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Process Evaluation of the Early Implementation Stages of theNational Diabetes Prevention Program through Kentucky Cooperative Extension: Perceptions of Adopters and Potential Adopters

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Early Implementation of NDPP Through KY Extension 189

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With the growing demand for lifestyle change programs that prevent or delay Type 2 diabetes onset, community organizations with broad reach should be explored for national dissemination of the National Diabetes Prevention Program (NDPP). This study evaluates the early implementation of the NDPP through Cooperative Extension in four Kentucky counties and explores the feasibility of scaling up the program to additional counties. Using a qualitative approach, semi-structured telephone interviews were conducted with 12 Family and Consumer Sciences (FCS) Agents – four who were participating in the pilot (adopters) and eight who had no experience with the NDPP (potential adopters). Five overarching themes emerged: satisfaction with and desire for the NDPP; implementation barriers (recruitment challenges and Agent comfortability issues); needed supports; roles of community partners (potential duplication of efforts); and dynamics of community relationships and trust. While there was agreement that Cooperative Extension was an appropriate platform for dissemination, notable barriers must be overcome. This study provides important information for Cooperative Extension Services across the country that are implementing or considering implementing the NDPP; specifically, that this program may need a more tailored and controlled rollout compared to traditional Extension programming.

Keywords: National Diabetes Prevention Program, Cooperative Extension, rural, implementation, process evaluation

Introduction

One in ten American adults has Type 2 diabetes, and one in three has prediabetes (Centers for Disease Control and Prevention [CDC], 2019). There is universal agreement that intensive lifestyle change programs, such as the National Diabetes Prevention Program (NDPP), can

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effectively delay or prevent incident diabetes (Ely et al., 2017; Knowler et al., 2002). Research demonstrates compelling evidence of the DPP's effectiveness across a variety of community settings, including churches, worksites, and public housing communities (Sattin et al., 2016; Wilson et al., 2016; Wittemore et al., 2014;). The NDPP is a one-year, evidence-based program where certified lifestyle coaches deliver a standardized curriculum and offer 16 core sessions in the first six months and at least one session per month for the rest of the year. Importantly, many areas, such as rural communities, do not have access to the NDPP (AuYoung et al., 2019; Venkataramani et al., 2019). To meet this need and address prediabetes prevalence, organizations with significant geographic reach should be explored for NDPP dissemination. Given their mission to provide knowledge and skills that encourage healthy lifestyles and promote well-being, Cooperative Extension Services (CES) across the country are increasingly playing a prominent role in chronic disease prevention and management (Remley et al., 2018). With CES located in or near all counties in the United States, CES are thus well-positioned to provide access to the NDPP for hard-to-reach populations, such as in rural areas where the availability of preventive health services is generally low (Ariel-Donges et al., 2020).

Despite the effectiveness of the NDPP, recruitment and retention of participants is a well-documented challenge (Cannon et al., 2020; Carrol et al., 2015). Given the structure of CES, there may be additional complexities when offering the program through this platform. For example, CES typically provides brief, non-technical educational programs that are flexible and inclusive of all interested participants. By contrast, the NDPP is a one-year program with explicit participant eligibility requirements regarding age, weight, glucose level, and other criteria (CDC, 2020). Additional complexities involve a significant time commitment to invest in becoming a certified lifestyle coach and utilizing new reporting systems and standards (CDC, 2018). Despite these complexities, some of the contextual factors that contribute to poor recruitment and retention among at-risk groups, such as cultural barriers, distrust of health professionals, and low health literacy, may be mitigated by offering the NDPP through trusted community educators, such as CES Agents. CES Agents are adept at translating complex scientific information into lay terminology, experienced with recruiting through community partnerships, and skilled at fostering strong group cohesion (Seevers & Stair, 2015).

More than a dozen CES are currently offering or planning to offer the NDPP (eXtension, 2020). In the wake of increasing demands for accountability in recent decades, the importance of evaluating CES programming for impact has received significant attention (Braverman & Engle, 2009; Lamm et al., 2013; McCann et al., 2009; Rennekamp & Arnold, 2009). However, much less attention has been paid to the value of evaluating program implementation (Hughes et al., 2012; Richards & Woodcox, 2020), even though process evaluations yield valuable data that are useful for refining a program during scale-out. Process evaluations are particularly useful when introducing an intervention that may be considered complex, like the NDPP, into a new setting (Limbani et al., 2019). This research investigated the early implementation of the NDPP in four pilot counties through Kentucky CES and explored the perceived feasibility of scaling the

program to additional counties. The aim of the study was to explore the potential facilitators and barriers to expanding the NDPP beyond the four pilot counties, specifically as it relates to participant recruitment, retention, and implementation, from the perspective of two groups of Family and Consumer Sciences (FCS) Agents: (a) those in the early stages of delivering the program in pilot counties ("Adopters") and (b) those with no NDPP experience who might consider implementing the program in the future ("Potential Adopters").

