Evidence Analysis Grid

Authors of Article, (Yr) Level of Evidence of article (I – VI)	Purpose of study/or review	Outline: A) Design B)population C) sampling method and size D) description of methods/ interventions (if any) E) instruments used and F) outcomes measured (may use bullet points for each section)	Major findings/findings relevant to your project	Give strengths and weaknesses of this article for your project related to validity, bias and applicability
Ziv, A., Vogel, O., Keret, D., Pintov, S., Bodenstein, E., Wolkomir, K., & Efrati, S. (2013). **Level of Evidence: II** Caroline Wisdom	The aim of this study was to compare the effects of Comprehensive Approach to Lower Measured Blood Pressure (CALM-BP) with the standard recommended DASH plus exercise intervention on BP, medication use, and cardiovascular risk factors in hypertensive population treated with at least one BP-lowering drug.	**A)** Randomized Control Trial **B)** Population included adults aged 22-75 with BP of systolic 120-180 mm Hg and diastolic 70-100 mm Hg treated with at least one antihypertensive drug **C)** Convenience Sample from Israeli community. Participants were recruited from the community and from the medical center patients. Researchers posted advertisements in local newspapers and on the medical center website. 113 were selected for randomization. **D)** Participants were randomized to either CALM-BP or to DASH plus exercise control group and observed over a period of 16 weeks. Patient follow-up continued for an additional 6 months. Interventions included for both groups were participating in a 45-min group walk once a week with additional walking on their own, a lecture about the diet utilized by the specific control group, and a group meal. The CALM-BP group also utilized relaxation and stress management including a 1 hour relaxation session of yoga and qigong movements, breathing and meditation, and group counseling meetings. A 10-min qigong guided imagery audio CD was also used once a day. Both groups filled out questionnaires about adherence to the program at week 4 and week 10. Patients were taken off medications if the mean systolic BP was <110 mm Hg on two consecutive days in conduction with	-The CALM-BP group demonstrated BP reduction mainly during the first 5 weeks as opposed to a steady decrease in the DASH group. -In some patients, medications were reduced or stopped due to signs and symptoms of hypotension. The first drugs to be dropped according to protocol were diuretics. 70.4% of the CALM-BP group stopped taking their diuretics as opposed to only 30.8% of the DASH group. -A significant increase in quality of life was observed in the CALM-BP group. No significant improvement was observed in the DASH group. -Hypertensive individuals can make lifestyle changes that lower BP, reduce medication usage, and improve lipid and blood glucose profiles. -In the CALM-BP group, it is assumed that the change in diet featuring whole grain rice as the major component was significant in reducing the blood pressure because most changes occurred in the first 5 weeks. -The CALM-BP saw a large	**STRENGTHS:** The study utilized statistical analysis to compile results and calculated the p-value to determine the significance of findings. The study included stress reduction techniques as a method to lower BP, which is the main interest of our project. The study compared two different methods of nonpharmaceutical BP control. This was the first study to assess a multifactorial treatment approach for BP control. **WEAKNESSES:** Self-reported adherence questionnaires are based on the honesty of participants and may not be accurate. Patients also took their own BP at home, which may have resulted in errors. Study was conducted in Israel. Findings about complementary therapies and dietary changes may be difficult to apply to an American culture. The small sample and short amount of time the study was conducted may have limited

		reduced or discontinued in the following order: diuretics, beta blockers, ACE inhibitors, and angiotensin-converting enzyme inhibitors. **E)** 24-h ambulatory BP measurements were taken at the beginning and end of the 16-week intervention period using the ABP monitors made by Spacelabs healthcare. Daily BP measurements were taken by participants at home using Omron M2 blood pressure monitoring devices. Life quality Short Form 36 questionnaires were filled out, and fasting blood samples were obtained at the beginning and at the end of the 16-week period. **F)** Outcomes measured included self-reported adherence, change in BP and BP medication, life quality, adverse events, and serum lipid levels..	loss was observed suggesting that weight loss was not a significant contributing factor. -The success of the individuals in the program may have been related to the support system and group activities. -There is a beneficial effect of a multifactorial	interventions were utilized, it is difficult to identify the significance of each contributing factor to lower BP.
