PLANT-BASED INTERVENTIONS TO IMPROVE HEALTHCARE WORKER WELLNESS

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Abstract

Purpose: To increase staff knowledge and improve well-being through plant-based cooking demonstrations and nutrition education sessions at a single health facility in Hawai‘i.

Background: Healthcare workers experience stress from burnout, which has a negative impact on their health. Plant-based nutrition enhances well-being and provides benefits for health promotion and management. Barriers to improved nutrition are lack of accessibility to healthy food and workplace culture that devalues self-care.

Methods: At two Wahiawā Center for Community Health (WH) staff meetings, one in July and one in October, participants were asked to complete a Likert-Scale item online questionnaire to assess baseline attitudes and knowledge regarding a plant-based diet. Immediately following the pre-questionnaire, participants viewed a recorded plant-based cooking demonstration/education session and engaged in a virtual Q&A session. Intervention experience and effectiveness were assessed by measuring participants' change in attitudes, knowledge, and self-perceptions of well-being post-intervention with the same questionnaire and check-ins to assess perceived wellness over time.

Results: Twenty-two healthcare workers were included in the study. There was an overall increase in knowledge and improvement in attitudes post-intervention. Increased knowledge and improved perceptions of well-being and staff engagement allowed WH staff members to feel supported in the workplace.

Conclusions: The findings indicate increased staff knowledge, positive attitudes toward plant-based diets, and improved well-being over time. These cooking demonstration and education sessions at WH successfully measured healthcare workers' knowledge and attitudes around plant-based eating and could be used in the evaluation of future work wellness interventions.

Implications: To increase knowledge and wellness for healthcare workers, engaging activities and educational programs that support staff health and well-being should be provided.

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Introduction to the Problem

Healthcare workers experience emotionally and physically demanding environments, high expectations, and long hours, which lead to increasing job-related frustration. Thus, many healthcare professionals suffer from burnout—a psychological syndrome involving emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (Bethea, Samanta, Kali, Lucente, & Richmond, 2019). Burnout has a negative effect on health and well-being and is associated with lower quality of care, increased medical errors, decreased staff engagement and patient satisfaction, higher absenteeism and turnover rates, and increased health care costs (Buck, Williamson, Ogbeide, & Norberg, 2019). As a result, burnout has been identified by healthcare professionals as a major barrier to a healthy work environment (Bethea et al., 2019).

Various types of wellness, resilience, and stress-management interventions have been studied in populations of healthcare providers (e.g., Agarwal et al., 2015; Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013; Hart, Paetow, & Zarzar, 2018; Katcher, Ferdowsian, Hoover, Cohen, & Barnard, 2010; Wietmarschen, Tjaden, Vliet, Battjes-Fries, & Jong, 2018). As a form of wellness, balanced diets have enhanced staff performance in workers who must prioritize the safety of others, including healthcare providers (Hamidi, Boggild, & Gheung, 2016). Improved nutrition is an important means of enhancing healthcare providers' well-being, and there are health benefits of a plant-based diet for disease prevention and health promotion and management. The main barriers to improved nutrition for healthcare providers are lack of breaks, lack of accessibility to healthy food, and a workplace culture that devalues self-care (Hamidi et al., 2016).

To support and improve employee wellness and to mitigate the toll of stress, chronic disease, and healthcare disparities, many organizations and communities have begun to partner with The Blue Zones Project (Buettner, Skemp, & Frates, 2016). The Blue Zones Project is a community well-being improvement program designed to change the way people experience the world around them by utilizing a supportive environment to initiate change in the individual. The Blue Zones Project's best practices rely on people, places, and policy as catalysts to create change. This includes providing support for physical activity, food choices, and connection. As a result of implementing Blue Zone programs, many communities have directly benefited and have seen enhanced well-being, improved measures on health outcomes, and reduced healthcare costs.

Since 2005, awareness of the Blue Zones has grown and in 2015, community projects were launched in Hawai'i (Buettner, Skemp, & Frates, 2016). Through the Blue Zones Project, community organizations can become an approved site and receive supportive resources for employee wellness. One of the organizations that took interest in becoming a Blue Zones Approved Site was Wahiawā Health (WH). With the purpose of supporting employee wellness and reducing detrimental effects of working in a high stress field, WH achieved Blue Zones approval in June 2020 (K. Steinhelfer, personal communication, June 5, 2020).

Needs Assessment

Although many factors contribute to employee stress, a leading concern among workers at WH is the long work hours, which reduce the amount of time WH employees have to care for themselves (C. Endrizal, personal communication, October 23, 2019). Because WH is a Federally Qualified Health Center (FQHC) Look-Alike, healthcare staff are taking on heavy workloads with limited resources. Long workhours with decreased time to care for self,

including time to prepare and eat nutritious foods, increase the risk of burnout, which in turn leads to increased absenteeism and decreased staff morale/engagement.

With minimal time for self-care outside of work and during work, it is difficult for employees to dedicate time toward The Blue Zones Project initiatives. Efforts are also going towards applying for federal funding, which is time consuming for leadership and limits their ability to attend to additional staff needs. As a result, innovative interventions to improve employee wellness at work within the scope of the Blue Zones Project best practices were identified by the team at WH. Team members include the DNP Student, chief quality officer and dietitian, pediatric nurse practitioner, telehealth director of clinical operations, and office manager.