Methods

Participants

We used a qualitative approach and conducted semi-structured telephone interviews. An Extension Specialist in Food and Nutrition recruited 12 FCS Agents to participate in the study: four were implementing the NDPP ("Adopters"), and eight had no experience with the NDPP but might offer it in the future if the program is expanded ("Potential Adopters"). The University of Kentucky Office of Research Integrity approved the study.

Adopters

The Adopters (n = 4) were FCS Agents employed in four Kentucky counties chosen as pilot sites for NDPP implementation. One of the counties is metropolitan, including a large city of more than 250,000. The other three capture the heterogeneity of rurality in the state; these counties have populations less than 50,000, but one is adjacent to a principal city, another is further removed, and the third is in rural Appalachia (Economic Research Service, 2020). Pilot counties had diabetes prevalence rates higher than the national average and no CDC-recognized in-person, in-county NDPP suppliers targeting rural or racial/ethnic minority populations. These pilot counties also had FCS Agents with educational backgrounds in dietetics or human nutrition, which was well-aligned with program content. Adopters received training from the University of Kentucky Healthcare Barnstable Brown Diabetes Center and were certified as CDC-recognized lifestyle coaches.

The three rural FCS Agents planned to deliver the NDPP in-person at their county CES offices, and the FCS Agent in the urban county planned to deliver it in a low-income senior apartment complex. Participant enrollment began in August 2019 and ended in March 2020. Prior to the COVID-19 public health restrictions, one of the rural FCS Agents had offered introductory sessions, another had offered five weeks of classes, and a third had implemented 16 classes. Only one was able to adapt the in-person sessions to a virtual format and complete the 12-month program (26 sessions) by September 2020. Due to the pandemic, the urban FCS Agent was unable to convene participants and deliver any sessions.

Potential Adopters

Potential Adopters (n = 8) were also interviewed. None of these FCS Agents had experience implementing the NDPP or participated in the lifestyle coach training. None had a background in dietetics either, which is representative of FCS Agents in Kentucky. To yield "information-rich" cases (Patton, 2001), we purposively sampled Potential Adopters from among the remaining 116 counties in Kentucky and selected FCS Agents from diverse geographic regions, educational backgrounds, and years of CES service. Eight participants were chosen in line with Creswell and Poth's (2017) recommendations; data saturation was also achieved (Glaser & Strauss, 1967). Prior to conducting interviews, we described the NDPP to all respondents.

Data Collection and Analysis

FCS Agents who agreed to participate were contacted directly by the graduate research assistant (GRA). Interviews were conducted by the principal investigator and the GRA, both of whom were new to CES, unknown to participants, and are outside the area of FCS. The principal investigator trained the GRA during a half-day meeting to deliver the interview guide (see Appendix). Semi-structured interviews lasting approximately one hour were conducted by telephone between March and May 2020. Questions focused on FCS Agents' perceptions of and experiences with NDPP implementation. Specifically, we explored recruitment barriers and facilitators, challenges with program start, and perceptions regarding necessary support for successful NDPP implementation.

All phone interviews were digitally recorded and later transcribed verbatim by the GRA. Afterward, two investigators trained in qualitative research methods reviewed the files to ensure clarity and completeness. Initially, the two investigators conducted a line-by-line review of the transcripts and coded the data independently. Data were explored to identify similarities and differences across interviews (within groups and across groups), which led to the development of overall themes (Nowell et al., 2017). We did not use predetermined codes but rather allowed overarching themes to emerge from the data. Several discussions were held amongst the team until a consensus around coding was reached. To clearly illustrate each theme, direct quotes from the data were grouped under thematic headings.

Results

Among the FCS Agents (n = 12), Cooperative Extension service ranged from 1 to 38 years. The educational backgrounds varied: nutrition/dietetics (n = 4—our "Adopters"), family and consumer sciences (n = 4), vocational home economics (n = 2), child and family studies (n = 1), and public health (n = 1).

