Synthesis of Evidence

Traditional approaches to hypertension typically include pharmacological interventions and possibly a complementary therapy, depending on a patient's adherence and its availability, such as stress management and dietary interventions. There is a certain population that seeks alternative therapies that can be valuable to hypertensive self-monitoring and reduce the necessity of hypertensive medications. Research has been done on the effectiveness of several nonpharmacological therapies. These therapies include dietary interventions, relaxation therapies, exercises, and intentional health care provider strategies (Murthy et al., 2011; Ae Kyung et al., 2012). These treatments have been researched for their effectiveness in combination with pharmacological interventions and in substitution of pharmacological treatments. The interventions have shown that alternative therapies can lead to a reduction in blood pressure and the amount of hypertensive medications needed (Murthy et al., 2011; Dusek et al., 2008). This reduction in the amount of medication needed will decrease the likelihood of dangerous drug interactions, increasing overall patient safety.

Physical Activity

One cost free intervention to incorporate into a patient's lifestyle is brisk walking for approximately 50-60 minutes a day, three to four days a week. This has shown to be one of the more effective nonpharmacological therapies available. For patients with complications in addition to hypertension that prevent them from performing brisk walking, yoga is a less strenuous physical activity. Although research conducted on the relationship between yoga and hypertension tends to be lower quality, the research still suggests that yoga exercises may contribute to lowering blood pressure and reducing the use of pharmacological interventions (Tyagi & Cohen, 2014). The systematic review conducted by Tyagi and Cohen included studies

that reviewed any specific component of yoga as well as studies with other yoga-like interventions such as breathing exercises and meditation. They found that low impact yoga benefits patients because it incorporates stretching, relaxation techniques, and diaphragmatic breathing (Tyagi & Cohen, 2014). Although yoga has proven to be effective, brisk walking is able to lower the blood pressure more effectively, as evidenced by a 5.39 mm Hg reduction in systolic blood pressure and 6.08 mm Hg in diastolic blood pressure compared to a reduction of 2.36 mm Hg systolic and 2.44 mm Hg diastolic with yoga and yoga-like therapies (Subramanian et al., 2011).

Tai Chi, another exercise alternative, showed improved hypertension and exercise behavior in an eight-week study. The mean drop in systolic blood pressure was approximately 10 mm Hg and an average drop of 2 mm Hg in diastolic blood pressure (Lo, Yeh, Chang, Sung, & Smith, 2012). According to the researchers of this particular study, Tai Chi is a valuable exercise because it is not difficult for participants to adhere to and is a low-impact, non-strenuous activity (Lo, et al., 2012).

Naturopathy

Naturopathy, which includes massages, cold spinal baths, ice massages, hot foot immersions, oxygen baths, cold immersion baths with friction, mud baths, and cold or neutral chest packs, in conjunction with yoga and other physical activities has demonstrated the feasibility of controlling blood pressure without medications (Murthy et al., 2011). It is important to use naturopathy with other physical activities such as yoga or Tai Chi. When naturopathy is used to self-control hypertension, it is possible to lower blood pressure without the use of modern, synthetic options.

Diet Modifications

Relatively similar to the effects of yoga and Tai Chi, hypertension can be managed by diet, specifically salt restriction. Some randomized controlled trials showed a decrease in both systolic and diastolic blood pressure. The participants in these studies were encouraged to choose low sodium options when cooking and shopping. Their compliance was verified, and the participants cut their daily intake of salt in half (Subarmanian et al., 2011). In this group, the mean value of the reduction in blood pressure was 2.6 mm Hg for systolic and 1.6 mm Hg for diastolic. While these numbers do not seem significant, it is possible that a longitudinal study, as well as using reducing salt intake in conjunction with other self-management strategies could show more substantial results. Other studies also suggested that a general improved diet would have a beneficial effect on hypertension (Ziv et al., 2013; DeSimone & Crowe, 2009). Generally, a healthy diet and exercise encourages weight loss, which reduces the risk of developing or exacerbating hypertension.

