Practice-Based Evidence in Nutrition (PEN) Knowledge Pathway- Should the DASH (Dietary Approaches to Stop Hypertension) nutrition care plan be recommended for overweight hypertensive children? - *A review and update of the literature*

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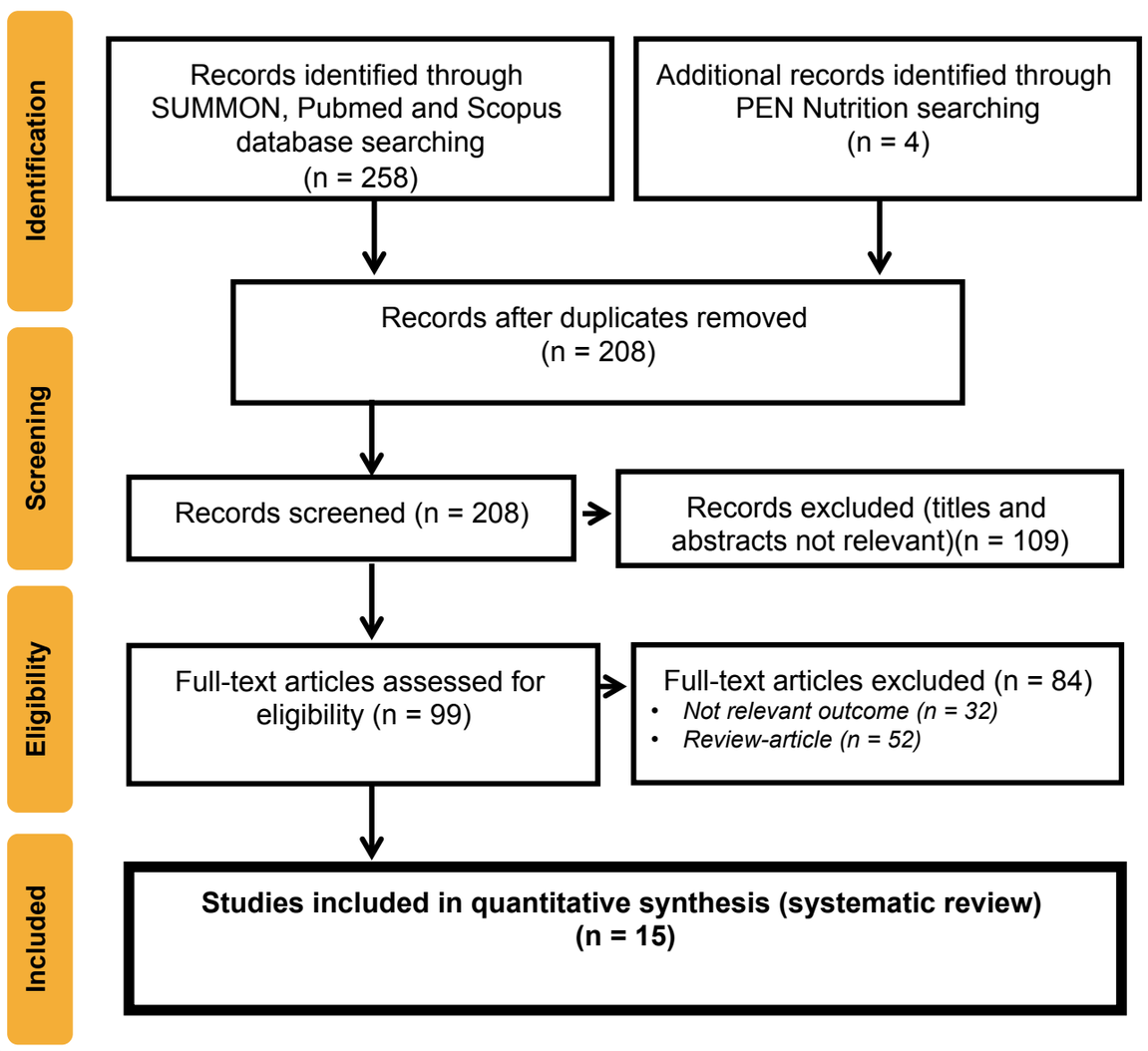
Introduction

The effectiveness of the DASH (Dietary Approaches to Stop Hypertension) diet for adults is well documented in the literature, but not well-known in pediatrics. Pediatric primary hypertension [PPH] is estimated to be between 1-3% in Canada and is compounded by increasing obesity rates, thus further emphasizing the need for research in this population.

