### Literature Review: The Use and Benefits of Wichealth.org

Megan Brenny, MPH Community Health Education student  
Keywords: wichealth.org, nutrition, education, benefits, barriers

<table>
<thead>
<tr>
<th>Source</th>
<th>Type, sample, DV</th>
<th>Abstract</th>
<th>Key findings</th>
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| 1) Au, L. E., Whaley, S. E., Gurzo, K., Meza, M., Rosen, N. J., & Ritchie, L. D. (2017). Evaluation of Online and In-Person Nutrition Education Related to Salt Knowledge and Behaviors among Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants from 3 different LA WIC clinics. From Nov 2014- Oct 2015. The outcomes were measured by reductions in salt intake and knowledge and self-efficacy | **Background:** The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) differs from other federal nutrition programs in that nutrition education is a required component. WIC programs traditionally provide in-person education, but recently some WIC sites have started offering online education. Education focused on reducing salt intake is an important topic for WIC participants because a high-sodium diet has been associated with high blood pressure, and low-income populations are at increased risk.  
**Objective:** Our aim was to examine the impacts of traditional in-person and online nutrition education on changes in knowledge, self-efficacy, and behaviors related to reducing salt intake in low-income women enrolled in WIC.  
**Design:** Although a comparison of groups was not the primary focus, a randomized trial examining the impact of online and in-person nutrition education on participant knowledge, self-efficacy, and behaviors related to salt intake was conducted.  
**Participants/setting:** 514 WIC participants from three Los Angeles, CA, WIC clinics received either in-person (n.257) or online (n.257) education. Questionnaires assessing salt-related knowledge, self-efficacy, and behaviors were - Little difference shown between online and in person education for salt-intake.  
- Success shown in each program in reduced salt-intake at the table, salt-added foods, and in cooking.  
- Online showed slightly longer term improvements in salt behavior  
- Findings consistent with other WIC studies with fruits and vegetables, exercise, knowledge, and other health outcomes.  
- study lacked with no control group but is not allowed since education is required by federal guidelines and the questionnaire follow up was not the same as baseline to increase the retention. | |
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| Link: https://pubmed.ncbi.nlm.nih.gov/21515124/ | Quasi-experimental with starting participants in phase 1 and 2  
| 692 and 872 respectively with the loss of about 51.6% to follow up. | **Abstract:** The purpose of this project was to compare the impact of Internet nutrition education to traditional nutrition education on Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participant fruit and vegetable consumption.  
| **Participants:** Interventions were delivered at 15 WIC clinics after normal WIC clinic operations or delivered online. A total of 692 and 872 participants from eight WIC agencies self-enrolled into two phases. |  

