

Development of a Self-Directed Home Kitchen Makeover for Mothers of Young Children

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Abstract

Women, especially those with children at home, have the potential to positively affect the nutritional status of the entire household. The purpose of this paper is to describe the formative research that led to and guided the development of an intervention program designed to improve the ability of mothers of young children to plan, prepare, and serve healthy family meals within their lifestyle constraints and preferences. Mothers of young children (n=201) who had participated in previous phases of this project clustered into 4 segments named: *Happy, Healthy, Food Involved; Working, Convenience Driven; Healthy, Free of Food Price, Taste, Convenience, and Advertising Effects; and Stressed, Emotional Eating, Time Conscious*. Intervention development was guided by previous findings coupled with qualitative interviews (n=20) that identified and further clarified needs and interests of mothers in each segment. After developing the intervention, qualitative formative evaluation data were collected via interview from mothers from all groups (n=19). Mothers needed and desired information on: healthy meals and use of pre-prepared ingredients to speed preparation time; kitchen organization and food storage methods; and healthy meal preparation and grocery shopping guidance. Formative evaluation results indicated that mothers rated the intervention highly for readability, completeness, relevance, and usefulness.

Key Words: Healthy Meals, Mothers, Kitchen, Makeover, Meal Planning, Meal Preparation, Home Food Environment, Nutrition Education

Introduction

Food preparation knowledge and abilities are declining (Byrd-Bredbenner 2004, 2005; Sloan 2005; Soliah, Walter, and Antosh 2006), intake of several key nutrients is suboptimal (Basiotis et al. 2002; Ervin, Wang et al. 2004; Ervin, Wright et al. 2004; Moshfegh, Goldman, and Cleveland 2005), obesity rates are rising (National Center for Health Statistics 2006; Ogden et al. 2006), and poor diet and physical inactivity are major contributors to death in American adults (Mokdad et al. 2004). Taken all together, these data paint an alarming picture of our ability to choose, prepare, serve, and consume healthy diets.

Educational interventions focusing on how to plan, prepare, and serve meals that support good health and meet lifestyle needs and desires, as well as match taste preferences, could help Americans re-discover their kitchens and improve the quality of their diets. Concepts from the Social Cognitive Theory (Bandura 2004; McAlister, Perry, and Parcel 2008), especially self-management (i.e., setting goals, planning, and monitoring behaviors such as food purchasing, meal planning and preparation, and eating), provide a useful framework for the design of these interventions. Self-management typically is stressed in nutrition education efforts directed to those with limited financial resources, weight loss candidates, and individuals with dietary related diseases, such as diabetes and renal disease (Burney and Haughton 2002; Pastors et al. 2002; Rais-Keeley 2002). However, little attention is given to self-management in interventions directed to healthy, food secure individuals (Beck 2007) even though self-management (particularly goal setting) is associated with healthier food purchases and intakes (Boutelle et al. 2003; Henry et al. 2003; Schnoll and Zimmerman 2001; Pelletier et al. 2004; Crawford et al. 2007; Anderson, Winett, and Wojcik 2007) .

Women are an especially important group to reach for interventions that address meal planning and preparation because they have the primary food responsibilities in most households (Harnack et al. 1998). Changing the behavior of women, especially those with children at home, has the potential to positively affect the entire household. Thus, the purpose of this paper is to describe the formative research that led to and guided the development of an intervention program designed to improve the self-management abilities of mothers of young children with regard to planning, preparing, and serving healthy family meals within their lifestyle preferences and constraints. In this study, mothers of young children were defined as those who have at least one child age 12 years or younger.

PROJECT BACKGROUND

This multiphase project involved 201 mothers from a northeastern state with the following characteristics: at least one child aged 12 years or younger; not employed in a health-related profession; married or living with a domestic partner who was not employed in a health-related

profession; food secure (Life Sciences Research Office and Andersen 1990); held primary responsibility in their households for meal planning, grocery shopping, and meal preparation; and ate dinner at home at least three times weekly. The first two phases of this project provided baseline data needed to develop an intervention program.

