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Utilizing broad-based partnerships to design a precision approach to implementing evidence-based home visiting

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Abstract

The aim of this paper is to describe a participatory process for adapting an implementation strategy, using a precision approach, for an evidence-based home visiting program, Family Spirit. Family Spirit serves Native American and low-income communities nationwide. To redesign Family Spirit's implementation strategy, we used workshops ($n = 5$) with key stakeholders and conducted an online survey with implementers ($n = 81$) to identify hypothesized active ingredients and "pivot points" to guide when to tailor the program and for whom. Active ingredients identified included the relationship between the home visitor and clients, lessons ensuring child safety and healthy development, parent–child communication, and goal setting. Pivot points included whether the client is a first-time mother who has substance abuse history, has a baby at risk for childhood obesity, and/or has sexual or reproductive health concerns. These results are informing the adaptation of Family Spirit' implementation strategy making it more responsive to diverse families while balancing fidelity to the previously proven standard model.

1 | INTRODUCTION

Home visiting programs provide critical support to families and young children to promote healthy development and reduce health disparities. Decades of research has yielded a robust evidence base supporting home visiting's effectiveness and impact on maternal and child outcomes (Casillas, Fauchier, Derkash, & Garrido, 2016; Filene, Kaminski, Valle, & Cachat, 2013; Peacock, Konrad, Watson, Nickel, & Muhajarine, 2013). In 2010, the importance of these interventions was recognized nationally with the authorization of $1.5 billion to fund the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program across states, territories, and tribes. There are now 20 federally endorsed early childhood home visiting models nationwide that have evidence from multiple randomized controlled trials, favorable

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[a]We refrained from using the definition as laid out by Supplee and Duggan (2019) as empirically proving active ingredients is challenging, and we intended to use the term Active Ingredients to encompass theoretically hypothesized as well as empirically supported.

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impacts on primary and secondary outcomes including maternal and child health and mental health outcomes, and sustained impacts of the intervention over time (Sama-Miller et al., 2018). Of these, 18 are approved for use with MIECHV funds.

Despite robust evidence of effectiveness, home visiting's implementation challenges of reach, retention, engagement, and fidelity continue to impede optimal operation at scale (Michalopoulos et al., 2019; Supplee, Parekh, & Johnson, 2018). The most recent report from the Mother and Infant Home Visiting Evaluation showed that only 50% of families who enroll in home visiting services are retained by 12 months (Michalopoulos et al., 2019). Improving program retention, enhancing program content to address additional behavioral needs, and increasing fidelity to the models' core components have been identified as priority areas for further research (Ammerman, 2016). Research has shown that tailoring home visiting to meet individual family needs has enhanced engagement and retention (O'Brien et al., 2012). Thus, the home visiting field has turned to the idea of precision home visiting, delivering the active ingredients of a program while tailoring content to each individual family, to help improve engagement, retention, and overall program efficiency and effectiveness (HARC Guidelines Task Team, 2018).

Precision home visiting borrows from the field of precision medicine and precision public health (Chorpita, Daleiden, & Weisz, 2005; Embry & Biglan, 2008; HARC Guidelines Task Team, 2018). Precision medicine and public health aim to customize healthcare and programming for individual users based on their specific characteristics. Therefore, precision home visiting seeks to customize evidence-based home visiting programs for individual families (HARC Guidelines Task Team, 2018). Tailoring programming is meant to increase the fit of a program to participants' unique needs and characteristics, such as family type, familial strengths, risk factors, a sociocultural match between home visitor and family, and other key determinants of outcomes.

However, to be successful in a precision home visiting approach, developers must know and understand the active ingredients—or, the individual elements of an intervention responsible for positive effects—and how these active ingredients can be combined to meet an individual user's or family's needs across time. Our knowledge of empirically supported active ingredients to date is limited. Only one study has empirically tested the effects of certain home visiting components on client level outcomes and found some components were associated with outcomes (e.g., components on developmental norms and expectations and discipline and behavior management were associated with improvement in parental behaviors and skills), although there was variability in which components were associated with which outcomes (Filene et al., 2013). Actually, proving something is an active ingredient can be incredibly complex (Cuijpers & Reijnders, 2019), particularly in home-visiting when the number of positive outcomes expected is vast and the programs are comprehensive. Without this knowledge, generating hypotheses for what could be the active ingredients and then empirically testing these in a systematic approach is critical.