Literature Review

The literature was searched via the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PubMed databases. In CINAHL, subject headings (MH) *wellness interventions in healthcare* and *interventions to reduce burnout and job stress in healthcare* were utilized. The following key words were utilized in both CINAHL and PubMed search with no limitations placed on dates of publication: provider, healthcare workers, nursing, nurse practitioner, physician, burnout, job stress, exhaustion, resilience, wellness, plant-based, nutrition, diet, and staff engagement.

A total of 160 articles were obtained from the search. After narrowing the results by refining keywords, 79 articles were obtained. A review of abstracts determined 22 articles were potentially relevant. Those 22 articles were read, and 18 articles were deemed relevant. Four additional articles were obtained from the articles' reference lists. Thus, 22 articles were graded according to the Strength of Recommendation Taxonomy (SORT) tool (Ebell et al., 2004) to

critically appraise the articles and identify the level of evidence (Appendix A, Table A1). The evidence in the literature ranges from strong to weak, and levels from SORT were used to rate the evidence to help assess its overall quality.

Literature Synthesis

The Impact of Burnout in Healthcare Settings

Professional burnout is a complex syndrome comprised of emotional and physical exhaustion, depersonalization and diminished sense of personal accomplishment. Among healthcare workers burnout is linked to poor staff health and decreased quality of medical care (Bethea et al., 2019; Buck et al., 2019; Grabbe, Higgins, Baird, Craven, & Fratello, 2019; Ha, 2019; Lubinska-Welch, Pearson, Comer, & Metcalfe, 2016; See et al., 2018). Recent studies indicate burnout has been increasing and currently affects approximately 50% of healthcare providers (Bethea et al., 2019; Buck et al., 2019; Moss, Good, Gozal, Kleinpell, & Sessler, 2016). Burnout is often associated with low job satisfaction and is common in trauma/high acuity settings and rural settings where heavy workloads, high levels of stress, and underserved patients are prevalent (Bethea et al., 2019; Diller, Osterman, & Tabatabai, 2018; Lubinska-Welch et al., 2016; Mealer et al., 2012; Moss, Good, Gozal, Kleinpell, & Sessler, 2016; See et al., 2018; Toullic, Papazian, & Kentish-Barnes, 2007). Using the base-case model, the cost of burnout at a national level is estimated at approximately $4.6 billion a year related to physician turnover and reduced productivity, and at an organizational level, the annual cost attributable to burnout was estimated at $7600 per physician (Han et al., 2019).

Wellness Interventions for Healthcare Workers

In recent studies, there is a call for more nutrition education and self-care programs (Grabbe et al., 2019; Lubinska-Welch et al., 2016; McElligott et al., 2010). Educational

interventions for clinical nurses to support self-care practices may improve patient outcomes (Grabbe et al., 2019). In a recent study by Wietmarschen et al. (2018), and an earlier study by Fortney et al. (2013), mindfulness training was found to improve stress resilience, self-compassion, and self-reflection in primary care physicians. Mindful eating (in which there is planning, physical cues, feelings about food, and development of awareness of experiences) has beneficial effects on nutrition behavior, contributes to mental well-being, and alleviates stress (Bukowska-Durawa, Haynes, & Luszczynska, 2010; Choi et al., 2019; Fujishiro et al., 2015; Hamidi, Boggild, & Cheung, 2016).

Nutritional interventions decrease depression and anxiety, and increase work productivity (Agarwal et al., 2015; Katcher et al., 2010). Worksite plant-based nutrition programs improve quality of life for employees (Katcher et. al, 2010). Specifically, plant-based workplace dietary interventions that included weekly nutrition education increased knowledge and improved indicators for depression, anxiety, and stress (Agarwal et al., 2015). Furthermore, employee integration of a plant-based diet improves physical functioning, mental health, energy, and work productivity. Healthcare workers feel positively toward workplace wellness activities that support their health (Bukowska-Durawa, Haynes, & Luszczynska, 2010; Christensen et al., 2011; Grabbe et al., 2019; Stanulewicz et al., 2019; Wietmarschen et al., 2018). Workplace wellness programs promote and improve health and well-being, productivity, job satisfaction, and reduce healthcare costs (Christensen et al., 2011; Fortney, Luchterhand, Zakletskaia, Zgierska, &Rakel, 2013; Grabbe et al., 2019; McElligot et al., 2010).

Diet and Nutrition

Healthy diets decrease risks linked to chronic diseases such as diabetes and heart disease, which are currently leading causes of death worldwide (Christensen et al., 2011; Stanulewicz,

2019; Torquati, Kolbe-Alexander, Pavey, & Leveritt, 2018). Muskuloskeletal (MSK) concerns are a main cause of absenteeism and are prevalent in nurses, yet can be reduced with improved nutrition and exercise (Christensen et al., 2011; Davey, Cummings & Newburn-Cook, 2009; Fujishiro, Lawson, Hibert,Chavarro, & Rich-Edwards, 2015; Grabbe et al., 2019; Stanulewicz, 2019; Torquati et al., 2018).