In Phase 1, participants completed a survey designed to assess the extent to which key factors influencing food choices (i.e., psychographic characteristics; see Table 1) affected their behavior and identify appropriate goals for interventions. Survey development and findings have been reported in detail elsewhere (Byrd-Bredbenner and Maurer Abbot 2008). In brief, mothers indicated they could follow through on goals and were satisfied with life but were less certain life/stress was under control. They valued and actively protected their health but were unsure about their ability to consistently eat a healthy diet. As a group, mothers enjoyed preparing meals and believed preparing meals was worth the time and effort but many meals were not planned ahead of time. They expressed interest in learning to make meals more nutritious but not faster. They had positive feelings toward healthy food but felt less positive about convenience foods. This audience indicated they were sensual eaters but not adventurous, restrained, emotional, or disinhibited eaters. Overall, mothers felt personally responsible for serving healthy meals and valued eating as a family. Cluster analysis (Ward 1963) of Phase 1 data revealed that psychographic factors influencing food choices systematically differed among segments of mothers. That is, mothers clustered into four distinct segments: *Happy, Healthy, Food Involved Mothers*; *Working, Convenience Driven Mothers*; *Healthy, Free of Food Price, Taste, Convenience, and Advertising Effects Mothers*; and *Stressed, Emotional Eating, Time Conscious Mothers* (Byrd-Bredbenner, Abbot, and Cussler 2008).

Phase 2 involved an in-home inventory of the household food supplies of a subsample of the mothers (n=100). Although these inventories were designed to assess the nutritional quality of the foods on hand, debriefing interviews with the researchers after data collection was complete yielded serendipitous retrospective observations regarding the general condition of the inventoried home kitchens. Although the pantries varied widely in condition and degree of organization, research team members estimated that in at least half of the homes food storage areas were poorly organized and food preparation workspace was limited by clutter. Researchers felt that in some kitchens it would be a challenge to prepare recipes with more than one or two steps, especially those that required preparing fresh produce, because the workspace available was “*crowded with junk*” including food preparation and non-food preparation items. Although the problem of clutter was particularly problematic in small kitchens, the researchers felt that the size of the kitchen and amount of counter space in the kitchen were not necessarily correlated with the amount of unoccupied counter space. They tended to feel that the disorganization and clutter correlated positively with the number of younger children (preschoolers and early elementary age children) in the household.

METHODS

Phases 3 and 4 are reported in this paper. Phase 3 used a qualitative research design to explore intervention preferences of mothers and provide guidance for the development of the intervention. In Phase 4, researchers developed the intervention and collected qualitative formative evaluation data for refining the intervention. All phases of this cross-sectional study were approved by the Institutional Review Board at the authors' university. Participants gave informed consent in each phase.

Sample

The sample for Phases 3 and 4 was drawn from the 201 mothers who participated in the earlier phases of the study. A subsample of 20 mothers from each of the four segments identified in Phase 1 was randomly selected and invited to participate in Phase 3. Similarly, a subsample of 20 mothers was invited to participate in Phase 4. Mothers who participated in Phase 3 were excluded from participation in Phase 4. All participants were blind to the study funding source.

Instruments

In Phase 3, a 45-minute telephone interview was conducted by a trained researcher with each participant. The interview further explored findings from earlier phases and identified how to develop an intervention that responded to mothers' needs and interests. In specific, the interview investigated participants' thoughts regarding how to help mothers: 1) improve planning and preparation of healthy meals; 2) easily change the organization of their kitchens and food storage areas to make healthy meal preparation more efficient; 3) improve grocery shopping efficiency; and 4) easily make eating areas in their homes more pleasant or interesting to promote eating meals together as a family. Mothers also provided tips they believed would help others achieve these goals. Additionally, mothers rated the importance of components of an organized, efficient home kitchen and meal planning using a 5-point Likert scale (1=not important at all to 5=extremely important).

