

Culturally Tailored Plant-Based Nutrition Education: An Integrative Review

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INTRODUCTION

Consuming plant-based diets (PBD) are cost effective and sustainable for the environment. PBD also prevent and treat chronic diseases including ischemic heart disease, type 2 diabetes, hypertension, some forms of cancer and obesity.^{1,2} PBD also lower mortality rates.² PBD are suitable in every phase of life, from pregnancy and lactation to infancy, childhood, adolescence and adulthood.² The World Health Organization (WHO) recommendations for a healthy diet include a daily intake of at least 5 servings of fruits and vegetables, legumes, nuts and whole grains.³ Typical PBD are low in saturated fats and high in vegetables, fruits, whole grains, legumes, soy products, nuts and seeds. PBD are also rich in fiber, phytochemicals, antioxidants, vitamins and minerals.^{1,2} Individuals may have concerns that vegan or vegetarian diets may lack vitamin B-12 and vitamin D. However, with a balanced diet, outside sources of fortified foods, and/or supplements, individuals will be able to meet the recommended daily intake of both.^{1,2,4} PBD have become prevalent worldwide.⁵⁻¹¹ Considering the global trend in shifting toward PBD, we wanted to better appreciate how education of PBD is carried out. Our aim was to conduct an integrative review of literature databases to summarize what is currently known about the role and impact of culturally tailored plant-based nutrition education.

METHODS

A methodological review using an integrative approach by R. Whittemore and K. Knafel (2005) was conducted in PubMed, CINAHL, PsycINFO, and Google Scholar from 2010-2020 and resulted in 514 articles with 13 articles retained for full-text review.

FINDINGS

Our review showed that culturally tailored plant-based nutrition interventions improved the consumption of fruits and vegetables, lowered obesity, reduced cardiovascular risks, and delayed the time to antihyperglycemic medication use.

CONCLUSION AND IMPLICATIONS

By targeting education to a specific cultural group, the impact and effectiveness of plant-based nutrition interventions are significantly improved. Overall, the result is a healthier lifestyle and overall well-being. Future research should focus on culturally tailored plant-based interventions and chronic disease.



Reduce risk and increase fruit/vegetable consumption



Authors (Year)/ Rigor/Study Type	Culturally Tailored Intervention/Diet Type	Outcomes
Chen et al. (2014) H* Mixed methods (Surveys, focus groups)	Menu ↑FV	Increased: • Familiarity/preferences for fruits and vegetables • Consumption of vegetables • Involvement in home food preparation
Davis et al. (2016) H RCT	Curriculum, Menu ↑FV	• Participants vs. controls improved scores for identification of vegetables (+11% vs. +5%; P=.001), nutrition & gardening knowledge (+14.5% vs. -5.0%; P=.003) and were more likely to garden at home (+7.5% vs.-4.4%; P=.003). • The intervention did not result in significant improvements in self-efficacy to eat FV, to garden or cook, willingness to try FV.
Shaikh et al. (2011) L Pre- and post-test with focus groups	Curriculum ↑FV	• Subgroup with low baseline autonomous motivation mediated 17% of the effect of the Group 3 intervention on fruit and vegetable intake. • Conversely, social support, self-efficacy, and controlled motivation were not significant mediators.
Alcazar et al. (2017) L Qualitative (Photovoice)	Community-based, Language ↑FV	• Themes that emerged during the produce distribution period included: cost savings, increased variety and accessibility of fresh produce, and ability to practice healthy eating. • Themes that emerged when the produce distribution was no longer in session included: increased costs, lack of variety, the continued effect of Brighter Bites, and innovative ways to cook with produce.
Baruth & Wilcox (2017) H Group randomized design	Community- and Faith-based ↑FV	• Despite the significant increases in the fruit and vegetable and physical activity groups, none of the hypothesized mediators were significant mediators of change in physical activity or fruit and vegetable consumption. • When examining each path of the mediation model, the intervention did not change any of the hypothesized mediators. However, changes in some mediators were associated with change in outcomes.
Gatto et al. (2012) H Quasi-experimental	Curriculum ↑FV	• Results suggest that a cooking, nutrition, and gardening after-school program in a garden-based setting can improve attitudes and preferences for fruits and vegetables in Latino youth, which may lead to improved nutritional habits and dietary intake and reduced health disparities.
Greenlee et al. (2016) H Pre- and post-test	Language ↑FV	• At 12 months, the intervention group compared to the control group reported higher increases in mean daily fruit/vegetable servings, and non-significant decreases in percent calories from fat. • Compared to controls, participants in the intervention group had higher increases in plasma lutein, and borderline significant increases in global DNA methylation.
Ramal et al. (2018) H Experimental randomized controlled community pilot study	Language PB	• Mean A1C levels decreased from baseline to 6 months for both groups.
Ornelas et al. (2017) L Surveys	Gardening ↑FV	• Increased fruits/vegetable consumption in those that gardened more frequently. • 51% of the sample gardened, and on average participants gardened 8.9 times per month. • Lack of time (53%) and financial barriers, such as gas for transportation or irrigation (51 and 49%, respectively), were reported as barriers to gardening. • Most participants reported low levels of self-efficacy (80%) and behavioral capability (82%) related to gardening. • Those with higher levels of gardening self-efficacy and behavioral capability reported more frequent gardening. • There was a positive association between FV consumption and gardening, with those gardening more than 4 times per month eating about 1 more serving of FV per day than those gardening 4 or fewer times per month.
Singh et al. (2020) H Mixed methods (Quasi-experimental, pre- and post-test, interviews)	Curriculum, Language, Menu PB	• For children ages 5-12 years who were overweight/obese, no evidence of excess weight gain found (BMI Z scores post-pre = -0.02, p = 0.11). • Among the parent/guardians who were overweight or obese, there was a decrease in BMI that was stronger in men (BMI post-pre = -0.75 kg/m ² , p = 0.01) than in women (BMI post-pre = -0.12 kg/m ² , p = 0.30).
Esposito et al. (2014) H RCT	Menu LCMD	• In patients with newly diagnosed type 2 diabetes, a low-carbohydrate Mediterranean diet (LCMD) resulted in a greater reduction of HbA1c levels, higher rate of diabetes remission, and delayed need for diabetes medication compared with a low-fat diet. • LCMD group had significantly greater reduction in weight than low-fat group in first year. (absolute difference in weight loss of 2kg which decreased over 6 years)
Takke et al. (2020) H Cross-sectional	Curriculum, Language, Menu WFPB	• All participants improved baseline mean pre-obesity BMI range to normal BMI range (from 26.4 to 23.9 kg/m ² p < 0.001); were physically very active (Long International Physical Activity Questionnaire (L-IPAQ) score: 5542 METs min/week), had good sleep quality (Pittsburgh Sleep Quality Index (PSQI) score: 2.7), and perceived low stress questionnaire (PSQ) score: 0.3.
Schwarz et al. (2014) H Exploratory 8-month prospective	Curriculum, Menu V	• Vegans following a whole food diet had a borderline supply of vitamin B12. • Folic acid, vitamin B6, TSH, iron metabolism, and the blood count were in the normal range. • Vegans taking dietary supplements demonstrated satisfactory overall results. • Ingestion of sundried mushrooms can contribute to the supply of vitamin D.

*KEY:
 ↑FV: increase fruits and vegetables
 H: High rigor
 LCMD: low-carbohydrate Mediterranean diet
 L: Low rigor
 PB: plant-based
 V: vegan
 WFPB: whole food plant-based