And who better to help generate these hypotheses about active ingredients than the people with deep knowledge and experience delivering home visiting to families? Precision home visiting emphasizes the importance of a participatory approach to designing and testing

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interventions and strategies that are relevant and feasible (HARC Guidelines Task Team, 2018). This participatory framework includes the involvement of frontline staff, supervisors, model developers, families, and other key stakeholders in broad-based partnerships to inform adapting or developing precision strategies. Combining stakeholder experience and input with child development and parenting theory can help us in identifying hypothesized active ingredients that could be further tested in empirical studies.

Precision approaches to program delivery can be considered an implementation strategy aimed at promoting adaptability (Powell et al., 2015), while trying to balance fidelity to the model proven effective in previous research studies. As programs have gone from effectiveness research to implementation at scale through MIECHV funding, we know from the literature that adaptation is common and often necessary (Shelton, Cooper, & Stirman, 2018). What we do not know is how this adaptation is being done, by whom and under what circumstances. To ensure that each family receives a home visiting service that is evidence-based, the precision approach must become an implementation strategy that appropriately balances fidelity and adaptation.

The goal of the current paper is to describe the process of adapting an evidence-based home visiting program, Family Spirit, to be a precision home visiting program. Family Spirit was developed over a two-decade period beginning in the mid-1990s in partnership with three tribal communities in the Southwestern United States: The Navajo Nation, San Carlos Apache Tribe, and White Mountain Apache Tribe. It is one of the 18 nationally recognized, evidence-based home visiting programs approved for MIECHV. Family Spirit has been disseminated to 125 tribal communities across 20 states and is starting to be used by nonnative urban communities similarly impacted by health disparities. This paper describes the use of participatory methods to identify Family Spirit's hypothesized active ingredients and ways to tailor program content as the basis for promoting the adaptability of the program through precision design. Promoting adaptability of Family Spirit through precision design ultimately aims to maintain fidelity while increasing reach, administrative and cost efficiency, and, ultimately, program impact for high disparity families who are generally hard to reach, engage, and retain.

The research presented here is part of a larger project to design and test a precision approach to Family Spirit. The larger project has three main steps: (a) Identify meaningful subgroups of Family Spirit participants who benefit from the program; (b) explore active ingredients and ways to tailor Family Spirit from the perspective of implementers and other stakeholders; and (c) use the information from Aims 1 and 2 to design and test the impact of precision approach to Family Spirit on implementation outcomes. Results from Aim 1 have been reported elsewhere (Haroz et al., 2019). This paper reports and synthesizes data from Aim 2. Aim 3 is currently in progress through an implementation pilot trial (NCT03975530).

2 | METHODS

2.1 | Intervention

Family Spirit is a home visiting program designed to address behavioral health disparities in young, Native American mothers and their children (Barlow et al., 2013; Barlow et al.,

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2015; Mullany et al., 2012). Created by the Center for American Indian Health at the Johns Hopkins Bloomberg School of Public Health and in partnership with tribal communities, it has been recognized by Home Visiting Evidence of Effectiveness, a project of the Department of Health and Human Services, as one of the 20 home visiting programs meeting criteria for an evidence-based early childhood home visiting model (Sama-Miller et al., 2018). In a 3-year study of Family Spirit, the intervention was found to improve parenting knowledge for mothers, reduce depression symptoms and substance use in mothers, and improve social, emotional, and behavioral development for Family Spirit intervention mothers' children (Barlow et al., 2015). Several characteristics of Family Spirit make it an ideal candidate for the introduction of a precision approach to home visiting. With 63 total lessons covering a wide range of topics from diabetes risk in the mother to the child's developmental milestones, the intervention is broad in scope. Certain groups of lessons will be inherently more relevant to certain families and not others. A precision approach will enable investigators to tailor Family Spirit content to individual families, potentially increasing the efficiency of delivery and improving outcomes by providing the right intervention, to the right family, at the right time.