Overall, the findings were remarkably similar across the Adopters and Potential Adopters regarding the concerns, challenges, and opportunities afforded by offering the NDPP through CES in Kentucky. Given their direct experience with NDPP implementation, however, the

Adopters were able to provide more specific feedback regarding recruitment challenges. Across the interviews, five themes emerged: (1) Satisfaction with and desire for the NDPP, (2) Agent-identified "barriers," (3) Agent-identified "supports" needed for implementation, (4) Roles of community partners, and (5) Dynamics of community relationships. Within the "barriers" theme, two subthemes emerged: (a) barriers to implementation and (b) barriers related to FCS Agent knowledge and comfortability.

Theme 1: Satisfaction with and Desire for the NDPP

The FCS Agents (Adopters and Potential Adopters) agreed that diabetes-related programming was necessary and potentially beneficial in their counties. One Potential Adopter explained: *"*I just feel like this is a very important program, you know, because I think we need extra help for our folks." An Adopter described why the NDPP was especially effective at meeting this challenge: "[County name] has terrible diabetes numbers. I really think this program is effective at promoting lifestyle changes. It's not some kind of a quick fix—it really teaches people better habits!" FCS Agents noted that the NDPP seems to be a particularly good fit for CES. One Adopter explained, "For me, it was an easy choice. … With my nutrition background and dietitian experience, I had always focused on diabetes education in the community. So, this just gave me another curriculum to be able to use in the stuff I was already doing." Similarly, a Potential Adopter noted, "Well, you know, we have a diabetes coalition, and they are very active and have raised a ton of money. … But we are always looking to find more resources and help with all the programs that we offer, and we really just need something new!"

Theme 2: FCS Agent-Identified Barriers

Subtheme 2.1: Barriers to Implementation

FCS Agents expressed deep concerns about NDPP recruitment. One Adopter explained,

> I would say that the biggest challenge I experienced was just getting started. After that, the [NDPP] runs really smoothly because we are trained to have these long-term programs set up in a way to continue them. Maintaining it is not really a problem, but getting started is really challenging. There are certain criteria that participants have to meet, so that automatically knocks some people out. And we are so unaccustomed to refusing anyone for programming.

Adopters in rural areas noted that traditional CES recruitment methods, such as newspaper, radio, and social media, were unsuccessful. There was some success with recruiting through the monthly Extension newsletter, but many interested individuals had a diabetes diagnosis and were ineligible. Notably, none of the rural FCS Agents were able to recruit through local doctors, hospitals, or health insurance providers, largely because they did not have existing relationships, and no one replied to their written queries. In the urban county, the FCS Agent prioritized

Hispanic and Black populations and attempted to recruit through a family medicine clinic; however, the healthcare providers were too busy to assist. Instead, the Agent partnered with a residential housing facility that served low-income seniors and engaged social support services to assist with recruitment, which yielded sufficient interest.

FCS Agents also discussed the difficulty in "selling" a year-long behavior change program and garnering commitment from a reliable set of participants. One Adopter noted, "I think the hardest or the most challenging thing [about the NDPP] is that it requires a true lifestyle change. And it's very time intensive." A Potential Adopter expressed a similar sentiment: "I would think it would be very difficult to have participants sign up for a program that is going to be a year long." Adopters and Potential Adopters noted additional barriers to participation, especially in rural settings, included transportation challenges, lack of childcare, and complex scheduling issues.

The detailed and frequent reporting requirements were also noted as a challenge by both Adopters and Potential Adopters, given that Agents have busy schedules, and this type of reporting is not a typical part of the job. One Adopter noted,

> For example, the reporting could be overwhelming ... It's another learning curve, and [Agents] have to be prepared in knowing how to respond to those items that aren't traditionally in the scope of practice for an Agent. ... Things like height and weight and physical activity logs and tracking all of that for every individual in your cohort.

Subtheme 2.2: Barriers related to Agent Knowledge & Comfortability

The two groups (Adopters and Potential Adopters) felt differently about their own level of comfort with the program and its content. One Potential Adopter explained,

> Since I am not a dietitian, I don't feel super comfortable teaching diabetes classes … umm, because people ask specific questions and not general nutrition questions. So, I often partner with the local health department. They have a diabetes educator, and they are the ones that teach any diabetes-specific class that we have had here in the county.