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administered at baseline and 2 to 4 months and 9 months later from November 2014 through October 2015.  
**Results:** Positive changes in knowledge and self-efficacy were retained 2 to 4 months and 9 months later for both groups (P<0.05). Both groups reported significant changes in behaviors related to using less salt in cooking (P<0.0001) and eating fewer foods with salt added at the table or during cooking (P<0.001) at 2 to 4 months and 9 months.  
**Conclusions:** Both online and in-person education resulted in improvements during a 9-month period in knowledge, self-efficacy, and reported behaviors associated with reducing salt intake in a low-income population. Offering an online education option for WIC participants could broaden the reach of nutrition education and lead to long-term positive dietary changes.
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| and caregivers and children fruit and vegetable daily intake post nutrition education and counseling. | **Design:** A quasi-experimental design using an interrupted time series to determine the impact of two methods of nutrition education and follow-up nutrition counseling was used. Data were collected online and at Michigan WIC clinics during 2005-2007 at 3-month intervals during a 9-month period (per phase). Two Internet nutrition education modules were compared to WIC traditional nutrition education, which included either group classes or a self-guided nutrition education information mall.  
**Objectives:** All interventions were based on the same program learning objectives. Optional motivational negotiation counseling followed 3 months post-intervention. Stage of change progression, belief in ability to change, and fruit and vegetable consumption were measured at baseline, immediately after the intervention, and 3 and 6 months post-intervention.  
**Results:** Significance (P<0.05) was analyzed using independent samples t tests, χ² distribution, and sample tests for differences in binomial proportions.  
**Conclusion:** The Internet group experienced substantial positive differences in stage of change progression, perception that the intervention was helpful and easy to use, and fruit and vegetable consumption. Traditional nutrition education required follow-up counseling to achieve fruit and vegetable consumption levels similar to the Internet nutrition education group. Based on these findings, this study supports Internet nutrition staff time and resources that can be directed towards high-risk participants. -Findings support that those with easy access to internet enjoyed and found success in the online education. -This study has many limitations from the non-random assignment, 51.6% loss to follow up, education material was not the same for internet and in-person instruction, the motivational negotiation counseling was optional, and only 60.9% of the traditional method progressed through the stages of action compared to 96.7% of internet. -Noting that the loss to follow up is consistent with previous studies -2 phases were completed one focusing on adults/caregivers and 2 focusing on the children. -Significant increase in daily intake was observed .2 to .13 |
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| Type: Randomized controlled trial. **Sample:** 590 WIC participants from LA. **DV:** participants retention and habits on breakfast education | **Background:** Although in-person education is expected to remain central to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) service delivery, effective online nutrition education has the potential for increased exposure to quality education and a positive influence on nutrition behaviors in WIC participants. Education focused on promoting healthy breakfast behaviors is an important topic for WIC participants because breakfast eating compared with breakfast skipping has been associated with a higher-quality diet and decreased risk for obesity. **Objective:** To examine the influences of online and in-person group nutrition education on changes in knowledge, attitudes, and behaviors related to breakfast eating. **Design:** Randomized-controlled trial comparing the effectiveness of online and in-person nutrition education between March and September 2014. **Participants/setting:** Five hundred ninety WIC participants from two Los Angeles, CA, WIC clinics were randomly assigned to receive in-person group education (n=359) or online education (n=231). Education focused on ways to reduce breakfast skipping and promoted healthy options at breakfast for parents and their 1- to 5-year old children. Overall improvement is consistent with prior studies stating with education there is an improvement in knowledge, attitude, and behavior in this case towards breakfast. Study states the access for Spanish speaking WIC participants is significantly lower than the English speaking participants. Online saw longer retention compared to in-person education. In-person saw significant higher pre/post retention compared to online. Reduction in barriers to breakfast was seen in participants. Juice recommendations knowledge saw improvement in both groups. Self efficacy did not significant changes between groups. |

