



Nutrition and Cooking Class Collaboration

South Dakota WIC Program

FINAL REPORT
WIC Special Project Grant Fiscal Year 2017

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Summary & Purpose

Child retention in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) has become a pressing issue nationally with the rate of participation dropping sharply from 84.4% in infancy to an average of 49.8% for children ages one to four. South Dakota (SD) WIC is in a similar situation with the participation rate of children ages one to four at 52.6%.¹ Research shows participation in WIC not only improves children's diet and diet-related outcomes, such as increased intake of nutrient dense foods and lower rates of iron deficiency, but also improves other outcomes such as increased immunization rates, having a regular provider of medical care, and improved cognitive development.² As such, it is crucial that South Dakota WIC continues to evolve to retain eligible child participants until they turn 5 years old by incorporating new methods of nutrition education delivery where parents can participate in activities with their children as they prefer, rather than being told through counseling to provide healthy meals, shop for healthy groceries, or complete physical activity with their children.³

Another issue SD adults have reported is low vegetable and fruit intake. In 2015, over 25% of SD adults reported eating vegetables less than one time per day, and 42.6 percent reported eating fruit less than one time per day.⁷ Partial redemption of the WIC cash value benefit (CVB) for vegetables and fruit was at 84% statewide in Fiscal Year (FY) 2016, but full redemption was not occurring.

In a qualitative study of parents at two urban Head Start centers in the Midwestern U.S., focus groups revealed themes of perceived parental barriers to supporting healthy eating. The main themes shared from the focus groups were the lack of time and cooking skills, as well as a tight family budget.³ Parents who reported lack of cooking skills as a perceived barrier to healthy eating were 10.4% less likely to meet recommendations for vegetable and fruit intake; parents also indicated they did not like the taste or found vegetables and fruit too boring (10.2%).⁴ Evidence supports that making parents the focus of interventions using interactive education to target nutrition behaviors in preschool students and the use of cooking classes can increase vegetable and fruit intake.^{3,5} Data gathered from the internal SD 2017 WIC Participant Survey indicated that many participants (40% of those surveyed) would like to try cooking classes as a form of nutrition education.⁶ WIC dietitians have consistently expressed the need for and desire to provide this service for their participants. However, resources such as equipment and space for food preparation are limited in SD WIC clinics.

Many evidence-based cooking curricula include classes that range from one to two hours per class. With the forementioned lack of time for participants and lack of space and equipment in clinics, SD WIC and South Dakota State University Extension (SDSU Extension) worked to develop and implement an evidence-based cooking curriculum with hands-on lessons that can be completed in a 30-minute timeframe as an option for SD WIC nutrition education.

The purpose of this project is to optimize WIC nutrition education services and improve nutrition related behaviors through collaboration between South Dakota Department of Health Special Supplemental Nutrition Program for Women, Infants, and Children (SD WIC) and SDSU Extension to create and implement an evidence-based, hands-on, participant-centered cooking curriculum delivered by SDSU Extension Expanded Food and Nutrition Education Program

(EFNEP) and Supplemental Nutrition Assistance Program – Education (SNAP-Ed) Nutrition Assistants. The objectives of this intervention include: increase retention of WIC participants ages 1-4, increase redemption of the cash value benefit for vegetables and fruit, increase cooking confidence to utilize demonstrated cooking skills, and increase intake of vegetables and fruit.

The purpose of this report is to summarize the key findings of the pilot study and the effectiveness of the pilot on vegetable and fruit intake, cooking confidence, redemption of the CVB, and retention rates within WIC. Qualitative data from key informant interviews are also presented.

Goals & Objectives and Implementation

The main goal of this project is to collaborate with SDSU Extension to develop an alternative option to nutrition education that provides an option for time-efficient, hands-on learning for our participants and fits within the confines and requirements for WIC nutrition education. SDSU Extension felt the best way to implement this project was to use a modified version of their current Eat Smart and Moving More curriculum as it is already designed with low-income families in mind and would limit the need to train SDSU Extension staff to deliver the education. This method would fit better with Extension requirements as well. The lesson focusing on vegetables and fruits is meant to be a 44 slide PowerPoint presentation on the health benefits of vegetables and fruits, why each color is important, how much we should eat, what a serving size looks like, limiting juice and added sugar, food safety, shopping for vegetables and fruits, storage, and ways to incorporate vegetables and fruits into meals. It is meant to be presented in a classroom setting with a few physical activity breaks along with preparing a recipe at the end.

The SDSU Extension Nutrition Assistant was the key personnel delivering the curriculum to participants. The curriculum was delivered in a flexible, informal manner that was worked into the conversation about the recipe, rather than delivered as a stand-alone education piece in a classroom type setting. Recipes used in the cooking curriculum were pulled from the new SD WIC Cookbook created by staff at a local SD WIC clinic. Both recipes, which included braised carrots with fresh herbs and steamed broccoli with dill dressing, highlight food that can be purchased with SD WIC benefits and are simple to make with minimal ingredients. Evaluation of the curriculum and recipes ensured the lesson would be completed within the 30-minute timeframe for WIC nutrition appointments. A needs assessment with input from the participating local SD WIC clinic staff helped refine the logistics portion of the project design and implementation plans to fit the local agency needs.

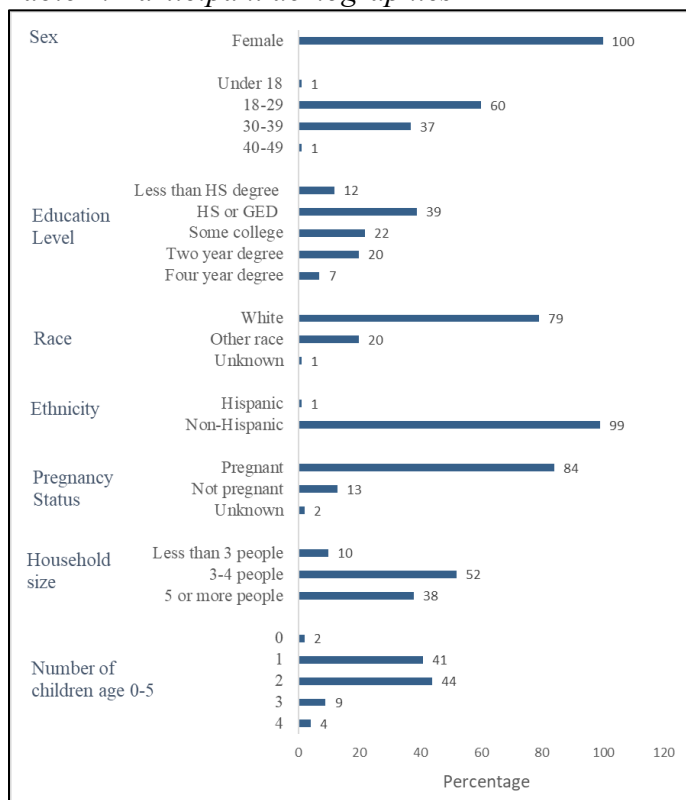
SD WIC and SDSU Extension worked together to identify one community to pilot the cooking class intervention. This decision was formed based on the location of an experienced SD Extension Nutrition Assistant with access to resources (i.e., facilities, equipment), and a local SD WIC clinic with adequate participant caseload and supportive SD WIC staff.

