cause mortality rates than did their urban counterparts. Rural disparity, the degree to which rural death rates exceeded urban rates within the same period, was highest among American Indian/Alaskan Native populations (+42%) and varied between +11% and +18% for all other groups.</p>	<p>Investigating rural-urban disparities without also considering race/ethnicity leaves minority health disparities unexamined</p>	<p>5</p> <p>(table continues)</p>

<p>Rossier, B., Bochud, M., & Devuyst, O. (2017). The hypertension pandemic: The evolutionary perspective. <i>Physiology</i>, 32(2), 112-125. https://doi.org/10.1152/physiol.00026.2016</p>	<p>N/A</p>	<p>Investigate the possible cause of the current hypertension pandemic in the light of evolutionary medicine through the evaluation of 101 papers.</p>	<p>Systematic review</p>	<p>Likely differences may play a role on BP, including low total energy intake and high physical activity in paleolithic periods compared with the high total energy intake and high sedentary of modern life. A high sodium to potassium ratio in diet was associated with increased cardiovascular and all cause mortality.</p>	<p>Elements discussed should help to provide further insights into the genetic basis of disease and how this may reflect adaptation to local environmental variables in space and time</p>	<p>5</p>
<p>Schiavon, C. A., Bhatt, D. L., Ikeoka, D., Santucci, E. V., Santos, R. N., Damiani, L. P., Oliveira, J. D., Machado, R. H. V., Halpern, H., Monteiro, F. L. J., Noujaim, P. M., Cohen, R. V., de Souza, M. G., Amodeo, C., Bortolotto, L. A., Berwanger, O., Cavalcanti, A. B., & Drager, L. F. (2020). Three-year</p>	<p>N/A</p>	<p>To determine the 3-year effects of Roux-en-Y gastric bypass (RYGB) on blood pressure (BP) compared with medical therapy (MT) alone.</p>	<p>Randomized clinical trial</p>	<p>Patients with obesity and hypertension who underwent RYGB plus MT were significantly more likely to reduce the number of antihypertensive medications by at least 30% while maintaining BP control than patients managed with MT alone.</p>	<p>RYGB is an effective strategy for midterm BP control and hypertension remission, with fewer medications required in patients with hypertension and obesity</p>	<p>2</p> <p><i>(table continues)</i></p>

<p>outcomes of bariatric surgery in patients with obesity and hypertension: A randomized clinical trial. <i>Annals of Internal Medicine</i>, 173(9), 685–693. https://doi.org/10.7326/M19-3781</p>						
<p>Semlitsch, T., Krenn, C., Jeitler, K., Berghold, A., Horvath, K., & Siebenhofer, A. (2021). Long-term effects of weight-reducing diets in people with hypertension. <i>The Cochrane Database of Systematic Reviews</i>, 2, CD008274. https://doi.org/10.1002/14651858.CD008274.pub4</p>	<p>N/A</p>	<p>To assess the long-term effects of weight-reducing diets in people with hypertension on all-cause mortality, cardiovascular morbidity, and adverse events. An initial 7244 publications were reviewed, but 7198 were excluded by consensus as not relevant to the question under study on the basis of their titles or abstracts, leaving 46 articles.</p>	<p>Systematic Review of Randomized Control Trials</p>	<p>The results of these RCTs strengthen the finding of a reduction of blood pressure by dietary weight-loss interventions. In people with essential hypertension, therapy with dietary interventions to reduce body weight resulted in reductions in blood pressure and body weight. A reduction in body weight of approximately 4 kg was necessary to achieve a reduction of approximately 4.5 mm Hg systolic blood pressure and approximately 3.2 mm Hg diastolic blood pressure</p>	<p>In people with primary hypertension, weight-loss diets reduced body weight and blood pressure, but the magnitude of the effects are uncertain.</p>	<p>1</p> <p><i>(table continues)</i></p>