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<th>4) Vehawn, J., Richards, R., West, J. H., Hall, P. C., Crookston, B. T., &amp; Neiger, B. L. (2013). Identifying Barriers Preventing</th>
<th>Type: 5 Focus groups, 27 self-identified</th>
<th>Abstract: The Special Supplemental Nutrition Program for</th>
<th>-First study to analyze barriers specifically to</th>
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<td>year-old children participating in WIC. Questionnaires assessing breakfast-related knowledge, attitudes, and behaviors were administered before and after education, and at a 2 to 4 month follow-up. <strong>Statistical analysis:</strong> Changes within and between in-person and online groups were compared using t tests and χ² tests. Analysis of covariance and generalized estimating equations were used to assess differences in change between groups. <strong>Results:</strong> Changes in knowledge between pretest and follow-up at 2 to 4 months were similar between groups. Both groups reported reductions in barriers to eating breakfast due to time constraints, not having enough foods at home, and difficulty with preparation. Increases in the frequency of eating breakfast were greater for both the parent (P&lt;0.0007) and child (P&lt;0.01) in the online group compared with the in-person group during the same time points. <strong>Conclusions:</strong> Overall, this study demonstrates that both in-person and online nutrition education were effective in increasing breakfast-related knowledge in WIC participants, reducing breakfast skipping, and improving other breakfast-related behaviors, showing the potential usefulness for online education modalities for future WIC services.</td>
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<td>Latina Women from Accessing WIC Online Health Information. Journal of Immigrant and Minority Health, 16(4), 699–705. doi: 10.1007/s10903-013-9801-0</td>
<td>Latina women, 60 min sessions with native Spanish speaker, qualitative</td>
<td>Women, Infants and Children (WIC) is a program for low income women and children under age five. <strong>Objective:</strong> The purpose of this study was to identify barriers to accessing online WIC resources among Latina WIC clients. <strong>Design:</strong> Five focus groups were conducted with Spanish-speaking participants recruited from a single WIC clinic. <strong>Results:</strong> Two key themes emerged relating to barriers in accessing WIC’s online resources. The first theme, access issues, included three subthemes: lack of computer/Internet resources; family barriers to computer use; and computer literacy. The second theme, perceived value of the website, included three subthemes: limited time savings; preference for on-site education; and knowledge about the website. <strong>Conclusion:</strong> This is the first study to evaluate barriers to accessing online resources among Latina women in the WIC program. WIC sites attempting to increase utilization of online resources may be more successful if they serve clients with easy access to a computer with Internet access. They may also consider strategies to increase the value of the online resources, as compared to their current services offered to clients in a face-to-face setting.</td>
<td>Latina women and wichealth.org showed the interest in in-person education because of cultural values and beliefs, able to ask questions, enjoy the interaction with other humans/change of scenery/have to go in any way for vouchers -limited population/not generalizable, groundwork for larger quantitative study -enhance online education to include computer literacy, incorporate live video or text chats to improve cultural inclusivity -2 main themes; Access issues &amp; Perceive value of website. Culturally Latina women may practice <em>familismo</em> (focus on family values and well-being over or at the expense of individual opportunities.</td>
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<th>Among WIC Participants With Internet Access. <em>Journal of Nutrition Education and Behavior, 46</em>(3). doi: 10.1016/j.jneb.2014.02.007</th>
<th>WIC participants preferences these current clients have for using new technologies to interact with WIC.</th>
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<td><strong>Methods:</strong> Cross-sectional convenience sample for online survey of WIC clients over 2 months in 2011.</td>
<td><strong>Results:</strong> A weighted sample of 8,144 participants showed that the majority of WIC clients have access to the Internet using a computer or mobile phone. E-mail, texting, and Facebook were technologies most often used for communication. Significant differences (P &lt; .05) existed between age groups and Facebook use, education level and technology use for education delivery, and education level and use of video chat.</td>
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<td><strong>Conclusions and Implications:</strong> Technologies should be considered for addressing WIC clients’ needs, including use of text messaging and smartphone apps for appointments, education, and other WIC services; online scheduling and nutrition education; and a stronger Facebook presence for connecting with WIC clients and breastfeeding support.</td>
<td>-Clients not comfortable with technology still see behavior change programs to be effective -Study states lack of information on most effective combinations of online info -Online can focus on reaching a more diverse, rural, and wider audience -62% of the audience is millennial (avg age 29) -92% of respondents indicate they have a cell phone -The lower the education level showed the interest in in-person education vs online; higher education higher interest in online -Majority of respondents were interested in the use of text and email for nutrition education, breastfeeding, and appointments and reminders -Use of Facebook for support groups had a high interest</td>
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- This study focused on interests and ways of improvement even with the limitations of sample, increase in internet use, and not an equal representation from states in it.


**Link:** https://pubmed.ncbi.nlm.nih.gov/27017051/

**Type:** Controlled randomly assigned sample: of 1,170 participants from LA. **DV:** Satisfaction with in-person and online nutrition education on breakfast and salt

**Objective:** To examine satisfaction with in-person group and online nutrition education and compare findings based on language preference by Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

**Methods:** A total of 1,170 WIC participants were randomly assigned to 2 nutrition education modalities between March, 2014 and October, 2015 in Los Angeles, CA. Logistic regressions compared differences between groups in satisfaction outcomes.

