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Perceived Barriers to Type 2 Diabetes Prevention for Low-Income Women with a History of Gestational Diabetes: A Qualitative Secondary Data Analysis

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Abstract

Purpose: The purpose of this qualitative study was to examine perceived barriers to adoption of lifestyle changes for type 2 diabetes prevention among a diverse group of low-income women with a history of gestational diabetes mellitus (GDM).

Methods: A secondary data analysis of 10 semi-structured focus group discussions were conducted. Participants were low-income African American, Hispanic, and Appalachian women aged 18–45 years who were diagnosed with GDM in the past 10 years. A qualitative content analysis was conducted to identify key themes that emerged within and between groups.

Results: Four key themes emerged on the role of knowledge, affordability, accessibility, and social support in type 2 diabetes prevention. Women discussed a lack of awareness of the benefits of breastfeeding and type 2 diabetes prevention, inaccessibility of resources in their local communities to help them engage in lifestyle change, and the desire for more culturally relevant education on healthful food options and proper portion sizes.

Discussion: Study findings suggests that to improve effectiveness of type 2 diabetes prevention efforts among low-income women with GDM history, healthcare providers and public health practitioners should avoid using “one size fits all” approaches to lifestyle change, and instead use

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tailored interventions that address the cultural and environmental factors that impact women's ability to engage in recommended behavior change.

Gestational diabetes mellitus (GDM) affects up to 14% of pregnancies in the United States (U.S.) and confers significant and lifelong health challenges for both mother and child, including an increased risk of type 2 diabetes (T2DM) later in life.¹⁻⁴ While 5–10% of these women will be diagnosed with T2DM during the postpartum period,^{2,3} the remaining 90–95% comprise a high-risk group that should be targeted for T2DM prevention efforts due to their sevenfold lifetime risk.^{2,3}

Behavioral interventions, particularly those focused on weight loss through a dietary modification and increased physical activity, can prevent or delay T2DM in such high-risk populations.^{5,6} Breastfeeding is also a modifiable behavior that reduces glucose metabolism and later risk of T2DM.⁷ However, the effects of previous lifestyle interventions aimed at reducing T2DM risk among women with GDM have been modest or suboptimal, particularly with achieving significant improvements in modifiable health behaviors.^{1,8,9} Postpartum women with a GDM history may face unique barriers to successful lifestyle modification such as those introduced by the competing demand of caring for young children, particularly when there was not one before.¹⁰ These are important factors that may limit the success of existing interventions.

Factors associated with successful adoption of healthful lifestyle behaviors among women with GDM history differ across racial/ethnic groups and populations with varying access to resources.^{11,12} Racial/ethnic disparities in risk of T2DM after GDM are well documented, with African American women at highest risk.¹³ Medicaid and uninsured patients also have higher GDM incidence and subsequent T2DM compared to patients with private health insurance.¹⁴ Drivers of heterogeneity in the burden of GDM risk and consequences across diverse low-income subgroups are largely unknown, particularly regarding lifestyle approaches to T2DM prevention. This study aimed to examine perceived barriers to adoption of lifestyle change for T2DM prevention in a diverse sample of low-income women with a history of GDM. Understanding barriers to lifestyle behavior change can inform tailored interventions to prevent T2DM in high-risk populations of low-income women with a GDM history.

Methods

Study Design

A secondary analysis of existing focus group data collected for a prior study was conducted to examine perceived barriers to adoption of lifestyle change for T2DM prevention in a diverse sample of low-income women with a history of GDM. Secondary qualitative data analysis is an inexpensive way for generating new answers to research questions, especially regarding sensitive topics and populations that are hard to reach.¹⁵ While the primary study was designed to explore perceptions and healthcare experiences of low-income women at risk for T2DM due to prior GDM diagnosis,^{14,16,17} discussions during the focus group provided additional insight that informed the current study. The focus group content was designed to collect a broad set of data including but not limited to prenatal and postpartum

healthcare experiences of women with GDM, but also included personal experiences in managing GDM both during and after pregnancy. The research team for this secondary data analysis was not involved in the original research study. However, three of the authors from the original research team (EJC, ROF, MBW) provided administrative and contextual support for this secondary analysis. The protocol for secondary data analysis was determined exempt through the Institutional Review Boards (IRBs) at the Ohio Department of Health (ODH) and The Ohio State University.

