



Mississippi Communities for Healthy Living: Implementing a nutrition intervention effectiveness study in a rural health disparate region

Carol L. Connell^{a,*}, Jessica L. Thomson^b, Holly F. Huye^c, Alicia S. Landry^c,
LaShaundra B. Crook^c, Kathy Yadrick^c

^a Department of Nutrition and Food Systems, The University of Southern Mississippi, 118 College Drive #5172, Hattiesburg, MS 39406, United States

^b Agricultural Research Service, United States Department of Agriculture, Stoneville, MS 38776, United States

^c Department of Nutrition and Food Systems, The University of Southern Mississippi, 118 College Drive #5172, Hattiesburg, MS 3940, United States

ARTICLE INFO

Article history:

Received 3 February 2015

Received in revised form 1 April 2015

Accepted 2 April 2015

Available online 11 April 2015

Keywords:

Dietary Guidelines for Americans

Rural populations

Nutrition interventions

Study design

Behavior change

Lower Mississippi Delta

ABSTRACT

Background: Intervention research in rural, health disparate communities presents unique challenges for study design, implementation, and evaluation. Challenges include 1) culturally appropriate intervention components, 2) participant recruitment and retention, 3) treatment cross-contamination, 4) intervention delivery and data collection, and 5) potential measurement reactivity. **Purpose:** The purposes of this paper are to 1) detail the methods of the MCHL study and 2) report baseline demographic characteristics of study participants. The secondary aim is to determine if study participants were engaging in behavior changes after enrollment and prior to intervention initiation.

Methods: MCHL was developed using the RE-AIM planning and evaluation framework (reach, effectiveness, adoption, implementation, maintenance). Intervention components were based on Roger's diffusion of innovation attributes that promote adoption of a new innovation as well as on the psychosocial constructs of social support, self-efficacy and decisional balance. Rolling enrollment data collection was used to acquire sufficient sample size and a second data collection just prior to intervention implementation assessed measurement reactivity effects. Participant outcomes included diet quality, blood pressure, weight status, and quality of life. Cluster stratified assignment to one of two treatment arms was utilized to minimize cross contamination. Generalized linear models were used to compare enrollment measures between the two treatment arms while mixed model linear regression was used to test for changes in diet quality outcomes from enrollment to pre-intervention baseline.

Results: There were no significant differences in participant demographic, anthropometric or clinical measures between the two treatment arms at enrollment. With the exception of total vegetables, none of the diet quality indicators were significantly different between enrollment and baseline timepoints.

Conclusions: Conducting nutrition intervention research in a rural health disparate region requires flexibility in adapting the recruitment, retention, and data collection procedures while maintaining a high level of scientific rigor. Negligible research participation effects, such as measurement reactivity, were noted in this population. However, further research is needed to identify methods to successfully recruit and retain Caucasian females to participate in community-based nutrition interventions in this region.

© 2015 Elsevier Inc. All rights reserved.

* Corresponding author. Tel.: +1 601 266 6341; fax: +1 601 266 6343.
E-mail address: carol.connell@usm.edu (C.L. Connell).

1. Introduction¹

Diet-related chronic diseases such as obesity, type 2 diabetes mellitus, and coronary heart disease plague rural populations with greater prevalence compared to the nation as a whole [1–6]. The Lower Mississippi Delta region (LMD) of Arkansas, Louisiana and Mississippi is one such rural area [7]. According to the 2013 County Health Rankings, counties in the LMD continue to have the lowest overall health rankings within their states, which in turn have among the highest chronic disease prevalence in the US [8,9]. In particular, the state of Mississippi ranks 50th among states in overall health, with an obesity prevalence of 34.4% [6,9]. Further, the state ranks first in the percentage of the population meeting two or fewer health metrics defined by the American Heart Association as indicating good cardiovascular health (e.g. absence of hypertension) [10].

This agriculturally rich region is characterized by high unemployment and poverty, low educational attainment, a large African American population, and limited access to public health services and professionals [11–14]. Food deserts are prevalent and access to healthy affordable food is limited [15–17]. These socio-demographic, cultural, and geographic characteristics shape the dietary patterns observed among LMD residents including sugar-sweetened beverages as leading contributors to energy intake, fewer servings of fruits and vegetables, and higher intakes of fat compared to the US population [18–20]. In light of the high rates of chronic disease and obesity among LMD residents, it is ideal to implement nutrition interventions to improve their overall diet quality.

