



# A Review of Interventions to Increase WIC Enrollment and Participation

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## Abstract

Our goal was to identify strategies aimed at increasing Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) enrollment and participation rates. The WIC program provides many health benefits for pregnant women, mothers, and children. WIC offers nutrition education, formula, fruits and vegetables, and other food to pregnant and postpartum women and their children until they reach the age of five. Despite the availability of this program nationwide, enrollment and participation rates remain low across the country. Several states have tried various interventions to combat this deficiency of engagement with the goal of increasing WIC enrollment and participation. We conducted a scoping review to identify articles based on pre-specified inclusion and exclusion criteria. Two reviewers independently identified and screened articles. Subsequently, three reviewers independently extracted study details and outcomes related to WIC enrollment and participation rate changes. We included 14 studies reporting on 12 interventions from 3945 citations reviewed. Seven of these were published papers, while the others were final reports of USDA WIC Special Grant Projects. All the observed interventions had some success increasing WIC participation. Virtual interventions demonstrated the most success based on preliminary evidence. Successful interventions showed percentage gains in enrollment close to 8% and changes in participation over 9%. Overall, the literature surrounding WIC enrollment interventions reveal a mixed impact on improving participation. Many successful interventions involve an online or virtual engagement component which can provide educational resources on WIC benefits, nutrition, and living a healthy lifestyle.

**Keywords** WIC · Nutrition · Public health · Pregnant · Infants

## Introduction

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) was piloted by the United States Department of Agriculture in 1972 to provide nutrition for at-risk, low-income pregnant and postpartum women, infants, and children up to the age of five [1]. The WIC food package, which eligible families may receive in addition to the broader Supplemental Nutrition Assistance Program (SNAP), has extensive health and lifestyle benefits for both mothers and children. Participation in WIC leads to fewer nutrient deficiencies, reduced cases of obesity, and increased healthcare access for mothers [2, 3]. For infants

and preschoolers, participation in WIC is associated with cognitive and academic development, a better-quality diet, and reduces the likelihood of a premature or low birthweight birth [4–6]. WIC is associated with a \$100 reduction in Medicaid costs per newborn [7]

Despite all of these benefits, fewer than half of WIC-eligible families receive WIC nutrition benefits [8]. Though the program is proven to be extremely beneficial, participation continues to fall each year, due to a variety of reasons including food package inflexibility, lack of fruit and vegetable funds, stigma using Electronic Benefit Transfer (EBT) cards, troubling finding WIC-approved products in stores, and fear of taking benefits away from families in greater need [9, 10]. Multiple studies have been conducted to determine why people do not take part in WIC. Informed by input from researchers and the greater WIC community, several states have tried programs to raise their enrollment and participation rates.

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The aim of this study is to investigate what types of strategies to increase WIC enrollment and participation have been tested and what resulted. This scoping review will provide guidance to help make recommendations to improve policy, provide guidance for state and local WIC initiatives, and/or to identify areas for future research.

## Methods

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR) guidelines to ensure methodological and reporting quality.

### Step 1: Identify the Research Question

One author (R.A.D.) conducted a rapid review of the existing literature to refine the research question. A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and Google Scholar was conducted and no current or underway systematic reviews or scoping reviews on the topic were identified.

### Eligibility Criteria

Eligible published literature was defined using the following inclusion criteria: (1) Participants were enrolled in WIC or eligible for WIC or those providing WIC foods, such as grocery store owners, or physicians (2) Studies that looked at an intervention to increase WIC enrollment or WIC participation (3) Studies that took place within the United States. Gray literature was also included in this review.

Reports from prior to 2009 were excluded as WIC released a new food package that year. Interventions that were not yet implemented or did not provide outcome results were excluded from the review. We only included grants that have published final reports in order to chronicle a complete dataset.

A scoping review was selected for this study as it facilitates a broad review of WIC initiatives across the country to summarize attempts and results. We used Arksey and O'Malley's original scoping review methodology to guide our research and used their recommended customizations to enhance our approach [11].