Tyagi, A. & Cohen, M. (2014). **Level of Evidence: V** Caroline Wisdom	The systematic review documents published studies on yoga and BP and explores the current evidence for specific practices and potential underlying mechanisms.	**A)** Systematic Review **B)** The review included studies with yoga or yoga-like interventions. Studies on other types of meditations were excluded. **C)** Databases such as PubMed, PsycINFO, CINAHL, Scopus, and ScienceDirect were searched. Because of Indian yoga origins, IndMED, medIND, *Yoga Mimamsu*, and *International Journal of Yoga* were also searched. All studies that evaluated BP as a primary or secondary outcome for yoga or yoga-type interventions were included. 120 studies (39 cohort studies, 48 RCTs, and 3 case reports) were analyzed. **D)** Interventions included relaxation, breathing, integrated yoga techniques, biofeedback, and the RESPeRATE device. **E)** Interventions vary based on the specific studies. **F)** Blood pressure, heart rate, number of cardiovascular events, mood, sleep quality, weight, blood glucose, and lipid index	-Studies suggest that yoga and yoga-like interventions are useful for lowering BP in patients. -Research also suggests that yoga practices may contribute to reducing the use of pharmacological methods to lower BP. -Most studies that involve yoga and hypertension have a poor design and small sample sizes. -Because of the lack of standardization, it is difficult to recommend a protocol from the analysis of current studies. -Future studies should focus on high quality clinical trials that have specific guidelines for the yoga practices utilized.	**STRENGTHS:** The search method was effective and utilized appropriate databases in order to be effective. The article reviews 48 randomized control trials. The studies included both healthy and diseased people. The review identifies the gaps in research and provides suggestions for future studies. **WEAKNESSES:** The authors admit that many studies were poorly designed. Guidelines are difficult to establish because of the lack of standardization in yoga practices. The review was only conducted by two authors and does not fully explain the significance of the combined findings.
Subramanian, H., Soudarssanane, M. B., Jayalakshmy, R.,	The purpose of this study was to test the efficacy of	**A)** Cross-over Randomly Controlled Trial **B)** Pre-hypertensive/ hypertensive young		**STRENGTHS:** The results of the research in the

Thiruselvakumar, D., Navasakthi, D., Sahai, A., & Saptharishi, L. (2011). **Level of Evidence: II** Marybeth Norton	nonpharmacological interventions in preventing/ controlling hypertension.	adults randomly allotted into a group that he/she had not belonged to in the earlier RCT. **C)** 98 subjects **D)**The subjects reduced their sodium intake, were counseled and performed yoga exercises, and performed brisk walking exercises for 30-45 minutes/day at least 5 days a week for 8 weeks, and their blood pressure values were measured before and after the study **E)** Participants were counseled on the different walking exercises and ways to reduce salt intake, and a qualified yoga instructor taught theme exercises as well as gave them pamphlets about yoga. Data analysis was done using the paired *'t'* and ANOVA with Games-Howell post-hoc tests. **F)** To measure the independent and relative efficacies of Physical Exercise, Salt Reduction, and Yoga, in lowering the blood pressure among young pre-hypertensives and hypertensives by way of a crossover randomized controlled trial.	-This cross-over RCT reaffirms the effectiveness of physical exercises, salt reduction, and yoga, in significantly reducing blood pressure in young adults and physical exercise would be the most effective. -Salt reduction and yoga should be advocated for those who are not be able to perform physical exercise but need to lower their blood pressure.	article had positive results in all three areas of research. All three methods used to lower BP are nonpharmacological which is applicable to our topic. The newly formed intervention groups in this cross-over trial showed the same results as in the previous RCT conducted; therefore, it has proved the effect regardless of other influences. **WEAKNESSES:** The study was conducted in India. Findings may be difficult to compare to American culture. The article does not state how the blood pressure was measured for each participant, so the results could vary depending on the accuracy of the instrument used to measure. The study was done over an eight-week period, so no long term results can be concluded from this article.
AeKyung Chang, Cynthia Fritschi, Mi Ja Kim (2012) **Level of Evidence: III** Seth Perry	To compare the effect of a nurse-led empowerment-based intervention to that of a standard care on metabolic syndrome risk factors, self-management behaviors, and walking activity in Korean hypertensive patients	**A)** Quasi-experimental **B)** Greater than or equal to 35 years, diagnosed HTN, or taking HTN medications **C)** Convenience sample; 30- Experimental, 22- Control **D)** Pilot study of N=6 to test feasibility; final study was an 8 week empowerment intervention **E)** NCEP-ATP III, Diabetes Empowerment Scale-Short Form, IPAQ-SF, Questionnaire developed by Lee (1995) **F)** Metabolic syndrome risk factors, self-	Nursing-led empowerment therapy has the potential to improve the standard of care and its outcomes for hypertensive patients. The empowerment therapy led to a reduction in certain risk factors such as waist circumference, systolic pressure, and diastolic pressure Walking adherence,	**STRENGTHS:** Research was done with a good sample size (.80) and the results indicated the benefits of this therapy Nursing-led strategies was important to this specific topic due to the nursing implications The study was done over an eight week period and knowing that HTN can be a life-long

		management behaviors, walking activity	empowerment, and self-management had positive significant differences in the experimental and control group's management of blood pressure	issue, having research to back up the therapy's ability to last over time is important **WEAKNESSES:** The study was not randomized. The study was done in Korea which limits its generalizability. The article suggests that more research would be required as well as longitudinal studies that would indicate the therapy's ability to produce results over time.
