

An Evaluation of the Mississippi Recipes for Success Program From the Perspective of Child Nutrition Directors

Chelsea Bell, MS; Laurel Lambert, PhD, RDN, LD; Yunhee Chang, PhD; Teresa Carithers, PhD, RDN, LD; Lydia West, MPH, RD, LD; Doris Schneider, RD

ABSTRACT

Purpose/Objectives

The Mississippi Recipes for Success (MRS), a customizable selective menu system resource, was developed for child nutrition program (CNP) directors to comply with USDA nutrition regulations. The resource is available in printed and online formats and includes recipes, menu matrixes, food safety, and training materials for meal planning. The purpose of this study was to investigate CNP directors' perceptions of their satisfaction with, as well as the importance and helpfulness of, the various features included in the MRS.

Methods

An electronic survey was developed in collaboration with the Mississippi Department of Education, Office of Child Nutrition (MOCN) and sent to CNP directors in Spring 2016. Directors rated MRS features using a 4-point scale for satisfaction and helpfulness and a 5-point scale for importance. Data analyses included descriptive statistics and one-way ANOVAs to measure associations.

Results

CNP directors (N=146) were contacted with 99 completing the survey. Overall results indicated high satisfaction with the MRS and its various features. Features with highest ratings were as follows: level of satisfaction - *Number of meal components found in recipes* ($M = 3.45, SD=.56$), level of importance - *Easy-to-follow recipe directions* ($M = 4.74, SD = .47$); and level of helpfulness - *Portion sizes for age/grade groups* ($M= 3.64, SD=.52$). The majority of directors (n=94) reported using the MRS for training with 53 using it on a daily, weekly or monthly basis. Number of schools in a district and directors' number of years of experience in child nutrition did not significantly affect responses.

Applications to Child Nutrition Professionals

Findings from this study can be utilized by the MOCN in updating future editions of the MRS resource. Their findings also have the potential to serve as a template for other state OCNs to provide directors with menu planning tools that are customizable and meet cultural needs, while ensuring compliance with USDA nutrition standards.

Keywords: Recipes for Success; Mississippi; child nutrition

INTRODUCTION

The 2010 proposal for the Healthy Hunger-Free Kids Act (HHFKA) was the first major modification to the National School Lunch Program (NSLP) in over thirty years and included a

series of changes to strengthen the national nutrition standards for school meals as well as combat childhood obesity and food insecurity (Disiena, 2015). Implementation of the HHSFKA and updated USDA nutrition standards for school meals began in 2012 and was to continue incrementally over the next several years (USDA FNS, 2012).

One requirement of the HHSFKA is that schools develop and follow standardized recipes. To assist CNP directors in meeting nutrition requirements, USDA provides resources such as the Team Nutrition Initiative and the Institute of Child Nutrition (ICN), formerly the National Food Service Management Institute. One program entitled *What's Cooking? USDA Mixing Bowl* has been useful as an interactive recipe tool and website developed in collaboration with the Center for Nutrition Policy and Promotion (CNPP) for the purpose of supporting CNP directors in developing standardized recipes (Bergman et al., 2015).

In addressing current available resources, one study found that although USDA initiatives and programs have provided direction on how to meet the HHSFKA school meal nutrient standards, CNP directors wanted recipes that could be customized to their various regions and/or cultures. Based on their findings, Rushing and Johnson (2015) recommended that recipes should be routinely updated to follow current trends and offer more diverse and culturally appropriate meals for all regions of the country.

Another recent study evaluating CNP directors' perceptions on implementing federal meal guidelines found that most felt prepared for the new regulations. However, director concerns with the new regulations included financial implications due to increased food costs, possible decreased revenue from declines in participation, and certain challenges with menu planning such as regional food differences and the ability to procure specific products that would comply with whole grain-rich foods and age-appropriate portion sizes. Directors also reported struggling with menu development that complied with the calorie ranges for different age groups (Yon, Amin, Taylor, & Johnson, 2016).