Eligible participants were identified and given the opportunity to enroll in the project and corresponding research study during their certification or mid-certification assessment throughout the enrollment period. A convenience sample was used, and enrollment was not randomized as each community was serving as either intervention (n=27), handout (n=14), or

control groups (n=43). All participants who were certified or completing their mid-certification assessment during the enrollment period were offered the option of cooking classes as two of their follow-up nutrition education visits. Inclusion criteria for participants were: 18 or older; able to read and/or speak English; and the primary caregiver and cook in their household. One family member was enrolled in the research study, but children and other family or friends were welcome to attend and participate.

To enroll, participants completed the consent form, the pre-intervention questionnaire and the National Cancer Institute Fruit and Vegetable Screener (NCIFVS)⁸, which are both described below and can be found in Appendix 1. WIC staff, including clerical, nurses, and dietitians, were trained in assisting participants to fill out their evaluation materials appropriately. To test the effectiveness of the cooking classes versus providing written materials or traditional methods of nutrition education, a cohort of SD WIC participants were enrolled in a similar WIC clinic and only received the informational handout during their traditional nutrition education appointment (Handout group). A control group of enrolled participants were also enrolled in a similar community and only receive traditional nutrition education (Control group). Clinics selected as the Handout and Control groups share similar qualities as the Intervention group clinic in terms of participant caseload. All participants enrolled in the study were female, mostly between the ages of 18-29 (60%), and White non-Hispanic (99%). Many participants had a high school education or higher, were pregnant, and had one or more child under age five in the household. Participant demographics are summarized in Table 1.

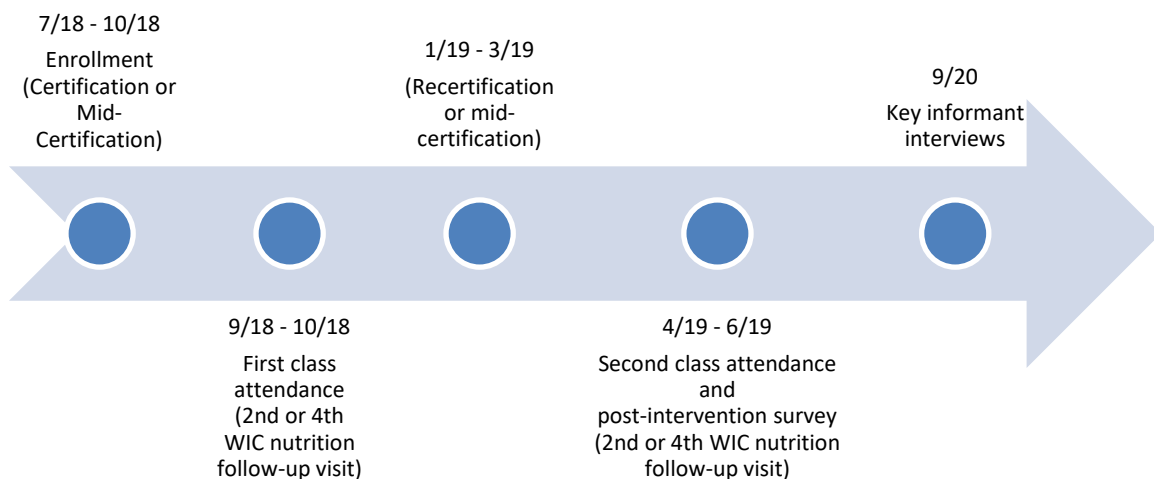
Table 1. Participant demographics



Cooking confidence and nutrition behaviors were evaluated before the intervention, after the completion of the two cooking classes, and three months after the study in all three study groups. Questions asked to the study groups were pulled from the valid and reliable Cooking Matters for Adults FY2017 Participant Survey and Expanded Food and Nutrition Education Program Food & Physical Activity Questionnaire.^{9,10} These two surveys have been tested to relate to a variety of curricula and audiences to collect demographics, including federal and state program enrollment, and nutrition related behaviors such as cooking confidence, physical activity, and food choices related to household income. The NCIFVS was also used to evaluate vegetable and fruit intake. Data from reports produced through the South Dakota WIC Integrated Technology (SDWIC-IT) data management system were used to identify differences in retention and CVB redemption.

The intervention group (n=27) was offered two cooking classes, which served as their nutrition education visits for the requirements of the SD WIC program for one, year-long WIC certification (Figure 1). Following the cooking demonstration, each participant also received an informational handout with the recipe they prepared to support what they learned (Appendix 2). Data were collected at pre-evaluation, post-evaluation (after completing both cooking classes), 3 months following the post evaluation, and through key informant interviews via telephone to gain a qualitative perspective from staff and participants. Due to the small number of participants in the Handout group (n=14), this group was dropped from the final analysis and Intervention was only compared to Control. There were also a small number of study participants who completed the 3-month follow-up evaluation in the intervention group (n=2), so the analysis focused on pre and postintervention timepoints.

Figure 1. Timeline



To promote enrollment, participants received a five-dollar Walmart gift card incentive for each data collection they participated in, including the key informant interviews. Participants were also provided a complimentary SD WIC Cookbook for completing all three points of data collection. Walmart gift cards were chosen for the five-dollar incentive, as this was a popular place participants shopped in their community. Participants enrolled in the Intervention group also received a food container for storing fresh vegetables and fruits for completing both lessons. Bus tokens were available for intervention participants who indicated their lack of transportation to the class would be a barrier to participating, but no participants expressed the need for this resource. Although these measures will not be sustainable following the conclusion of grant funding, they were used to encourage attendance and jump start the word-of-mouth promotion between participants for the cooking class option for WIC nutrition education. Data are not available to support whether participants would have participated without incentives.