**Results:** Participants in both education groups were highly satisfied regardless of modality of nutrition education (89% and 95%; P = .01). The online group reported a stronger preference for online education than did the in-person group (P < .001). In the in-person group, Spanish-speaking participants were less likely than were English-speaking participants to prefer online education (P < .001). A training video improved access to online education. Conclusions and **Implications:** Online delivery of education can be an acceptable addition for WIC participants with online access.

- Results consistent with previous studies on Spanish speaking clients preferring in-person education
- Spanish speaking clients were less likely to request online education for follow-up
- With the exception of Spanish speaking clients, there was a significantly stronger preference with continuing online education
- The use of a “training” video how to access 2nd nutrition education video shows significant reduction in challenges with technology
- Online saw a quicker response in follow-up than in-person
- Online users were more likely to want to use online
### Literature Review: The Use and Benefits of Wichealth.org
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<th>High-quality online education platforms represent an important avenue to promote continued satisfaction with nutrition education.</th>
<th>again (90.3%) vs in-person only (52.5%) wanted to complete in-person again - Exact same education was given to both groups. - Retention of nutrition education was not looked at for this study</th>
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#### Link:

| **Type:** Cross-sectional design survey. **Sample:** 39,541 WIC participants from 7 states **DV:** stages of change in clients |
| **Objective:** To determine the usefulness and impact of wichealth.org on stage of change associated with 8 WIC client nutrition issues. **Design:** Cross-sectional design. Data were collected through an online survey and via Web pages visited by clients for each module. **Setting:** wichealth.org intervention and data collection are Internet-based. **Participants:** 39,541 WIC participants from 7 states completed a module and online survey. Subjects were likely between the ages of 18 and 34, residing in Michigan, Illinois, or Indiana, and accessing the Internet from home. **Interventions:** Intervention included 8 online modules focusing on parent-child feeding behaviors. **Variables Measured:** Impact variables included stage of change movement, user belief in ability to engage in behavior, and perception of site usefulness. **Analysis:** Data were reported using frequency, ANOVA (analysis of variance) (P < .01), and chi-square (P < .01) analyses. Results: Movement in stage was greatest for the “picky eater” (PE) module. Contemplation as the beginning stage | - The stage of change that saw the largest movement was contemplation - Physical activity and meals and snacks saw the most responses to maintenance - 97.8% of individuals said the website was easy to use, 97.8% said it provided useful information, and 84% were interested in using it in the future - The picky eater module had the greatest movement in stages implicating more information or a place to expand information for clients - As a participant the further along in stages they were at the start the more likely they were to finish in an action stage; starting in |
had the greatest stage movement. Participants responded well to all measures of site usefulness. User belief in ability to engage in behavior was associated with 7 of the 8 modules.

**Implications for Research and Practice:**

wichealth.org is a highly popular and viable method for impacting movement in stage of change with a number of parent-child feeding issues.

contemplation saw an avg of 1.63 stage change
- The breastfeeding module saw the least amount of changes and belief they could change. Sample size was the smallest (n=106) breastfeeding may need the most virtual assistance or in person to improvements.