<p>Soltani, S., Arablou, T., Jayedi, A., & Salehi-Abargouei, A. (2020). Adherence to the dietary approaches to stop hypertension (DASH) diet in relation to all-cause and cause-specific mortality: A systematic review and dose-response meta-analysis of prospective cohort studies. <i>Nutrition Journal</i>, 19(37), 2020. https://doi.org/10.1186/s12937-020-00554-8</p>	<p>N/A</p>	<p>This meta analysis was aimed to explore the linear and non-linear dose-response association between adherence to the DASH diet and all-cause and cause-specific mortality. The inclusion criteria was met by 17 studies within 13 publications</p>	<p>Meta Analysis</p>	<p>There was evidence of linear and non-linear associations between the DASH diet and all-cause and cause-specific mortality. The systematic review and meta-analysis showed that adherence to the DASH diet had a significant inverse dose-response association with all-cause, CVD, stroke, and cancer mortality. The Linear dose-response meta-analysis revealed that each 5-point increment in the adherence to the DASH diet could significantly lower the risk of all-causes, cardiovascular disease, stroke and cancer mortality by 5% (6–4%), 4% (5–2%), 3% (4–2%), and 3% (5–2%), respectively</p>	<p>Even the modest adherence to the DASH diet is associated with a lower risk of all-cause and cause-specific mortality. The higher adherence to the diet also strengthens the risk-reducing association</p>	<p>1</p>
<p>Shallwani, S., King, J., Thomas, R., Thevenot, O., De Angelis, G., Aburub, A., &</p>	<p>N/A</p>	<p>The objectives of this systematic review were to: 1) identify recent clinical practice guidelines including</p>	<p>Systematic Review</p>	<p>Many recommendations on PA were generic, focused on general activity, aerobic</p>	<p>Several guidelines developed and published recently include PA recommendations for people diagnosed with</p>	<p>5 <i>(table continues)</i></p>

<p>Brosseau, L. (2019). Methodological quality of clinical practice guidelines with physical activity recommendations for people diagnosed with cancer: A systematic critical appraisal using the AGREE II tool. <i>Peer-Reviewed Open Access Scientific Journal</i>, 14(4): e0214846. https://doi.org/10.1371/journal.pone.0214846</p>		<p>PA or exercise recommendations for people with cancer and 2) critically appraise the methodological quality of the included guidelines. After exclusions, there were 187 full texts reviewed</p>		<p>exercise and strengthening exercise The majority of guidelines (70%) were applicable to the general population. These findings demonstrate the need for better developed guidelines addressing physical activity in populations.</p>	<p>cancer. These guidelines apply to a range of cancer types. Strengths of the guidelines including the identification of scope and purpose</p>	
<p>Sudharsanan, N. (2019). Population-level mortality benefits of improved blood pressure control in Indonesia: a modelling study. <i>International Journal of Epidemiology</i>, 48(3), 954-965. https://doi.org/10.1093/ije/dyy232</p>	<p>N/A</p>	<p>What are the gains in adult life expectancy from improving SBP control among adults ages 40 and above and assessed the benefits among richer and poorer subpopulations. After taking into account exclusions, the total sample size was 10,085 individuals</p>	<p>This is a descriptive study</p>	<p>Fully controlling SBP to a population mean of under 125 mmHg was associated with a life expectancy gain at age 40 of 5.3 years [95% confidence interval (CI): 3.2, 7.4] for men and 6.0 years (95% CI: 3.6, 8.4) for women</p>	<p>elevated SBP carries a large mortality burden and with good b/p control, can decreased mortality and improve life expectancy, the same among richer and poorer subpopulations.</p>	<p>6 <i>(table continues)</i></p>

<p>Treciokiene, I., Postma, M., Nguyen, T., Fens, T., Petkevicius, J., Kubilius, R., Gulbinovic, J., & Taxis, K. (2021). Healthcare professional-led interventions on lifestyle modifications for hypertensive patients : A systematic review and meta-analysis. <i>BMC Family Practice</i>, 22(1), 1–15. https://doi.org/10.1186/s12875-021-01421-z</p>	<p>N/A</p>	<p>In a meta-analysis on the difference between systolic blood pressure (SBP), diastolic blood pressure (DBP) and the percentage of patients with controlled blood pressure (BP) was analyzed. In total, 34 clinical trials were included</p>	<p>Meta Analysis</p>	<p>Health care professional-led interventions were effective. Patients achieved almost 5 mmHg decrease of SBP and more patients achieved BP control. The mean age was 58.4 years, 49.14% female, 69.9% used antihypertensive medications were included. The mean difference SBP was – 4.41 mmHg (95% CI, – 5.52to – 3.30) and the mean difference DBP was – 1.66 mmHg (95% CI – 2.44 to – 0.88) in favor of the intervention group vs usual care</p>	<p>Physician led lifestyle modification program does help reduce blood pressures.</p>	<p>1</p>
<p>Vasiliadis H-M., & Belanger, M. (2018). The prospective and concurrent effect of health related quality of life in older adults over a 3- year period. <i>Health and Quality of</i></p>	<p>N/A</p>	<p>Assess the effect of sex and neighborhood socio-economic status on the change in health related quality of life. The sample size was 967 participants.</p>	<p>Prospective Cohort Study</p>	<p>Participants reported a lower quality of life (p=0.008) and a lower number of times of exercise in a week (p<0.001) at baseline. Exercise at baseline was found to be a significant predictor of health related quality of life 3 years later in the unadjusted model.</p>	<p>For healthy ageing, maintaining, and increasing physical activity throughout the years is necessary for improved quality of life</p>	<p>4 <i>(table continues)</i></p>