### Step 2: Identify Relevant Studies

In collaboration with a research librarian, we developed and executed a comprehensive search strategy on 06/07/2022. The strategy was registered through OSF (#uq2eh). See Appendix I for full details of search strategy.

## Search Strategy

The search strategy aimed to locate both published and unpublished studies. An initial limited search of MEDLINE Pubmed, SCOPUS, Web of Science, Cochrane Libraries, and gray literature were undertaken to identify articles on the topic.

We explored keywords such as “Food Assistance”, “WIC Programs”, “Special Supplemental Nutrition Program for Women, Infants, and Children (U.S.)”, and “Participation.” We used the Boolean term “AND” to combine themes and the term “OR” to search within themes. The only limit we imposed was that the studies must evaluate WIC after 2008, since a new WIC food program was implemented in 2009. Studies in all languages were included.

The search strategy, including all identified keywords and index terms, was adapted for each included database and/or information source. The reference list of all included sources of evidence were screened for additional studies. The databases searched included MEDLINE Pubmed, SCOPUS, Web of Science, Cochrane Libraries, and gray literature. Sources of unpublished studies/ gray literature were searched for through Google Scholar.

### Step 3: Study Selection

Following the search, all identified citations were collated and uploaded into Endnote and duplicates removed. The remaining studies were then uploaded into a new Rayaan review [12]. Following a pilot test, titles and abstracts were then screened by two (R.A.D. and H.B.L.) blinded, independent reviewers for assessment against the inclusion criteria for the review. At the abstract review stage, studies were kept if they included an implementation and evaluation of a WIC engagement intervention. Potentially relevant sources were retrieved in full. The full text of selected citations was assessed in detail against the inclusion criteria by two (R.A.D. and H.B.L.) blinded, independent reviewers. Any disagreements that arose between the reviewers at each stage of the selection process were resolved through discussion, or with input from an additional reviewer (M.C.).

### Step 4: Charting the Data

#### Data Extraction

Data was independently extracted from papers included in the scoping review by our team using a data extraction tool (Appendix II). The data extracted included specific details about the participants, context, intervention goals, methods, and key findings relevant to the review questions. The data extraction form was created in accordance with the TIDieR guidelines [13]. Any disagreements that arose between the

reviewers were resolved through discussion. Authors of papers were contacted to request missing or additional data where required. We did not formally assess the risk of bias in included studies or outcomes.

## Step 5: Collecting, Summarizing, and Reporting Results

### Data Analysis and Presentation

The extracted data was tabulated and summarized. A descriptive narrative has been used to present the findings.

## Results

### Selection of Sources and Relevant Evidence

A total of 3,945 entries were loaded into Rayyan, and their titles and abstracts were subsequently reviewed (Fig. 1). 1151 duplicates were removed. After the primary review, we identified 30 citations for full text review. We excluded 23 citations after our secondary screen and identified 7 citations meeting our inclusion criteria. Two of those studies described the same initiative, so we combined their information for our results. An additional 7 studies were identified by reviewing the United States Department of Agriculture WIC Special Project Grant history, giving us a final list of 14 included articles [1]. One of these additional studies is another reporting of one of the included studies, so we reported these results together to reduce repetition.

### Characteristics of Implemented Interventions

Of the six studies included in the initial keyword search, two spanned the United States and four occurred in single states exclusively; for details see Table 1. Though the overarching goals of these interventions were to increase usage of WIC funds, some of the programs were designed to target specific areas such as fruit and vegetable redemption or farmer's market allowances redeemed. The studies varied in ways to measure WIC enrollment and participation, including the number of people enrolled in WIC, voucher redemption rates, fruit and vegetable intake, and program reach. Three of the studies were targeted interventions while three of the studies examined data from external changes to the WIC program to assess the impact on enrollment and participation.