2.2 | Adaptation methods

We utilized two methods to engage a broad-based partnership network to inform adaptation of standard Family Spirit. First, we convened workshops using convenience and purposive sampling through a review of Family Spirit's internal program records and a listserv of all implementing partners. The workshops included program developers, trainers, supervisors, and home visitors. Program developers and trainers were known to the research team based on publications. Supervisors and home visitors were recruited based on the fact that they were familiar with the program, had demonstrated leadership in implementing the program, and had been implementing and/or supervising for over a year. Second, we designed and administered an online survey to elicit feedback from Family Spirit affiliate members (personnel from sites across the country involved in implementing Family Spirit) who had experience implementing the Family Spirit curriculum.

2.2.1 | Workshops with stakeholders—We use workshops as a participatory method to gather input on the overall idea of a precision approach, ways to tailor existing curriculum content to different families, and what further modules may be needed to address families' needs. Similar approaches have been used in previous work with indigenous communities as a method of participatory research in other health fields (Gittelsohn et al., 2010). We identified stakeholders to participate in the workshops through purposive and convenience sampling (Home Visiting Applied Research Collaborative [HARC], 2018; Patton, 2014). The Family Spirit national replication team identified stakeholders from the national affiliate network who could add additional insight into adapting Family Spirit to a precision home visiting approach. We engaged a variety of participants ranging from state-level leaders to supervisors to home visitors. Overall, we held five workshops: one with the national Family Spirit leadership team and intervention developers, two with Family Spirit implementing partners in the Southwest and Midwest regions, and two online workshops with affiliates from around the United States such as state-level directors, consultant trainers, and site supervisors in Family Spirit implementation. The first online workshop was an open

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invitation for all affiliates to join, while the second online workshop consisted of the identified leaders in Family Spirit implementation. Each workshop followed approximately the same procedure: We presented on the initial idea of a precision approach, then elicited feedback on how this could be helpful, how home visitors currently tailored the program (e.g., to which types of moms, and which lessons did they cover), and what problems families have that Family Spirit may be able to address but currently did not have appropriate content to do so. Workshops were audio-recorded if online. If, in person, notes and photographs were taken to document feedback.

2.2.2 | Survey methods—We conducted a survey of Family Spirit implementers (e.g., supervisors, home visitors, etc.,) to identify perceived active ingredients in the form of lessons. We recruited participants through an email to all affiliates of the Family Spirit program. Surveys were administered via Qualtrics survey software. Participants rated each lesson in the curriculum as to whether it was necessary for all families to receive and on the lesson's perceived contribution to improved parenting (scale of 0–100, with 0 meaning does not contribute to improved parenting and 100 meaning absolutely critical to improving parenting). We also asked participants to choose the top five lesson topics and rank them by importance based on their usefulness to the families they work with. A total of three follow-up reminder emails were sent to encourage participation. No compensation for survey completion was provided. The survey was deemed exempt from Institutional Review Board (IRB) oversight by the Johns Hopkins Bloomberg School of Public Health's IRB.

2.3 | Designing the precision approach

Using the information gathered from both the workshops and surveys, we used modular design principles to identify content modules and coordination sequences. Modular design principles allow interventions to be divided into meaningful functional units that can be sequenced or dosed in different ways depending on an individual's characteristics (Chorpita et al., 2005). Modular design approaches have been used in psychotherapy research for over a decade with great success. They emerged as evidence mounted that clinicians often had difficulty implementing evidence-based treatments due to challenges with selecting the right treatment among the numerous available and were combining elements from different treatments on their own to fit their individual client's unique needs (Weisz & Chorpita, 2012). Weisz and Chorpita (2012) then tested the theory that using a modular approach may be more effective than using only clinical judgment or strictly following evidence-based treatment manuals and found that the modular approach did better (Chorpita et al., 2013). These approaches have now been rigorously tested with results indicating equally strong if not stronger effects than single manualized treatment alone (McEvoy, Nathan, & Norton, 2009; Reinholt & Krogh, 2014). Applying a modular framework to Family Spirit yields content modules containing the activities that are delivered as part of services. In Family Spirit we identified these as the lessons or groups of lessons on particular content. Coordination sequences are then the algorithms that define what content modules to deliver and when (Chorpita et al., 2005).