Adopters felt that the NDPP incorporates many of the existing strengths within FCS, including general health promotion. One Adopter explained,

> My education has made me really comfortable with the subject matter. So, if someone mentioned a blood sugar test or something like that, that might make other Agents feel like they don't know enough about it, but I'm comfortable with that. … But I think the curriculum, it's close to other curriculums that we have that encourage healthy lifestyles. It's pretty general, and I think anyone would be fine teaching it. It's just that they may not have the comfort level that I have if they have a different background.

Of note, one Potential Adopter who had personal experience with diabetes was particularly passionate about and comfortable with the program contents. She explained,

> I understand firsthand. I have experience with that, and I can testify that it can be done in terms of making a [lifestyle] change – even after having a diagnosis and living with the treatment of that condition. I had to decide maybe this is not impossible; it is something I can do! So, I sort of learned by doing. … I hope that because I've got firsthand experience that I would be more effective than just trying to present something out of a book.

Finally, both groups voiced concerns with adequate subject matter knowledge across all FCS Extension Agents. One Adopter shared,

> I do think it would be challenging for every single Agent to deliver [the NDPP] because of the nature of the program. I think it does require a certain type of individual with a certain type of educational background – because of the nature of it, that diabetes is a clinical chronic disease. … It is a wonderful program, but they may just have to pick and choose who could deliver it.

Theme 3: FCS Agent-Identified Supports Needed for Implementation

FCS Agents discussed needed supports, including (a) a community of practice with peers, (b) a high level of responsiveness from state Specialists, and (c) subject matter support. Adopters and Potential Adopters felt that a collective group of implementing Agents should be organized to share ideas for recruitment, teaching, and hands-on activities as well as answer questions related to program content. One Potential Adopter stated,

> I think maybe putting people together in a professional learning community where you could have people answer your questions whenever they had time … using something like Microsoft Teams. That might be beneficial. Or, umm, meetings and letting us know what really helps in managing the program—the core of what you need in your county, what the best practices are.

Both groups believed that timely state-level support from Administration and Extension Specialists with related subject matter expertise was critical for successful program implementation. Adopters highlighted how responsive and helpful Specialists had been: "I really credit [Specialist Name] for keeping me on track. … She has been guiding me and checking in to make sure I'm doing this right and following all these rules."

Potential Adopters expressed the need for working with subject matter experts in their county and at the regional and state levels. One stated,

> I think if you have your sessions planned in advance, you could collaborate and say to your participants, "Next week we will have a dietitian here, and she will be talking about meal planning or whatever, so if you have any questions about this, you should bring them next week." I think that would be a helpful resource for Agents to help fill the void.

Theme 4: Roles of Community Partners

Four of the Potential Adopters and one Adopter shared that a different organization in their community had previously offered the NDPP. FCS Agents expressed concerns over "turf wars" and "duplication of efforts." One Potential Adopter shared,

> The DPP program has actually been offered here and implemented through a health organization that I regularly partner with in programming efforts. They had a few behavioral health specialists on their staff. They, myself, and some other community entities actually make up our local Diabetes Coalition. So, you know, they would talk about implementing the DPP program, and then oftentimes, because of lack of meeting room space, they would actually use the Extension Office meeting room space as a location to implement their programs.

FCS Agents also expressed concern about how they might transition from being a supportive entity of community partners to an independent NDPP supplier that may be competing for participants. A Potential Adopter explained,

> My only reservation is if that agency—which, don't get me wrong, we have plenty of potential clients if you look at the numbers! But if I was to want to try to do something that another entity was already trying to implement. … I guess I would probably need to sit down with the group, the ladies that already do the program, maybe sitting down with them as a co-partner, even a co-teacher. … I guess, for myself, I would really need to take more ownership of the program.

Theme 5: Dynamics of Community Relationships

FCS Agents within both groups frequently mentioned using community partners, such as public health departments and diabetes educators, to assist with recruitment and serve as subject matter experts. Many recognized that they did not have strong relationships with physicians, hospitals, clinics, or health insurance providers that could directly refer eligible patients. One Potential Adopter explained, "It would be easier to use the health department, the hospital, or the doctors' offices and to have the names of people. Then we could call and personally invite them to be involved in this opportunity."