Objectives

1) to update research on the efficacy of the DASH diet for this population for the PEN pathway
2) to provide RDs with evidence-based therapeutic guidelines in practice.

Methods



Results

- Diertary Appraoches to Stop Hypertension (DASH) nutrition care plan with increased servings of fruit, vegetables, and dairy along with sodium reduction have demonstrated reductions in blood pressure in the pediatric population.
- Studies reveal this population is not meeting the dietary intake requirements for these key food groups and is consuming excessive amounts of sodium.
- Modest increases in fruit, vegetables and dairy along with sodium restriction are recommended.
- Further, results have also indicate that weight reduction and BMI play a role in blood pressure regulation.
- A summary of the findings can be found in Table 1.

Results

Table 1: ***Summary of findings from journal articles***

Intervention	Journal	Findings
DASH or Elements of DASH	Can J Cardiol. 2017;33(5)	• 2017 Canadian Hypertension Guidelines recommend DASH diet for blood pressure reduction and decreased risk of target organ damage from hypertension and cardiovascular disease
	Hypertension. 2009;53	• Assessment of risk of hypertension in those with T1DM was found to be lower with adherence to the DASH diet
	J Clin Nurs. 2011;20	• Lower systolic and diastolic blood pressure was found in those who ate 2 or more servings of fruit per day
		• Lower systolic blood pressure was found in those that consumed vegetables and pulses daily
	Br J Nutr. 2012;108	• 4 or more servings of fruits and vegetables and increased dairy intake led to a reduction in risk for elevated blood pressure
		• Lower systolic blood pressure was found with higher dairy intake and a reduction in both systolic and diastolic blood pressure was found with the DASH dietary pattern of fruit, vegetables and dairy
	Eur J Clin Nutr. 2016;55	• Systolic and diastolic blood pressure were significantly lower with DASH diet
		• Those with higher intakes of fruit, vegetables and dairy had a decreased risk of developing 3 or more cardiometabolic risk factors
	Eur J Clin Nutr. 2015;54	• Sex differences in dietary patterns and systolic blood pressure were found with higher dietary salt intake in males and higher fruit and vegetable consumption among females
		• A 1 g increase in dietary sodium was associated with increased systolic blood pressure and a 100g increase in fruit and vegetable intake equated to a decrease in systolic blood pressure
	Int J Pediatr Syst Rev. 2016:4(11)	• Systematic review containing 14 studies that relate to DASH or element of DASH. Salt restriction along with increased servings of fruit vegetables and dairy were found to have a positive effect on systolic blood pressure
	J Acad Nutr Diet. 2017;117(9)	• DASH dietary pattern was inversely associated with systolic blood pressure
	Br J Nutr. 2015;133	• DASH elements were associated with a decrease in heart rate and waist to hip ratio but no association with blood pressure
Sodium Restriction	Hypertension 2006;48(5)	• A reduction in both systolic and diastolic blood pressure was demonstrated with a modest reduction in sodium intake
	Eur J Clin Nutr. 2015;69	• Salty snack consumption was associated with an increase in both systolic and diastolic blood pressure among adolescents
	Hypertension 2013;62(2)	• Using RDI cut offs, 80% children in study exceeded the RDI for sodium
		• After controlling for obesity, increased blood pressure was shown for those with sodium intake 1.5 X RDI vs. those below this level
		• This effect was more profound for non-black children than for black children
	JAMA Pediatr. 2015;169(6)	• No association was found between dietary sodium and blood pressure
		• Dietary potassium was found to lower both systolic and diastolic blood pressure with a further decrease demonstrated with an increased potassium to sodium ratio
	Ann Nutr Metab. 2007;51	• No association was found between sodium intake and blood pressure but sodium was associated with BMI
		• Systolic blood pressure was positively associated with age and BMI and negatively associated with dietary calcium
Increased servings of dairy	J Am Heart Assoc. 2017;6	•Inverse relationship was found between systolic blood pressure and dairy intake

Conclusions

Research supporting the use of the DASH diet as a therapeutic strategy for PPH remains limited. However, there is convincing evidence that weight reduction, sodium limitation and increased servings of fruit, vegetables, and low-fat dairy may be beneficial.

Significance to Dietetics

The DASH nutrition care plan may prove to be an effective tool for patients with PPH; however, DASH may not meet dietary requirements for calcium and vitamin D without RD supervision to ensure nutritional adequacy with this population.