### Intervention Impact on WIC Enrollment and Participation

All the examined interventions had a positive impact on WIC participation (Table 2). The two studies that measured

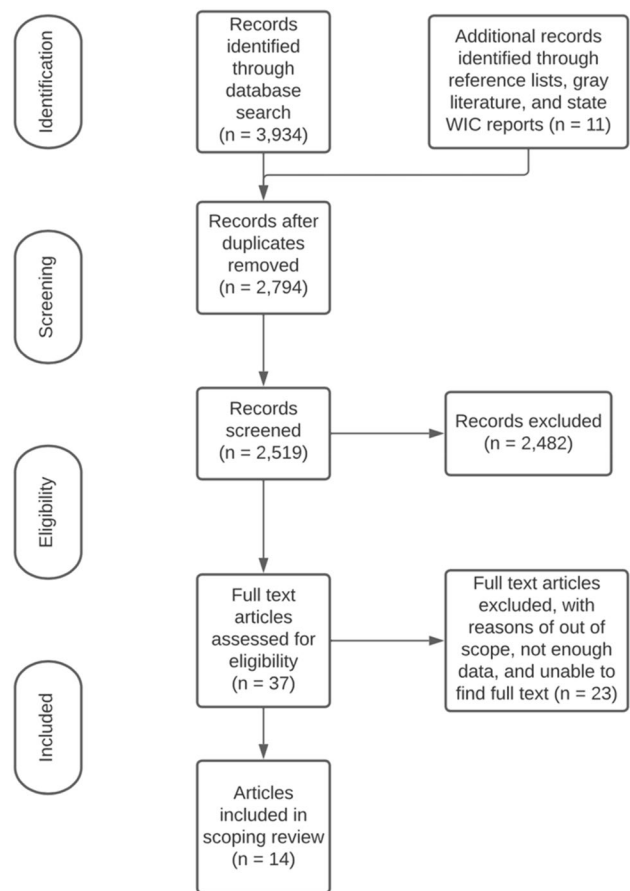


Fig. 1 PRISMA flow diagram

online versus offline benefits showed that participants had a clear preference for the online system [14, 15]. Offline benefits provided a check or voucher to WIC participants for them to bring to local supermarkets to redeem. In 2020, all states were required to switch to eWIC, or electronic benefit transfer (EBT), which replaced paper vouchers with a card [16]. There was approximately an 8% change in both studies between online and offline states. The various educational initiatives, including WIC Fresh Start, CRUNCH, and shopping orientation all resulted in increased participation, though CRUNCH was the only program to report statistical significance [17–20]. While the non-participants only redeemed 39% of Farmer's Market Nutrition Program checks, those receiving the intervention redeemed 46.5% of their checks ( $P < 0.001$ ) [17]. Nationwide, the redemption rate is a mere 60%, suggesting a need for continued attempts to increase redemption rates [21].

### Characteristics of WIC Special Project Grants

The Food and Nutrition Service department of the United States Department of Agriculture provides funding “to test

**Table 1** Characteristics of Included Studies

Authors	Study Title	Journal	State(s)	Year	Intervention	Intervention goal	Primary outcome	Secondary outcome
Vasan et al. (2021) [14]	Association of Remote vs In-Person Benefit Delivery with WIC Participation During the COVID-19 Pandemic	JAMA	33 online states, 7 offline	2019–2021	Transition from paper vouchers to EBT	Decrease risk of in-person contact	Number of WIC participants in each state per month	
Vasan et al. (2021) [15]	Association of WIC Participation and Electronic Benefits Transfer Implementation	JAMA Pediatrics	36 EBT, 14 non-EBT	2014–2019	Paper to EBT vouchers	EBT is more convenient to use, are potentially less stigmatizing, and may improve WIC participation	Monthly number of state residents enrolled in WIC	
Di Noia et al. (2015) [18]	A Randomized Controlled Trial of Nutrition Education to Promote Farmers' Market Fruit and Vegetable Purchases and Consumption Among Women Enrolled in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Rationale and Design of the WIC Fresh Start Program	BMC Nutrition	NJ	2014–2015	Theory-driven, web-based nutrition education lesson to promote farmers' market fruit and vegetable purchases	Increase fruit and vegetable intake, Farmer's Market Nutrition Program voucher redemption, and redemption of cash value vouchers at farmers' markets	Fruit and vegetable intake at post-test	Improvements in targeted knowledge, attitudes, and skills
Seidel et al. (2018) [17]	Increasing WIC Farmers' Market Nutrition Program Redemption Rates: Results and Policy Recommendations	Progress in Community Health Partnerships: Research, Education, and Action	PA	2015	Quasi-experimental design of cooking demonstrations, tours of farmer's markets, and community garden visits	Examining the community-level barriers to access farmers markets	Increase Farmer's Market Nutrition Program check redemption by participants	Increase fruit and vegetable consumption
Zhang et al. (2022) [19]	The Role of Generic Price Look-Up Code in WIC Benefit Redemptions	Journal of Public Policy and Marketing	VA	2020	Generic price lookup	Increase vegetable and fruit consumption and redemptions with use of accurate PLU codes	Annual average redemption rate	Rate of benefit cycles with no fresh fruits and vegetables redeemed