Training is also an important component in encouraging adherence to CNP regulations. Stephens and Byker Shanks (2015) stated that school nutrition personnel play an important role in appropriately implementing CNP regulations and that research is still needed on training practices. Past training initiatives for school nutrition personnel have included hiring chefs to assist in training and menu development. As part of a 10-year initiative to improve the school food environment in New York City, the State Department of Education developed menu items that could be produced in all schools, even those with lack of kitchen space and/or equipment. To accomplish this, registered dietitians and executive chefs were hired to work with each of the boroughs' schools to enhance aesthetic appeal of menu items, increase the staff efficiency, and train them in the utilization of standardized recipes (Perlman et al., 2012). Another two-year study in Boston school districts utilized chefs to train kitchen staff in preparing healthier school lunches that focused on enhancing specific aspects of the menu (more whole grains, fresh/frozen fruits and vegetables, and decreasing sugar, salt, saturated fats, and trans fats) (Cohen et al., 2012). Both studies accomplished the development of a healthier food environment. Specifically, the study from Cohen et al. (2012) found increased whole-grain selection and vegetable consumption at schools that utilized the chef initiative. The study from Perlman et al. (2012) found increased availability of fruits and vegetables, whole grains, and low-fat dairy and decreased sugary beverages and foods high in saturated fats and added sugars.

In addressing the meal standards, only a few states have developed and/or implemented resources to provide standardized recipes to assist in meeting the HHFKA nutrition requirements (Bergman et al., 2015; Stephens, Shanks, Roth, & Bark, 2016). One such resource is the Mississippi Recipes for Success (MRS) that provides a customized selective menu system for elementary and secondary schools in Mississippi. This resource was first developed in 1998 and has been updated in 2005, 2014 and 2015 to meet changing USDA regulations. This resource provides menu customization and flexibility using foods that are available through the Mississippi Statewide Purchasing Cooperative and USDA Foods (Bounds, Catchings, & West, 2013).

One of the primary functions of MRS has been to provide CNP directors with standardized recipes that can be customized and updated to meet current trends and student tastes, while meeting the nutrient standard requirements for school meal programs. The MRS also includes nutrient analysis of recipes specifically using USDA approved software and is available in print and online. In today's technological environment, most directors have access to computers to assist in program management. Thus, it was important to provide the resource online. Directors are also provided a database of ingredients and recipes to use to create school meal menus using USDA approved nutrition software. A study investigating CNP directors' perceptions of technology use in school nutrition programs found that directors typically use office and menu related software, which are effective in assisting them with several regulatory goals (Pratt, Bednar, & Kwon, 2012).

The printed edition of MRS includes an introductory manual titled Intro-Menu Planning and Cooks Tools, and five recipe manuals divided into 1) Breakfast – Grains, Meats, and Combos; 2) Sides – Vegetables and Fruits; 3) Sides – Grains and Desserts; 4) Entrees – Salads, Sandwiches, Soups, and Vegetarian; and 5) Entrees – Beef, Fish & Seafood, Pizza, Pork, and Poultry. The Intro manual provides sample weekly menus, matrixes worksheets based on age/grade groups to assist in menu planning, recipe customization, and purchasing formulas.

The online version of the MRS provides the same information as the printed but allows for more frequent recipes updates that can be downloaded. Recipes in the online database can be found by ingredient, recipe name, MRS number, or meal component. When recipes are modified or new products are introduced, consultants hired through the Mississippi Department of Education, Office of Child Nutrition (MOCN) update the recipe information. The purpose of this study was to investigate CNP directors' perceptions of the satisfaction, importance, and helpfulness of the various components of the MRS.

METHODOLOGY

Instrument

A web-based survey was developed in collaboration with the MOCN to identify CNP directors' level of satisfaction, importance, and helpfulness of the MRS resource based on their use of the printed, online, or both MRS resources. The survey included Likert-type scale, multiple choice, and open-ended questions to measure the different attributes. It ranged from 16 to 21 questions, depending on which MRS formats directors used (printed, online, or both). The first group of questions asked how often the MRS was used by school nutrition staff, at which locations the MRS was available, how often the MRS was used, and if the MRS was used in employee training. The next series of questions asked directors their satisfaction level with 10 features included in the MRS resource using a 4-point scale (4= Very Satisfied to 1=Dissatisfied) with an optional selection of "I do not use this feature." A 5-point Likert-type scale (5=Very Important to

1=Not Important) was used for the second series of questions asking directors to indicate level of importance placed on features such as student acceptability of recipes and food safety information included when choosing a recipe from the MRS resource. The third series of questions asked directors to indicate how helpful the MRS resource was in assisting them in meeting nutrition requirements. Helpfulness was measured using a 4-point scale (4=Very Helpful to 1=Not Helpful) with an optional selection of “Not Used.” The last series of questions asked directors to evaluate the helpfulness of the “Cook’s Tools” section. The same 4-point scale to measure helpfulness was used and included the optional selection of “Not Used.” Lastly, directors were asked how long they have worked in CNPs and how many schools were in their district. Due to concerns with anonymity, demographics were not requested. To pilot the survey, a hard copy that included all questions for the printed and online MRS format usage was sent to two CNP directors and child nutrition program experts. Directors were asked to evaluate the survey for clarity, readability, and only a few changes were made.

