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Developing a Multicultural Nutrition Education Tool: Pacific Island Food Models

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Native Hawaiians and other Pacific Islanders (NHOPI) are one of the highest-risk U.S. populations affected by the cardiometabolic diseases of obesity, diabetes, and heart disease, which can be improved with increased nutrition education and counseling.¹ Barriers for health improvements through effective nutrition education include: limited English proficiency, differences in social norms related to food, and limited availability of preferred food items. Development and dissemination of innovative tools, such as culturally relevant food models, are needed in order to address these barriers. In 2004 the Center for Native and Pacific Health Disparities Research (Center) at the University of Hawai'i, John A. Burns School of Medicine conducted a health education needs assessment of community health agencies serving NHOPI.² When asked what type of support the community health agencies needed to provide quality cardiovascular disease education to their population, agency representatives indicated that much of the nutrition counseling and education material currently available was not representative of a Pacific population. Food models of NHOPI ethnic foods were specifically identified as a priority to assist effective nutrition counseling and education in multilingual and low-literacy populations.

The Center, in response to this community priority and guided by a community-based participatory approach³, developed and disseminated durable Pacific Island Food Models (PIFM). A multi-disciplinary committee was formed with community representatives

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Notes:

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center on Minority Health and Health Disparities or the National Institutes of Health. *Mahalo piha* is extended to: Kai'ulani Odom, Donna Palakiko, Desiree Puihi, and Megan Fong. Since the Pacific Island Food Model Toolkit was a health education tool used in an educational setting utilization and evaluation data collected was considered exempt from institutional review board oversight according to University of Hawai'i Human Studies Program Policies and Procedures Section 3.1 Exempt Research.⁷ Further information regarding the PIFM kits, including PIFM ordering information, and other commercially available Pacific food models can be found at the Center for Native and Pacific Health Disparities Research Educational Materials resource page.⁸

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including: dietician, nurses, diabetes educators, and community health workers. An initial product developed by the committee was a catalog of commercially available food models common to Pacific Island palates, such as banana and papaya, which indicated that key food items are not currently available.⁴ Next, the committee embarked on developing custom manufactured PIFM. Over 80 food items commonly used in NHOPI nutrition counseling, classes, and demonstrations that are not currently available as food models were identified. Committee discussion reduced the original list down to approximately 50 and each of the 8 committee members consulted their communities to further reduce the list. Following the community consultation, the list was reduced to 30 items. A final round of committee discussion and prioritization identified the top 10 food items: mango, kabocha pumpkin, ho'i'o salad, poi, kalua pork, haupia, saimin, ahi poke, breadfruit, and cooked bok choy. Complete nutritional information for all items was identified or developed, with special attention given to appropriate portion size.

Funding was obtained from a local health foundation and manufacturers were evaluated based on quality, material, cost, and production location. The U.S. based vendor who manufactures durable, slightly flexible polymer food models was chosen (Fake Foods Inc., Phoenix, AZ). To ensure that the manufacturer understood the visual requirements for the master models, foods were collected, delivered, and prepared at the vendor's manufacturing site.

IMPLEMENTATION & EVALUATION

The PIFM Toolkit was assembled in a durable plastic case and consisted of the ten custom manufactured food models, nutrition information for each food model, catalog of commercially available Pacific-relevant food models, custom food model purchasing information, and evaluation forms. Toolkits were distributed statewide to 23 community health organizations serving NHOPI including rural and urban community health centers and rural hospitals.

Over a 12-month period 17 of the organizations tracked and reported satisfaction and utilization data including days of use and numbers of individuals reached through a survey with Likert-type scale ratings and open-ended questions. During the first 6-month period, 3645 community members (median per organization, 67.5) were exposed to the PIFM and there was a 70.2% increase in utilization (n=2,473; median per organization, 150) in the second 6-month period. A total of 12,410 community members were reached by the PIFM. During the first 6-month period, only three organizations utilized the food models to reach 200 community members for nutrition education activities. In the second 6-month period, that number doubled with 6 organizations each reporting a reach 200+ community members with food model activities. It should be noted that organizations with lower reach reported higher usage of food models for individual counseling sessions.

The satisfaction surveys, which were included with the PIFM kits, consisted of 9 Likert-type questions, which ranged from usefulness during individual counseling sessions to the physical appearance of the models and the practicality of the models and accompanying nutritional information. There was also 1 open-ended question regarding overall satisfaction

to be answered by a representative of the organization who regularly used the PIFM. Among the 9 questions, the proportion of responses in the strongly or somewhat agree categories ranged from 71% (useful tools for low literacy or non-English speaking patients) and 76% (for nutritional information notecards) to 100% (value as classroom educational tools; food models were high in quality and durability). Thematic analysis with 3 independent reviewers was used to identify themes for the single open-ended question. The response rate for this question was 32.4% and the majority of responses to this question were positive. A frequent theme regarded the models' realistic appearance: *"They were made really well made as far as appearance. [Clients] think it's real food."* Another theme was: *"Clients thought it was good seeing some of their traditional foods being used."* Organizations reported patients appreciated inclusion of ethnic foods as education tools because it validated their lifestyle and built trust with the clinician or health educator, which facilitated meaningful discussion about dietary habits. Although there was overall high satisfaction for the toolkit and models, negative comments included: limited number of food model items available, staff unfamiliarity of some of the food items, and models were smaller than client perception of appropriate serving sizes. Overall, themes emphasized the utility of the models in diverse educational settings, helpfulness in overcoming language barriers, and applicability with multiple age and ethnic groups; one agency reported: *"A local food model in hand is worth a thousand words!"*

No collection of behavior change data, even self-reported, was a major limitation in this intervention and evaluation.

DISCUSSION

Previous studies have shown that culturally-relevant, non-verbal education tools are helpful when demonstrating appropriate meal planning and serving size when working with multicultural and multilingual populations^{5,6,7}. Agencies found it useful to integrate these custom models with models of Western food to represent the diverse diet of their multicultural population. The visual and tactile features of the food models help patients learn about appropriate portions and meal planning. While the process to develop and integrate these unique food models in nutrition education cases, displays, and demonstrations was somewhat lengthy, the models are now used daily by the community agencies. This process can be duplicated by others interested in developing their own food model kits to promote relevant nutritional education in ethnic populations.

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