**Table 1** (continued)

Authors	Study Title	Journal	State(s)	Year	Intervention	Intervention goal	Primary outcome	Secondary outcome
Sekhoboa et al. (2017) [20]	Use of a Mixed-method Approach to Evaluate the Implementation of Retention Promotion Strategies in the New York State WIC Program	Evaluation and Program Planning	NY	2016–2017	Compared the three strategies: a standardized Shopping Orientation curriculum (1), a Pictorial Foods Card (2), and a Guided Shopping Tours at a local WIC vendor (3)	Evaluate WIC Retention Program Study through three strategies	Participant responsiveness as measured by: number of follow-up telephone contacts, participant used WIC checks, shopping tips deemed helpful	Reach as measured by: Encounter forms returned, total number of new moms & infants, and proportion reached

*EBT* electronic benefits transfer

innovative projects that have the potential to improve and enhance the WIC program” [1]. Many of the yearly grants, provided on a competitive basis, align with our inclusion criteria of studies that increase WIC enrollment and participation. This resulted in seven projects that fit our inclusion criteria (Table 3). These projects spanned ideas such as cooking classes, texting reminders, and community partnerships. Some states, like Washington, dispersed their grant funds to several different WIC sites and nonprofit operations across the state to encourage many smaller experiments.

### Outcomes of WIC Special Project Grants

There were mixed results among Special Grant Projects, though all reported some form of success. One main issue among several projects was staff turnover and lack of continuity of project activities. Of the six grants we analyzed, four had “mixed” results and two reported higher success metrics. The Massachusetts grant found that there was gap in addressing the social needs of prospective or current participants. This gap was alleviated by the incorporation of a Family Support Coordinator to connect social and welfare services to WIC participants, which increased the WIC child retention rate. The most successful project was observed to be the Colorado Texting for Retention Program texting service. Within this project, the group that had the best outcomes was the “augmented innovation” group that received additional educational texts about WIC beyond just appointment reminders. One of the twelve sites in Washington reported positive statistically significant results, which the report attributed to the fact that the program was offered year-round while the other sites only provided summer offerings.

### Discussion

This review is the first to examine a variety of interventions to increase WIC enrollment and participation and compare their impact. Despite the different approaches and outcomes of the studies, we observed that simplicity is one key to increasing WIC enrollment and participation across the country. We observed that single faceted programs that focused on direct and simple interventions saw higher success in increasing WIC enrollment and participation across the country.

While conducting this review, we also examined the barriers that impacted WIC enrollment and participation. Administrative barriers were common in discouraging WIC participants from engaging with programs. These barriers include discovering eligibility criteria, paperwork and gathering documentation, time and inconvenience of registering for services, and stressors that come from interacting with