Developing new community-clinical partnerships may require intervention at the state level since it can be difficult for Extension Agents to access and build relationships with busy clinicians

(many of whom are unfamiliar with CES). One rural Adopter shared, "I don't know if doctors really even know much about Extension and that we could offer a service that could help them." Another Adopter explained,

> I do think having [Specialist Name] or someone else fairly high up actually be there and go with me to just talk with these doctors and help sell the program from a medical standpoint would be extremely beneficial. Because I may be a dietitian, but I've been in this community since I got out of school, and I don't have the clinical experience to be able to talk whatever talk the doctors need to hear to be willing to give those recommendations for referrals.

FCS Agents noted that Administrators and Specialists may also be able to forge connections with statewide health insurance providers to further recruitment.

Finally, the Adopter in the urban setting stated the importance of fostering ties with non-traditional partners such as residential retirement communities or senior living facilities. The Adopter described her success in pursuing this strategy:

> So, we identified a [residential facility] as another option to consider for recruitment. We met with the Director of Services of the various programs that they offer through the residence facility, and that Director, he was on board and was very eager to offer this to the residents. We had him distribute recruitment materials, and we started having people express interest, and the plan was that we were going to start that in April.

Discussion

Our study provides important insight into the opportunities for statewide dissemination of the NDPP through CES. Despite data collection from two different groups, the over-arching themes were consistent across the Adopters and Potential Adopters, which speaks to the deep knowledge and understanding FCS Agents have regarding the feasibility and acceptability of programs in their communities prior to implementation. First, the findings indicate a common theme amongst Adopters and Potential Adopters that CES is a suitable platform for NDPP implementation. FCS Agents are experienced with recruiting underserved populations, leveraging community partnerships, offering health promotion programs, and motivating individuals and groups. Moreover, despite the duration and intensity of the NDPP, the FCS Agents expressed a high desire to implement the program. Almost all Agents included in our study felt that the program would fill an unmet community need.

However, FCS Agents indicated significant implementation challenges, particularly regarding recruitment. Both Adopters and Potential Adopters noted that traditional recruitment methods were unlikely to be sufficient for the DPP and highlighted the challenge of balancing the traditional open, inclusiveness of CES programs with the specificity of NDPP inclusion criteria.

Our findings of recruitment challenges are consistent with others; a systematic review of "real world" implementation of DPPs reported that 25 of the 35 studies noted low enrollment (Aziz et al., 2015). Given that the CES structure emphasizes the importance of relationships, one strategy mentioned by an Agent is to allow the eligible participant to enroll in the NDPP with social support, such as a spouse or other family member who does not meet NDPP eligibility criteria. Leveraging social support networks may be a promising strategy, given that previous research indicates social support as predictive of health-promoting behaviors (Rad et al., 2013). Moreover, research indicates that potential DPP participants find the option of enrolling with family members to be appealing (Dasgupta et al., 2013). Indeed, some Adopting FCS Agents allowed couples to participate and only reported data for the individual who met the CDC criteria. This recruitment strategy may also reduce additional barriers commonly experienced by rural residents, such as lack of transportation.

Second, FCS Agents emphasized the need to develop relationships with health care providers and insurance companies who could directly refer participants. Given power differentials and knowledge hierarchies, they noted the potential role of state Specialists in helping to forge these connections. Developing these additional partnerships builds on the long CES history of strong community relations and leverages the credibility and trust that the broader community has with CES and their services, particularly in rural contexts where resources are limited.

Third, in line with this emphasis on community partnerships, FCS Agents described the value of offering the NDPP in settings where large numbers of potentially eligible participants congregate, such as assisted living homes, churches, and retirement centers. Previous research demonstrates the value of providing an immediate screening opportunity and offering the program in a familiar setting, especially in the enrollment of harder-to-reach populations, such as racial/ethnic minorities and rural residents (Sattin et al., 2016; Vincent et al., 2013; Yeary et al., 2011).

To overcome potential "turf wars," especially in the context of complex community dynamics in rural counties, it is critical that FCS Agents conduct a thorough assessment prior to NDPP implementation. Careful communication and coordination with those who have already moved into this space is essential to maintaining community relations that are central to the work of CES.

Lastly, to overcome the concern that some FCS Agents do not have the educational backgrounds in nutrition or dietetics to successfully deliver the NDPP, Agents offered strategies such as developing a community of practice among participating Agents, collaborating with other trusted community experts (such as local diabetes educators), and bringing in Specialists to provide subject matter support. Moreover, FCS Agents noted that scaling up the NDPP may look different than traditional Extension programs. Historically, decisions about which programs are offered at the county level are determined by Agents. However, the best approach with the

NDPP may be a collective decision-making process between individual FCS Agents and supporting Extension professionals at the state level. Prior to deciding to implement, CES must consider county-level factors, such as FCS Agent ability and comfortability, NDPP availability, potential community partners, and need.