Dusek, Jeffery A. Hibberd, Patricia L. Buczynski, Beverly, Bei-Hung Chang Dusek, Kathryn C, Johnston, Jennifer M. Wohlhueter, Ann L. Benson, Herbert Zusman, Randall M (2008) **Level of Evidence: II** Cora Wolfington	To compare stress management, specifically relaxation response training, versus lifestyle modification and its effects on systolic hypertension, which could potentially lead to cessation of hypertension medication	**A)** Double- Blind Randomized Trial **B)** Individuals with over the age of 55 years, with blood pressure SBP between 140–159 mm Hg, DBP 90 mm Hg, and taking at least two antihypertensive medications. **C)** Patients were recruited from hospital clinics (MGH and BIDMC) and by brochures, newspaper advertisements, and Internet postings. 61 patients: experimental vs 61 patients: control **D)** *Relaxation Response Group*: At each weekly RR session, trainers provided 15 minutes of instruction in approaches that elicit the relaxation response—diaphragmatic breathing, guided body scan, repetition of a self-chosen word, and mindfulness meditation. *Lifestyle Modification Group:* patients in this control group were asked to listen to a series of different 20-minute lifestyle modification audiotapes daily. At each weekly control session, participants received 60 minutes of written and verbal information about the stress response and its impact on health, identification of	-there are nonpharmacological approaches that can be taken and effective in reducing systolic and diastolic blood pressure -when implementing relaxation and lifestyle modification, there is potential to significantly reduce blood pressure and result in medication cessation -In this randomized trial, it was found that 8 weeks of stress management training (via elicitation of the RR) and lifestyle modification resulted in SBP reduction of more than 9 mm Hg in elderly patients with SH; this supports our paper's topic and our PICO question	**STRENGTHS:** A major strength of our study is that it utilized a double-blind design 44 participants in the RR group (34 after 8 weeks and 10 after 12 weeks) and 36 participants in the control group (33 at 8-week visit and 3 at 12-week visit) were eligible for supervised antihypertensive medication elimination. To reduce bias in analysis, the study blindness was only broken after the final data set was cleaned and frozen for analysis. This adds credibility to the result that patients in the relaxation response group significantly reduced their SBP and were more likely to be able to eliminate the use of antihypertensive medications.

		cardiac risk factors, role of stress in hypertension, and specific guidelines and recommendations for sodium restriction, weight reduction, and improving diet and exercise habits. **E)** a certified, manual, wall-mounted mercury sphygmomanometer, 20-minute audiotape (either on lifestyle modificaton or relaxation techniques), a daily diary that was reviewed with their therapists each week **F)** SBP and DBP after 8 weeks, and whether or not the relaxation response/lifestyle modification interventions positively impacted the SBP and DBP levels, and whether or not patients were eligible for medication elimination protocol based on whether their 8-week or 12-week SBP was below 140 mm Hg and had decreased by at least 5 mm Hg from baseline		The results in the control group are in line with other interventions, which further supports the validity of the conclusions. **WEAKNESSES:** -Eighteen patients did not complete the 8-week visit -There was imbalance between treatment groups in the number of antihypertensive medications that subjects were taking. This was a concern because it might have been easier for patients on three medications to eliminate one medication than those on two medications.