**Table 2** Summary of results

Authors	Intervention(s)	Effects	Results
Di Noia et al. (2015) [18]	Theory-driven, web-based nutrition education lesson to promote farmers' market fruit and vegetable purchases	1% of participants redeemed their cash value vouchers at the farmer's markets. Seven received the WIC Fresh Start lesson and one received the Electronic Health Education. Among Farmer's Market Nutrition Program voucher recipients, Farmer's Market Nutrition Program voucher redemption did not differ by lesson	Exposure to the Fresh Start lesson was associated with Farmer's Market Nutrition Program voucher redemption (among Farmer's Market Nutrition Program voucher recipients who spoke Spanish), improvements in farmers' market-related knowledge and skills, and intentions to purchase fruit and vegetables at a farmer's market (among those who received the WIC Fresh Start lesson alongside Farmer's Market Nutrition Program vouchers as compared to those who received the WIC Fresh Start lesson only and electronic health education with and without Farmer's Market Nutrition Program vouchers), and small gains in the redemption of cash value vouchers at farmers' markets
Seidel et al. (2018) [17]	Quasi-experimental design of cooking demonstrations, tours of Farmer's Markets, and community garden visits	Redemption rate of Farmer's Market Nutrition Program checks among research participants and nonparticipants was 46.5% and 39.0% ( $p < 0.001$ ), respectively	CRUNCH was successful in increasing the WIC Farmer's Market Nutrition Program check redemption rate among Wilkesburg WIC participants
Sekhoboa et al. (2017) [20]	Compare the three strategies: a standardized Shopping Orientation curriculum (1), a Pictorial Foods Card (2), and a Guided Shopping Tours at a local WIC vendor (3)	Shopping orientation had the highest change in participation, guided shopping tours had the lowest	A standardized shopping orientation along with a pictorial food card can help educate new WIC families on what items are eligible
Vasan et al. (2021) [27]	Transition from paper vouchers to EBT*	-4.43% decrease in offline states, 3.49% increase in online states with a -9.33% adjusted difference-in-differences estimate of relative change in participation	States that were offline were associated with significant relative decreases in WIC participation during the COVID-19 pandemic, due to increased WIC participation in online states and decreased WIC participation in offline states
Vasan et al. (2021) [27]	Paper to EBT vouchers	7.78% change in WIC enrollment 3 years after EBT implementation in EBT states relative to non-EBT states	Statewide implementation of WIC EBT was associated with a significant and continued increase in WIC program participation
Zhang et al. (2022) [19]	Generic price look-up	Qualitative: rejections of PLU in store, forgetting the benefit expiration dates, lack of related knowledge (e.g., do not know how to redeem fruits and vegetables, do not know how to cook vegetables), personal preference of not eating fruits and vegetables, and lack of transportation Quantitative: "diverse generic code experiences and WIC participants' benefit redemption rates." (in Virginia) "mixed" generic code group had the highest average redemption rate ( $M = 86.8\%$ , $SD = 13.8\%$ ), "all" generic code group-83.6% ( $SD = 20.3\%$ ), never" generic code group showed the lowest average annual redemption rate of 80.9% ( $SD = 20.0\%$ ), $p = 0.001$ -significant differences across different code groups	Higher redemption rates were associated with higher exposure to generic codes (mixed groups had the highest participation). The mechanism could not be explained, so a second, qualitative study was conducted which showed feelings of negativity decreases one's likelihood to use WIC redemptions

\*Electronic benefits transfer

government programs [22]. One article discussed administrative barriers fall into three sub categories: the learning costs of finding out about a program's existence and benefits, the compliance costs of filling out forms, and the psychological costs, such as stress, frustration, and anxiety, that arise from interacting with these programs. These listed barriers can limit access to other government and social service programs, and decrease participation and enrollment rates resulting in health harming effects [22]. Other barriers include physical access to WIC services, stigma associated with redemptions, and lack of knowledge about redemption qualifications.