Limitations

Although our study provides important insight regarding NDPP implementation within CES, it is not without limitations. First, the FCS Agents were employed by CES, and thus there may be response bias. To control for this threat, co-authors unaffiliated with FCS conducted the interviews, which may have allowed participants to speak more honestly. Secondly, no Potential Adopters had nutrition backgrounds. Due to the time-sensitive nature of the study, Potential Adopters were selected to represent the statewide FCS Agent population that largely does *not* have a nutrition background to better understand how a scale-out of the program may be received by FCS as a whole. Therefore, our understanding may be limited due to the nature of data collection from our Adopters and Potential Adopters. Third, the COVID-19 pandemic slowed participant recruitment and halted implementation for all but one CES program, thereby limiting project data. Adopters were at varying points of recruitment and implementation; however, the purpose of this study was to examine scaling out the program with a focus on early implementation. Further study is warranted to identify additional barriers and facilitators beyond the initiation and recruitment stages of the program. Lastly, our findings are limited to the FCS Agents' experience in Kentucky; states with differing infrastructure may have different results.

Conclusions

This study provides important information for CES who are considering NDPP implementation. While CES appears to be an appropriate platform for offering the NDPP, notable barriers must be overcome. A careful assessment of community power dynamics and relations of trust is critical for developing new recruitment methods and support networks for FCS Agents. Given the county-level variability of Agents and community dynamics, FCS Agents and Specialists should work together to identify and establish the requisite resources necessary for successful statewide scaling.

References

Ariel-Donges, A. H., Gordon, E. L., Dixon, B. N., Eastman, A. J., Bauman, V., Ross, K. M., Perri, M. G. (2020). Rural/urban disparities in access to the National Diabetes Prevention Program. *Translational Behavioral Medicine*, *10*(6), 1554–1558. https://doi.org/10.1093/tbm/ibz098

AuYoung, M., Moin, T., Richardson, C. R., & Damschroder, L. J. (2019). The Diabetes Prevention Program for underserved populations: A brief review of strategies in the real world. *Diabetes Spectrum*, *32*(4), 312–317. https://doi.org/10.2337/ds19-0007

Aziz, Z., Absetz, P., Oldroyd, J., Pronk, N.P., & Oldenburg, B. (2015). A systematic review of real-world diabetes prevention programs: Learnings from the last 15 years. *Implementation Science*, *10*, Article 172. https://doi.org/10.1186/s13012-015-0354-6

Braverman, M. T., & Engle, M. (2009). Theory and rigor in extension program evaluation planning. *Journal of Extension*, *47*(3). https://archives.joe.org/joe/2009june/a1.php

Cannon, M. J., Masalovich, S., Ng, B. P., Soler, R. E., Jabrah, R., Ely, E. K., & Smith, B. D. (2020). Retention among participants in the National Diabetes Prevention Program lifestyle change program, 2012–2017. *Diabetes Care*, *43*(9), 2042–2049. https://doi.org/10.2337/dc19-2366

Carroll, J., Winters, P., Fiscella, K., Williams, G., Bauch, J., Clark, L., Sutton, J., & Bennett, N. (2015). Process evaluation of practice-based diabetes prevention programs: What are the implementation challenges? *The Diabetes Educator*, *41*(3), 271–279. https://doi.org/10.1177/0145721715572444

Centers for Disease Control and Prevention. (2018). *CDC Diabetes Prevention Recognition Program: Standards and operating procedures*. https://www.cdc.gov/diabetes/prevention/pdf/dprp-standards.pdf

Centers for Disease Control and Prevention. (2019). *Type 2 diabetes*. https://www.cdc.gov/diabetes/basics/type2.html

Centers for Disease Control and Prevention. (2020). *National Diabetes Prevention Program: Lifestyle change program details*. https://www.cdc.gov/diabetes/prevention/lcp-details.html

Creswell, J., & Poth, C. (2017). *Qualitative research and inquiry design: Choosing among five approaches* (4th ed). Sage.