<p><i>Life Outcomes</i>, 16(15), 2018. https://doi.org/10.1186/s12955-018-0843-9</p>						
<p>Whelton, P., Carey, R., Aronow, W., Casey, D., Collins, K., Dennison Himmelfarb, C., DePalma, S., Gidding, S., Jamerson, K., Jones, D., MacLaughlin, E., Munter, P., Ovbiagele, B., Smith, S., Spencer, C., Stafford, R., Taler, S., Thomas, R, Williams, K.,... Wright, J. (2018). 2017 ACC/AHA/AAPA /ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults:</p>	<p>N/A</p>	<p>Creation of clinical practice guidelines for the management of HTN for the 2017 American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. There were 437 paper analyzed for this study.</p>	<p>Meta Analysis</p>	<p>Best Proven Nonpharmacological Interventions for Prevention and Treatment of Hypertension include weight loss and DASH diet and shows how many points the B/P changes</p>	<p>AHA 2017 for HTN. Describes the different lifestyle modification areas that can help reduce blood pressure.</p> <p>States that lifestyle modifications should be implemented first for all stages of HTN</p>	<p>1</p> <p><i>(table continues)</i></p>

<p>Executive summary. <i>Journal of the American College of Cardiology</i>, 71(19), 2199-2269. https://reader.elsevier.com/reader/sd/pii/S073510971741518X?token=72182B1D39DEA06599E73C260AE3F5179C545EEFCC22E842ABD59E198250E181843D768813D26394C697AF7DA2296EDF&originRegion=us-east-1&originCreation=20210417173943</p>						
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Note. Evidence graded using the hierarchy of evidence model from “Evidence-based Practice Step by Step: Critical appraisal of the evidence: Part I,” by E. Fineout-Overholt, B. M. Melnyk, S. B Stillwell, and K. M Williamson, 2010, *American Journal of Nursing*, 110(7), p.47-52.

Appendix B: Melynk et al.'s Grading Criteria

Levels of Evidence	Description of the Evidence
Level 1	Evidence obtained from systematic reviews or meta-analyses of randomized controlled trials
Level 2	Randomized controlled trials
Level 3	Evidence obtained from well-designed controlled trials without randomization, quasi-experimental
Level 4	Evidence from well-designed case-control or cohort studies
Level 5	Systematic reviews of descriptive or qualitative studies
Level 6	Evidence obtained from a single descriptive or qualitative study
Level 7	Evidence obtained from the opinions of authorities and/or reports of expert committees

Evidence-Based Practice in Nursing and Health Care: A Guide to Best Practice (Melynk & Fineout-Overholt, 2011, p. 12.).

Appendix C: AGREE II grading tool

Domain 1: Scope and Purpose
• The overall objective(s) of the guideline is (are) specifically described.
• The health question(s) covered by the guideline is (are) specifically described.
• The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.
Domain 2: Stakeholder Involvement
• The guideline development group includes individuals from all the relevant professional groups.
• The views and preferences of the target population (patients, public, etc.) have been sought.
• The target users of the guideline are clearly defined.
Domain 3: Rigor of Development
• Systematic methods were used to search for evidence
• The criteria for selecting the evidence are clearly described
• The strengths and limitations of the body of evidence are clearly described
• The methods for formulating the recommendations are clearly described.
• The health benefits, side effects, and risks have been considered in formulating the recommendations.
• There is an explicit link between the recommendations and the supporting evidence.
• The guideline has been externally reviewed by experts prior to its publication
• A procedure for updating the guideline is provided
Domain 4: Clarify of Presentation
• The recommendations are specific and unambiguous
• The different options for management of the condition or health issue are clearly presented.
• Key recommendations are easily identifiable
Domain 5: Applicability
• The guideline describes facilitators and barriers to its application.
• The guideline provides advice and/or tools on how the recommendations can be put into practice
• The potential resource implications of applying the recommendations have been considered
• The guideline presents monitoring and/ or auditing criteria
Domain 6: Editorial Independence
• The views of the funding body have not influenced the content of the guideline
• Competing interests of guideline development group members have been recorded and addressed

Appendix D: Lifestyle Modification for the Treatment of Hypertension: A Clinical
Practice Guideline

Purpose:

- To provide an evidence-based guideline for clinical staff on the management and education of lifestyle modifications for hypertensive patients.