Data Collection

The study was reviewed and approved as exempt by the University of Mississippi Institutional Review Board. The survey was uploaded to Qualtrics, an online survey service, and the emailed link was accessible to CNP directors from April 14 through May 11, 2016. Access to the web-based survey was distributed to 146 of the 148 CNP directors of state’s school districts. Directors identified themselves as users of printed, online, or both MRS resources. Two directors that participated in the piloting of the survey were excluded from the final study. The MOCN provided contact information for the directors. Each director was emailed an anonymous link to the survey. The survey used a forced response format, which would not allow directors to continue to the next question without an answer selection. The survey began with three qualifying questions. Directors were excluded from entering the survey if they were (1) under 18 years of age, (2) unfamiliar with the MRS, or (3) indicated that they did not use any MRS format.

Statistical Analyses

All data were analyzed using the statistical package Version 19 of SPSS. Descriptive statistics including means, percentages, and standard deviations were obtained for each question in the survey. Cronbach alphas were determined to measure internal consistency among the different questions using the Likert-type scale. Two one-way ANOVAs identified associations between the scales and directors’ years of experience and district size. The directors’ years of experience were grouped as <than 1 year, 1-5 years, 6-10 years, 11-15 years, and 16-20 years of experience in child nutrition. District sizes were grouped as 1-10 schools, 11-20 schools, and >20 schools. Responses were summed within each scale, and the summed responses were used in the ANOVAs.

RESULTS AND DISCUSSION

Ninety-nine of 146 directors completed the survey (response rate = 68%). Twenty-one reported using the printed version only; 2 used the online version only, and 76 used both formats of MRS. More directors (n=90) reported using the printed format at least monthly compared to directors using the online format (n=73).

School districts ranged in size from one school to greater than 25 schools. The majority of directors (n=91) had 10 or fewer schools in their district. The greatest number of directors (n =

31) reported having over 20 years of experience working in child nutrition with only 5 directors reporting working less than one year. When directors were asked if they used the MRS for training, 94 reported they did with 53 using the MRS for training on a daily, weekly, or monthly basis.

Directors were asked to indicate their level of satisfaction with 10 features and/or aspects of the MRS resource reflected in both printed and web-based versions (Table 1). The features focused on meal planning, recipe layout/formatting, and recipe components with four additional features to measure satisfaction of directors who also access the web-based MRS.

Table 1. Child Nutrition Directors' Mean Satisfaction Ratings with Features of the Mississippi Recipes for Success

Features*	N	M	SD
Number of meal components found on recipe	99	3.45	.56
Organization of food categories found in the binders	98	3.43	.61
Using recipes to meet USDA nutrition standards	99	3.37	.62
Formatting or layout of recipes	99	3.34	.63
Clarity of recipe directions	99	3.30	.72
Nutrient analyses of recipes	99	3.29	.69
Pictures of 'illustrated steps for preparation of' recipes	99	3.28	.73
Pictures of the recipe finished product	99	3.25	.79
Variety of recipes found in each category	99	3.15	.81
Menu planning and menu matrixes guide	91	3.12	.73

ONLINE VERSION			
Features*	N	M	SD
Printables and resources on website	76	3.42	.64
Organization of website	77	3.26	.62
Search options for finding recipes	76	3.20	.75
Frequency of website updates	76	3.14	.74

Mean ratings in this section are based on a 4-point rating scale: 4= Very Satisfied, 3=Satisfied, 2= Neutral, and 1= Dissatisfied.

* Directors who responded, "I do not use this feature" were not included in the N.

While all features received a mean rating of satisfied or higher, discussion will primarily focus on features receiving the highest and lowest ratings from CNP directors. The two features receiving the highest satisfaction rating were *Number of meal components found on recipes* ($M = 3.45$, $SD = .56$) and *Organization of food categories found in the binders* ($M = 3.43$, $SD = .61$). Each recipe not only lists the meal components at the top of the page, but also uses large colorful icons for quick identification of meal components when meal planning. Dividing the food components into five separate binders makes the MRS more manageable in accessing and easily locating the different recipes for meal planning. Additionally, the individual binders allow for portability around the kitchen.