Data Collection

Study methods have previously been described in detail.¹⁶ Briefly, data collection occurred from February to May of 2012. Women between 18–45 years with a GDM diagnosis in the past 10 years were invited to participate. Focus groups were conducted across urban and rural Appalachian communities throughout the state of Ohio to improve the representativeness of the study sample and generalizability of findings. Within rural Appalachian communities, women residing in Appalachian-designated counties were recruited regardless of racial/ethnic identity. Within the urban communities, women who self-identified as African American or Hispanic were recruited. Participants were recruited through flyers in clinics funded by the state health department (e.g., Special Supplemental Program for Women, Infants, and Children (WIC)), Obstetrics and Gynecology clinics affiliated with academic institutions, local providers serving low-income women and online advertising. Participants were given a \$50 gift card.

Trained moderators from a market research group with similar backgrounds as the participants conducted 12 focus groups, stratified by group (e.g., Hispanic), using a semi-structured interview guide (Table 1). Moderators were market researchers with experience working together on healthcare research projects related to T2DM and other healthcare issues, and pharmaceutical clinical trials. Discussions lasted up to two hours and 8 of the 12 were audio-recorded. Moderators met and debriefed within one week of the focus groups. Initial (non-verbatim) transcripts were completed within a month of the focus groups. For the 8 available audio-recordings, study staff from ODH created verbatim transcripts used in this analysis in 2013. Non-verbatim transcripts were analyzed for the remaining 4 focus group discussions that were not audio-recorded. One focus group with Hispanic participants was conducted in Spanish, then transcribed and translated into English by a hired transcriber not affiliated with the study and verified by a bilingual Spanish-speaking member of the original study staff.

Data Analysis

For this secondary analysis, recordings and transcripts were not available for two focus groups, leaving 10 discussions for analysis. Transcripts were coded using NVivo 11 (QSR International, Cambridge, Massachusetts). Content analysis was used to identify key themes that emerged within and between groups.^{18,19} Coding categories were derived from the transcribed text through an iterative process. Two of the authors (TTI and JK) independently coded a subset of transcripts. Coders then compared and discussed the code list to ensure that they were capturing the same information. TTI and JK used the moderator's guide and their initial findings to create a preliminary codebook. Using the codebook, TTI coded 100%

of the transcripts and JK coded 60%. New codes that emerged were discussed and added to the codebook as appropriate. The coding comparison query in NVivo 11 was used to identify discrepancies between coders, which were subsequently discussed and resolved. Coded text was analyzed to identify themes around healthful eating, physical activity, and breastfeeding, and to select verbatim quotes to illustrate the themes. Structured comparisons were made between the different groups of women to explore differences.

Results

A total of 64 participants across 10 focus groups were included in this study. The mean age of participants was 32.9 years (SD=1.24) with an average of 2.6 children (Table 2). Approximately 20% of African American and Hispanic women had T2DM whereas only 6.7% of Appalachian women had a T2DM diagnosis. Four major themes emerged from the data that provide insight into the perceived barriers to T2DM risk reduction among low-income women with a history of GDM. These themes were centered on Knowledge, Affordability, Accessibility, and Social Support.

Knowledge

Knowledge of healthful eating, physical activity, and other behaviors conducive to T2DM prevention had similarities and variations across the different groups of women. Several African American women expressed a desire for more education and resources within their neighborhood regarding healthful eating and physical activity. Specifically, they wanted more in-depth education from health providers that included visual examples of healthy and unhealthy food options and portion sizes. Some African American women shared that not all women in their communities were aware of what a balanced meal and proper portion sizes look like. As a result, some women assumed that they were making proper eating adjustments to manage their diabetes, when in actuality they were not. An African American woman shared, “Some people don’t know portions right to actually see what is, what it is, and what foods break down to sugar...I thought me just eating fruit was good, but it actually was...how much you eat, you know? You can have a apple, but if you eat 3 or 4 apples, then turn around eat oranges or grapes or something like this, you’re like, Oh no.”

Similarly, several Hispanic women expressed a need for more nutritional information and resources. A common misconception among Hispanic women was that they could eat any vegetable without it having a negative impact on their blood sugar. Many reported feeling surprised after learning that they needed to limit intake of vegetables such as potatoes and corn due to their high carbohydrate content. Hispanic women also were concerned that healthcare providers underestimated the amount of physical activity that they truly engage in. Many felt that they did not need to participate in additional exercise activities because they were already engaged in physical activity when walking to work or performing other caretaking responsibilities such as cooking or cleaning. A Hispanic woman stated, “I think they [healthcare providers] do not realize that we already do exercise. Cleaning, cooking in the summer, going to the park. Walking is exercise, and people walk a lot.” On the other hand, several Appalachian women expressed a knowledge of healthful eating and spoke of the importance of reducing the amount of processed foods, sugars, and starches in their diet.