Procedure:

- A hypertensive screening will be provided at each visit to the clinic.
- When a patient 18 years and older is identified as pre-hypertensive or newly diagnosed as hypertensive, lifestyle modification education will be provided as the initial treatment of hypertension and continued at every subsequent appointment.
- For patients 18 years and older with a previous diagnosis of hypertension, lifestyle modification education will begin at the next scheduled appointment and continue at every subsequent appointment.

Question:

- What information do health care providers, including nursing staff, need to provide evidence-based patient education on lifestyle modifications as treatment for hypertension.

Target Population:

Pre-hypertensive and hypertensive patients and the health care providers who provide them patient education at their primary care appointment.

Recommendations:

There is a lack of a standardized guideline on evidence-based patient education for lifestyle modifications as the initial treatment of hypertension.

- Lifestyle modifications not only can decrease the rates of obesity and reduce blood pressure, but they can improve a patient's overall health (Whelton et al., 2018).
- This CPPEG will provide guidance for the clinical staff to educate patients with evidence-based information on lifestyle changes that can lower blood pressure, reduce weight, and improve their overall health.
- Lifestyle modifications as a treatment for hypertension are essential to empower patients to change their behaviors to improve their health, especially in rural settings which have fewer resources than urban settings (Lee, 2020).
- A reduction in the prevalence of cardiovascular diseases, including hypertension, is associated with decreased health care spending (Dieleman et al., 2017).
- With this standardized evidence-based guideline, health care staff can take advantage of their scheduled time with patients to educate patients on appropriate lifestyle modifications including exercise and the DASH diet (Naci et al., 2019), which can help reduce hypertension and obesity, and can potentially lead to improved health outcomes.

Key Evidence:

- Lowering blood pressure levels has been shown to be an effective means of reducing the rate of cardiovascular morbidity and mortality (Semlitsch et al., 2021).

- Lifestyle modifications are widely accepted and recommended as the first line treatment for hypertension (Herrod et al., 2017).
- In adults with hypertension the initial recommendations for reduction in blood pressure include weight loss and a heart-healthy diet (Arnett et al., 2019).
- This CPPEG can benefit nursing practice by increasing nurses' knowledge of the recommended first line treatment of hypertension, which is lifestyle modifications.
- Individuals who were started on antihypertensive medications prior to the initiation of lifestyle modifications have been found to substitute the medication for a healthy lifestyle and continue an unhealthy lifestyle or even start engaging in one (Korhonen et al., 2020).

Guideline Monitoring:

- This guideline should be reevaluated every 3 years or when new recommendations for lifestyle modifications for the hypertensive patient are published.
- The health care provider should address barriers to the guidelines as they arise and before implementation.

***No funding was requested or received throughout the Lifestyle Modifications for the Treatment of Hypertension project as I developed this CPPEG.**

Lifestyle Modifications for the Treatment of Hypertension: Teaching Guidelines

This guideline is intended for health care providers and staff who engage in patient education in the primary care setting to provide up to date, evidence-based guidelines on lifestyle modifications as the initial treatment for hypertension.

- What is blood pressure?
 - Blood pressure is the measurement of the pressure of blood that is pushing against the walls of arteries.
- What is hypertension?
 - High blood pressure is also called hypertension and the definition of hypertension is a blood pressure that has been elevated on two separate office visits. According to the Centers for Disease Control and Prevention (2021), blood pressures are defined as:
 - Normal blood pressure <120/80
 - Elevated blood pressure is 120-129/<80
 - Stage 1 hypertension 130-139/80-89
 - Stage 2 hypertension $\geq 140/\geq 90$
- Signs and symptoms of hypertension:
 - Some of the most common symptoms of hypertension include
 - Headache, sometimes described as severe
 - Shortness of breath
 - Anxiety
 - Sweating