Nursing Care

One research article addressed the role of the nurse in the management of hypertension. It reviewed the effects of nursing led empowerment therapy on metabolic syndrome risk factors, patient self-management behaviors, and physical activity (Ae Kyung et al., 2012). The patients in this study were subjected to an 8-week intervention program that focused on education regarding hypertension risk factors and therapy, group empowerment sessions, and personalized exercise programs. There were significant differences between the experimental and control groups possibly indicating that nursing led empowerment therapy is beneficial (Ae Kyung et al., 2012).

Finally, the gathered research suggests that medical professionals who incorporate nonpharmacological therapies have the ability to improve clinical outcomes of hypertensive patients (DeSimone & Crowe, 2009). Patients are able to make informed decisions while being educated by physicians, nurse practitioners, and nurses. When utilizing a holistic approach, it is important to focus on the patient's needs and specific desires. Holistic care is necessary to treat hypertension and achieve the best possible outcomes for each patient (DeSimone & Crowe, 2009).

Eighth Joint National Committee Guideline

The clinical guidelines, established by the Joint National Committee, suggest that the first step to treat hypertension is to implement lifestyle modifications and to continue these therapies throughout the course of treatment. It is important during this initial process to set goals with the patient and treat them with medication based on their specific level of health. While the recommendations focus on pharmacological therapies and how they should be prescribed, the clinical guideline highlights the importance of practitioners modifying the medication dosages as lifestyle changes alter their patient's blood pressure (James et al., 2014).

Appraisal of Evidence

A. What are the levels of evidence of your supporting articles?

   a. The levels of evidence for our articles include one level I, three level II's, three level III's, and two level V's. The primary sources included three randomly controlled trials and three quasi-experimental studies. The secondary sources included a systematic review, a narrative literature review, and a clinical guideline established by the Joint National Committee.

B. Is there a sufficient **quantity** of studies or reviews with **consistent** results to support recommendations?

    a. Yes, three of our five recommendations were grade A. Our first recommendation to utilize nonpharmacological techniques when treating hypertension was supported by all of our evidence. Although the clinical guideline did not specifically support our second recommendation to address dietary needs, psychological needs, and physiological needs; the rest of our evidence did support a holistic approach. Three randomized controlled studies, one quasi-experimental study, and one literature review supported encouraging patients to lower their salt intake and select a balanced diet of whole grains, fruits, and vegetables. These recommendations were classified as grade A. The use of breathing techniques and mediation was supported by two randomized controlled studies, two quasi-experimental studies, and one systematic review. None of the articles mentioned any information that these methods were not effective. We classified this recommendation as grade B because of the lack of standardization among studies. Finally, the use of yoga practice was supported by one randomized controlled trial, one quasi-experimental trial, a literature review, and a systematic review. Our final recommendation received a grade B.

C. Are there identified benefits to the patient/provider for applying evidence-based practice recommendations? Are there identified risks?

    a. The identified benefit of applying the evidence-based practice recommendations is lowered systolic and diastolic blood pressure for the hypertensive patients. The results of the studies conducted showed that applying such recommendations was beneficial to the patients who participated. It could possibly reduce the amount of

medications that patients take and improve their quality of life. In terms of risk factors, patients may experience signs and symptoms of hypotension that should be addressed by modifying pharmacological therapies.

D. Have cost studies been done on the recommended action, intervention, or treatment?

a. The studies did not cover the specific costs of nonpharmacological therapies but did mention that yoga was a less costly treatment when compared to drug therapy. Extra research could be done to determine the cost of previously mentioned therapies versus hypertensive medications to manage blood pressure.

Recommendations

- Nurse practitioners should incorporate nonpharmacological interventions in the treatment and management of hypertension to improve clinical outcomes.
    - Grade: A
        - Ae Kyung, C., Fritschi, C., & Mi Ja, K. (2012). Nurse-led empowerment strategies for hypertensive patients with metabolic syndrome. *Contemporary Nurse: A Journal for the Australian Nursing Profession*, *42*(1), 118-128.
        - DeSimone, M., & Crowe, A. (2009). Nonpharmacological approaches in the management of hypertension. *Journal of the American Academy of Nurse Practitioners*, *21*(4), 189-196. doi:10.1111/j.1745-7599.2009.00395.x
        - Dusek, J. A., Hibberd, P. L., Buczynski, B., Bei-Hung, C., Dusek, K. C., Johnston, J. M., ...Zusman, R. M. (2008). Stress management versus lifestyle modification on systolic hypertension and medication

elimination: A randomized trial. *Journal of Alternative & Complementary Medicine*, *14*(2), 129-138. doi:10.1089/acm.2007.0623