Findings from Phases 1 to 3 were used to create the study intervention during Phase 4. Phase 4 also included a 45-minute interview that gathered formative evaluation data related to the intervention. Prior to the interview, participants reviewed the intervention materials (i.e., a 3-part set of written educational materials, see below). The interview explored the mothers' impressions of the intervention's content (relevance, usefulness, completeness), design (graphic images, colors, layout), readability (vocabulary, print size), and likelihood the intervention would improve knowledge, increase self-confidence in application of the knowledge gained, and lead to behavior change. In addition, mothers used a 5-point Likert scale to rate the readability, completeness, relevance, usefulness, and likelihood to improve behavior of each part of the

intervention. They also indicated (yes or no) whether the intervention materials increased their knowledge, improved confidence in their knowledge, and whether the materials were likely to help other mothers feel more knowledgeable and confident.

Intervention Development

A self-directed, action-oriented intervention program was designed to expand mothers' knowledge of how to plan, prepare, and serve nutritious, delicious family meals in a hurry and to build confidence in their abilities to achieve this goal. Activities were self-directed so that mothers could tailor them to their family's taste preferences, nutritional needs, cooking skills, eating habits, food budget, time available to make meals, usual in-home and eating out practices, and kitchen facilities. Another reason for choosing a self-directed format was the desire to create an intervention that had the potential to be sustainable after the field test and study funding ended.

Social Cognitive Theory provided the framework for developing the intervention. This theory addresses psychosocial aspects associated with making behavioral changes and methods that promote and support these changes (Bandura 2004; McAlister, Perry, and Parcel 2008). This theory posits that a person's characteristics (including cognitions), behavior, and environment interact and influence each other in a dynamic fashion. Phases 1 to 3 provided background information regarding each of these three components and helped identify factors that needed to be addressed from an educational need perspective as well as those changes mothers identified as important, under their control, and those they were motivated to change. Formative evaluation in Phase 4 provided a check from the audience as to whether the intervention was likely to motivate mothers to practice the behaviors.

The intervention consisted of three colorful folios comprised of facts and activities ("factivity"), with each focusing on a specific topic area. Factivity Folio A addressed overall kitchen organization. This folio instructed participants to focus on a kitchen work zone (i.e., planning and message zone, food preparation zone, cooking and serving zone, clean-up zone, or eating zone) that they felt was in need of the most attention. Then, they were to analyze that zone in their own kitchens, prioritize needed changes, identify barriers to changes and strategies for overcoming the barriers, identify supplies needed to make the changes, make the changes, and make plans for keeping the changes in place.

Factivity Folio B focused on the topic of food storage. Each mother was instructed to select the food storage area (e.g., refrigerator, freezer, pantry) in her kitchen that needed the most organization. Then, she was to assess the freshness and safety of the food stored there, determine whether the stored food was likely to be consumed, determine how the area could be better

organized, identify barriers to changes and strategies for overcoming the barriers, identify supplies needed, make the changes, and make plans for sustaining the changes.

Factivity Folio C covered the topic of healthy meal planning, preparation, and grocery shopping . Each mother was instructed to determine whether the foods on hand in her home would let her serve meals that were delicious, nutritious, and quick to prepare. Then, she was asked to think about her weekly menu planning activities and the preparation, organization, and completeness of her typical grocery shopping list. Next, mothers used a meal planning grid to create menu plans for their family meals and identified “short-cut” ingredient substitutions that would boost nutrients and save time and effort. Short-cut ingredients include time- and effort-saving food forms such as purchasing prewashed and precut salad greens, canned and frozen fruits and vegetables, and supermarket roasted chicken. The meal planning grid combines the menu with a shopping plan that lists all items needed and is arranged by food form to increase shopping efficiency. Finally, mothers described how they would motivate themselves to follow through with their planned menus and the techniques they would use to get their families to adopt more positive eating behaviors.

Each folio was four 8.5x11” pages: three pages were informational and the last page was an activity sheet. Folio C also included a one-page meal planning grid. The informational pages were designed to expand knowledge and skills, advance self-efficacy, explain benefits of changes, and describe strategies for dealing with time, space, and other food-related stresses. The information was presented in a manner that took into consideration the importance assigned to the key factors influencing food choices (Table 1) expressed by mothers during baseline data collection. Results from Phase 1 cluster analysis were used to identify information to include in the folios that would appeal to mothers in different cluster segments. The activity sheet promoted self-management by engaging mothers in assessing their situation and environment, goal setting (making plans for changes, prioritizing changes), identifying potential barriers and strategies for overcoming them, describing ideas for garnering family support for making and sustaining changes, and making a self-contract to set specific start and completion dates for changes and set additional goals. A panel of experts in nutrition and outreach (n=4) reviewed the folios for clarity, accuracy, completeness, usefulness, and likelihood to effect desired changes.