Dasgupta, K., Da Costa, D., Pillay, S., De Civita, M., Gougeon, R., Leong, A., Bacon, S., Stotland, S., Chetty, T. V., Garfield, N., Majdan, A., & Meltzer, S. (2013). Strategies to optimize participation in diabetes prevention programs following gestational diabetes: A focus group study. *PLOS ONE, 8*(7), Article e67878. https://doi.org/10.1371/journal.pone.0067878

Economic Research Service. (2020, December 10). *Rural-urban continuum codes*. https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/

Ely, E. K., Gruss, S. M., Luman, E. T., Gregg, E. W., Ali, M. K., Nhim, K., Rolka, D. B., & Albright, A. L. (2017). A national effort to prevent type 2 diabetes: Participant-level evaluation of CDC's National Diabetes Prevention Program. *Diabetes Care, 40*(10), 1331–1341. https://doi.org/10.2337/dc16-2099

eXtension. (2020). *Cooperative Extension National Diabetes Prevention Program interest group*. https://ce-dpp.extension.org/

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Sociology Press.

Hughes, R., Jr., Bowers, J. R., Mitchell, E. T., Curtiss, S., & Ebata, A. T. (2012). Developing online family life prevention and education programs. *Family Relations*, *61*(5), 711–727. https://doi.org/10.1111/j.1741-3729.2012.00737.x

Knowler, W. C., Barrett-Connor, E., Fowler, S. E., Hamman, R. F., Lachin, J. M., Walker, E. A., Nathan, D. M., & the Diabetes Prevention Program Research Group. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine, 346*(6), 393–403. https://doi.org/10.1056/nejmoa012512

Lamm, A. J., Israel, G.D., & Diehl, D. (2013). A national perspective on the current evaluation activities in Extension. *Journal of Extension*, 51(1). https://archives.joe.org/joe/2013february/a1.php

Limbani, F., Goudge, J., Joshi, R. Maar, M. A., Miranda, J. J., Oldenburg, B., Parker, G., Pesantes, M. A., Riddell, M. A., Salam, A., Trieu, K., Thrift, A.G., Van Olmen, J., Vedanthan, R., Webster, R., Yeates, K., Webster, J., & the Global Alliance for Chronic Diseases, Process Evaluation Working Group. (2019). Process evaluation in the field: Global learnings from seven implementation research hypertension projects in low- and middle-income countries. *BMC Public Health,* 19(1), Article 953. https://doi.org/10.1186/s12889-019-7261-8

McCann, A., Peterson, J., & Gold, A. (2009). Using planning and evaluation tools to target extension outputs & outcomes: The New England Private Well Symposium example. *Journal of Extension*, *47*(3). https://archives.joe.org/joe/2009june/tt4.php

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1–13. https://doi.org/10.1177/1609406917733847

Patton, M. Q. (2001). *Qualitative research and evaluation methods* (3rd ed.). Sage.

Rad, G. S., Bakht, L. A., Feizi, A., & Mohebi, S. (2013). Importance of social support in diabetes care. *Journal of Education and Health Promotion, 2*, Article 62. https://doi.org/10.4103/2277-9531.120864

Remley, D., Buys, D., Cronk, L., Duffy, V., Garden-Robinson, J., Horowitz, M., McGee, B., Nelson, C., Prevedel, S. M., Reicks, M., & Warren, T. (2018). The role of Cooperative Extension in chronic disease prevention and management: Perspectives from professionals in the field. *Journal of Human Sciences and Extension*, *6*(2), 15–25. https://www.jhseonline.com/article/view/716/618

Rennekamp, R. A., & Arnold, M. E. (2009). What progress, program evaluation? Reflections on a quarter-century of Extension evaluation practice. *Journal of Extension*, 47(3). https://archives.joe.org/joe/2009june/comm1.php

Richards, E. & Woodcox, S. (2020). Process evaluation of an email-based walking program with Extension educators. *Journal of Human Sciences & Extension, 8*(2), 215–222. https://www.jhseonline.com/article/view/1065

Sattin, R. W., Williams, L. B., Dias, J., Garvin, J. T., Marion, L., Joshua, T. V., Kriska, A., Kramer, M. K., & Narayan, K. M. V. (2016). Community trial of a faith-based lifestyle intervention to prevent diabetes among African-Americans. *Journal of Community Health, 41*(1), 87–96. https://doi.org/10.1007/s10900-015-0071-8