**Limitations** include but not limited to: clients already engaging in behavior change more likely to see improvement, not able to analyze using multiple times

**Implications:** ability to focus on in-person those not as ready for change vs. those ready, willing, and able to use online resources. Expanding information on picky eating, physical activity, and meals and snacking to match the interest of clients.
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8) Bensley, Robert J, and John J Brusk.  

| Type: Retrospective cohort study | **Background:** The impact of integrating video into health education delivery has been extensively investigated; however, the effect of integrating video on a learner’s subsequent performance in an online educational setting is rarely reported. Results of the relationship between the learner’s online video viewing and subsequent progression toward health behavior change in a self-directed online educational session are lacking.  
**Objective:** This study aimed to determine the relationship between viewing a Health eKitchen online video and key engagement performance indicators associated with online nutrition education for women, infants, and children (WIC).  
**Methods:** This study involved a retrospective cohort of users grouped on the basis of whether Health eKitchen exposure occurred before or after completing a nutrition education lesson. A two-sample test for equality of proportions was performed to test the difference in the likelihood of progression between the groups overall and when stratified by lesson type, which was defined by whether the lesson focused on food preparation. Welch two-sample t tests were performed to test the difference in average link depth and duration of use between groups overall and stratified by lesson type. Logistic regression was conducted to validate the impact of video viewing prior to lesson completion while controlling for lesson type and factors known to -This study reassures the need for further studies regarding behavior change and wichealth.org  
-The early stages of change saw more progression which was expected  
-Surprisingly there was not a significant difference in videos between meal prep and non-meal prep health eKitchen videos  
-half the subjects were Latino but was not addressed as for any barriers as previous studies suggest - |
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| Be associated with WIC key performance indicators. | Results: A greater stage of change progression was observed for both food preparation ($\chi^2 = 12.6, P < .001$) and non-food preparation ($\chi^2 = 62.8, P < .001$) lessons among early stage users who had viewed a Health eKitchen video before completing a lesson. Time spent viewing educational learning resource links within the lesson was also significantly longer for both food preparation ($t = 7.8, P < .001$) and non-food preparation ($t = 2.5, P = .01$) lessons. Logistic regression analysis corroborated these results while controlling for known confounding factors. The odds of user progression were nearly three times greater among those who viewed a Health eKitchen video prior to lesson completion (odds ratio = 2.61; 95% CI = 2.08-3.29). Type of lesson (food vs non-food preparation) was the strongest predictor of progression odds (odds ratio = 3.12; 95% CI = 2.47-3.95). |

**Conclusions: User access to a Health eKitchen video prior to completion of an online educational session had a significant impact on achieving lesson goals, regardless of the food preparation focus. This observation suggests the potential benefit of providing an application-oriented video at the onset of online nutrition education lessons.**
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| **Objective:** We set out to compare rates of breastfeeding between women who participated in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) with those of non-WIC mothers from 1978 to 2003.  
**Methods:** The Ross Laboratories Mothers Survey is a national survey designed to determine patterns of milk feeding during infancy. Mothers were asked to recall the type of milk fed to their infant in the hospital and during each month of age. Rates of breastfeeding in the hospital and at 6 months of age were evaluated. Logistic regression analyses identified significant predictors of breastfeeding in 2003.  
**Results:** From 1978 through 2003, rates for the initiation of breastfeeding among WIC participants lagged behind those of non-WIC mothers by an average of 23.6 ± 4.4 percentage points. At 6 months of age, the gap between WIC participants and non-WIC mothers (mean: 16.3 ± 3.1 percentage points) steadily increased from 1978 through 2003 and exceeded 20% by 1999. Demographic factors that were significant and positive predictors of breastfeeding initiation in 2003 included some college education, living in the western region of the United States, not participating in the WIC program, having an infant of normal birth weight, primiparous, and not working outside the home. For mothers of infants 6 months of age, WIC status was the strongest determinant of breastfeeding: mothers who were not enrolled in the WIC program had a higher rate of breastfeeding than those who were. |
<table>
<thead>
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</tr>
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</tr>
</tbody>
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| program were more than twice as likely to breastfeed at 6 months of age than mothers who participated in the WIC program. |
| CONCLUSIONS. Breastfeeding rates among WIC participants have lagged behind those of non-WIC mothers for the last 25 years. The Healthy People 2010 goals for breastfeeding will not be reached without intervention. Food package and programmatic changes are needed to make the incentives for breastfeeding greater for WIC participants. |