Evaluation Approach

Demographic characteristics were compared between the two study groups (intervention vs control) using chi-square tests. Program participation was also compared between groups using participation in each individual program (using a yes/no format) as well as by collapsing participation into a dichotomous variable (participation in one or more programs vs no program participation). Responses to questions about cooking were left as continuous variables and mean values were compared within and between groups using t-tests. The NCIFVS was scored according to published protocol. Individual food group and total scores from the NCIFVS were also compared within and between groups using t-tests.

Pre- and post-data from participants in the intervention and control groups were used to examine the relationship between the intervention and various outcomes. The researchers expected an increase in retention, redemption of the cash value benefit for vegetables and fruit, cooking confidence to utilize demonstrated cooking skills, and intake of vegetables and fruit in the intervention group from pre- to post-intervention and a significant difference in those variables when compared to the control group. For example, linear regression was used to determine the relationship between the intervention and each NCIFVS food group response at post intervention while controlling for baseline food group response. Likewise, linear regression was used to examine the association between intervention and post-scores for cooking confidence questions while controlling for initial scores.

CVB redemption was categorized in two ways. First, benefit redemption was summed by year. By using the amount issued and redeemed during the year, a percent of benefits used was calculated for each participant. Second, benefit redemption was dichotomized as either 'pre' intervention or 'post' intervention. Again, using the amount issued and redeemed during the pre- and post-intervention periods, a percent of benefits used was calculated for each participant. T-tests were used to examine differences in percent of benefits used within study groups between periods (i.e., did percent of benefits used differ pre- vs post-intervention within each group). Linear regression was used to determine if an association existed between intervention status and percent of benefits used. Linear regression was also used to examine the association between intervention status and benefit redemption while controlling for different characteristics, including vegetable and fruit intake, cooking question scores and participant characteristics.

Further, the relationship between NCIFVS scores and percent of benefits used was examined.

Evaluation Results

Demographic Baseline Characteristics

At baseline, intervention and control groups were not different in age, education level, race, ethnicity, pregnancy status, total household members, or having children in the household of any age. Summer food assistance program use did differ between groups ($p=.018$) and was therefore controlled for throughout analyses where the two groups were being compared.

Outcomes of the pilot study were evaluated as follows:

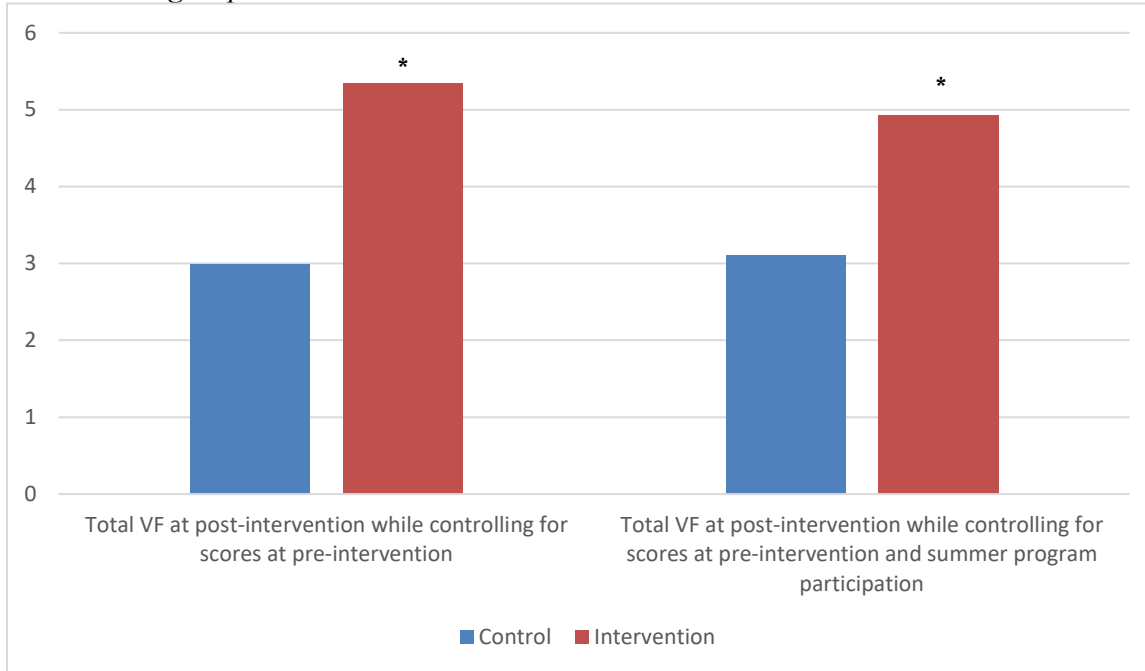
- **Vegetable and Fruit Intake:** The NCIFVS was used to evaluate vegetable and fruit intake in an average week (Appendix 1).
- **Cooking Confidence:** Questions were derived from the Share Our Strengths Cooking Matters survey to evaluate cooking confidence (Appendix 1).
- **Redemption of the CVB:** Percent of aggregated cash value benefits redeemed versus the amount issued.
- **Retention of Children Ages 1-4:** Evaluated through WIC participation (i.e., number of months enrolled in WIC and received benefits).
- **Participant Feedback (Qualitative analysis):** Common themes from key informant interviews (Appendix 3).

Vegetable and Fruit Intake:

Within-group analyses indicated that Control participants had significantly higher total weekly lettuce salad intake at post compared to pre intervention (.29 daily servings vs .15 daily servings, $p=.009$) which was unexpected. No within-group differences were seen in the intervention group.

When examining the relationship between intervention status and intake at post intervention while controlling for intake at pre intervention, fruit intake was found to differ significantly between control and intervention groups which was unexpected (1.77 daily servings vs .64 daily servings, $p=.048$). The relationship was no longer seen after controlling for summer food assistance program participation ($p=.446$). At post-intervention, the regression analysis indicated a significant difference in total vegetable and fruit intake ($p=.007$) by 2.35 daily servings between control and intervention as hypothesized (2.99 and 5.34 daily servings respectively), while controlling for scores at pre-intervention. This difference remained significant when also controlling for summer food assistance program participation ($p=.033$) with a closer margin (1.83 daily servings) between control and intervention groups (3.1 and 4.93 daily servings respectively). Outcomes are shown in Table 2.