Seevers, B., & Stair, K. (2015). Exploring community partnerships in agriculture and Extension education. *Journal of Extension*, 53(3), Article 15. https://tigerprints.clemson.edu/joe/vol53/iss3/15/

Venkataramani, M., Pollack, C. E., Yeh, H.-C., & Maruthur, N. M. (2019). Prevalence and correlates of diabetes prevention program referral and participation. *American Journal of Preventive Medicine*, *56*(3), 452–457. https://doi.org/10.1016/j.amepre.2018.10.005

Vincent, D., McEwen, M. M., Hepworth, J. T., & Stump, C. S. (2013). Challenges and success of recruiting and retention for a culturally tailored Diabetes Prevention Program for adults of Mexican descent. *Diabetes Educator, 39*(2), 222–230. https://doi.org/10.1177/0145721713475842

Whittemore, R., Rosenberg, A., Gilmore, L., Withey, M., & Breault, A. (2014). Implementation of a diabetes prevention program in public housing communities. *Public Health Nursing, 31*(4), 317–326. https://doi.org/10.1111/phn.12093

Wilson, M. G., DeJoy, D. M., Vandenberg, R., Padilla, H., & Davis, M. (2016). FUEL Your Life: A translation of the Diabetes Prevention Program to worksites. *American Journal of Health Promotion, 30*(3), 188–197. https://doi.org/10.4278/ajhp.130411-quan-169

Yeary, K. H. K., Cornell, C. E., Moore, P., Bursac, Z., Prewitt, T. E., West, D. S., & Turner, J. (2011). Feasibility of an evidence-based weight loss intervention for a faith-based, rural, African American population. *Preventing Chronic Disease,* 8(6), A146. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3221585/

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Appendix

Interview Protocol

Thanks so much for agreeing to participate in this study! We are interested in your honest feedback and thoughts. There are no right or wrong answers.

Just as an extra precaution, we ask that you please avoid disclosing identifiable information or specifically naming others during the interviews. It would be helpful if you only refer to titles or general information (e.g., supervisor). This further protects your confidentiality.

For Adopters

1. Can you tell me a little about yourself? How long have you been working in Extension, and what is your area of education & expertise?
2. Now I want to learn more about the DPP program in particular. Could you tell me the story about how you first got involved with this program?
    a. How did you hear about the program?
    b. Why did you decide to become a DPP lifestyle coach?
    c. What was the process of getting the training like for you?
    d. What were your early expectations & thoughts about what this would be like? Concerns? Worries? Anticipation? Excitement? Be as specific as possible.
3. Now, I'd like to learn more about the recruitment process. What were the first steps that you took in trying to recruit participants? What happened?
    a. What worked well?
    b. Where did you run into trouble? How did you try to overcome those obstacles?
    c. Did you work with any partners in trying to recruit participants? If so, who were they, and how did that work out for you?
4. What happened once you started to implement the program?
    a. Was it hard to retain participants? What did you do to keep people coming back? What worked and what did not? How might you do things differently next time?
    b. What other challenges did you face? How, if at all, have you tried to overcome these challenges?
5. How can Extension Specialists at UK support you in implementing this program?
    a. What have they already provided that has been helpful? Can you give an example?
    b. Where do you wish you had more resources or support? Please be specific.
6. Overall, how do you feel about the DPP program being implemented through Extension Agents?

For Potential Adopters

1. Can you tell me a little about yourself? How long have you been working in Extension, and what is your area of education & expertise?
2. What, if anything, have you heard about the Diabetic Prevention Program (DPP) before this phone call?
3. Have you ever considered becoming certified as a DPP lifestyle coach and offering the program in your county? Why or why not?
    a. What are some of your concerns about participating?
    b. What might be some of the benefits for you or for your community?
    c. What kinds of support from main campus might you need to be successful?
4. What local collaboration would be useful to get you started?
    a. Have you worked with your public health department or local physicians?
    b. How did that work out?
5. Are there any other kinds of training that might be helpful?
6. The DPP program requires recruiting participants that fit specific criteria (for example, they have to be pre-diabetic, be a certain age, etc.) How would you recruit participants given the specificity of the program and what it requires?
    a. What concerns might you have about this process?
7. How could other Agents who have experienced the program best assist you in moving forward?
8. Do you think that an Agent's educational background may impact their ability to successfully offer this particular program? If so, how and why?
    a. Are there any ways to address this?
9. Overall, do you think it is possible or even desirable to offer the DPP program through Cooperative Extension?