DATA ANALYSIS

Trained researchers identified themes and trends in data collected via interview. Standard qualitative data analysis methods were used (Miles and Huberman 1994).

RESULTS

The full sample of 201 mothers had a mean age in years of 38.8 ± 5.3 SD (standard deviation) (range 27 to 52) and 2.3 ± 0.81 SD children in their households. The majority was white (90%) and had a moderately high socioeconomic status. They spent a mean of 2.2 ± 1.0 SD hours shopping for food weekly and 1.1 ± 0.6 SD hours preparing food daily. A comparison of the demographic characteristics of those in the subsample for Phase 3 with the full sample revealed no significant differences in demographic characteristics. Similar comparisons of the subsample for Phase 4 revealed no significant differences.

Phase 3

Twenty mothers completed Phase 3 of the intervention development. As can be seen in Mothers tended to rate all aspects of an organized and efficient home kitchen and weekly family meal plan as very to extremely important, except for weekend meal preparation ease (Table 2). With the exception of the importance of planning meals before food shopping, few differences were noted in importance ratings among segments. Overall, mothers gave the highest importance ratings to an organized kitchen and pleasant eating area.

When asked about the content to include in the intervention, few trends were noted among the segmented clusters. The themes of time constraints, planning, cost control, health, and parenting emerged when participants were asked how mothers could improve planning and preparation of healthy meals. To work within time constraints, mothers wanted ideas for easy, quick-to-prepare, healthy meals as well as food-related time management skills. They tended to recognize that planning ahead and using time on the weekends to make meals for later in the week could help them manage their time. Mothers also stated that they wanted a set of pre-planned meals with a grocery list and complete preparation instructions as well as techniques to stay on track with their pre-planned meals when unexpected events occurred. Mothers indicated a need for cost effective strategies to help them “*get the most nutrition ‘bang’ for the buck.*” To improve the healthful qualities of meals, mothers wanted to know which foods are considered healthy, ideas for healthier food alternatives/options, information about healthy cooking methods, and an eating plan for “*healthy, kid-friendly meals.*” Mothers also expressed a need for learning how they could get children to eat healthfully. Food demonstrations, cookbooks, and recipes were cited as resources mothers thought could help them serve healthier meals.

Some (n=4) rated their kitchens as ‘very organized’ and easy to work in. Constraints to keeping their kitchens organized were family members “*who mess it up,*” limited and/or poorly used storage space, and lack of time. When asked how mothers could easily change kitchen organization to help them prepare healthy meals more easily, responses focused on cleaning out food storage areas before each grocery shopping trip, “*clearing off the clutter,*” keeping

frequently used kitchen equipment organized and easily accessible, storing infrequently used kitchen equipment in locations other than the kitchen, and dovetailing kitchen clean up with meal preparation. Although a wide-array of organizational tips were offered, each participant offered only three suggestions or less and some (n=4) indicated, *"I don't have any, but I need some."* Participants also stated it would be helpful to have a list of essential kitchen equipment.

To easily change home food storage to make it easier to prepare healthy meals, participants suggested cleaning out food storage areas often, storing like food items together, labeling pantry shelves so that foods are always returned to the same location, and setting up an area outside the kitchen for storing bulk purchases. Suggestions tended to be broad with few details.

When asked how other mothers could create a plan so that they know ahead of time what meals they will serve, participants frequently stated that meal planning was important but, despite prompting, could offer few concrete suggestions for actually creating these plans. The most common suggestion provided was to use supermarket circulars to create a meal plan. Other suggestions were to involve family members, *"keep things simple,"* use a recipe book or online recipe website for ideas, make a grocery list, buy complete meals, and have a 'standard' meal that is served every week (e.g., spaghetti night). Mothers requested a meal planning template that is flexible *"like a mom's crazy schedule."* Mothers also wanted ideas for using leftovers and meals prepared from non-perishables to always have on hand.