Table 2. Post-intervention vegetable and fruit (VF) intake differences between control and intervention groups.



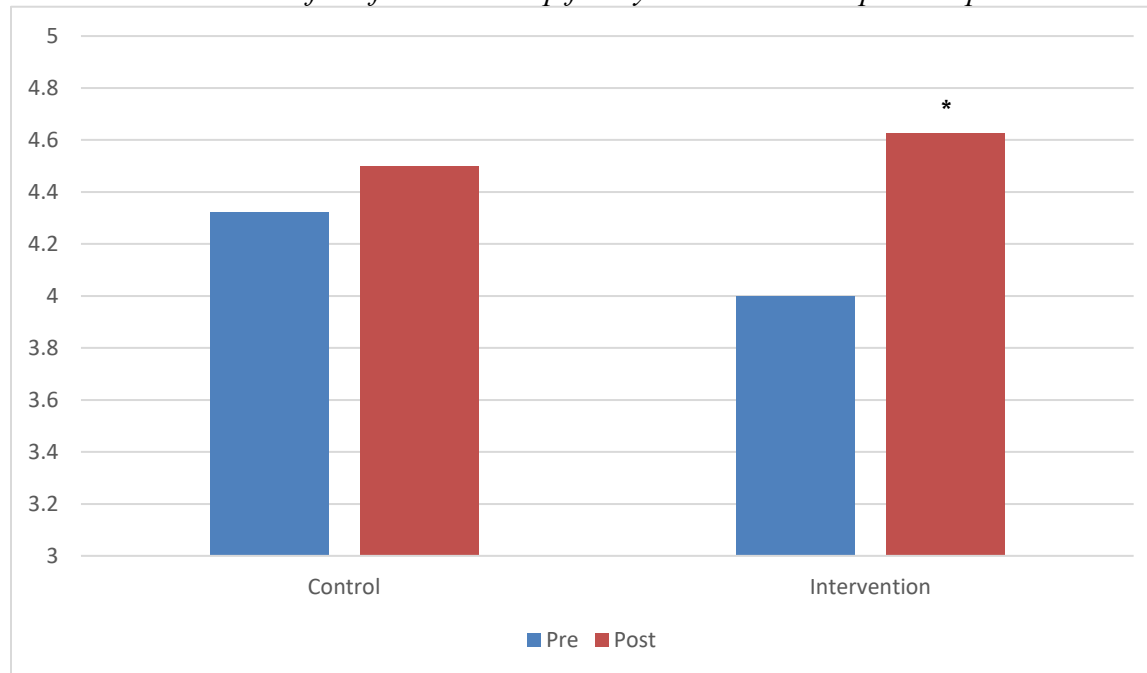
* $p \leq .05$

Cooking Confidence:

Within group analyses indicated that on a scale of one (Not confident at all) to five (Very confident), there was a statistically significant ($p=.049$) difference in mean confidence to help the family eat healthier between pre (4.00) and post (4.63) in the intervention group, which was not seen in the control group ($p=.18$, 4.32 to 4.52) (Table 3). Within the intervention group, there was a statistically significant ($p=.04$) difference in days per week cooking dinner (your main meal) at home between pre (6.5) and post (6.06) which was not seen in the control group ($p=.14$, 5.65 to 5.98). This was an unexpected difference that may either be a positive result of skills learned in the classes on using leftovers or preparing in bulk or may be a negative in that they are eating more meals that are not prepared at home. Although these are statistically significant, the difference was small and may not be a meaningful difference.

When examining intervention status and cooking confidence at post intervention while controlling for confidence at pre intervention, no relationships were found. This did not change when summer food assistance participation was controlled for.

Table 3. Mean values of confidence to help family eat healthier at pre and post intervention.



* $p \leq .05$

Redemption of the CVB:

The researchers hypothesized that the intervention would increase CVB redemption. The mean CVB percent redemption was not significantly different between intervention and control groups in any of the 3 years examined (2017, 2018 and 2019). Redemption amounts in 2019, which aligned with post-evaluation, were not associated with cooking confidence scores. Redemption amounts in 2019 were significantly and negatively associated with consumption of French fries/fried potatoes ($p=.02$), but no other vegetable or fruit variables. This means that as redemption went up, consumption of these foods went down which is a positive result. Intervention status was not significantly associated with 2019 redemption while controlling for vegetable and fruit intake or cooking confidence variables.

At pre-intervention, the mean CVB percent redemption was 71.7% in control participants and 73.6% in intervention. Within-group analyses did not show any difference in pre- (June 2018- July 2018) and post-intervention (Aug 2018- July 2019) redemption in either group in any of the three years examined. When examining intervention status and percent redemption at post while controlling for redemption at pre, no relationship was seen with or without Supplemental Nutrition Assistance Program (SNAP) participation, which some believe is a major reason WIC participants who are on both programs do not redeem their benefits.

Relationships between redemption at post and participant characteristics were also examined. Having children under five years old in the household was significantly associated ($p=.03$) with percent redeemed at post-intervention. This relationship remained after controlling for redemption at pre, with households having children under 5 years old redeeming 80% vs 67% for those without ($p=.022$). There was no significant relationship between SNAP participation and

percent redemption post-intervention ($p=.598$).

Retention of Children Ages 1-4:

Retention (enrollment on WIC and receiving benefits) in June and July of 2018 was used to establish a baseline for comparison and to study whether there were any differences in retention between the groups that could be linked to the intervention (August 2018-July 2019). There were no demographic characteristics associated with participation and intervention status was not associated with post-intervention participation while controlling for pre-intervention participation and summer food assistance program participation.

Participant Feedback – Qualitative Analysis:

The qualitative surveys were designed to be descriptive in nature, providing an overall picture of how participants perceived the intervention. The data was analyzed descriptively by summarizing frequencies and relative frequencies (percentages) for each survey question. However, due to the small number of responses within each of the clinic types, it was not appropriate to perform chi square or other statistical tests.

Participating WIC participants, outlined in Table 4 Key Informant Interview Participation, were called for a short interview regarding their experiences with the intervention to help the state office weigh the pros and cons of statewide implementation. The interview was completed by a student from South Dakota State University working under our Social Scientist to reduce bias in answers that may have been given to a WIC staff completing the interviews. All participants who participated in the initial survey were contacted and asked the questions as outlined in Appendix 3. Those who were unreachable were sent back to the Project Lead and updated phone numbers were retrieved, if possible. The survey results were interpreted as supportive of the intervention, but reflective only of the opinions of those individuals who responded.