Establishment and maintenance of healthy nutrition and exercise depend on the individuals' choices as well as factors that influence their choices, such as work-related stress and their environment. Healthcare workers who have stressful jobs and work long hours tend to have poor diets and physical inactivity (Fujishiro et al., 2015; Stanulewicz et al., 2019; Torquati et al., 2018). Although healthcare providers are often aware of the benefits and importance of healthy lifestyles, up to 53% report poor nutrition and/or sedentary lifestyle (Bukowska-Durawa, Haynes, & Luszczynska, 2010; Stanulewicz et al., 2019). Additionally, while healthcare providers value healthy lifestyle and promote healthy behaviors to patients, they find it difficult to practice self-care and maintain a healthy diet themselves (Bukowska-Durawa, Haynes, & Luszczynska, 2010; Choi et al., 2019; McElligott, Capitulo, Morris, & Click, 2010).

Lower stress and anxiety are associated with avoidance of animal fats and can be attributed to healthier diet patterns (Beezhold, Radnitz, Rinne, & Dimatteo, 2015; Medawar, Huhn, Villringer, & Veronica Witte, 2019). Fruits and vegetables provide abundant antioxidant nutrients and phytochemicals, and intake has been associated with lower biomarkers of oxidative stress and inflammation and better mental health (Beezhold, et al., 2015; Medawar et al., 2019). Beezhold et al. (2015) found that individuals following plant-based diets had significantly less negative emotion, fatigue, better mood, and coped better with mental stress than did those eating meat. Lifestyle interventions have an important role in physical and mental health, and among

the most effective of these is the use of plant-based diets (Agarwal, Mishra, Xu, Levin, Gonzales, & Barnard, 2015).

Quality, Quantity, and Consistency of Evidence

Though much of the literature highlights the benefits of wellness interventions to support improved self-care among healthcare providers, there is little evidence describing the outcomes such interventions have on healthcare providers. There is no standard way to implement a wellness program across all healthcare settings. However, the literature has been consistent in these findings: (a) healthcare workers have a positive attitude about reducing burnout but feel they lack the support, knowledge, and time to reduce stress in the workplace; (b) leadership and organizational support empowers healthcare workers to practice self-care; (c) wellness education and training are lacking, but when utilized, found to be helpful in providing nurses and clinicians with knowledge and skills to practice self-care and healthy eating; (d) nutrition is a key factor in physical and mental well-being, and an important part of healthcare worker wellness; and (e) more research on the impact of workplace wellness interventions, especially plant-based nutrition interventions, is necessary.

Limitations and Gaps

Currently, there are no objective tools to evaluate and measure outcomes of wellness interventions on healthcare providers experiencing burnout. There are studies on the need for workplace wellness and self-care programs in healthcare, as well as the benefit they provide, but long-term results have not been examined. Barriers to sustained staff wellness include lack of time or knowledge of self-care practices or other environmental practices (Choi et al., 2010; Lubinska-Welch et al., 2016; McElligot et al., 2010).

Many studies have small sample sizes (Bethea et al., 2019; Buck et al., 2019; Diller, Grabbe et al., 2019; Osterman, & Tabatabai, 2018; Fortney et al., 2013; Lubinska-Welch et al., 2016), and lack of control groups (Fortney et al., 2013; Hart, Paetow, & Zarzar, 2018; Wietmarschen et al., 2018). Hart, Paetow, and Zarzar (2018) and McElligot et al. (2010) noted the short duration of their studies, and recommended the studies be replicated for longer periods. Additional limitations in the studies include self-selected participants (Fortney et al., 2013; Wietmarschen et al., 2018) and self-reports, which were found to be a hindrance to some study outcomes (Bukowska-Durawa, Haynes, & Luszczynska, 2010; Klein et al., 2019; McElligot et al., 2010).

Little focus exists in the literature on the impact of nutrition, specifically plant-based diets on health care workers' well-being. Switching to a plant-based diet improves mental and physical health. If healthcare workers are able to eat a plant-based diet, they will have better mental and physical health, which will in turn mitigate burnout.

PICO Question

For healthcare staff at Wahiawā Health, does the implementation of plant-based cooking demonstrations and nutrition education sessions change attitudes, increase knowledge of a plant-based diet, and improve well-being compared to no previous nutrition-based employee wellness interventions?

Purpose Statement

The purpose of this evidence-based quality improvement project is to increase staff knowledge and improve well-being through plant-based cooking demonstrations and nutrition education sessions at WH.

Theoretical Framework

For this project, the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) conceptual framework was utilized; it is designed to increase the impact of health promotion interventions by assessing the factors most translatable from scientific theory to real-world implementation (King, Glasgow, & Leeman-Castillo, 2010). The RE-AIM framework was developed as a tool for translating research to practice. Its goal is to produce programs and policies with a high likelihood for uptake and sustainability in community or clinical settings. The RE-AIM framework was applied to this project through the identification of a need in a FQHC Look-Alike to support staff while they provide care to the underserved community of Wahiawā, Hawai‘i.

The reach factor of the framework refers to the percentage and characteristics of individuals receiving the intervention; effectiveness refers to the impact of the intervention (including anticipated and unanticipated outcomes); adoption relates to the percentage and representativeness of settings that adopt the intervention; implementation refers to the consistency and cost of delivering the intervention; and maintenance refers to long-term sustainability at both the setting and individual levels (King et al., 2010).