The lowest satisfaction rating was *Menu planning and menu matrixes guide* ($M = 3.12$, $SD = .73$) with 8 directors reporting they do not use this feature. The menu matrixes are based upon USDA meal patterns (USDA FNS, 2012). The matrixes are divided into breakfast and lunch and

age/grade groups. Directors who do not use this feature may be relying primarily on nutrient analysis software for menu planning. Only USDA-approved software may be used when analyzing nutrient content of meals (USDA National Agricultural Library, 2016). Presently there are 15 software programs approved for use in school meal programs, and 9 directors reported using an approved USDA nutrient analysis software program. In the comments section of the survey one director reported using MRS mainly through Nutrikids® to access recipes and print them. Perhaps this is because Nutrikids® allows directors to customize the yields of recipes, which is not offered through the MRS. Having the mechanism for customizing yields of recipes could be a consideration when updating the online MRS.

Although directors appear to be satisfied with the feature *Variety of recipes found in each category*, it was one of the lower rated features ($M=3.15$, $SD=.79$). In a position paper from the Academy of Nutrition and Dietetics, improving variety of recipes was noted as an important aspect of school meals (Bergman & American Dietetic Association, 2010). When evaluating the USDA recipe system, Rushing and Johnson (2015) reported several deficiencies including variety along with the availability of recipes meeting today's trends, cultural diversity, regional appropriateness, and student acceptability. Following discussions with CN directors on their needs, variety is an area that could be one of the focuses on the next revision or update of the MRS.

The lowest rating for the online features was the *Frequency of website updates* ($M=3.14$, $SD=.74$). Presently there is not a planned schedule for updating the MRS printed or online resources. The online resource is updated on the website as new ingredients are added or removed or as the makeup of ingredients is altered. Per discussion with the MRS resource developers, the website is updated on an as-needed basis. Although 76 directors were using the online version of the MRS, 21 used the printed version only. Although many people appreciate resources in an online format in this digital age, print resources still continue to be a popular format. A 2014 study of print and e-book use of the e-Duke scholarly collection found that print remained a popular medium and was actually preferred by most individuals over digital formats (Goodwin, 2014). Although the majority of directors used the online version, there still appears to be a need to continue publishing the printed format.

Table 2 shows features included in the recipes such as affordability of ingredients, acceptability of the recipes, accuracy of recipe yields, and directors' ratings of their perceived level of importance placed on these features when choosing a recipe. The features receiving the highest level of importance were *Easy-to-follow recipe directions* ($M = 4.74$, $SD = .47$), *Accuracy of recipe yields* ($M = 4.65$, $SD = .58$), *Student acceptability of recipe* ($M = 4.65$, $SD = .60$), and *Food safety – Critical control points* ($M = 4.65$, $SD = .50$). Recipes all follow the same standardized directions, include production notes, and draw the employees' attention to food safety by highlighting the critical control points within the recipe directions. Since directors who use the MRS rated student acceptability of the recipe as one of the most important features, future studies of the MRS should identify recipe acceptability from the students' perspectives both on selection and consumption of meal items. This is especially timely since student acceptability was identified as a deficiency in the USDA recipe system (Rushing & Johnson, 2015).

The two food safety features, *Critical control points* ($M = 4.65$, $SD = .50$) and *Recipe HACCP process* ($M = 4.64$, $SD = .52$), were rated as very important among the directors. Food safety is an important component of the HHFKA. Although food safety programs have always been

included in school meal program requirements, the HHFKA further requires that all food safety programs be based on Hazard Analysis Critical Control Point (HACCP) principles (USDA FNS, 2014). Acknowledging the importance of food safety, the most recent update of the MRS (2015) offers enhanced critical control points and recipe HACCP processes features for each recipe.