Table 4: Key Informant Interview Participation

Participants Reached who attended at least 1 class	7 (6 attended 2 classes, 1 attended 1 class)
Participants Reached who did not attend class	1
Participants Unreachable for interview	15
Total Intervention Participants	26

The survey results strongly support statewide implementation of the cooking class option. Those who attended at least one class ($n=7$) were asked their opinions of the class. Six of the seven respondents (86%) felt that the cooking class was enjoyable, and one (14%) could not remember how they felt about it. All of those who attended said they would attend again if a class was available, and they felt that the intervention improved the participant experience. There were no negative responses, but a few suggestions were provided to enhance the classes. The first was to

provide a virtual option as the participant and was unable to attend physically but would have participated virtually. The second was to offer classes on other food groups in the future. And the third noted if the recipes were more advanced, they may need more than 30 minutes to complete. The most telling information came from asking “Tell me what you liked about the class.” Figure 2 below shows a Word Cloud description of participant responses. Many liked that these classes were new, hands-on, and enjoyed the instructor.

Figure 2: Class Enjoyment Word Cloud



Key Findings & Conclusions

Even with our small group numbers in this pilot, a significant difference was found in total vegetable and fruit intake between control and intervention at post-intervention by 2.35 daily servings while controlling for scores at pre-intervention. This difference remained significant when also controlling for summer food assistance program participation (1.83 daily servings) between control and intervention groups. This indicates that the intervention participants were consuming more vegetables and fruits at post-intervention than the control participants.

The intervention was successful in increasing participants' confidence to help their families eat healthier, which was not seen in the control group. Days per week cooking at home decreased in the intervention group which was also not seen in the control group. Further analysis would be needed to identify the reason for this, as part of the conversation during the cooking class was focused on stretching the food dollar, so it is unclear if this is an undesirable outcome as the participant was eating meals not prepared at home or a desirable change where they were preparing larger meals which led to leftovers.

The number of vegetables and fruits purchased with the CVB provided by WIC was not significantly different between intervention and control groups in any of the 3 years examined or associated with cooking confidence scores. Redemption of the CVB in 2019 was not significantly associated with intervention status while controlling for vegetable and fruit intake or cooking confidence variables. However, the data did bring to light that as redemption of the CVB increased, the consumption of French fries/fried potatoes decreased. Redemption did not affect any other vegetable or fruit evaluated. This provides evidence that utilization of the vegetable and fruit CVB is associated with less unhealthy eating habits such as intake of fried foods.

The evaluation also found that households with children under five years old redeem 13% more of their WIC CVB than those without, even after controlling for redemption at pre-evaluation. More efforts may need to be placed on encouraging women participants who are pregnant to redeem the CVB. Redemption of the CVB was not different at baseline between groups or associated with any demographic data, how many total people living in the household, or how many children aged 6-17 were living in the household. This could suggest that most people are using their benefits appropriately for the family member they were provided for. There was also no significant relationship between SNAP participation and percent redemption post-intervention, which has been a theory as to why WIC participants do not redeem all their benefits.

Although intervention status was not associated with increased retention in WIC participants enrolled in the study, the key informant interview feedback strongly supported statewide implementation of the cooking class option. Most respondents stated they felt the cooking class was enjoyable, all stated they would attend again if a class was available, and, most importantly, they all felt the intervention improved the participant experience. Many liked that these classes were new and hands-on, and enjoyed the instructor.

Limitations

This small pilot study has a limitation of sample sizes as there was only one nutrition assistant available to provide the lessons in one community which limited the number of participants who could enroll. One of the other major hurdles faced during this intervention was the coinciding implementation of the eWIC EBT card at the end of 2017. This option made WIC much more convenient for participants overall; however, this new change impacted the way nutrition education could be provided. Telenutrition services became an option as eWIC cards allow for loading of benefits without the participant physically being in the office. The SD WIC dietitian involved in study implementation reported that he observed that when participants missed a cooking class, they were less apt to reschedule the in-person class and preferred to complete their appointment remotely, thus impacting the show rate to the intervention cooking classes.

Lessons Learned & Future Implications

When the participants did attend the classes, they reported enjoying their experience and that they would go again if they were offered the opportunity because it improved their WIC experience. The biggest lesson learned is that if SD WIC can get participants to participate in the cooking classes, they will most likely enjoy them. The classes were also successful in increasing participants' vegetable and fruit consumption and their confidence to help their family eat healthier, which further supports the expansion of this project statewide.

Since 2019 when the pilot concluded, COVID-19 brought many changes to the SD WIC program, good and bad. It provided the opportunity to use technology and virtual services more expansively, but participants not coming into the office interfered with statewide implementation of the project. Even with these challenges, the project secured a strong relationship with WIC and SDSU Extension. WIC continues to work with SDSU Extension to build a process that allows statewide participation in EFNEP through in-person and virtual cooking classes.

Now that participants are coming back into the office for appointments, WIC and EFNEP have been working together to provide opportunities for staff to learn about each program and promote referrals to each program. Coordination of service is the main focus now and with virtual services on the horizon there are plans to expand opportunities for participants to attend virtual cooking classes as well. Overall, this project has built a strong relationship with EFNEP that will continue to improve the health of WIC participants and enhance their WIC experience.

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Appendices

Appendix 1. Enrollment Form including demographics, cooking confidence, and fruit and vegetable questionnaire.

Nutrition and Cooking Education in South Dakota WIC Information Sheet

Carolyn McGlade, Principal Investigator
Carolyn.McGlade@state.sd.us
605.688.6487

You are invited to participate in a research study. The purpose of this study is to improve WIC nutrition education services and nutrition related behaviors, such as cooking confidence and eating fruits and vegetables.

Eating enough nutritious foods and knowing how to prepare them is important for health. Because you are a WIC participant, you are being invited to take a *fruit and vegetable questionnaire* and a *participant survey*.

Your participation in this study is completely voluntary and does NOT affect your eligibility for the WIC program. You will receive a \$5 benefit for completing the surveys at each time point and you will receive a South Dakota WIC Cookbook for completing the surveys at all three time points. The results of this study will be used to create an educational tool for WIC participants and are meant to help improve the WIC program.