Project Goals and Objectives

The project goal was to improve the staff attitudes and knowledge of plant-based nutrition and cooking by implementing two recorded cooking and nutrition demonstration/education sessions via the online Zoom platform with the WH staff, by October 27, 2020. In light of the COVID-19 pandemic, this project was developed so the intervention could be delivered virtually via a recorded presentation, which allowed for physical distancing and also means the recording can be re-used by WH in the future. Immediately following each

recorded demonstration/education session, the DNP student hosted a question and answer (Q&A) session for staff. The evaluation of this project included a student-developed questionnaire to assess attitudes and knowledge of a plant-based diet before and after the demonstrations/education sessions. In addition, three staff check-in questions were asked by the DNP student and content expert via email regarding staff-reported experience of the demonstration/education sessions and self-perceived impact had on their wellness (Appendix C).

The project objectives included: (a) by March 13, 2020, the DNP student developed pre- and post-implementation questionnaire to assess attitudes, knowledge, and intervention experience; (2) by July 28, 2020, the student provided WH staff with a pre-implementation questionnaire to collect baseline data and assess attitudes and knowledge of a plant-based diet; (3) between July 28, 2020 and October 27, 2020, the student implemented two virtual demonstration/education sessions; provided WH staff with post-implementation questionnaire and collected post-implementation data immediately after the intervention; (5) between October 27, 2020 and January 31, 2020 the DNP student and content expert provided three virtual check-ins with WH staff; (5) between November 20, 2020 and January 31, 2021 the DNP student conducted three food sampling events at WH which provided participants with the dishes made in the demonstrations, and; (6) by January 31, 2021, the DNP student evaluated the impact of the demonstration/education sessions, comparing baseline data to end of implementation data.

Project Plan

The project design is non-experimental with a pre- and post-implementation questionnaire, including Likert scale and open-ended questions as measurements. The Iowa Model-Revised (Lloyd, D'Errico, & Bristol, 2016) guided project design. Major tasks for the

project included engaging participants, utilizing resources, project implementation, obtaining data, and creating an evaluation plan.

The DNP student collected baseline data to assess attitudes and knowledge regarding a plant-based diet; examined intervention experience and effectiveness by measuring change in attitudes, knowledge, and self-perceptions of well-being after implementation compared with baseline. The Project team was consulted to develop the project's steps.

Setting

WH is a FQHC Look-Alike located in Wahiawā, Hawai'i. Since 2012, WH has employed approximately 30 staff members, including physicians, nurse practitioners, medical assistants, nutritionists, pharmacists, and support staff, who render primary care, pediatric, women's health, psychology, podiatry, and nutrition services through scheduled and walk-in appointments. There are also student training and volunteer opportunities.

Participants

The participants were 22 WCCH employees working at the facility between July 2020 and January 2021. The inclusion criterion consisted of being a staff member at WCCH who attends monthly staff meetings, and the exclusion criterion was being all other people other than WCCH staff who attend monthly staff meetings.

Human Subjects Consideration

The DNP student has completed the Collaborative Institutional Training Initiative (CITI) training for research ethics and compliance, and Health Insurance Portability and Accountability Act (HIPAA) training on patient privacy protections. This DNP project entailed making judgements to implement plant-based cooking demonstrations and nutrition education, for Wahiawa Health staff members who hold positions of employment within a FQHC Look-Alike.

Participants were surveyed prior to and after the implementation. Participation was voluntary, and the participants were allowed to discontinue participation at any time. Refusal to participate or the decision to withdraw did not result in any penalties or loss of benefits to which the participant is otherwise entitled. All these tasks are related to quality improvement and did not produce generalizable knowledge. Protected health information was not collected nor retained. No identifying information was used in data analysis procedures or in project reports. Thus, this project did not require IRB application and review.

Evaluation Plan

Measurements

Participation. Participation was determined by the percentage of the total WH staff present at the demonstration/education sessions, as well as number of questionnaires completed.

Change in attitudes and knowledge. The change in attitudes and knowledge was assessed by a questionnaire completed pre- and post-intervention. A unique questionnaire was created and includes Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree), and qualitative open-ended questions (Appendix B). Developed with The Blue Zones Project Plant Slant principle in mind, the questions were adapted from recent studies and modified to suit the need for my population (Faber et al., 2020; Krause & Williams, 2019). The pre-implementation questionnaire assessed baseline attitudes and knowledge of the benefits of a plant-based diet and cooking plant-based meals. The post-implementation questionnaire assessed the effectiveness of the demonstration/education sessions in improving the healthcare workers' attitudes and knowledge about plant-based diets and applying gained knowledge to improve their well-being.

P**ost-intervention staff check-ins.** The Post-intervention staff check-ins consisted of three unique questions created to assess overall value and sustainable impact of the intervention.

(Appendix C). Qualitative data, in the form of written responses to the check-in questions was gathered from staff via email by both the DNP student and the content expert after the second implementation. Verbal feedback was collected in-person post-intervention by the DNP student at the food sampling events, which were administered three times (November 20, December 17, and January 22).

Evaluation of the Implementation and Practice Change

Data Collection. On July 28, the DNP student collected baseline data on WH staff attitudes and knowledge of a plant-based diet and plant-based cooking before the staff viewed the first virtual cooking demonstration. After the staff viewed the demonstration, the DNP student collected data from questions that emerged from the question-and-answer session (Q&A) and collected the post-implementation questionnaire via Zoom. The feedback from the staff Q&A was documented on a spreadsheet, and the data was looked at to assess the level of engagement from WH staff. This documentation could provide valuable information to help guide future demonstration/education sessions. On October 27, after the second virtual cooking demonstration, a second post-implementation questionnaire was collected via Zoom. The DNP student grouped the results by demonstration/education session date under pre-implementation and post-implementation categories on an Excel spreadsheet.