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3 | RESULTS

3.1 | Workshop results

Overall, it was clear from all workshop participants that the idea of a precision approach was acceptable and potentially useful. When presented with the idea of a precision approach, one home visitor stated: "I think this is a great idea to navigate the lessons that would best correlate with what the patient or family needs are." However, it was also clear that tailoring is already happening in Family Spirit programming. The type and scope of tailoring varied from omitting certain recommended assessments (e.g., some home visitors in the Southwest reported that they did not administer some knowledge tests because they were too lengthy and hard for families), to delivering lessons out of order, to skipping some lessons if not relevant to the family's circumstances, to delivering the lessons in groups. Many home visitors stressed that they prioritize lessons based on their own assessment of families' knowledge and needs. For example, several participants in the online affiliate workshop stated: "We base our lessons (delivered) on our clients' needs and knowledge." However, home visitors described their own varied approaches as well:

> "When we first meet with a family, we make it a point to just get a general feel for the family and talk about their life, their story, and what they hope to gain from a program like this. This can take 20 min or a couple of visits, but my goal is to make sure we're addressing what's more relevant to a family and what comes up naturally. An example is that I have an adoptive mom who has a baby that we know was exposed to drugs and alcohol in the womb. He's 8 months old, but we started with (lessons) on drugs and alcohol and making sure she had the support and then started in on developmental lessons that are normally taught at that age."

Tailoring is already happening in Family Spirit; however, like most home visiting models, there is little guidance on how or when to adjust the curriculum. Decisions to tailor and how rely solely on the home visitor or supervisor, raising the question of how fidelity is maintained.

Workshop participants also stressed that it was hard to tailor to certain family circumstances, such as those children who are in protective custody, parents who were struggling with substance use, or families with a history of adverse childhood experiences (Felitti et al., 1998), including historical trauma (Evans-Campbell, 2008). These were considered areas where Family Spirit could either change existing curricula or add additional lessons to cover these topics. They were also identified as leverage points or ways to tailor curricula based on family need. Finally, almost all workshop participants mentioned the relationship between the home visitor and the family as being an active ingredient of the intervention. This was described as critical to how a home visitor was able to tailor Family Spirit as well as being central to retaining the client and achieving positive program outcomes.

3.2 | Survey results

The survey had a total of 32 questions. Emails with links to the survey were sent out to $N =$ 423 affiliate addresses. Of these, $n = 86$ surveys were started with $n = 5$ who declined after reading the introduction, leaving a total of $n = 81$ respondents. Of these, only $n = 40$

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participants completed the whole survey. The remaining participants provided partial completion. Overall, 77% of the respondents self-identified as home visitors, 15% as supervisors, 3% as administrators, and 4% as other (Table 1). Participants had an average of 2 years of experience (standard deviation = 1.48; range: 0.1–6 years) with Family Spirit.

Family Spirit lessons are divided into six modules including prenatal care, infant care, child development, toddler care, maternal and family health and life skills, and healthy living modules. Survey responses indicated that most prenatal care lessons were considered necessary for all families with "*Contributing to a healthy pregnancy*," "*Babyproofing and safety inside and outside the home*," and "*Breastfeeding basics*," endorsed the most frequently ($n = 56$, 85%; $n = 50$, 77%; and $n = 49$, 75%, respectively). Topics less frequently endorsed as necessary for all families included "*Time to push* (*i.e., preparing for labor and delivery*)," and "*Preparing for safe travel and outings*" ($n = 31$; 48% each). In the infant care module, almost all lessons were seen as critical to all families with the exception of baby care lessons: "*How to feed*," "*How to diaper*," "*How to dress*," and "*How to bathe*" ($n = 22$, 37%; $n = 13$, 22%; $n = 11$, 18%; and $n = 12$, 20%, respectively). All child development lessons were endorsed as necessary for all families by over 70% of respondents. In the toddler care module, only one lesson was seen necessary for all families by less than half the respondents "*Feeding your toddler*" ($n = 25$, 45%). All lessons in the maternal and family health and life skills module were endorsed as necessary for all families by over 75% of respondents. Finally, in the healthy living module which covers goal setting, maternal coping and problem-solving skills, family planning, and sexually transmitted infections, the lessons "*Understanding reproduction"* and "*Understanding paternity*" were the least frequently endorsed lessons as necessary for all families ($n = 16$, 31%; $n = 19$, 37%, respectively).