The surveys ask between 34 and 47 questions about your demographic information, dietary and physical activity habits, and cooking confidence. It takes between 10 and 15 minutes to complete. You do NOT have to answer questions that you are uncomfortable answering. All information will remain confidential (private). Also, your personal information will NOT be linked to your questionnaire responses. However, federal regulatory agencies and the South Dakota State University Institutional Review Board (a committee that reviews and approves research studies) might see this information.

The researcher conducting this study is Carolyn McGlade. Contact information is above. If you have any questions, concerns, or complaints about the research, please feel free to contact the researcher during the day.

This project has been approved by the South Dakota State University (SDSU) Institutional Review Board, Approval No.: IRB-1806001-EXP

If you have questions regarding your rights as a research subject, you may contact the SDSU's Research Integrity and Compliance Officer at 605.688.5051. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual and is independent of the research team with problems, complaints, or concerns about the research.

**Nutrition and Cooking Education in South Dakota WIC
Consent Form**

You must be 18 years of age older to consent to participate in this research study.

Your signature implies that you have read the Information Sheet and consent to participate in the study and your understanding that this study is completely voluntary and does NOT affect your eligibility for the WIC program.

Name: _____

Date _____

Nutrition and Cooking Education in South Dakota WIC
Participant Survey

1. What is your sex?
 Male
 Female
2. What is your age?
 Under 18 40-49
 18-29 50-59
 30-39 60 and over
3. What is the highest level of education you have completed?
 Less than a high school degree Two-year college degree
 High school degree or GED Four-year college degree
 Some college, but have not graduated
4. Are you Hispanic or Latino?
 Yes
 No
5. What is your race?
(You may mark more than one)
 White
 Black or African American
 Asian
 Native Hawaiian or Pacific Islander
 American Indian or Alaska Native
 Other (please specify)

6. Are you pregnant?
 Yes
 No
7. How many people **TOTAL counting yourself** live in your household? (This may include non-relatives who live with you.)
 1 4 7 10 or more
 2 5 8
 3 6 9
8. How many children **ages 0-5** live in your household? (This may include non-relatives who live with you.)
 0 2 4
 1 3 5 or more
9. How many children **ages 6-17** live in your household? (This may include non-relatives who live with you.)
 0 2 4
 1 3 5 or more
10. Have you or other members of your household participated in any of the following programs in the last year? (Mark all that apply)
 SNAP (formerly Food Stamps)
 Free or reduced-priced school breakfast
 Free or reduced-priced school lunch
 Free or reduced-priced school supper
 Free summer meals
 Head Start
 Food Pantry
 Medicaid
 Did not participate in any of these programs

Place an "X" in the box to choose the best answer for each statement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
11. Cooking takes too much time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Cooking is frustrating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. It is too much work to cook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Never	Rarely	Sometimes	Often	Always	Does not Apply
14. How often do you plan meals ahead of time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. How often do you make homemade meals "from scratch" using mainly basic whole ingredients like vegetables, raw meats, rice, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Not at all confident	Not very confident	Neutral	Somewhat confident	Very confident	Does not Apply
16. How confident are you that you can use basic cooking skills, like cutting fruits and vegetables, measuring out ingredients, or following a recipe?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. How confident are you that you can use the same healthy ingredient in more than one meal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. How confident are you that you can cook healthy foods for your family on a budget?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. How confident are you that you can help your family eat more healthy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. How many **days a week** do you cook dinner (your main meal) at home?
 0 1 2 3 4 5 6 7

21. During the last 7 days, how many days did you exercise for at least 30 minutes?
 0 1 2 3 4 5 6 7

22. During the last 7 days, how many days did you do workouts to build and strengthen your muscles?
 0 1 2 3 4 5 6 7

23. In the past month, how often did you eat less than you wanted so there was more food for your family?

- Never
- Rarely (about 20% of the time)
- Sometimes (about 40% of the time)
- Often (about 60% of the time)
- Usually (about 80% of the time)
- Always

24. In the past month, how often did you not have money or another way to get enough food for your family (such as SNAP, WIC, or a food pantry)?

- Never
- Rarely (about 20% of the time)
- Sometimes (about 40% of the time)
- Often (about 60% of the time)
- Usually (about 80% of the time)
- Always

Fruit and Vegetable Questionnaire INSTRUCTIONS

- Think about what you usually ate last month
- Please think about all the fruits and vegetables you ate last month. Include those that were:
 - raw and cooked,
 - eaten as snacks and at meals,
 - eaten at home and away from home (restaurants, friends, take-out), and
 - eaten alone and mixed with other foods.
- Report how many times per month, week or day you ate each food, and if you ate it, how much you usually had.
- If you mark “Never” for a question, follow the “Go to” instruction.
- Choose the best answer for each question. Mark only one response for each question.

1. Over the last month, how many times per month, week or day did you drink **100% juice** such as orange, apple, grape, or grapefruit juice? **Do not count** fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.

<input type="radio"/> Never (Go to Question 2)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	---	---	---	---	---	--	--	--	--

- 1a. Each time you drank **100% juice**, how much did you usually drink?

<input type="radio"/> Less than $\frac{3}{4}$ cup (less than 6 ounces)	<input type="radio"/> $\frac{3}{4}$ to $1\frac{1}{4}$ cup (6 to 10 ounces)	<input type="radio"/> $1\frac{1}{4}$ to 2 cups (10 to 16 ounces)	<input type="radio"/> More than 2 cups (more than 16 ounces)
--	--	--	--

2. Over the last month, how many times per month, week or day did you eat **fruit**? Count any kind of fruit - fresh, canned, and frozen. **Do not count** juices. Include fruit you ate at all mealtimes and for snacks.

<input type="radio"/> Never (Go to Question 3)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	---	---	---	---	---	--	--	--	--

- 2a. Each time you ate **fruit**, how much did you usually eat?

<input type="radio"/> Less than 1 medium fruit	<input type="radio"/> 1 medium fruit	<input type="radio"/> 2 medium fruits	<input type="radio"/> More than 2 medium fruits
---	---	--	--

OR

<input type="radio"/> Less than $\frac{1}{2}$ cup	<input type="radio"/> About $\frac{1}{2}$ cup	<input type="radio"/> About 1 cup	<input type="radio"/> More than 1 cup
--	--	--------------------------------------	--

3. Over the last month, how often did you eat **lettuce salad (with or without other vegetables)**?

<input type="radio"/> Never (Go to Question 4)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

3a. Each time you ate lettuce salad, how much did you usually eat?