Every mother interviewed stated that to make grocery shopping more efficient, mothers needed to use a grocery list. Other suggestions for efficient grocery shopping included *"Number 1-- don't take the kids," "avoid busy weekends," "build the list throughout the week, don't wait until the last minute,"* and *"shop online to save time, it may be more expensive but can be more efficient and save money in the long run."*

To make preparing healthy meals easier, mothers indicated that they *"need an easy guide book"* with time saving tips on healthy food preparation, ingredients and alternatives, and methods and techniques. Their suggestions for preparing healthier meals more easily included using healthy short-cut foods (e.g., pre-washed vegetables), *"sneaking"* vegetables into meals, using fruit as dessert, reading Nutrition Facts panels to find healthier alternatives, planning ahead, and practicing time-management techniques.

To make the eating areas in homes more pleasant or interesting so that family members will want to eat together more often, participants indicated that it was important to keep the area clean and pleasant, have a set mealtime, *"encourage conversation, but don't harass children," "engage the family in meal time preparations,"* and *"stress the importance of eating together as a family - make it a priority."* One of the most common suggestions was to *"turn off the TV"* during mealtime.

Phase 4

Overall, mothers (n=19) completing the Phase 4 formative evaluation reported a positive first impression of the content and design of the intervention folios. In specific, they liked the content, thought it was helpful, applicable, clear, interesting, and informative. One mother stated, “*content is thought provoking, gets me thinking about how I can change the way I plan meals.*” Mothers also reported that the tone of the writing was appropriate for mothers like them. The only term some mothers thought others would not understand was aseptic cartons. While some (n=4) mothers felt the folios were too long, most found the length appropriate. Suggestions for reducing length were to use more lists and graphics illustrating concepts. When asked whether any information should be added, mothers felt the folios were complete, but suggested additions of recipes and ideas for obtaining kitchen organizational materials (e.g., tiered shelves, drawer inserts) on a budget.

Mothers indicated that the design was appealing and friendly and they liked the colors, graphics, bulleted lists, informational boxes, highlighted text, and layout. They felt that the design features helped make the content manageable and easy to read and would interest them enough to want to read the folio. Mothers also agreed that the font size was just right. However, a few (n=3) commented that the folios would benefit from having more or better quality graphic images illustrating organizational concepts described.

Mothers rated all folios positively for readability, completeness, relevance, and usefulness (mean scores ranged from 3.8 to 4.8 on a scale of 1 to 5; see Table 3). An examination of trends in ratings among segments revealed few differences for Folios A and C. *Happy, Healthy, Food Involved Mothers* (n=5) and *Healthy, Free of Food Price, Taste, Convenience, and Advertising Effects Mothers* (n=3) tended to rate Folio B, which focused on food storage area organization, 10 to 15 percent lower than *Stressed, Emotional Eating, Time Conscious Mothers* (n=6) and *Working, Convenience Driven Mothers* (n=5). Overall ratings for the likelihood that the folios would improve behavior were somewhat lower than ratings for other characteristics, but varied greatly among cluster segments. The majority of mothers reported that the folios improved their personal knowledge and confidence in their knowledge. Mothers unanimously reported all folios would improve the knowledge and confidence of other mothers who used them .

Minor revisions (e.g., including more graphics, reformatting of paragraph text to bulleted lists) were made to the folios to incorporate the most prevalent recommendations given for improving them. To respond to the mothers’ request for recipes, a meal planning/cooking guide (QuickFlip, Faughey 1999) that transforms basic recipes into many variations and supports simplified, healthy food preparation was selected to accompany Folio C .