- Nosebleeds
- Can be asymptomatic
 - Often referred to as the “silent killer”
- What are potential risk factors for the development of hypertension?
 - Being overweight or obese
 - High sodium diet
 - Increased stress
 - Minimal physical activity
 - Genetic factors
- Why are lifestyle modifications for hypertension so important?
 - Four of the five risk factors are modifiable by a change in lifestyle.
 - Having a diagnosis of hypertension increases your risk of heart disease and stroke, which are leading causes of death in the U.S. and contributed to over half a million deaths in the U.S. in 2019 (CDC, 2021).
 - Nearly half of all adults in the U.S. have a diagnosis of hypertension or are taking medication for hypertension
 - Over 75% of these hypertensive adults do not have control of their hypertension (CDC, 2021).

- Why is health care provider education important for patient education?
 - This guideline can benefit nursing practice by increasing nurses' knowledge of the recommended first line management for hypertension, which can increase their confidence in patient education.
 - Providing standardized evidence-based information can increase the quality of care provided to patients which will increase nurses' job satisfaction (Guirardello, 2017).
 - Interventions on lifestyle modifications that were provider-led had a higher percentage of patients with well controlled blood pressure (Treciokiene et al., 2021).
- What lifestyle modifications are evidence based that you can educate your patient on?
 - Adoption of a low sodium, heart healthy diet such as the DASH diet
 - Has a proven record in helping people reduce blood pressure (National Heart, Lung, and Blood Institute, 2021)
 - Encourage weight loss if the patient is overweight or obese.
 - Weight reduction to a healthy weight body mass index, between 18.5 and 24.9, can help reduce hypertension.
 - Encourage an increase in physical activity to 150 minutes per week of moderate intensity exercise
 - Averages to 30 minutes, 5 days per week.

- Explain to the patient that they should be able to talk, but not be able to sing with moderate intensity exercise.
 - This can include brisk walking or riding a bicycle.
- Discuss and reinforce smoking cessation.
- Discuss reduction of alcohol intake to less than 2 drinks per day for men and less than 1 drink per day for women.
- Encourage adequate and restful sleep.
 - Discuss good sleep hygiene to promote healthy sleep
 - Reduction of caffeine before bed
 - Remove electronics
 - Go to bed at a set bedtime
 - Be consistent
 - Keep the room dark and cool

Sources

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Patient Education: Lifestyle Modifications for the Hypertensive Patient

What is Hypertension?

- What is blood pressure?
 - Blood pressure is the measurement of the pressure of blood that is pushing against the walls your arteries. Your arteries carry blood away from your heart and to your organs.
- What is hypertension?
 - High blood pressure is also called hypertension. According to the Centers for Disease Control and Prevention (2021), blood pressures are defined as:
 - Normal blood pressure $<120/80$
 - Elevated blood pressure is $120-129/<80$
 - Stage 1 hypertension $130-139/80-89$
 - Stage 2 hypertension $\geq 140/\geq 90$
- Signs and symptoms of hypertension:
 - Some of the most common symptoms of hypertension include:
 - Headache, sometimes described as severe
 - Shortness of breath
 - Anxiety
 - Sweating
 - Nosebleeds
 - Can be asymptomatic
 - Often referred to as the “silent killer”

- What are potential risk factors for the development of hypertension?
 - Being overweight or obese
 - High sodium diet
 - Increased stress
 - Minimal physical activity
 - Genetic factors
 - All except genetic factors can be minimized with lifestyle changes
- Why are lifestyle modifications for hypertension so important?
 - Having a diagnosis of hypertension increases your risk of heart disease and stroke, which are leading causes of death in the U.S.
 - Contributed to over half a million deaths in the U.S. in 2019 (CDC, 2021).
 - Nearly half of all adults in the U.S. has a diagnosis of hypertension or are taking medication for hypertension
 - Over 75% of these hypertensive adults do not have control of their hypertension (CDC, 2021)
- What lifestyle modification can you make to improve your blood pressure?
 - Adopt a low sodium, heart healthy diet such as the DASH diet (see Appendix D1)
 - Has a proven record to helping people reduce blood pressure (National Heart, Lung, and Blood Institute, 2021)