- James, P. A., Oparil, S., Carter, B. L., Cushman, W. C., Dennison-Himmelfarb, C., Handler, J., ...Ortiz, E. (2014). Evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the eighth joint national committee (JNC 8). *JAMA, 311*(5), 507-520. doi:10.1001/jama.2013.284427.
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- Murthy, S., Rao, N., Nandkumar, B., & Kadam, A. (2011). Role of naturopathy and yoga treatment in the management of hypertension. *Complementary Therapies in Clinical Practice*, *17*(1), 9-12. doi:10.1016/j.ctcp.2010.08.005
- Subramanian, H., Soudarssanane, M. B., Jayalakshmy, R., Thiruselvakumar, D., Navasakthi, D., Sahai, A., & Saptharishi, L. (2011). Non-pharmacological interventions in hypertension: A community-based cross-over randomized controlled trial. *Indian Journal of Community Medicine : Official Publication of Indian Association of Preventive & Social Medicine*, *36*(3), 191–196. doi:10.4103/0970-0218.86519

        - Tyagi, A., & Cohen, M. (2014). Yoga and hypertension: A systematic review. *Alternative Therapies in Health & Medicine*, *20*(2), 32-59. Retrieved from http://www.alternative-therapies.com
        - Ziv, A., Vogel, O., Keret, D., Pintov, S., Bodenstein, E., Wolkomir, K., ...Efrati, S. (2013). Comprehensive approach to lower blood pressure (CALM-BP): A randomized controlled trial of a multifactorial lifestyle intervention. *Journal of Human Hypertension*, *27*(10), 594-600. doi:10.1038/jhh.2013.29

- Nurses should utilize a holistic approach by addressing dietary needs, psychological needs, and physiological needs.
    - Grade: A

        - Ae Kyung, C., Fritschi, C., & Mi Ja, K. (2012). Nurse-led empowerment strategies for hypertensive patients with metabolic syndrome. *Contemporary Nurse: A Journal for the Australian Nursing Profession*, *42*(1), 118-128.
        - DeSimone, M., & Crowe, A. (2009). Nonpharmacological approaches in the management of hypertension. *Journal of the American Academy of Nurse Practitioners*, *21*(4), 189-196. doi:10.1111/j.1745-7599.2009.00395.x
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intervention. *Journal of Human Hypertension*, *27*(10), 594-600. doi:10.1038/jhh.2013.29

- For patients unable to participate in physical activity, nurses should encourage a reduction in salt intake and a balanced diet of whole grains, fruits, and vegetables.
    - Grade: A
        - Dusek, J. A., Hibberd, P. L., Buczynski, B., Bei-Hung, C., Dusek, K. C., Johnston, J. M., ...Zusman, R. M. (2008). Stress management versus lifestyle modification on systolic hypertension and medication elimination: A randomized trial. *Journal of Alternative & Complementary Medicine*, *14*(2), 129-138. doi:10.1089/acm.2007.0623
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- Nurses should teach patients to utilize relaxation techniques daily, such as breathing exercises and meditation to lower blood pressure.
  - Grade: B
    - Dusek, J. A., Hibberd, P. L., Buczynski, B., Bei-Hung, C., Dusek, K. C., Johnston, J. M., ...Zusman, R. M. (2008). Stress management versus lifestyle modification on systolic hypertension and medication elimination: A randomized trial. *Journal of Alternative & Complementary Medicine*, *14*(2), 129-138. doi:10.1089/acm.2007.0623
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- Nurses should encourage yoga practices when treating patients with hypertension.
    - Grade: B

        - DeSimone, M., & Crowe, A. (2009). Nonpharmacological approaches in the management of hypertension. *Journal of the American Academy of Nurse Practitioners*, *21*(4), 189-196. doi:10.1111/j.1745-7599.2009.00395.x
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