Between July 28 and December 31, the DNP student provided WH staff with three open-ended check-in questions at two separate times via email (Appendix C), and by January 31, collected final feedback from WH staff via email (Appendix C). Staff members emailed the DNP student and the content expert with their responses, and the DNP student organized the results according to date and topic in the aforementioned spreadsheet.

Data Analysis. The DNP student evaluated the effectiveness of the demonstration/education sessions based on change in staff attitudes, change in plant-based diet knowledge, and perceptions of wellness impact. Deidentified and aggregated data was used. Questionnaire responses were analyzed using a Likert-type method, manually entered into a spreadsheet to calculate mean scores for each of the eight items in the pre-implementation survey and compared with the mean score of each item in the post-implementation survey per demonstration/education session date. Pre-implementation mean was subtracted from post-implementation mean to determine trends as an increase, decrease, or no change in each element (attitudes or knowledge) experienced by WH staff from before demonstration/education session to after demonstration/education session. Qualitative responses of the three open-ended questions were listed and analyzed individually. Qualitative data collected from the Q&A sessions were grouped by topic and analyzed; staff check-in responses and verbal feedback were added to the data.

Results

One goal of this project was to administer pre- and post-implementation questionnaires to assess attitudes, knowledge, and intervention experience; and the DNP student administered them on the two aforementioned dates with 22 staff members at WH. During the July 28 implementation, one participant had to leave the staff meeting early, so there were 21 staff members who participated in the post-questionnaire. Data was also collected verbally from WH staff members during the food sampling events on November 20, December 17, and January 22, which met another goal to collect data via check-ins with WH staff members. The data was manually entered into a spreadsheet.

Pre-implementation data was used to assess baseline attitudes and knowledge of a plant-based diet, and post-implementation data was used to evaluate the effectiveness of the intervention. The DNP student evaluated the effectiveness of the demonstration/education sessions based on change in staff attitudes, change in plant-based diet knowledge, and perceptions of wellness impact.

When comparing July 28 pre-questionnaire data to post-questionnaire data, there was an increase in knowledge regarding plant-based eating (Table 1). The resulting means of items 2, 3, 4, and 8 were all positive, which indicated an increase in knowledge. The means from items 1, 5, and 7 decreased, which showed participants learned more and gained knowledge. There was a slight decrease in the mean of item 6, "Plant-based diets are easy to prepare," which may be attributed to previous perceptions of "plant-based eating" being simpler recipes with fewer ingredients. The negative mean outcome could also have resulted from perceptions after the first implementation, viewing ingredients they may never have used or even seen (e.g., tofu, liquid aminos) before, being used to make a dish that was new to them.

The pre- and post-means from the second implementation on October 27 also trended positive, with the exception of item 5, suggesting an increase of knowledge of the participants. Regarding item 5, "Plant-based diets are expensive," the mean was slightly decreased (-0.23), indicating an increase in knowledge. The results are shown in Table 1.

Table 1. Pre- and Post-Questionnaire Results

Likert-Scale Items *	July 28			October 27		
	Pre- Mean	Post- Mean	Difference	Pre- Mean	Post- Mean	Difference
1.Plant-based diets consist exclusively of plant-originated products	3.41	2.48	-0.93	3.55	3.73	0.18

Likert-Scale Items *	July 28			October 27		
	Pre- Mean	Post- Mean	Difference	Pre- Mean	Post- Mean	Difference
2. I am aware of the health benefits of a plant-based diet	3.73	4.24	0.51	3.55	4.05	0.5
3. Taking time to nourish my body helps me to better care for patients	4.32	4.33	0.01	4.27	4.36	0.09
4. I am aware of tools and resources to create plant-based meals.	3.45	3.90	0.45	3.23	4.05	0.82
5. Plant-based diets are expensive.	3.59	2.76	-0.83	3.32	3.09	-0.23
6. Plant-based diets are easy to prepare.	3.59	2.76	-0.83	3.59	3.82	0.23
7. Plant-based diets do not provide enough protein or other nutrients.	2.45	2.10	-0.35	2.09	2.14	0.05
8. Plant-based diets are linked to reduced chronic diseases.	3.95	4.29	0.34	3.68	4.00	0.32

*SCALE: 1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree

Themes that emerged from the qualitative data were 1) knowledge about plant-based diets, and 2) well-being.

Knowledge and attitudes about plant-based diets. This first theme included subthemes of benefits and barriers. When asked what was most useful, informative, or supportive, WH staff members reported recipes as being useful to learn, and a willingness and motivation to try making plant-based meals, further expressing appreciation for learning alternative and healthy ways to cook. Over time, new knowledge and improved attitudes of health benefits empowered staff members to share within their communities. One staff member reported, “Your recipes are rippling outside of this health center! They’re being shared throughout the islands and mainland! My sister on Kauai was struggling with nutrition and breastfeeding because her baby is allergic to dairy. She was advised by her provider to switch to a vegan diet, however, was scared of not knowing what changes to make, or where to begin. I shared your recipes, and she and baby are doing great!”