<input type="radio"/> About ½ cup	<input type="radio"/> About 1 cup	<input type="radio"/> About 2 cups	<input type="radio"/> More than 2 cups
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4. Over the last month, how often did you eat **French fries or fried potatoes**?

<input type="radio"/> Never (Go to Question 5)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

4a. Each time you ate French fries or fried potatoes, how much did you usually eat?

<input type="radio"/> Small order or less (About 1 cup or less)	<input type="radio"/> Medium order (About 1 ½ cups)	<input type="radio"/> Large order (About 2 cups)	<input type="radio"/> Super Size order or more (About 3 cups or more)
--	--	---	--

5. Over the last month, how often did you eat **other white potatoes? Count baked, boiled, and mashed potatoes, potato salad, and white potatoes that were not fried.**

<input type="radio"/> Never (Go to Question 6)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
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5a. Each time you ate these potatoes, how much did you usually eat?

<input type="radio"/> 1 small potato or less (½ cup or less)	<input type="radio"/> 1 medium potato (½ to 1 cup)	<input type="radio"/> 1 large potato (1 to 1 ½ cups)	<input type="radio"/> 2 medium potatoes or more (1 ½ cups or more)
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6. Over the last month, how often did you eat **cooked dried beans? Count baked beans, bean soup, refried beans, pork and beans and other bean dishes.**

<input type="radio"/> Never (Go to Question 7)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

6a. Each time you ate these beans, how much did you usually eat?

<input type="radio"/> Less than ½ cup	<input type="radio"/> ½ to 1 cup	<input type="radio"/> 1 to 1 ½ cups	<input type="radio"/> More than 1 ½ cups
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7. Over the last month, how often did you eat **other vegetables**?

- DO NOT COUNT:**
- Lettuce salads
 - White potatoes
 - Cooked dried beans
 - Vegetables in mixtures, such as in sandwiches, omelets, casseroles,
 - Mexican dishes, stews, stir-fry, soups, etc.
 - Rice

COUNT:

- All other vegetables - raw, cooked, canned, and frozen

<input type="radio"/> Never (Go to Question 8)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

7a. Each of these times that you ate **other vegetables**, how much did you usually eat?

<input type="radio"/> Less than ½ cup	<input type="radio"/> ½ to 1 cup	<input type="radio"/> 1 to 2 cups	<input type="radio"/> More than 2 cups
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8. Over the last month, how often did you eat **tomato sauce**? Include tomato sauce on pasta or macaroni, rice, pizza and other dishes.

<input type="radio"/> Never (Go to Question 9)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
---	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

8a. Each time you ate **tomato sauce**, how much did you usually eat?

<input type="radio"/> About ¼ cup	<input type="radio"/> About ½ cup	<input type="radio"/> About 1 cup	<input type="radio"/> More than 1 cup
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9. Over the last month, how often did you eat **vegetable soups**? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.

<input type="radio"/> Never (Go to Question 10)	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
--	--	--	--	--	--------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---

9a. Each time you ate **vegetable soup**, how much did you usually eat?

<input type="radio"/> Less than 1 cup	<input type="radio"/> 1 to 2 cups	<input type="radio"/> 2 to 3 cups	<input type="radio"/> More than 3 cups
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10. Over the last month, how often did you eat **mixtures that included vegetables**? Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.

<input type="radio"/> Never	<input type="radio"/> 1-3 times last month	<input type="radio"/> 1-2 times per week	<input type="radio"/> 3-4 times per week	<input type="radio"/> 5-6 times per week	<input type="radio"/> 1 time per day	<input type="radio"/> 2 times per day	<input type="radio"/> 3 times per day	<input type="radio"/> 4 times per day	<input type="radio"/> 5 or more times per day
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Thank you very much for completing this questionnaire. Please return it to WIC staff.

Pick it! Try it! Like it!



CARROT

Pick it!

- Can be white, yellow, red, purple. Dark orange carrots have the most beta-carotene.
- Baby carrots are slightly shorter carrots that have been peeled, trimmed, and packaged.
- Avoid huge overgrown carrots with woody centers.
- Keep fresh for several weeks in refrigerator crisper drawer in pierced plastic bags with green tops trimmed.

Try it!

- Scrub all soil from carrots before eating or cooking. If desired, peel with a vegetable peeler.
- Raw carrots are great snacks and salad additions, but can also be steamed, microwaved, roasted, grilled, or added to stir fry.
- Carrots and their green tops can also be added to soups and stews.

Find recipes & videos at iGrow.org



South Dakota State University, South Dakota counties, and U.S. Department of Agriculture cooperating. South Dakota State University adheres to AA/EEO guidelines in offering educational programs and services.

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Pick it! Try it! Like it!



BROCCOLI

Pick it!

- Choose tight florets that are green, purplish or bluish green – yellow is over mature.
- Head should be large with a tight cluster of small flower buds and very firm stalks.
- Store in vegetable crisper of refrigerator, use in a short period of time.
- Do not rinse until just before using.

Try it!

- Steam or eat raw with a dip; peel the stalk to use.
- Cut florets into even-sized pieces for cooking.
- Steam 3-4 minutes or simmer in 1 inch of boiling water to tender crisp.
- Avoid overcooking, which produces a strong sulfur odor.
- Add to salads, soups, stews, casseroles and stir fry.

Find recipes & videos at iGrow.org



South Dakota State University, South Dakota counties, and U.S. Department of Agriculture cooperating. South Dakota State University adheres to AA/EEO guidelines in offering educational programs and services.

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP).



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Like it!

Braised Carrots with Fresh Herbs

Ingredients:

- 1 pound baby carrots or carrot sticks
- 1 cup canned or fresh beef broth
- 1 teaspoon honey
- 1 Tablespoon margarine
- 2 Tablespoons fresh parsley, chopped (or use one Tablespoon dried)

Directions:

1. Rinse, scrub and peel carrots. Leave baby whole or cut larger carrots into sticks that are 2-3 inches long and then cut into halves or quarters so that all pieces are about the same size.
2. In a medium saucepan, bring beef broth to a boil, add carrots, honey, butter and parsley. Cover and simmer for 4 to 5 minutes.
3. Remove carrots from the liquid to a warm plate. Continue simmering the broth for 15 to 20 minutes longer until it becomes a thickened liquid glaze.
4. Return carrots to pan and cover them with the glaze.