- If you are overweight or obese, weight reduction to a healthy weight body mass index (BMI) can help reduce your blood pressure (see Appendix D2)
 - BMI is a screening method that takes height and weight into consideration to put you in a weight category.
 - You can find your BMI by searching google for a BMI calculator
 - A BMI of:
 - <18.5 is considered underweight
 - 18.5-24.9 is considered a healthy weight
 - 25.0-29.9 is considered overweight
 - >30.0 is considered obese
- Increase your physical activity to 150 minutes per week of moderate intensity exercise
 - Average 30 minutes, 5 days per week
 - This can include brisk walking or riding a bicycle.
- Stop smoking/vaping
 - To reduce your risk for heart attack and stroke and to improve overall health, avoid all forms of tobacco as well as secondhand smoke (American Heart Association, 2019).
 - Talk to your provider to get started on your journey to stop smoking, you can visit: <https://smokefree.gov/>

- Limit the amount of alcohol you consume
 - Less than 2 drinks per day for men
 - Less than 1 drink per day for women.
- Get enough sleep on a regular basis can keep your heart and blood vessels healthy
 - Adequate sleep is between 7-8 hours per day
- Promote healthy sleep
 - Stop caffeine intake at least 6 hours before bed
 - Turn off electronics at least one hour before bed
 - Go to bed at a set bedtime
 - Be consistent
 - Keep the room dark and cool

Patient Education Sources

















American Heart Association. (2019). 8 things you can do to prevent heart disease and stroke. <https://www.heart.org/en/healthy-living/healthy-lifestyle/prevent-heart-disease-and-stroke>

Center for Disease Control and Prevention. (2021). High blood pressure symptoms and causes. <https://www.cdc.gov/bloodpressure/about.htm>

National Heart, Lung, and Blood Institute. (2021). Your guide to lowering blood pressure. https://www.nhlbi.nih.gov/files/docs/public/heart/hbp_low.pdf

Figure D1

Dash Eating Plan

DASH Eating Plan	
The Benefits: Lowers blood pressure & LDL “bad” cholesterol.	
 Eat This	 Limit This
 Vegetables	 Fatty meats
 Fruits	
 Whole grains	 Full-fat dairy
 Fat-free or low-fat dairy	
 Fish	 Sugar sweetened beverages
 Poultry	
 Beans	 Sweets
 Nuts & seeds	
 Vegetable oils	 Sodium intake