When asked about barriers to plant-based cooking, participants reported self-perceived lack of knowledge. Participants stated, “I don’t know what to buy at the grocery store,” and “I don’t know how to prepare food the entire family will eat.” Many participants outlined not knowing what to do with ingredients, and lack of recipes to be limitations.

Well-being. In this second theme, participants reported improvements in mental and physical health, one by stating “[These demonstrations] provide a possible answer to the ‘4 pm question’: ‘what’s for dinner? That by itself is anxiety reducer.” Another participant noted, “I now realize my diet is horrendous, and [these demonstrations] have helped me conquer my fear of cooking without meat.”

Engagement appeared as a subtheme, and participants reported that the demonstrations had positive impacts on relationships with coworkers and family. The cooking demonstration/education sessions provided a common ground for coworkers that allowed for a shared experience and something to talk about. One participant sent a clinic-wide message via email post-intervention asking, “can anyone tell me where you find liquid aminos in the Wahiawā Foodland?” This created an opportunity for WH staff members to support one another in making healthier food choices, and furthermore, participants reported more open communication with family and coworkers about eating healthier and providing mutual support, encouragement, and motivation. Staff members at WH expressed their gratitude and appreciation for the demonstrations, and some stated that they were going to try it out at home.

Relationship of Results to Purpose

The purpose of this DNP project, which is to increase staff knowledge and improve well-being through plant-based cooking demonstrations and nutrition education sessions at WH, was

accomplished through successful project implementation at Wahiawā Health. The findings suggest an increase of staff knowledge and improvement of staff well-being.

Discussion

Flexibility and adaptability to new plans and protocol due to unforeseen and uncontrollable external circumstances were crucial components to the project's success. The COVID-19 pandemic was a hindrance on initial plans, however, this experience turned into an asset by pushing the DNP student out of comfort and deeper into the role of a clinical nurse leader, who was able to creatively transform challenges into opportunities. In the first virtual cooking demonstration/education session, there was a motivational beginning with the DNP student sharing their personal story and exemplifying the good that can come from creating healthier habits. The first session set the stage by providing background and purpose, and the next session started out in the grocery store to engage and encourage the audience to take action.

In the first implementation's virtual Q&A, details were missed, so for the second implementation, the DNP student encouraged WH staff members to verbally share and recorded the session. This allowed the DNP student to remain more focused on the present moment rather than trying to quickly record data, while missing important feedback in the process.

The IT coordinator who assisted with the first implementation was unable to assist for the second implementation, which prompted the DNP student and content expert to work together to determine a backup plan; if there would be another point of contact, or if we would step into the role. From this collaboration, an alternate way of virtually implementing was developed, and the office manager worked with the content expert to grant Zoom access and hosting capabilities to the DNP student.

Implications and Recommendations

The data in Table 1 as well as the qualitative themes suggest there was an increase in knowledge and a change in attitudes of the participants. Future studies should be conducted to strengthen and expand research. Being that this intervention was carried out during the COVID-19 pandemic, protocol changed, and the DNP student had to adapt to such changes, it would be ideal in the future to implement the cooking demonstration/education sessions in person so staff may more easily engage and connect with one another and the host. Conducting the intervention in person would also allow for more comments and questions to be addressed individually during the sessions, whereas multiple individuals typing into the Zoom chat box at all at once can lead to comments and questions being missed in the moment, especially when staff members are simultaneously speaking out loud and there is little time allotted for the discussion.

Thus, it may be important to have an assistant, or another person to observe and listen as a second set of eyes and ears for the DNP student. This person could also help the DNP student address comments and answer questions, and they could read questions and comments out loud. It could also be helpful to debrief and have a discussion with another person post-implementation. The lack of an assistant may have impacted the results.

To continue this type of intervention in the future, it may be helpful to establish funding for recipe ingredients, cooking supplies, and educational materials. Financial costs were estimated prior to the start of the project and slightly increased after implementing a third food sampling event. Funding may be acquired through donations from local farmers markets, grocery stores, or local organizations who want to support their community healthcare workers.

Strengths and Limitations

There were various limitations and strengths to this DNP project. The COVID-19 pandemic was a barrier that caused several obstacles. The interventions were not presented using

an in-person approach, which made it more difficult for the DNP student to connect with participants during the demonstration session. The online presentation format restricted the DNP student from reading the non-verbal responses of the participants and building rapport.

The pre- and post- questionnaire needed to be administered virtually, and Zoom polling was utilized. Also, since questions and comments were typed into the chat box feature, the chat report was reviewed later by the DNP student. Some of the questions posed in the Zoom live chat session were not seen until the DNP student reviewed the chat transcript after the session. This limitation in the first implementation however, led to a strength in the second implementation, which was recording the meeting and saving conversation text on the computer.

Another constraint was the social distancing requirement due to the pandemic. This affected the implementation of the recipe sampling portion of the project. Because of the social distancing requirement, only 2 people were permitted to be inside the small staff room at one time. Thus, with the DNP student being one of the two people in the staff room, no social interaction between participants within the group was possible, which may have changed the nature of the findings.

Another limitation encountered was time constraints. Implementing a cooking demonstration/education session with allowance for critical thinking and questions and answers in less than 20 minutes during a staff meeting was difficult. During the second implementation, time was decreased due to the site's workflow needs. However, this resulted in a strength which was increasing project adaptability and creating an alternate backup plan.