Murthy, S.N., Rao, N.S.N., Nandkumar, B., Kadam, A. (2011) **Level of Evidence: III** Aaron Vollenweider	To see the benefit of the effects of naturopathy (natural treatment options) and yoga in the management of hypertension	**A)** Quasi Experimental (Pre-experimental design) **B)** Patients who were known to have hypertension, and were being treated with antihypertensive medications **C)** Non-probability purposive sampling was used, any patients suffering from certain cardiac, renal, or lung problems that might affect the outcome were excluded. 104 subjects total were used (70 were diagnosed with HTN, while 34 had diabetes mellitus and HTN) **D)** 3 week inpatient study of naturopathy and yoga on HTN. Patients were assessed at admission and discharge. The patients were provided with Naturopathy treatment (Cold spinal bath, Ice Massage, Hot-foot immersion, oxygen bath, cold immersion bath with friction, and mud bath), Dietary Management (low calorie diet, 50 g protein, 40-50g fats, easily digestible carbohydrates, low sodium < 5g per day, and fruits and vegetables rich in potassium), and Yoga treatment. Depending on response to	-Out of the 104 patients, 97 of them had blood pressures within normal ranges, and 53 of those patients were able to cessate their antihypertensive medications. -In patients with just HTN, SBP decreased by 10.9 mm Hg and DBP decreased by 6.7 mm Hg on average. -In patients with HTN and diabetes, SBP decreased by 8.4 mm Hg and DBP decreased by 2 mm Hg on average. -These results show that regardless of whether or not you have a comorbidity such as diabetes, naturopathy and yoga are beneficial in lowering blood pressure.	**STRENGTHS:** the article was able to show that naturopathy is an effective nonpharmacological intervention to help control blood pressure in the presence of more than just HTN The results from this study agreed with those of other studies that indicate lifestyle changes can improve blood pressure levels **WEAKNESSES:** It was difficult to do a randomized trial in this study because people came to the naturopathy centers wanting to undergo yoga and naturopathy; therefore, it would be unethical

		treatment, some patients had their antihypertensive medications withdrawn. **E)** Significance of mean changes between admission and discharge were assessed using paired t-tests **F)** SBP and DBP		to randomly assign them to another form of treatment.
M. Elayne DeSimone, PhD, NPc (Clinical Professor) & Amanda Crowe, MA, MPH (2009) **Level of Evidence: V**	to discuss the holistic evaluation of the hypertensive patient and review evidence-based nonpharmacological treatments to help patients achieve maximum therapeutic benefits with minimal side effects.	**A)** Narrative Literature Review **B**) Individuals with hypertension **C)** N/A **D)** Health sciences literature was reviewed using databases including Medline, PubMed, and Cumulative Index to Nursing and Allied Health Literature. **E)** Nonpharmacological strategies to help reduce hypertension including diet and nutrition, exercise, smoking cessation, device guided breathing, CAM therapies, **F)** Reduction in blood pressure after performing the nonpharmacological methods on a long-term basis	-In this review, nonpharmacological strategies are recommended as successful primary and adjunctive treatment options in the effort to reduce blood pressure. The benefits of the strategies described in this article promote overall health and well-being. -Nurse practitioners who incorporate nonpharmacological interventions in the treatment and management of hypertension can improve clinical outcomes. -To successfully treat hypertension, a holistic approach is necessary -Nurse Practitioners should work closely with patients and really motivate them to maintain health-promoting lifestyle changes and interventions. Pooled clinical data show that after 8 weeks of using the device guided breathing for 15 minutes a day, the sustained blood pressure was reduced by an average of 14/8 mm Hg	**STRENGTHS:** This article discusses the modifiable risk factors for hypertension, and how they can be "amended" through the use of nonpharmacological treatments [The exploration of this information helps answer our PICO question and supports our research of finding ways to reduce blood pressure through nonpharmacological interventions] This study clearly shows that implementing certain health-promoting activities in daily life, continuously, can successfully reduce blood pressure **WEAKNESSES:** This level of evidence is lower on the pyramid; it is non-experimental and does not have a random controlled trial Conclusions are not drawn directly from the evidence and body of research, so there is room for bias

			Evidence supports the use of several CAM activities to help reduce blood pressure (CAM activities such as yoga, certain relaxation techniques, and meditation)	