In addition to studies with outcome data included in our scoping review, several additional strategies proposed by WIC offices across the United States have been implemented over the past 20 years. One popular strategy across many states is data sharing, where SNAP and Medicaid registries are shared with WIC offices to encourage mothers to take advantage of multiple assistance programs [23]. The Jewish Health Foundation investigated best practices by states with the highest WIC enrollment and participation, Maryland and California, and found that linking with other services and support beyond nutritional and breastfeeding topics, were offered in these successful areas [24]. WIC offices partnered with other areas of government, such as childcare (i.e. HeadStart), to programs for mothers, like domestic violence or addition support groups, to increase the usefulness of continued enrollment in WIC [24]. Some states like Maryland enacted policy changes that allowed a short term, one-month, WIC certification if a family cannot produce all the required documents right away. This "trial period" may allow families to become familiar with WIC and experience the benefits before needing to put in the effort to continuously stay engaged. In terms of overcoming the confusion in-store when shopping for WIC, some states positioned WIC clinics adjacent to grocery stores that specialize in WIC offerings to guide families toward WIC products. Pennsylvania and Maryland took advantage of a mobile WIC app that allowed participants to test whether items qualify by scanning food barcodes. Many states have tried various forms of outreach to reach participants, from social media advertisements, to local television and radio slots, to placing marketing materials at physicians' offices, churches, and other community organizations [25]. One creative idea Colorado WIC tried was sending out a card promoting the benefits of WIC on a child's first birthday to encourage the caregiver to continue participation even after the baby moves away from formula [25]. These efforts, especially those that attempt to modernize and streamline the WIC enrollment process, appear to be designed with participants in mind and will hopefully produce increased participation.

Administrative burdens such as cross-organization communication, high turnover, accountability gaps, and so on

were identified through this scoping review and are opportunities for future policy reform across WIC offices. Through future digitalization efforts and reduction of learning costs, there is strong potential for change in the administration barriers WIC programs face [26].

In addition to administrative burdens, WIC also faces other policy challenges that can further exacerbate one's access to services as a prospective or current participant. Before the COVID-19 pandemic, only about half of eligible participants were enrolled in WIC services. Many states use electronic benefit transfer (EBT) debit cards to redeem participants benefits, but there are several "offline" states which require participants to physically reload their EBT cards at an official WIC office every 3–4 months [27]. Due to government shutdowns, this made redeeming WIC benefits especially difficult and deterred many eligible families from participating in WIC services [27].

Online educational programs to promote nutritional practices have shown to be a useful tactic in behavior change, and increasing redemption rates in other federal programs, like SNAP. These programs have become more widespread and have a higher rate of participation than in-person educational sessions. These nutrition-focused sessions have shown to increase the amount of fruit and vegetable purchases redeemed [28]. Incorporating these programs could provide better approaches to educate WIC participants of the options they have for redemptions and decrease the frustration and stigma that may come with shopping for WIC qualified products.

Although the literature indicates that these enrollment interventions may increase participants in WIC programs, we have identified research gaps that should be addressed. First, several studies require further research to establish statistical significance and program effectiveness. Additionally, work is needed to gather information on participant characteristics (age, language, location, etc.) to identify possible differences in demographics that might engage well with various enrollment interventions. Lastly, many of the studies examined were not longitudinal, so the long-term effects of the enrollment interventions overtime, and their impact on retention, have yet to be studied. The authors recommend these as future areas of enrollment investigation.

## Study Limitations

Our study had several strengths We conducted a comprehensive search of the literature with no limitations on publication type. We were therefore able to assess the full breadth of literature on this topic. We also followed established PRISMA and Arksey & O'Malley guidelines and had two reviewers for the title, abstract and full text reviews, encouraging thoroughness. Our study also had several limitations. While we attempted to include all WIC engagement