Table 2. Child Nutrition Directors' Mean Importance Ratings of Features When Choosing a Recipe From the Mississippi Recipe for Success (N=99)

Features*	M	SD
Easy-to-follow recipe directions	4.74	.47
Accuracy of recipe yields	4.65	.58
Staff acceptability of recipe	4.65	.60
Food safety – critical control points	4.65	.60
Food safety – recipe HAACP process	4.64	.52
Nutrients that the recipe provides	4.51	.61
Number of meal components met by recipe	4.47	.64
Availability of equipment needed to prepare recipe	4.39	.60
Affordability of ingredients	4.31	.74
Adequate staffing needed to prepare recipe	4.30	.78
Skill level of staff needed to prepare recipe	4.25	.80
Picture of recipe	4.24	.80
Student acceptability of recipe	4.24	.77

Mean ratings in this section are based on a 5-point rating scale: 5=Very Important, 4=Important, 3=Neutral, 2=Low Importance and 1=Not Important.

* Directors who responded, “I do not use this feature” were not included in the N.

The two lowest rated recipe features were *Staff acceptability of recipe* ($M = 4.24$, $SD = .77$) and *Picture of recipe* ($M = 4.24$, $SD = .80$). Directors may be focusing more on meeting USDA regulations to ensure meal standards are achieved than staff perspectives. Gathering staff input on menu acceptability may provide additional insights in guiding future MRS revisions. As for pictures, if directions are easy-to-follow and staff is proficient in preparing the item, a picture of the completed recipe may not be as important. Not including pictures may also decrease printing costs. No director rated any of the recipe features as “Not Important.”

Table 3 shows the mean ratings of directors' perceptions of the level of helpfulness the MRS provides in meeting USDA nutrition standards. The four nutrient requirements perceived as most helpful were, *Portion sizes for age/grade groups* ($M = 3.64$, $SD = .52$), *Calorie ranges for age/grade groups* ($M = 3.55$, $SD = .56$), *Meeting vegetable subgroup requirements* ($M = 3.47$, $SD = .69$), and *Sodium targets* ($M = 3.43$, $SD = .67$). These are important findings since it was reported that directors struggle with ensuring age-appropriate portion sizes and calorie ranges for the different age groups when developing menus (Yon et al., 2016). The MRS also addresses the vegetable subgroup through the various icons to assist directors in menu planning. The different icons identify vegetables that qualify for the following subgroups; red/orange, beans/peas, dark green, starchy, and “other.” Additionally, many of the recipes are “made from scratch” recipes allowing for careful regulation of sodium. As identified in the study by Rushing and Johnson (2015), directors struggled most with sodium regulations and menu planning for dark green vegetables and red/orange vegetables.

Table 3. Child Nutrition Directors' Mean Helpfulness Ratings of Using the Mississippi Recipes for Success to Meet the Following Nutrition Requirements

Nutrition Requirements*	N	M	SD
Portion sizes for age/grade groups	98	3.64	.52
Calorie ranges for age/grade groups	99	3.55	.56
Meeting vegetable subgroup requirements	99	3.47	.69
Sodium targets	98	3.43	.67
Saturated fat limits	97	3.39	.62
Variety of fruits	99	3.38	.67
Variety of vegetables	99	3.38	.65
Variety of meat and meat alternate recipes	99	3.37	.63
Trans fat limits	97	3.36	.62
Variety of whole grain recipes	99	3.24	.76

Mean ratings in this section are based on a 4-point rating scale: 4=Very Helpful, 3=Helpful, 2=Somewhat Helpful, 1=Not Helpful.

* Directors who responded, "I do not use this feature" were not included in the N.

Table 4 shows the mean ratings of directors' perceptions of the level of helpfulness with the MRS section referred to as *Cook's Tools*. The *Cook's Tools* provides resources and guides to assist CNP directors in menu planning and cooking. They were developed to adhere to policies of the NSLP and School Breakfast Program and the State Board policies of the Mississippi Department of Education. This section had the greatest number of directors who stated that they did not use features in *Cook's Tools*. Of the six sections in the *Cook's Tools*, four sections had 2 to 5 directors who did not use the resource.

Table 4. Child Nutrition Directors' Mean Helpfulness Ratings of 'Cooks Tools' Provided in the Mississippi Recipes for Success

Sections of 'Cooks Tools'*	N	M	SD
Portion control	98	3.52	.60
Abbreviations and common measures	98	3.48	.63
Fresh/frozen/canned vegetable conversions	96	3.40	.62
Crediting grains	94	3.37	.66
Customizing recipes	93	3.34	.68
Purchasing formula	93	3.30	.72

Mean ratings in this section are based on a 4-point rating scale: 4=Very Helpful, 3=Helpful, 2=Somewhat Helpful, 1=Not Helpful.

* Directors who responded, "I do not use this feature" were not included in the N.