Lo H-M, Yeh C-Y, Chang S-C, Sung H-C, Smith GD. (2012) **Level of Evidence: III** Anna Grace Blackman	To evaluate the effects of a Tai Chi exercise program on blood pressure of patients with hypertension.	**A)** Two-group pretest and posttest quasi-experimental design **B)** Adults with hypertension who had no cardiovascular or kidney disease within the past 6 months no pregnancy or planning pregnancy **C)** 74 participants were recruited from an outpatient hospital in Taiwan. Patients who were recruited on days Monday and Wednesday were assigned to the experimental group while patients recruited on Tuesday and Friday were assigned to the control group. **D)** The intervention for the experimental group was a 60 minute Tai Chi exercise program in addition to patient education & medication. The patients did the Tai Chi exercise program 3 times a week for 8 weeks. The program consisted of a 15-minute warm-up, a 40-minute exercise session, and a 5-minute cool-down. 31 of the participants only received the medication & patient education without the Tai Chi program. **E)** Digital sphygmomanometers were used to measure blood pressure. **F)** SBP and DBP after 8 weeks of the Tai Chi exercise program and exercise behavior (using the Chinese-version of Routine Health Care Behavior by Hung, Likert-type scale, and Cronbach's alpha coefficient) were the measured outcomes of this study.	-After the 8 week Tai Chi program, the BP of the participants in the experimental group had improved, and so had their exercise behavior. - The results suggest that Tai Chi had significantly reduced the participant's systolic & diastolic BP. -Tai Chi had also improved exercise time & cardiovascular function of the participants. -Tai Chi may be used as an adjunct to cardiac rehab or as an exercise alternative for patients with hypertension -Tai Chi is a form of CAM that nurses can incorporate into the care plans of patients with hypertension in order to manage hypertension.	**STRENGTHS**: This study showed that Tai Chi had improved the BP and exercise behavior of patients with hypertension. **WEAKNESSES**: The study had a very small sample size of 74, and only 58 participants actually completed the study. Participants were chosen by convenience sampling instead of random sampling, therefore this study may not be applicable to all populations. Not all participants were diagnosed the same. 54% were diagnosed with stage I hypertension. This may signify that the results may be different for patients who were diagnosed with different forms of hypertension.
Paul A. James, MD; Suzanne	To take a rigorous, evidence-	**A)** Information was pulled from	In the population aged ≥60	STRENGTHS:

Oparil, MD; Barry L. Carter, PharmD; William C. Cushman, MD; Cheryl Dennison-Himmelfarb, RN, ANP, PhD; Joel Handler, MD; Daniel T. Lackland, DrPH; Michael L. LeFevre, MD, MSPH; Thomas D. MacKenzie, MD, MSPH; Olugbenga Ogedegbe, MD, MPH, MS; Sidney C. Smith Jr, MD; Laura P. Svetkey, MD, MHS; Sandra J. Taler, MD; Raymond R. Townsend, MD; Jackson T. Wright Jr, MD, PhD; Andrew S. Narva, MD; Eduardo Ortiz, MD, MPH (2014). **Level of Evidence: I**	based approach to recommend treatment thresholds, goals, and medications in the management of hypertension in adults	randomized controlled trials **B)** Adults aged 18 years or older with hypertension **C)** The panel members appointed to JNC 8 were chosen from over 400 nominees based on expertise in hypertension (n = 14), primary care (n = 6), including geriatrics (n = 2), cardiology (n = 2), nephrology (n = 3), nursing (n = 1), pharmacology (n = 2), clinical trials (n = 6), evidence-based medicine (n = 3), epidemiology (n = 1), informatics (n = 4), and the development and implementation of clinical guidelines in systems of care (n = 4). **D)** In January of 2013, the guideline was submitted for peer review by NHLBI to 20 reviewers. All of these reviewers had expertise in hypertension. Reviewers also had expertise in cardiology, nephrology, primary care, pharmacology, research (including clinical trials), biostatistics, and other important related fields. The comments from the reviewers were collected, collated, and anonymized; after these comments were discussed, they were incorporated into a revised document. **E)** N/A **F)** Healthy diet, weight control, and regular exercise have potential to improve BP control and reduce the need for hypertension medication -supports the recommendations of the 2013 lifestyle work group	years, use pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥150 mm Hg or diastolic blood pressure (DBP) ≥90 mm Hg and treat to a goal SBP <150 mm Hg and goal DBP <90 mm Hg In the general population <60 years, initiate pharmacologic treatment to lower BP at DBP ≥90 mm Hg and treat to a goal DBP <90 mm Hg.	This clinical guideline contains strong, Level I evidence The panel limited its evidence review to RCTs because they are less subject to bias than other study designs and represent the gold standard for determining efficacy and effectiveness. WEAKNESSES: Although this guideline has evidence-based recommendations for the management of hypertension and probably meets the clinical needs of most patients, these recommendations are "not a substitute for clinical judgment," and decisions about care must carefully consider circumstances of each individual patient This clinical guideline does not directly support our PICO question because it does not discuss nonpharmacological treatment of hypertension