DISCUSSION

Nutrition education interventions often focus specifically on making dietary changes, with few stepping back to set the stage by addressing precursors (e.g., kitchen and food storage area organization, meal planning) to these changes (Crawford et al. 2007). By gathering baseline data, reflecting on serendipitous observations in households, and gathering input from the audience during the design and refinement stage, it became apparent that the audience had organizational and management challenges that needed to be addressed before focusing on nutrition-specific messages. Others also have noted similar needs among parents for mealtime planning and organization (Fiese, Foley, and Spagnola 2006; Fulkerson et al. 2008).

The involvement of the target population is a vital step in the development of effective intervention materials that are responsive to their needs. In this study, input from mothers of young children was critical to identifying home kitchen issues they regarded as being essential and important to them (i.e., kitchen organization, food storage organization, and mealtime matters including healthy meal planning and preparation, grocery shopping efficiency, and eating area pleasantness). In addition, their involvement in folio design and refinement likely contributed to the high ratings they gave to the folios' readability, completeness, relevance, and usefulness.

The intervention folios developed in this study have the potential to help mothers improve their self-management abilities with regard to planning, preparing, and serving healthy family meals within their lifestyle constraints and preferences. The impact of these folios on mothers overall, as well as on specific segmented clusters, is reported in this article's companion paper (Byrd-Bredbenner and Maurer Abbot 2009).

Table 1. Psychographic Factors Influencing Food Choices

Factors Influencing Food Choices	Scales Assessing Factors
Outlook on Life	Ability to Follow Through on Goals
	Life and Stress Are Under Control
	Satisfied with Life
Health Characteristics	Values Health
	Health Locus of Control
	Internal

	External: Powerful Others
	External: Luck or Chance
	Healthy Eating Self-Efficacy (i.e., belief they could consistently eat healthfully)
	Belief in Link Between Diet and Health Outcome (Outcome Efficacy)
	Protects Health/Health Oriented
Food Engagement	Plans Meals
	Enjoys Food-Related Activities (Meal Planning, Shopping, Preparation)
	Values/Uses Food Product Information
	Food Price Conscious
	Belief that Food-Related Activities Are Worth the Time & Effort
	Family Involvement in Food-Related Activities (Meal Planning, Food Shopping, Meal Preparation)
Interest in Learning About Meals	Interested in Learning To Make Nutritious Meals
	Interested in Learning To Make Meals Quickly
Food Values	Values Food "Purity" (e.g., additive free, preservative free, organic/natural)
	'Healthy' Foods Beliefs (i.e., they are appealing, a good value, can be prepared quickly and easily)
	Convenience Food Beliefs (i.e., they are healthy, appealing, a good value, can be prepared quickly and easily)
	Frequent Use of Convenience Food

Food Relationships	Eating Style: Control of Eating
	Restrained Eater
	Emotional Eater
	Disinhibited Eater
	Believes Diet Is Varied
	Adventurous Eater (Tries New Foods; Seeks Variety in Eating & Meal Preparation)
	Sensual Eater (Involved with Food)
	Factors Typically Guiding Food Selection
	Taste
	Health/Weight Control
	Good Value
	Convenience
	Time Availability
	External Cues
	Factors Guiding Food Selection When Stressed (In a hurry or very hungry)
	Health/Weight Control
	Good Value
	Convenience
Family Meals	Belief that Moms are Responsible for Serving Healthy Meals
	Values Eating Together as a Family
	Likelihood Family Eats Meals Instead of Snacks
	Importance of Positive Feedback About Meals
	Family Members are not Picky Eaters
	Comparative Beliefs about Healthfulness of One's Own Family's Diet vs. Others

Table 2. Importance* Mothers of Young Children Place on Components of an Organized and Efficient Home Kitchen and Meal Planning (n=20)