Yields 4 servings.

Nutrition Facts per Serving:

Calories 90; Fat 3.5g; Cholesterol 0mg; Sodium 125mg; Carbohydrates 13g; Fiber 3g; Sugar 7g; Protein 2g

Sources: <http://urbanext.illinois.edu/veggies/carrot.cfm> <http://www.flickr.com/photos/nanaow/4018899982/>



Like it!

Steamed Broccoli with Dill Dressing

Ingredients:

- 1 bunch broccoli (about 2 pounds)
- 3 carrots, peeled and cut into 2-inch strips
- 6 tablespoons olive oil
- 1/4 teaspoon black pepper
- 1 teaspoon dried dill weed or 3 teaspoons fresh dill

Directions:

1. Combine ingredients for the Dill Dressing and set aside—olive oil, pepper, dill weed.
2. Bring a large saucepan of water to a boil while preparing the vegetables.
3. Rinse, trim stems from broccoli and peel, cut into 2-inch strips.
4. Cut florets into small uniform pieces and set aside. Prepare carrots and set aside.
5. When water is boiling add carrots and broccoli stems. Cook for one minute.
6. Add broccoli florets and boil two minutes longer. Do not overcook.
7. Drain, and rinse under cold running water, and drain again.
8. Place in a large bowl and gently toss with dressing. Serve immediately.

Yields 6 servings.

Nutrition Facts per Serving:

Calories 200; Fat 15g; Cholesterol 0mg; Sodium 70mg; Carbohydrates 14g; Fiber 5g; Sugars 5g; Protein 5g

Sources: <http://www.clemson.edu/cafls/cuchefs/files/broccoli.pdf> <http://urbanext.illinois.edu/veggies/broccoli.cfm>
<http://muffet1.deviantart.com/art/Fresh-Broccoli-314710689> <http://www.flickr.com/photos/35034350386@N01/2158070163>



Appendix 3. WIC Key Informant Interview Protocol

WIC Key Informant Interview Protocol

Date: _____

Time: _____

Interviewer: _____

Interviewee: _____

Did participant attend one or more classes? _____ YES _____ NO

For best success in the interviewing process, please read through this protocol and get an idea of how you will be conducting the interview.

1. *Fill out top portion of the “Study Participant Questions.”* (If the participant **did attend** the session, you will skip to the second page—part 5. If the participant **did not attend** the session, you will only go through this first page—part 4.)
2. Ensure a quiet space free of distractions and *call the participant* (phone number on file).
3. *Introduce yourself* as a part of the research team and read the following:

“You previously participated in the Nutrition and Cooking Class project with the Mitchell WIC office. I would like to ask you about your experience with the project, so we can learn about what worked and what didn’t, and how we can improve the program in the future. Even if you didn’t attend cooking classes, we’ve got a couple of questions for you. At the end of this interview, you’ll receive another \$5 Walmart gift card in exchange for your time. Does this sound OK? (wait for response). This message will be recorded to help us collect data, is that ok with you?”

START RECORDING

FOR THOSE WHO DID NOT ATTEND CLASSES

Explain: *We are interested in understanding more about why you did not attend the cooking classes.*

1. ***What prevented you from attending the cooking class?***
 - Probe: Barriers (answers may overlap with responses for next 3 questions)
 - i. *Was attending the class at the Extension building rather than the WIC office a barrier?*
2. ***Was the 30 minute appointment length a barrier?***
 - Probe (if no): Would you have liked it to be longer or shorter? Why?
 - Probe: What amount would have been best?
3. ***Do you have ideas on how to deliver this class?***
 - Probe: phone, video chat, or others?

“Thank you so much for your time and participation in our work. Would you like to pick your gift card up at the WIC office or have us send it by mail? If mailing, what is the best address to send it to?”

After you hang up, *STOP RECORDING.*
START RECORDING

FOR THOSE WHO DID ATTEND CLASSES

Explain: *We are interested in understanding more about why you attended the cooking classes and if they were beneficial.*

1. ***Did you enjoy the class?***
2. ***Tell me what you didn't like about the classes.***
 - Probe: "why" they stated that.
3. ***Tell me what you liked about the classes.***
 - Probe: "why" they stated that.
 - Probe: Is it something you would like to do again if it was available?
 - Probe: Would you like to see this service continued as an option for nutrition education?
 - Probe: Was this a valuable use of your time?
4. ***What types of new information did you learn?***
 - Probe: Did you learn something new or was it mostly refresher information?
5. ***Tell me how you used the recipes.***
6. ***What did you like about the recipes?***
 - Probe: Why?
7. ***What did you dislike about the recipes?***
 - Probe: Why?
8. ***Have you used any of the recipes at home?***
 - Probe: Did you share any recipes with others? If yes, who?
 - Probe: Did you try cooking any other vegetables with the skills you learned in class?
9. ***Do you feel like your family is eating more fruits and vegetables after attending the classes?***
 - Probe: What types of fruits and vegetables have you added?
10. ***Was attending the class at the Extension building rather than the WIC office a barrier?***
 - Probe: Why? Was transportation an issue?
11. ***Was 30 minutes an appropriate amount of time for the cooking class?***
 - Probe (if no): Would you have liked it to be longer or shorter? Why?
 - Probe: What amount would have been best?
12. ***Were there any barriers to having their benefits loaded onto their card?***
 - Probe: Was receiving the correct benefits that you wanted an issue?
13. ***Does the option of attending a class like this inspire you to stay on the WIC program?***

"Thank you so much for your time and participation in our work. Would you like to pick your gift card up at the WIC office or have us send it by mail? If mailing, what is the best address to send it to?"

After you hang up, *STOP RECORDING*

Additional notes about protocol

1. Potential participants will be called using the phone number on file.
 - Calls will be tried on 3 separate occasions in order to try and reach the individual – one weekday afternoon, one weekday evening and one weekend day
 - Call attempts and results will be logged
2. The purpose of the call will be explained and only after agreeing to be recorded will the call be put on speakerphone and recorded with a digital recording device.
 - Implied consent is given by proceeding to answer questions.
 - The call is being recorded in order to facilitate the drafting of transcripts to allow for analysis of themes
 - The digital files will be stored by participant ID # on a password-protected computer.
3. Participant must answer at least one question in order to receive the incentive.