Due to the time constraints, the live Q&A session was cancelled and instead, the DNP student asked the participants to email their questions to the DNP student. However, no emailed questions were received.

Another limitation was not having a budget to cover the costs of the intervention. This resulted in the DNP student and content expert both contributing personal funds to cover the costs.

Lastly, the small sample size and the specific population and setting of healthcare staff in a community health center made quantitative results not generalizable to other populations and/or settings. However, the qualitative results from the small homogenous sample enhanced the applicability of the comments to the project's implementation.

A strength of the DNP project included previously recorded cooking demonstration/education sessions because of the ability to edit and improve the recording prior to presenting it to the participants. Another strength is the questionnaire was developed specifically for this project and is potentially applicable to other projects like it. Lastly, while COVID-19 posed significant challenges to the DNP project plan, it also provided the DNP student with opportunities enhance their leadership skills, as well as improve collaboration and communication with WH staff and the project team.

Sustainability

To continue this project at WH, either a point person from WH will need to be appointed, or staff members will rotate in the role. The DNP student will consult and create a procedural template for staff to continue the demonstrations. Staff input is vital to the success of continuing the project, and if guidelines will allow for it, it would be beneficial to implement the demonstrations in-person to encourage staff and community engagement. If the cooking demonstration/education sessions remain virtual interventions, the point person will be able to review and discuss the recordings with colleagues and be able to edit content before rolling it out.

The proposed schedule is quarterly, and the staff could vote on recipes or food choices at the start of each year. This project will need funding of approximately $200 annually, and could be donated by local community organizations, WH staff members, or upper-level management.

This is an effective and beneficial project that WH onsite Pediatric Nurse Practitioner (and also content expert), Katie Steinhelfer, wants to continue at WH. Thus, the DNP student will work together with the WH project team, providing them with the project template so they may champion positive change within WH and successfully continue this project.

Dissemination Plan

The plan for dissemination is to share the project plan and procedures with WH leadership, who will then share with staff via organization emails and a staff bulletin board within the facility. The DNP student could prepare infographics on plant-based diets and nutritional cooking and education, as well as a resource sheet with information on how to receive more information and support.

DNP Essentials

The DNP essentials were met in the following manner.

1. Scientific Underpinnings for Practice
    a. Addressed the well-being of WH staff members focusing on creating positive changes to optimize their health individually and within their workplace environment.
2. Organizational and Systems Leadership for Quality Improvement and Systems Thinking
    a. Worked effectively with the target population of WH staff, and with this DNP project, developed a quality improvement strategy by creating sustainable changes

at an organizational level. Demonstrated sensitivity to a diverse organizational culture of healthcare workers.

3. Clinical Scholarship and Analytical Methods for Evidence-Based Practice
    a. Designed and implemented processes to evaluate outcomes of the wellness intervention at WH and used analytic methods to critically appraise literature to determine and implement the best evidence for practice.
4. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care
    a. Utilized information systems/technology resources such as the Zoom platform, to implement the quality improvement initiative of plant-based cooking demonstration/education sessions, and support improvement of the healthcare system by providing leadership in the setting of WH staff meetings.
5. Health Care Policy for Advocacy in Health Care
    a. Advocated for the nursing profession within the healthcare community starting with providing care and tools to improve mental, physical, and emotional well-being to healthcare workers at WH. Demonstrated clinical nurse leadership in the amidst the challenges the COVID-19 pandemic brought to WH and my DNP project. Also, contributed experience from working for Senator Baker and the state committee on health and consumer affairs to promote equity in healthcare policy for APRNs.
6. Interprofessional Collaboration for Improving Patient and Population Health Outcomes
    a. Effectively communicated and collaborated skills with DNP project team members in the development and implementation of DNP project intervention.

7. Clinical Prevention and Population Health for Improving the Nation's Health
    a. Analyzed data related to aggregate and population health, and evaluated an intervention to address health promotion/disease prevention efforts as well as improve health status and patterns of healthcare staff at WH.
8. Advanced Nursing Practice
    a. Developed and sustained therapeutic relationships and partnerships with WH staff members and with WH on an organizational level with the intention of facilitating successful health outcomes for staff and sustainability for future staff wellness programs at WH.

Conclusion

This project succeeded in piloting plant-based cooking demonstration and education sessions at WH. The data represent a measure of healthcare workers' knowledge and attitudes around plant-based eating and could be used in the evaluation of future work wellness interventions. The findings indicate that there were increases in staff knowledge, positive attitudes toward plant-based diets, and improved well-being over time. The effort to conduct cooking demonstration/education sessions could be improved by inviting participation, offering meals specific to the needs of individual participants, or taking culture or specific chronic illnesses (e.g., diabetes) into consideration. Further, more research is needed to determine if plant-based cooking demonstrations and education sessions can improve well-being of healthcare staff members over the long term. Ultimately, to increase knowledge and wellness for healthcare workers, engaging activities and educational programs that support staff health and well-being should be provided.

Appendix A

Table A1. The Strength of Recommendation Taxonomy. (SR = systematic review; RCT = randomized controlled trial)

Strength of Recommendation Taxonomy (SORT)

In general, only key recommendations for readers require a grade of the "Strength of Recommendation." Recommendations should be based on the highest quality evidence available. For example, vitamin E was found in some cohort studies (level 2 study quality) to have a benefit for cardiovascular protection, but good-quality randomized trials (level 1) have not confirmed this effect. Therefore, it is preferable to base clinical recommendations in a manuscript on the level 1 studies.