Respondents rated lessons from 0 to 100 on their perception of the lessons' contribution to improving parenting (0: Does not improve parenting and 100: Does improve parenting). During our first workshop with the Family Spirit replication team and model developers, we identified improved parenting as the main outcome of Family Spirit (Mullany et al., 2012). Lessons with the highest and lowest importance from each module are displayed in Table 2. Lessons identified as the most critical to improving parenting included lessons around child safety and communication. Lessons believed to be less important to improve parenting related to basic baby care such as the lesson "*How to dress*," to lessons around gestational diabetes, budgeting, and understanding paternity.

In terms of lesson topic areas, respondents felt that child safety lessons were the most useful to families with $n = 31$ (65%) ranking this as the most useful out of all other topic areas. Substance abuse lessons were ranked in the top three most useful lesson topic areas by $n =$ 30 (63%) respondents, followed by diabetes-related lessons which were ranked in the top three most useful by $n = 21$ (43.8%) of respondents (Table 3).

3.3 | Draft precision approach

Based on the feedback in the workshops, data from the survey, and a secondary data analysis examining moderators of Family Spirit impact on maternal and child outcomes (Haroz et al., 2019), a set of core lessons that every family should receive regardless of circumstances was identified (see Table S1). These core lessons are hypothesized as active ingredients or key

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content modules. Five other key coordination or pivot points (see next section) were also identified. Notably, all of the precision design was done utilizing the existing Family Spirit curriculum, but future work is needed to generate new content to address additional identified needs, such as high exposure to adverse childhood events or families with unstable housing situations.

3.3.1 | Coordination sequences—Characteristics of families identified as being potential pivot points that could guide coordination sequences included: (a) Being a first-time parent, (b) substance abuse risk, (c) having nutrition concerns or risk that may contribute to childhood obesity, (d) having sexual and reproductive health concerns, and (e) having unstable housing. In an effort to best simulate the way a home visitor might naturally adapt based on family need, these pivot points are not only considered at baseline but re-evaluated through a brief assessment each time a home visit is done to determine if a family might have new or emergent needs to be addressed.

Figure 1 shows an example of how this precision approach will work. Table S1 includes a full list of lesson sequencing algorithms. On the left side are the core lessons identified during the baseline that every family should get. If the client is a first-time mother, then she will receive two additional lessons during the same chronological period, related to basic baby care, preparing for safe travel with an infant, and prepping for labor. If this first-time mother also presents with substance abuse risk, then she will receive a third additional lesson before delivery focused on the effects of drug use on the baby. For childhood obesity risk, families would again get an additional lesson focused on maternal nutrition taken from the Family Spirit nurture lessons designed to reduce childhood obesity.

Unstable housing emerged as a pivot point based on secondary data analysis of the most recently completed trial of Family Spirit, (Haroz et al., 2019), and also was raised during the workshops. We will address this in the precision approach by alerting home visitors to participants whose data reports housing instability. Alerts are triggered for participants who are identified as homeless or with housing concerns at baseline and again if they express concerns about their housing situation on the brief assessment at each home visit. This finding will trigger home visitor prompts and instructions to help connect families to local resources to identify housing options.

This precision approach to Family Spirit is currently being tested in a pilot implementation trial comparing precision Family Spirit to Family Spirit delivered in the standard way (NCT03975530). In this trial, we use an electronic implementation support platform (i.e., Care4; Care4Software, 2019) to evaluate and monitor client characteristics and help guide home visitors in delivering the precision lesson sequences. Each time the home visitor meets with the client, we ask them to administer a brief assessment so that we can see if and when select outcomes change during the course of the program. We also track the relationship between home visitor and client. The goal with this pilot project is to help understand if precision Family Spirit is both feasible and acceptable, and to inform the design of a larger fully powered implementation trial to determine if precision Family Spirit can improve engagement, retention, and fidelity.