There were no significant differences between the number of years the CNP director worked in child nutrition and their ratings of the MRS with a one-way ANOVA showing satisfaction [F(5, 92) = .52, $p = .763$], importance [F(5, 92) = 1.04, $p = .401$], helpfulness [F(5, 92) = .44, $p = .821$], Cook's Tools [F(5, 91) = .54, $p = .748$], and the website [F(5, 72) = .32, $p = .902$].

There also were no significant differences between number of schools in each district and the CNP directors' ratings of the MRS with a one-way ANOVA satisfaction [F(3, 94) = .31, $p = .815$], importance [F(3, 94) = .29, $p = .832$], helpfulness [F(3, 94) = .48, $p = .697$], Cook's Tools [F(5, 91) = 1.82, $p = .148$], and the website [F(5, 72) = 2.68, $p = .053$].

CONCLUSIONS AND APPLICATION

Limitations of the Research

This study used a survey platform that was web-based. Although web-based surveys have several advantages, this method was evaluated as having a response rate approximately 10% lower than a mail-in or telephone survey (Fan & Yan, 2010). The response rate (68%) for this study may have been higher if a different platform had been used. Other possible reasons for a lowered response rate could be the questionnaire length, email firewalls blocking the receipt of the emailed survey link, or the large number of emails that CNP directors receive.

Although directors appeared satisfied with many features provided by the MRS and rated features as important and helpful, it was not determined to what extent the MRS resource is used and if it actually improves adherence to the USDA nutrition standards. It was also not identified whether other tools are being used to support directors in implementing and following the new USDA nutrition standards. Future research to assess satisfaction, usefulness, and helpfulness in menu planning could compare the MRS resource to other resources being used by CNP directors. Forty-five directors did not respond to the survey, and it is unknown if they use the MRS and, if not, what resources they are using in meal planning. This research surveyed CNP directors from one southern state who used one meal planning resource, and therefore it is limited in scope.

Applications

Implementing changes in USDA nutrition regulations for CNPs can be difficult for various reasons including limited resources, lack of funding from federal and state agencies, additional training, difficulty in acquiring new or alternative products, and meeting regional and cultural needs. The recipes and menu planning tools provided by the MRS resource were developed to assist CNPs in the implementation and adherence to USDA nutrition standards and provide an array of printed and online resources that are state specific. Recipes and menus also have the added benefit of supporting customization and local cultural needs.

This study found that the majority of directors have adequate access to technology to take full advantage of the online MRS. However, 21 directors used only the printed format showing the need to continue providing printed materials and perhaps further investigation as to why they did not access the online resource. Format used, size of district, and years working in a district did not affect the positive ratings by directors regarding the satisfaction, importance, and helpfulness with all the MRS features. This resource appears to be utilized and appropriate for directors with all levels of experiences and size of school districts. Results indicate that the MRS resource is a valuable tool for a wide audience of CNP directors, both new and experienced, as well as directors of small and large districts.

The MRS was developed to help CNP directors develop healthy menus and utilize standardized recipes that comply with federal guidelines. In lieu of hiring chefs or personnel for training, this resource can be used as a training tool. Recipes in the MRS include critical control points, instructions, pictures, and purchasing guidelines that can all increase staff and program efficiency. Future studies should inquire more about the use of this tool in training.

Along with being well received and utilized, a printed copy of the MRS resource is distributed to all school directors and each of their schools in the state. The online resources are free to any

individual with Internet access. This unique statewide initiative provides options to meet geographical and cultural needs. All ingredients in the recipes are items found in the CNP Statewide Purchasing System.

Findings from this study can be utilized by the MOCN to update future editions of the MRS. Future studies should include the perspectives of CNP managers and their school staff. Future studies could also investigate the practicality of developing a MRS-type resource to meet the needs of other states. Based on the favorable perception of the MRS resource, this study may encourage other states to create their own resources to assist CNPs in meeting USDA nutrition standards.

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BIOGRAPHY

Bell, Lambert, Chang, and Carithers are all associated with the Department of Nutrition and Hospitality Management at the University of Mississippi located at University, Mississippi. Bell is a graduate student. Lambert, Chang, and Carithers are Associate Professor, Associate Professor, and Professor respectively. Carithers is also the Associate Dean of the School of Applied Sciences. West and Schneider are Consultants employed by the Mississippi Department of Education in Jackson, Mississippi.