Components of Home Kitchen and Meal Planning	Total Group Mean+SD	Cluster Segment			
		<i>Stressed, Emotional Eating, Time Conscious (n=6) Mean+SD</i>	<i>Healthy, Free of Food Price, Taste, Convenience, & Advertising Effects (n=6) Mean+SD</i>	<i>Working, Convenience Driven (n=4) Mean+SD</i>	<i>Happy, Healthy, Food Involved (n=4) Mean+SD</i>
Importance of Organized Kitchen	4.6±0.6	4.2±0.8	4.8±0.4	4.5±0.6	5.0±0.0
Importance of Organized Food Storage Area	4.4±0.7	4.2±0.8	4.3±0.8	4.5±0.6	4.5±0.6
Importance of Planning Meals Before Food Shopping	4.0±1.0	3.7±1.4	3.5±0.8	4.5±0.6	4.8±0.5
Importance of Efficient Grocery Shopping	4.4±0.7	4.2±0.8	4.7±0.5	4.0±0.8	4.5±1.0
Importance of Easy Meal Preparation on Weekdays	4.4±0.8	4.8±0.4	4.3±0.8	4.5±1.0	3.8±1.0
Importance of Easy Meal Preparation	3.5±0.9	3.3±0.5	3.3±0.5	4.0±1.2	3.3±1.7

on Weekends					
Importance of Pleasant & Inviting Home Eating Environment	4.6±0.6	<i>4.7±0.5</i>	<i>4.3±0.5</i>	<i>4.3±1.0</i>	<i>5.0±0.0</i>

*Ratings were on a scale 5-point scale (1=not important at all; 5=extremely important).

**SD=Standard Deviation

Table 3. Formative Evaluation of Folio Characteristics by Mothers of Young Children (n=19)

Folio Characteristics	Folio A Mean±SD*	Folio B Mean±SD	Folio C Mean±SD
Readability#	4.8±0.4	4.7±0.5	4.8±0.5
Completeness#	4.7±0.6	4.7±0.6	4.5±0.7
Relevance#	4.0±1.1	4.1±1.2	4.3±0.9
Usefulness#	4.0±1.1	3.7±1.3	3.8±1.1
Likelihood to improve behavior#	3.9±1.2	3.5±1.3	3.7±1.1
	% Responding Yes	% Responding Yes	% Responding Yes
Personal knowledge improved after reading folio†	63%	74%	68%
Personal confidence in knowledge increased after reading folio†	79%	68%	66%
Belief that other mothers would feel more knowledgeable and confident after reading folio†	100%	100%	100%

*SD=Standard Deviation

#Rated on a scale of 1 to 5 (5 being highest)

†Answer choices were Yes or No.

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REFERENCES

Anderson, ES, RA Winett, and JR Wojcik. 2007. Self-regulation, self-efficacy, outcome expectations, and social support: Social cognitive theory and nutrition behavior. *Annals of Behavioral Medicine* 34:304-312.

Bandura, A. 2004. Health promotion by social cognitive means. *Health Education and Behavior* 31:143-164.

Basiotis, PP, A Carlson, SA Gerrior, WY Juan, and M Lino. 2002. Report card on the quality of Americans' diets. *Family Economics and Nutrition Review Nutrition Insight* 28:66-68.

Beck, ME. 2007. Dinner preparation in the modern United States. *British Food Journal* 109:531-547.

Boutelle, KN, AS Birnbaum, LA Lytle, DM Murray, and M Story. 2003. Associations between perceived family meal environment and parent intake of fruit, vegetables, and fat. *Journal of Nutrition Education* 35:24-29.

Burney, J, and B Haughton. 2002. EFNEP: A nutrition education program that demonstrates cost-benefit. *Journal of the American Dietetic Association* 102:39-45.

Byrd-Bredbenner, C. 2004. Food preparation knowledge and attitudes of young adults: Implications for nutrition practice. *Topics in Clinical Nutrition* 19:154-163.

———. 2005. Food preparation knowledge and confidence of young adults. *Journal of Nutrition in Recipe & Menu Development* 3:37-50.

Byrd-Bredbenner, C, J Abbot, and E Cussler. 2008. Psychographic segmentation of mothers of young children using food decision influencers. *Nutrition Research* 28:506-516.

Byrd-Bredbenner, C, and J Maurer Abbot. 2008. Food choice influencers of mothers of young children: Implications for nutrition educators. *Topics in Clinical Nutrition* 25:198-215.

———. 2009. Improving the nutritional quality of the home food environment using self-directed home kitchen makeovers. *Forum for Family and Consumer Issues* 14 (1: Spring).