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4 | DISCUSSION

Home visiting is a nationally recognized field with strong support through federal funding. Most existing models are designed so every family receives the same program regardless of who that family is and what its needs are. Many home visitors are already tailoring models to individual family needs (Willging et al., 2017), but this is not often done in a standard way that necessarily maintains fidelity or in a way that can be replicated. We also know that retention is a challenge for most home visiting models (Michalopoulos et al., 2019) and that retention improves when families receive what they specifically need (O'Brien et al., 2012). Given these factors, there is a growing interest in precision home visiting—applying what we know works best for families in particular settings and under particular circumstances. The aim of this paper was to describe the adaption process for an implementation strategy aimed at making delivery of Family Spirit customized to participant needs. We utilized multiple methods—workshops and an online survey—to solicit feedback and inform our adaptation process. Overall, participants liked the idea of a precision approach. Hypothesized active ingredients identified included lessons around safety and communication and the nature of the relationship between the home visitor and the family. Five pivot points to guide coordination sequences were also identified and included parity, substance abuse risk, childhood obesity risk sexual and reproductive health concerns, and unstable housing.

From the workshops, it was clear that home visitors naturally tailor services to meet families' diverse needs. However, this tailoring is not done systematically across home visitors, making it highly dependent on the unique traits of the home visitor rather than the intervention itself. This type of home-visitor tailoring has been found in other home visiting programs besides Family Spirit (Donelan-McCall, Eckenrode, & Olds, 2009) but has not been systematically studied. However, ad hoc tailoring of the standard model has also been found to decrease fidelity (Saias et al., 2012). There is a need for home visiting models to provide evidence-informed flexibility to help guide home visitors in knowing when and how to adapt the intervention and ensure that all families are receiving what we know works (Rotheram-Fuller et al., 2017; Saias et al., 2012).

Providing this guidance is complicated by the current lack of empirical findings on active ingredients for home visiting programs. In the most comprehensive attempt to identify active ingredients, Filene et al. (2013) examined program content and service delivery components of home visiting programs on a variety of outcomes. They found content related to developmental norms and expectations, responsiveness, and behavior management was associated with larger effects in parent behavior and skills, while problem solving related content was associated with better child maltreatment outcomes (Filene et al., 2013). More recently, Kaye, Faber, Davenport, and Perkins (2018) used common components analysis to identify components of home visiting programs that were common ingredients in programs targeting prevention of child maltreatment (Kaye et al., 2018). These findings suggested that problem-solving strategies, information on home cleanliness, accident prevention, first aid, and social support were common components across 23 manualized programs. Both sets of these empirical findings on active or common ingredients focus mainly on child

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maltreatment outcomes, which was different from our investigation, but suggest that untangling which components of home visiting are most important is a necessary endeavor.

Overwhelmingly our participants stressed the importance of the relationship between the home visitor and the client. Variability in this relationship has been studied previously and found to influence variability in implementation of home visiting programs (Gill, Greenberg, Moon, & Margraf, 2007; Korfmacher, Green, Spellmann, & Thornburg, 2007; Riley, Brady, Goldberg, Jacobs, & Easterbrooks, 2008; Sharp, Ispa, Thornburg, & Lane, 2003). The relationship between the home visitor and client may also be affected by the mother's attachment style, which in turn has been shown to moderate program outcomes (Cluxton-Keller et al., 2014; Duggan, Berlin, Cassidy, Burrell, & Tandon, 2009). Goal alignment between the mother and home visitor has also been shown to be critical to continued engagement in the intervention (Burrell et al., 2018). Given the centrality of the provider–client relationship, it is critical for future work to continue to unpack this relationship and better understand how it might moderate program outcomes.

True to Family Spirit's origins, we took a participatory approach to inform our hypotheses about which ingredients were critical to the program's effectiveness. Consistent with both findings from Filene et al. (2013) and Kaye et al. (2018), we identified lessons that related to responsiveness, child development, and communication and safety to be critical to Family Spirit's main outcome of improved parenting (Filene et al., 2013). We also found that certain lessons were more critical to certain types of family situations. For example, understanding gestational diabetes was not seen as critical to all parents, but might be particularly helpful for those with nutritional concerns. This was also true for some of the substance use lessons and lessons on the basics of baby care. In the future, we hope to empirically evaluate these hypotheses through the use of an embedded single-case experimental design (Kazdin, 2010) examining lesson impact on maternal and child well-being.