www.nhlbi.nih.gov/DASH




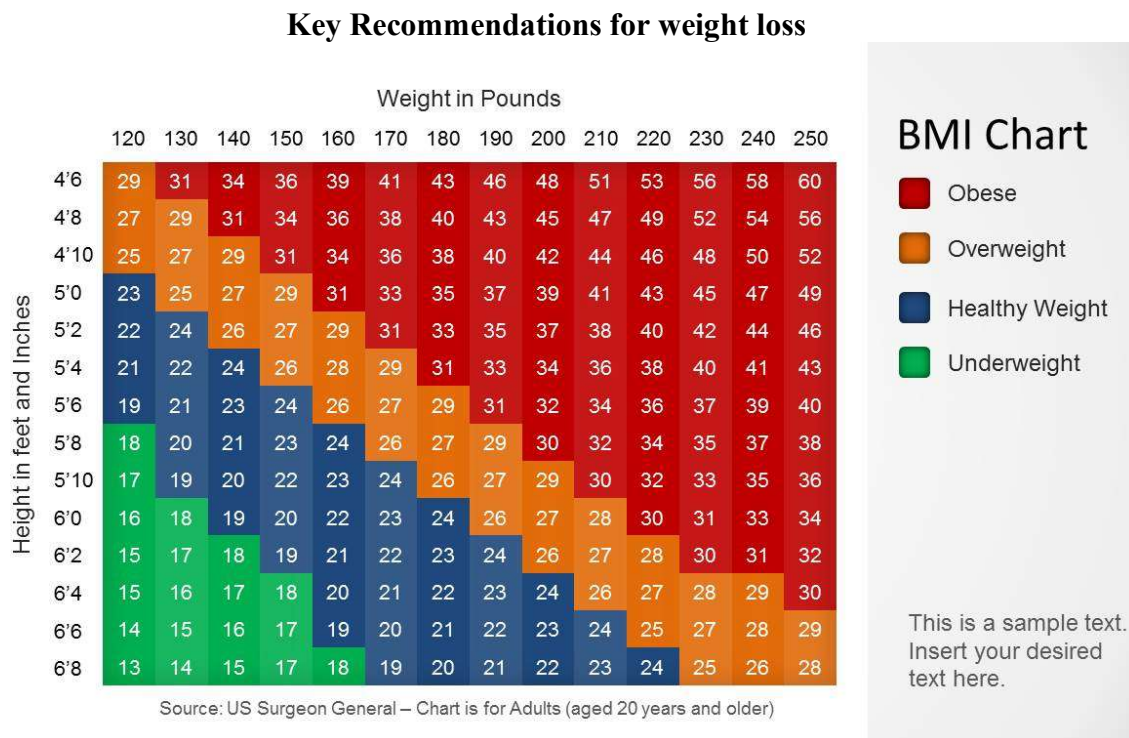




Figure D2

Key Recommendations for Weight Loss



- The initial goal of weight-loss should be to reduce body weight by about 10 percent from starting weight.
 1. After this goal is reached, you can discuss with your health care provider a new weight loss goal.
- The ideal rate of weight loss should be about 1 to 2 pounds per week for a period of up to 6 months.
- Physical activity is an important part of weight-loss.
 1. It is recommended that you start with moderate levels of physical activity for 30 to 45 minutes, about 3 to 5 days a week.
 2. A good long-term goal for everyone is to complete at least 30 minutes or more of moderate-intensity physical activity on most, and preferable all, days of the week.

- This can include brisk walking, jogging, or riding a bike. A good long-term goal for everyone is to accumulate at least 30 minutes or more of moderate-intensity physical activity on most, and preferably all, days of the week.

https://www.nhlbi.nih.gov/health/educational/lose_wt/recommen.htm

Appendix E: Introductory Letter

Dear Expert Panelist:

My name is Tiffany Oates, a DNP student at Walden University and I am developing a teaching guideline for lifestyle modifications as the initial treatment for hypertension. My project will be appropriate for all patients who are diagnosed with pre-hypertension or have been diagnosed with hypertension and has the potential to provide patients with current evidence-based information to treat hypertension and improve overall quality of care through lifestyle modifications.

I am requesting your expert knowledge and professional opinion regarding the quality of the CPPEG because of your expertise, knowledge, and vast experience in the treatment of hypertension. I am asking you to grade a newly developed CPPEG using the AGREE II tool, which can be accessed through the link, <https://www.agreetrust.org/register/>, I will also send the link to your email. This link will take you directly to the grading page, and after completion there will be a submission button at the very end. I would appreciate the CPPEG to be graded within 10 days to allow me to analyze the findings and revise the CPPEG as needed. After revisions are made based on your evaluation, I will share the CPPEG with a group of end-users for their input on content and usability, thus involving a sample of all stakeholders.

Thank you for your time and effort in assisting me with this project. I look forward to your evaluations and recommendations to help improve the patient education material that is provided to not only our nursing staff, but also to our hypertensive patients. Please do not hesitate to contact me with any questions or concerns regarding the AGREE II tool or the CPPEG.

Thank you again for your time, effort, and experience in improving patient education for an improved quality of life.

Tiffany Oates, RN, MSN, FNP

xxx-xxx-xxxx

txxxx@waldenu.edu

Appendix F: AGREE II Instructions

The AGREE II is a tool developed to assess the methodological quality of practice guidelines.

The tool can be used by:

- Guideline developers.
- Policy makers, health administrators, program managers and professional organizations; and
- Stakeholders (including patients/consumers, health professionals, researchers, educators, and other stakeholders interested in the development and uptake of clinical guidelines).

The AGREE II is comprised of 23 items organized into 6 quality domains:

- Scope and purpose.
- Stakeholder involvement.
- Rigor of development.
- Clarity of presentation.
- Applicability; and
- Editorial independence.

Each of the 23 items targets various aspects of practice guideline quality. The AGREE II also includes 2 final overall assessment items that require the appraiser to make overall judgements of the practice guideline while considering how they rated the 23 items.

The User's Manual is designed to guide appraisers in the use of the AGREE II. The Manual is part of the complete AGREE II document or "package" and includes specific information and guidance for each of the 23 items and the 2 overall assessment items.

Appraisal Process:

- It is recommended that at least two, and preferably four, appraisers review each clinical guideline to increase the reliability of the assessment.
- Before applying the tool, users should read the clinical guideline document in full, as well as any accompanying documents.
- 2 scoring methods
 1. Method 1: Using individual appraisers' scores
 2. Method 2: Reaching consensus
- Purpose of scoring:
 1. To identify limitations of the clinical guideline being considered
 2. To select high quality clinical guidelines to implement

Additional information can be found in the AGREE II tool user manual, [download it here](#).