Despite having this knowledge, many women chose to eat unhealthy food options because of convenience.

Many women expressed that they had some basic knowledge of breastfeeding. Many women were aware that breastfeeding could benefit their babies, with some referring to it as “nature’s milk.” However, some women reported that they discontinued breastfeeding because they needed to return to work or school and were not aware of ways to properly preserve breastmilk (e.g., freezing and thawing breastmilk). “I never knew you could freeze breast milk, or I would have kept pumping,” shared an Appalachian woman. Furthermore, few participants understood the connection between breastfeeding and T2DM risk reduction. Several women noted that their healthcare provider never discussed breastfeeding as a method to reduce their risk for T2DM after GDM. As one Appalachian woman stated, “There are some things on here that I was never told. Um, the the breastfeeding helps control blood sugar for you and your baby? I was never told that.” Most women argued that they would have breastfed or “would have tried harder” if they knew it would help reduce their risk of T2DM after GDM.

Affordability

Inability to afford healthful foods was a common reason why women across all groups expressed that they could not modify their dietary behaviors. A Hispanic woman shared, “It is hard to eat healthy, because to eat healthy you have to cook and also economically is hard. Sometimes is easier to buy junk or fast food.” Some African American women noted the need for more voucher programs to subsidize the costs of fruits and vegetables for low-income women. They reported that even with food stamps, women could not afford to purchase healthful foods. For example, one African American woman stated, “Think about it. If- if if I’m uh a low-income and you know, I’m just gettin’ food stamps or whatever, I might not be able to eat healthy, so tell me ways where I can eat healthy or give me eh you know, like WIC will give ya a voucher to where I can buy the healthy vegetables fruit you know what I’m sayin’?”

Affordability was also reported as a barrier to engagement in physical activity. Women expressed that it is too expensive to purchase gym memberships or participate in wellness programs. Furthermore, women reported that they were required to pay for childcare while using the gym, which was also burdensome. Even with subsidies from their health insurance or local recreational facility, most women were still unable to afford the costs associated with a gym membership. “The only people can use it [gym] at a reduced rate or on welfare, because most people who work, are working families that struggle to get by, even on two incomes,” said an Appalachian woman.

Accessibility

Participants reported personal and environmental barriers to accessing and utilizing community resources. Appalachian women noted that they were not aware of wellness programs, community gardens, or other programs that promoted physical activity or healthful eating in their communities due to residing in remote rural areas. Several Appalachian women expressed a need for more information and resources regarding lifestyle

modifications out in their communities because people are not always able to drive to major cities for resources and information. An Appalachian woman stated, “I mean there were so many things out there that the, I don’t even know, that I’m just now finding out from where I work. So there’s just, there’s not enough information being passed out and around.” Some African American women argued for more community resources that operate outside of normal business hours. Often times, they could not access community resources due to their work schedule and demands of motherhood. As stated by one African American woman, “We have farmers markets offered through the health department but they’re only offered during certain seasons and they only have it like one day. So if you’re not able to go that one day you’re just screwed.”

Some women who were knowledgeable of community resources reported being deterred from participating due to dogmatic attitudes and unwelcoming environments. An Appalachian woman stated, “I mean those groups, they would ideally help women to get resources but, but the group of people that go there is a very intimidating group and turns a lot of people off.” African American and Hispanic women reported welcoming and “positive” environments when utilizing faith-based community resources. However, some Hispanic women reported the Hispanic church as a source of frequent unhealthy potlucks and argued for more faith-based programming around healthful eating and physical activity. A Hispanic woman shared, “I think the whole church is diabetic...we have food all the time.”

Social Support

Social support was identified as an important motivator for engaging in lifestyle approaches known to reduce T2DM risk after GDM. Many women who reported receiving social support from family members and friends not only felt more empowered, but also began making lifestyle modifications to manage their health. For instance, some African American and Hispanic women reported successful breastfeeding experiences in which they attributed to the encouragement and guidance of family and friends. “My mother encouraged me to because she breastfed all of us,” shared an African American woman. Women also mentioned that social support indirectly facilitated their ability to control their T2DM risk. Some women went to the gym or attended a breastfeeding workshop simply because a friend or family member watched their children. An Appalachian woman described the social support received from her mother: “My mom moved in with me after my little boy was born and like I couldn’t do without her.”