4.1 | Limitations

Our adaptation process had several methodological limitations including using primarily convenience-based samples, focusing on only one evidence-based home visiting model, and using summary notes to capture results. These limitations impact the generalizability and reproducibility of these results. However, given that the workshops were qualitative in nature and our goal was to understand our participants' perspectives, reproducibility was not a central goal (Sandelowski, 1993). However, the strategy of engaging in broad-based partnerships across a range of stakeholders to inform how to implement and adapt evidence-based programing is generalizable. While we tried to limit the number of questions, our survey results indicated a low rate of full survey completion, suggesting possible survey fatigue. The results of this study should be interpreted with these limitations in mind.

5 | CONCLUSIONS

Precision home visiting is at the forefront of the home visiting field (Supplee et al., 2018)—a field that provides critical services to low-income families to help improve parental and child well-being with long-lasting preventative effects on mental and physical health outcomes. Despite home visiting receiving $400 million a year nationally for

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implementation efforts, these programs continue to struggle with implementation. Designing a precision approach to home visiting is a promising implementation strategy as it promotes adaptability while maintaining fidelity (Powell et al., 2015). In the absence of a large body of empirical evidence on active ingredients and the importance of participatory approaches in precision home visiting (Supplee et al., 2018), our process of adapting an evidence-based home-visiting program, Family Spirit, engaged a wide range of experienced stakeholders to inform how and when to tailor Family Spirit to better meet diverse family needs. This information helped us design the first precision home-visiting approach in the field. We are now currently evaluating this model in a pilot study using an implementation design to understand impacts on engagement, retention, and fidelity. We hope to then test the model against Family Spirit delivered as usual. The ultimate goal of a precision approach is to enhance home-visiting services to more efficiently and effectively serve a wide range of families with diverse needs and promote psychological well-being among parents and children alike.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Key Terms and Definitions

- **Active Ingredients:** Factors of an intervention responsible for changes in client outcomes.[a]
- **Implementation strategy:** Systematic process or methods, techniques, activities, and resources that support the adoption, integration and sustainment of evidence-based interventions into usual care settings (Brownson, Colditz, & Proctor, 2018).
- **Effectiveness research:** Aims to determine the impact of an intervention with demonstrated efficacy when delivered in "real-world" settings (Brownson, Colditz, & Proctor, 2018).
- **Implementation research:** Aimed at understanding the process and factors that are associated with successful integration of evidence-based interventions within a particular practice setting (Brownson, Colditz, & Proctor, 2018).