If you have additional questions about the AGREE II, you can visit the [AGREE II FAQ webpage](#) or send us your question by [contacting us](#).

AGREE Site Link

<http://www.agreetrust.org>

Appendix G: AGREE II Appraisal



A critical group appraisal of:

Lifestyle modifications for the treatment of Hypertension in Obese patients
using the AGREE II Instrument

Created with the AGREE II Online Guideline Appraisal Tool.

No endorsement of the content of this document by the AGREE Research Trust
should be implied.

Co-ordinator:

Date: 20 January 2022

Email: txxxxx@waldenu.edu

URL of this appraisal: <http://www.agreetrust.org/group-appraisal/16475>

Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	OA 1	OA 2
93%	89%	90%	98%	79%	86%	83%	Yes - 1, Yes with modifications - 2, No - 0

<i>Domain 1. Scope and Purpose</i>			
	Appraiser 4	Appraiser 5	Appraiser 7
Item 1	6	7	7
Item 2	5	7	7
Item 3	6	7	7
<i>Domain 2. Stakeholder Involvement</i>			
	Appraiser 4	Appraiser 5	Appraiser 7
Item 4	6	7	6
Item 5	4	7	6
Item 6	7	7	7
<i>Domain 3. Rigour of Development</i>			
	Appraiser 4	Appraiser 5	Appraiser 7
Item 7	7	7	7
Item 8	6	7	6
Item 9	5	7	6
10	Item	7	7
11	Item	6	7
12	Item	7	7

13	Item	7	4	5
14	Item	4	7	7
<i>Domain 4. Clarity of Presentation</i>				
		Appraiser 4	Appraiser 5	Appraiser 7
15	Item	7	7	7
16	Item	7	7	6
17	Item	7	7	7
<i>Domain 5. Applicability</i>				
		Appraiser 4	Appraiser 5	Appraiser 7
18	Item	5	4	5
19	Item	5	7	6
20	Item	6	7	5
21	Item	6	7	6
<i>Domain 6. Editorial Independence</i>				
		Appraiser 4	Appraiser 5	Appraiser 7
22	Item	7	7	7
23	Item	4	7	5

<i>Overall Assessment</i>			
	Appraiser 4	Appraiser 5	Appraiser 7
OA1	5	7	6

Appendix H: Summative Evaluations

TITLE OF PROJECT: Lifestyle Modifications to Reduce Hypertension in Obese Patients: A Clinical Practice Guideline

Summative Evaluation Questions:	Expert Panelist 1	Expert Panelist 2	Expert Panelist 3
Please describe the effectiveness (or not) of this project as a team approach related to meetings, communication, and desired outcomes etc.	-Good communication -Consistent with routine meetings -Desired outcome was met with completed guideline that has been implemented	-Effective using a team approach -Good communication and team discussions	-Weekly meeting with good communication. - Shared goals regarding the desired outcome -Good teamwork
How do you feel about your involvement as a stakeholder/committee member?	-Feels fortunate to be involved as this project affects patient outcomes	- Pleased to be able to request changes in the guideline before the implementation	-Happy with involvement -Hard work paid off with accomplishment of the goal
What aspects of the committee process would you like to see improved?	-More participation with the end users in the brainstorming sessions	-Weekly emails with real time updates regarding any changes made	- Early planning regarding potential roadblocks can improve the preparation for unexpected challenges
Describe your involvement in participating in the development/approval of the products.	-Took a passive role due to good leadership -Able to review the guideline during development	-Not involved in the development of pretest -Was involved in the approval of the overall guideline	- Offered suggestions regarding the guideline - Reviewed the final product for approval
Share how you might have liked to have participated in another way in developing the products.	-Would have enjoyed providing the staff education with in-services sessions	-Satisfied with this level of participation	- Had the opportunity to share lessons that can impact future projects
As a team leader how did the student direct the team to meet the project goals	- She did a great job with the pre-test and with gathering results	-She met all project goals - She did not hesitate to ask for advice or assistance	-Good organization helped meet each goal -Faced challenges, but did not lose sight of the projects purpose
How did the leader support the team members in meeting the project goals	-She collected all the necessary information for the guideline development. -She was supportive of all suggestions and comments from all staff.	-She was good with assigning tasks and subsequent follow up. -Kept the project moving forward	-Frequent communication and reassurance -She was available for encouragement -Knew when to step in to help a team member