Crawford, D, K Ball, G Mishra, J Salmon, and A Timperio. 2007. Which food-related behaviours are associated with healthier intakes of fruits and vegetables among women? *Public Health Nutrition* 10:256-265.

Ervin, RB, CY Wang, JD Wright, and J Kennedy-Stephenson. 2004. Dietary intake of selected minerals for the United States population: 1999-2000. *Advance Data* (341):1-5.

Ervin, RB, JD Wright, CY Wang, and J Kennedy-Stephenson. 2004. Dietary intake of selected vitamins for the United States population: 1999-2000. *Advance Data* (339):1-4.

Faughey, E. 1999. *Quick Flip to Delicious Dinners*. Boulder, CO: Nutrition Connections.

Fiese, BH, KP Foley, and M Spagnola. 2006. Routine and ritual elements in family mealtimes: contexts for child well-being and family identity. *New Directions for Child and Adolescent Development* 111:67-89.

Fulkerson, JA, M Story, D Neumark-Sztainer, and S Rydell. 2008. Family meals: Perceptions of benefits and challenges among parents of 8- to 10-year old children. *Journal of the American Dietetic Association* 108:706-709.

Harnack, L, M Story, B Martinson, D Neumark-Sztainer, and J Stang. 1998. Guess who's cooking? The role of men in meal planning, shopping, and preparation in US families. *Journal of the American Dietetic Association* 98:995-1000.

Henry, H, M Reicks, C Smith, K Reimer, J Atwell, and R Thomas. 2003. Identification of factors affecting purchasing and preparation of fruit and vegetables by stage of change for low-income African American mothers using the think-aloud method. *Journal of the American Dietetic Association* 103:1643-1646.

Life Sciences Research Office, and SA Andersen. 1990. Core indicators of nutritional state for difficult to sample populations. *Journal of Nutrition* 120:1557S-1600S.

McAlister, AL, CL Perry, and GS Parcel. 2008. How individuals, environments, and health behavior interact; Social Cognitive Theory. In *Health Behavior and Health Education. Theory,*

Research, and Practice, edited by K. Glanz, B. Rimer and K. Viswanath. San Francisco: Jossey-Bass.

Miles, MB, and AM Huberman. 1994. *Qualitative Data Analysis*. 2nd ed. Thousand Oaks, CA: Sage Publications.

Mokdad, AH, JS Marks, DF Stroup, and JL Gerberding. 2004. Actual causes of death in the United States, 2000. *JAMA* 291 (10):1238-1245.

Moshfegh, A., J. Goldman, and L. Cleveland. 2005. What we eat in America, NHANES 2001-2002: Usual nutrient intakes from food compared to Dietary Reference Intakes. *U.S. Department of Agriculture, Agriculture Research Service*.

National Center for Health Statistics. 2006. Figure 6.2. Prevalence of obesity among adults aged 20 years and over, by age group and sex: United States, January–March 2006.

Ogden, CL, MD Carroll, LR Curtin, MA McDowell, CJ Tabak, and KM Flegal. 2006. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA* 295 (13):1549-55.

Pastors, JG, H Warshaw, A Daly, M Franz, and K Kulkarni. 2002. The evidence for the effectiveness of medical nutrition therapy in diabetes *Management Diabetes Care* 25:608-613.

Pelletier, LG, SC Dion, M Slovinec-D'Angleo, and R Reid. 2004. Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion* 28:245-277.

Rais-Keeley, P. 2002. Nutrition interventions in early diabetic renal disease. *Diabetes Education* 28:62-66, 69-70.

Schnoll, R, and BJ Zimmerman. 2001. Self-regulation training enhances dietary self-efficacy and dietary fiber consumption. *Journal of the American Dietetic Association* 101:1006-1011.

Sloan, E. 2005. Demographic directions: Mixing up the market. *Food Technology* 59:34-45.

Soliah, L., J Walter, and D Antosh. 2006. College women and their food preparation ability. *Journal of Extension* 44 (5):Article No. 5RIB5.

Ward, J.H. 1963. Hierarchical grouping to optimize and objective function. *American Statistical Association Journal* 58:236-244.

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