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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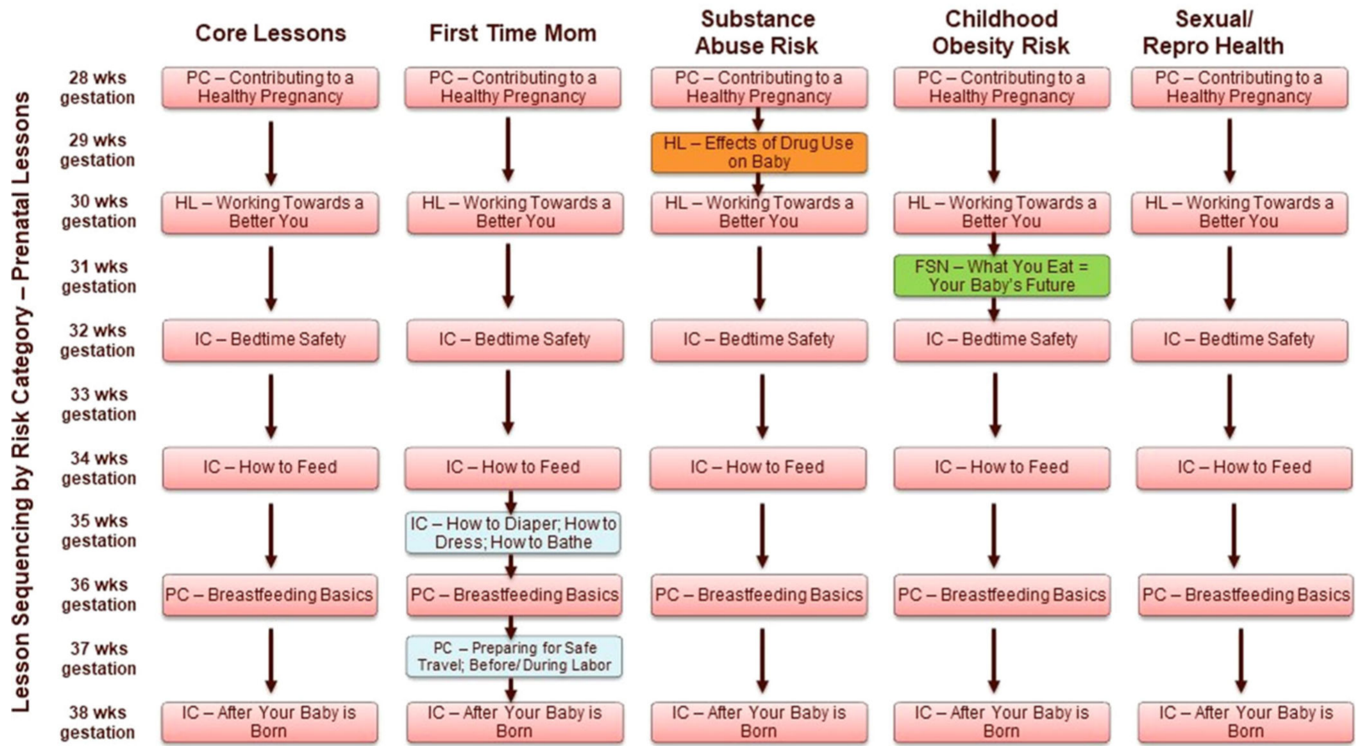

FIGURE 1.

Example of lesson sequencing algorithms for prenatal care modules

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TABLE 1

Role of respondents in providing Family Spirit ($N = 81$)

Role	***n*** **(%)**
Home visitor	55 (68)
Supervisor	11 (14)
Administrator	2 (3)
Other	3 (4)
Did not answer	10 (12)

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TABLE 2

Lowest and highest-rated lesson for contributing to improved parenting by module ranked by participants ($N = 48$)

	Lowest-rated lesson	Mean (*SD*); range	Highest-rated lesson	Mean (*SD*); range
Prenatal care	*Understanding gestational diabetes*	68.9 (25.1); 5–100	*Babyproofing and safety*	88.2 (13.2); 50–100
Infant care	*How to dress*	67.8 (22.9); 10–100	*Protecting children from abuse and neglect*	90.6 (14.7); 42–100
Your growing child	*Your baby's developing senses*	84.3 (14.4); 50–100	*Communicating with your child*	92.3 (13.0); 49–100
Toddler care	*Your child's first trip to the dentist*	81.9 (16.3); 20–100	*Safety for your toddler*	90.5 (12.3); 53–100
My family and me	*Budgeting for my family*	81.0 (23.2); 20–100	*Communication and building healthy relationships*	88.4 (17.8); 20–100
Healthy living	*Understanding paternity*	68.7 (25.7); 10–100	*Working towards a better you—goal setting*	86.0 (17.9); 30–100

Abbreviation: SD, standard deviation.

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TABLE 3

Lesson topic areas ranked as to which are viewed as the most useful to families ($N = 48$)

	Rank									
Topic area	**1 (%)**	***n***	**2 (%)**	***n***	**3 (%)**	***n***	**4 (%)**	***n***	**5 (%)**	***n***
Diabetes	12.50	6	16.67	8	14.58	7	29.17	14	27.08	13
Substance abuse	14.58	7	29.17	14	18.75	9	22.92	11	14.58	7
Child safety	64.58	31	8.33	4	14.58	7	10.42	5	2.08	1
Sexual and reproductive health	4.17	2	27.08	13	22.92	11	16.67	8	29.17	14
Dealing with abuse and neglect	4.17	2	18.75	9	29.17	14	20.83	10	27.08	13