**Table 3** WIC special project grants overview

Year	State	Grant Title	Participants	Intervention description	Results	Lessons learned
2009	WA	Revitalizing Quality Nutrition Services Washington WIC Fruit and Vegetable Community Partnership Grant	12 smaller project sites across the state	Several smaller project sites across the state including cooking classes, gardening tools and classes, community kitchens, farmers market outreach programs, nutrition education, creation of community gardens, farmer's market incentive coupons (ex: public transportation pass), CSA baskets given to WIC participants	Rural residents increased their fruit and vegetable intake; One of the twelve projects reported positive statistically significant results	Need for continuity with changing WIC staff, need for participant autonomy for a successful project, the successful project continued throughout the entire year rather than just the summer
2011	MA	Massachusetts WIC Enhanced Referral and Family Support Project	Focus groups: 6 initial focus groups of WIC participants and staff, and 6 follow-up groups (NOT same pop or sites) Online WIC surveys: 2971 initial, 21,520 follow-up-WIC participant emails. Online WIC staff surveys: addresses provided: initial 566, final 616. Initial 305, follow-up 345 (final group %, not initial)	4 different interventions to understand perceptions of WIC and effectiveness of family support coordinators (FSC) to high need families with complex living situations. Examined the effectiveness of using FSC to help WIC participants seek social services, which may help their living situation more than nutritionists, who would not have access to these services. This is all in order to increase use of WIC and address the multifaceted needs of families	41% of participants referred to FSC's said the FSC's made phone calls to agencies and programs on their behalf, vs. 24% of those who only saw nutritionists. FSC's are significantly more likely than nutritionists to help participants with this task (54% vs. 24%, respectively). The results indicate that referrals to FSC's are associated with a small, positive impact on child retention: Average of about 1 month (30± days) added to length of program participation if a participant is referred to an FSC Reduction of 1% on avoidable terminations over the course of three years if a participant is referred to an FSC. There was a reduction in terminations due to missed benefits (20.0% of terminations for those referred to FSC vs. 25.6% for those not referred to FSC)	The WIC enhanced referral process was useful in managing referrals to community services from a nutritionist's stand point, but did not benefit WIC participants. However, Family Support Coordinators were helpful in improving the access to resources for WIC participants, and address barriers to social and welfare services. Overall, this had a small positive impact on WIC child retention rates that have Family Support Coordinators
2014	CO	Texting for Retention Program	15 clinics (at 20 distinct sites)	Text messages for appointment reminders, prompts to recertify, and continue participation to participants	Recertification appointments and voluntary terminations were positively affected by the text message program. The augmented innovation group saw the most pronounced effects	Texting programs come with a high implementation cost for services, time, and resources for staff. Text wording tended to cause miscommunication/ confusion with participants



Table 3 (continued)

Year	State	Grant Title	Participants	Intervention description	Results	Lessons learned
2014	CT	WIC and Head Start Better Together Collaboration Project	12 sites (half intervention, half comparison)	Collaborative partnership with WIC and Head start programs to allow for stronger outreach with families that are eligible for WIC	Co-location efforts had mixed success, with many setbacks (project holds, proximity issues, etc.) Collaboration scale out-comes had significant changes in the system and activities	Identified administrative differences, staff shortages, accountability gaps, and the need for sustainability
2015	DE	The WIC Outreach Project: A Partnership between Delaware WIC and the Food Bank of Delaware	82 families	WIC Outreach Coordinator made visits to community partners (ex: Head Start) to do outreach with families eligible for WIC. This included distributing marketing materials, direct contact with families at community sites, and social media activity	Mixed results, decline in enrollment and participation in many counties	More effective site recruitment is needed; traveling to WIC clinic continues to be a barrier
2015	VT	WIC2FIVE: Using Mobile Health Education Messaging to Support Program Retention	138 parents received 75% of the full sequence of messages	Automated weekly text messages with health and nutrition information targeted to their child's age and stage of development, invitations to community events, and appointment reminders stage of development	Those who completed the post-intervention survey had positive opinions of the program, though goals of enrollment and retention were not met when comparing intervention and nonintervention counties	Have enrollment in texting embedded into the WIC clinic appointment rather than have the parents do it later or risk not having cell service on site; may need languages in addition to English

programs that had reported outcomes, there may be more whose results are either not publicly available, not yet published, or which we did not identify in our search. In addition, many of the interventions analyzed took place during the COVID-19 pandemic, which may have influenced the findings. We did not formally assess the quality of the included studies, which may have led to risk of bias or low-quality data inclusions. Further work to measure results of other WIC participation intervention would continue to advance our understanding of which methods work best to increase WIC utilization.

## Conclusion

This scoping review highlights the wide variety of enrollment interventions being practiced at WIC offices across the US. The literature indicates that there are a wide variety of ways to engage WIC participants to continue participation or access additional benefits with varying levels of success, many suggesting online/virtual engagement strategies may be most effective. Ensuring engagement is vital to providing WIC eligible families with nutritional support and with the pathways to access WIC programs.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s10900-022-01131-2>.

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## Declarations

**Conflict of interest** The authors have no relevant financial or non-financial interests to disclose.

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