The rural nature of the region also has implications for the development, delivery, and evaluation of a theory-driven nutrition education study. For example, the low population density of the LMD counties located in Mississippi would require a larger number of counties and more time allotted for recruitment in order to achieve an adequate sample size for study purposes. A longer period between recruitment and implementation of an intervention could potentially result in participants altering their behavior, in part, due to their anticipation of being involved in a nutrition intervention and/or their heightened awareness of their behavior in response to baseline assessments (i.e. Hawthorne effect or research participation effects) [21]. Likewise, the associated time lag could pose challenges to sustaining participation in the study.

The Delta Obesity Prevention Research Unit of the USDA Agricultural Research Service was a three-state consortium whose purpose was to evaluate existing food patterns of LMD adults and to adapt those patterns to better meet the recommendations of the *Dietary Guidelines for Americans* (DGA) using culturally acceptable and readily available foods [18–20], as well as to test the effectiveness of interventions promoting adoption of adapted patterns on diet quality and weight status. The Mississippi Communities for Healthy Living (MCHL) was one intervention developed to promote the adoption of the adapted dietary patterns in the LMD region of

Mississippi. The primary aims of this paper are to 1) detail the methods of the MCHL study and 2) report baseline demographic characteristics of study participants. Our secondary aim is to determine if study participants were engaging in behavior changes after enrollment and prior to intervention initiation.

2. Subjects and methods

2.1. Identification of dietary targets

The DGA are intended to lower the risk for chronic diseases and obesity while promoting adequate nutrient intake by providing recommendations for food intake and physical activity that are based on current evidence. The Healthy Eating Index (HEI) measures adherence to DGA for specific food groups, energy sources, and sodium (i.e., HEI components). Scores are calculated for each HEI component ($n = 12$). Then, individual component scores can be summed to obtain a measure of overall diet quality ranging from 0 to 100; higher component and total scores signify closer adherence to the DGA [22,23] and thus higher diet quality. Using dietary intake data representative of the LMD adult population, Thomson et al. [24] found that LMD residents' adherence to the DGA as indicated by the HEI 2005 was 54.5/100. In particular, exceptionally low HEI-2005 component scores were those associated with risk of obesity and chronic diseases including whole fruit (score = 2.3/5), dark green and orange vegetables and legumes (score = 1.2/5), whole grains (score = 0.8/5), saturated fat (score = 5.8/10), and solid fats, alcohol, and added sugars (SoFAAS) (score = 5.8/20). Thus, these dietary components contributing to participants' low scores became the initial targets for the MCHL intervention.

After noting marked differences in component scores, Thomson and colleagues [25] conducted computer simulation studies using the FOODS 2000 data to determine the extent of the improvement in diet quality that could be made with hypothetical incremental improvements (i.e., adaptations) in each dietary component associated with the HEI. In brief, simulating substitutions of foods from single food groups at 25, 50, and 100% replacement levels, the greatest improvements in HEI-2005 score occurred with 100% substitutions of juice-packed fruit for grain desserts (3.5 point increase in HEI-2005 score) and of water for sugar-sweetened beverages 3.8 point increase). When collectively simulating multiple substitutions across all food groups at the 100% level, HEI-2005 score improved by 12 points. The simulation was used to inform the design, food groups and substitutions used in the MCHL education sessions. Through MCHL, researchers sought to determine if simulated dietary adaptations were realistically achievable, particularly in free-living, community settings. Likewise, MCHL was developed to determine whether a greater impact on diet quality could be achieved in a community setting by making dietary adaptations in consumption patterns of several major food groups simultaneously or by making changes in only one.

2.2. Participants and recruitment

Qualitative research among LMD residents as well as among African American men in other areas indicates that women play a significant role in influencing dietary behaviors of

¹ LMD, Lower Mississippi Delta; MCHL, Mississippi Communities for Healthy Living; HEI, Healthy Eating Index; DGA, Dietary Guidelines for Americans; FOODS 2000, Foods of Our Delta Study 2000; DOI, Diffusion of Innovations; MMA, Multi-Message Arm; SMA, Single Message Arm; SoFAAS, Solid Fats, Alcohol, Added Sugars; FFQ, Food Frequency Questionnaire.

Download English Version:

<https://daneshyari.com/en/article/6150969>

Download Persian Version:

<https://daneshyari.com/article/6150969>

[Daneshyari.com](https://daneshyari.com)