Strength of recommendation	*Definition*
A	Recommendation based on consistent and good-quality patient-oriented evidence.*
B	Recommendation based on inconsistent or limited-quality patient-oriented evidence.*
C	Recommendation based on consensus, usual practice, opinion, disease-oriented evidence,* or case series for studies of diagnosis, treatment, prevention, or screening.

Use the following table to determine whether a study measuring patient-oriented outcomes is of good or limited quality, and whether the results are consistent or inconsistent between studies.

Study quality	*Diagnosis*	*Treatment/prevention/screening*	*Prognosis*
Level 1—good-quality patient-oriented evidence	Validated clinical decision rule SR/meta-analysis of high-quality studies High-quality diagnostic cohort study†	SR/meta-analysis of RCTs with consistent findings High-quality individual RCT‡ All-or-none study§	SR/meta-analysis of good-quality cohort studies Prospective cohort study with good follow-up
Level 2—limited-quality patient-oriented evidence	Unvalidated clinical decision rule SR/meta-analysis of lower-quality studies or studies with inconsistent findings Lower-quality diagnostic cohort study or diagnostic case-control study§	SR/meta-analysis of lower-quality clinical trials or of studies with inconsistent findings Lower-quality clinical trial‡ Cohort study Case-control study	SR/meta-analysis of lower-quality cohort studies or with inconsistent results Retrospective cohort study or prospective cohort study with poor follow-up Case-control study Case series
Level 3—other evidence	Consensus guidelines, extrapolations from bench research, usual practice, opinion, disease-oriented evidence (intermediate or physiologic outcomes only), or case series for studies of diagnosis, treatment, prevention, or screening		

Consistency across studies	
Consistent	Most studies found similar or at least coherent conclusions (coherence means that differences are explainable) *or* If high-quality and up-to-date systematic reviews or meta-analyses exist, they support the recommendation
Inconsistent	Considerable variation among study findings and lack of coherence *or* If high-quality and up-to-date systematic reviews or meta-analyses exist, they do not find consistent evidence in favor of the recommendation

**—Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, and quality of life. Disease-oriented evidence measures intermediate, physiologic, or surrogate end points that may or may not reflect improvements in patient outcomes (e.g., blood pressure, blood chemistry, physiologic function, pathologic findings).*

†—High-quality diagnostic cohort study: cohort design, adequate size, adequate spectrum of patients, blinding, and a consistent, well-defined reference standard.

‡—High-quality RCT: allocation concealed, blinding if possible, intention-to-treat analysis, adequate statistical power, adequate follow-up (greater than 80 percent).

§—In an all-or-none study, the treatment causes a dramatic change in outcomes, such as antibiotics for meningitis or surgery for appendicitis, which precludes study in a controlled trial.

Appendix B

Plant-Based Nutrition In-Service Cooking Demonstration Pre- and Post-Implementation Questionnaire
Wahiawa Center for Community Health

Attitudes and Knowledge	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Plant-based diets consists exclusively of plant-originated products.	○	○	○	○	○
2. I am aware of the health benefits of a plant-based diet.	○	○	○	○	○
3. Taking time to nourish my body helps me to better care for patients.	○	○	○	○	○
4. I am aware of tools and resources to create plant-based meals.	○	○	○	○	○
5. Plant-based diets are expensive.	○	○	○	○	○
6. Plant-based diets are easy to prepare.	○	○	○	○	○
7. Plant-based diets do not provide enough protein or other nutrients.	○	○	○	○	○
8. Plant-based diets are linked to reduced chronic diseases.	○	○	○	○	○

(The following is part of the post-implementation questionnaire only.)

Experience

1. What did you find most useful, informative, or supportive?
2. What improvements in this activity would you recommend?
3. What, if anything, would prevent you from eating a plant-based diet?

Appendix C

Staff Check-in Questions

(Self-perceived wellness impact)

1. Have you enjoyed these demonstrations, and have you found the information helpful?
2. Did these demonstrations support your well-being, and if yes, in what ways?
3. Did these demonstrations have any impact on relationships with coworkers or family?

Final Feedback Questions

1. What did you like about these demonstrations?
2. What would you change?
3. What would you like to see in future demonstrations to support your health and well-being?
4. How have these demonstrations affected you – personally and in other aspects of your life?

Appendix D

Plant-Based Nutrition In-Service Cooking Demonstration Topical Outline Example

Introductions

- Personal story and present day (what brings me here)
    - Growing up with JRA
    - Plant-based healing
    - Desire to support well-being
    - My project
- How it relates to the audience

Plant-based nutrition education

- All nutritional needs can be met with a plant-based diet
- Foods to aid in chronic illness (gut-healing, anti-inflammatory)
- Common myths debunked
    - "Plant-based diets don't provide enough protein."
    - "Plant-based diets are too expensive."
    - "Plant-based diets are time consuming and take a lot of work."

Cooking demonstration

- July 28: Buddha's Jewels (plant-based version of meatballs)
- It's quick and easy to make with simple ingredients, and it tastes delicious
- Wash hands, gather and present ingredients
- Walk through instructions and cooking demonstration

Conclusion

- Thank the audience for watching

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