Women across all groups who reported lack of social support expressed high levels of stress and feeling unmotivated to engage in lifestyle modifications. Women advocated for support groups specifically for women with diabetes, and ones where they could learn about other women’s stories and find accountable peers. “I think they need to have some sort of groups cause this is stressful...I mean like a support group as in exercising educating each other. Because a lot of people, just because you have diabetes doesn’t mean you know everything about it,” said an African American woman.

Discussion

This study provides unique insight into factors that assist and prevent low-income African American, Hispanic, and Appalachian women with a history of GDM from engaging in healthful eating, physical activity, and breastfeeding to reduce T2DM risk. In this population, some women expressed limited knowledge about healthful eating and portion sizes. Additionally, they noted a lack of awareness about community resources to help them engage in lifestyle change, lack of receipt of information about the role of breastfeeding in T2DM risk, and concerns about access to resources such as healthful foods and facilities to support physical activity. Finally, this study builds on previous findings on the importance of the healthcare provider and quality of healthcare provided to diabetes prevention and management,¹⁶ emphasizing the roles of cultural considerations and tailored discussions around health behaviors in the clinical setting.

Study participants also identified personal and economic barriers to accessing lifestyle modification supports and limited social support. For example, while physical activity or breastfeeding support groups were available in some communities, several participants expressed that existing services did not provide the type of information or assistance that they most needed (e.g., childcare, educational resources about preserving breastmilk). Further, the African American and Hispanic groups frequently mentioned the important role of family and friends to support behavior change and a preference for faith-based programs.

A few studies have focused on T2DM prevention for women with GDM with mixed results, illustrating the need to refine intervention approaches for this population. The Diet, Exercise, and Breastfeeding Intervention (DEBI) study aimed to reduce T2DM risk among women with recently diagnosed GDM using components of the Diabetes Prevention Program (DPP).¹ The intervention included lifestyle modification advice and support during the prenatal and postpartum period, including provision of free breast pumps to encourage exclusive breastfeeding; the study followed women through 12 months post-delivery. Another study, the Balance After Baby intervention, adapted the DPP to an internet-delivered intervention to address barriers to delivering a face-to-face intervention during the postpartum period such as family demands and lack of child care.²⁰ While both interventions demonstrated feasibility and slight differences in weight loss between groups, there were no significant changes in physical activity and minimal dietary differences between control and intervention groups. For example, the Balance After Baby intervention resulted in 177 kcal lower dietary intake at 6 months postpartum and 180 kcal lower at 12 months, but no differences were observed between groups in time spent in moderate-to-vigorous physical activity and no differences in breastfeeding prevalence were seen at 6 or 12 months postpartum.²⁰

This study suggests that T2DM prevention interventions should be tailored for women with GDM history with consideration of cultural and economic factors. By design, Balance After Baby addressed common barriers for women during the postpartum period such as transportation and required in-person time.²⁰ However, although 25% of the intervention group was Hispanic, the intervention did not specifically address cultural perceptions that could influence women's decision to engage in behavior change. The current study provides

additional support for the design of interventions that better address additional barriers extending from informational support (e.g., information about the benefits of breastfeeding) to instrumental support (e.g., culturally tailored programs or financial assistance). The complex social or cultural barriers identified in the current study that prevent women from engaging in healthful behaviors may be used to improve the impact of lifestyle interventions for diabetes prevention in this high-risk population.

Breastfeeding can facilitate diabetes prevention, particularly during the postpartum period. In the early postpartum period, lactation improves glucose tolerance.^{21,22} However, women with GDM may have delayed lactogenesis that could contribute to, but likely not fully explain, observed lower rates of initiation and continuation of breastfeeding.^{7,23–26} This study provides insight into motivations behind breastfeeding decisions and barriers to breastfeeding initiation and continuation among GDM women. Many women with a GDM history reported that they did not understand the connection between breastfeeding and T2DM risk reduction, which negatively impacted breastfeeding decisions. Had they received more information from providers regarding the maternal and infant health benefits of breastfeeding, they may have sought additional support. These insights can inform efforts to support breastfeeding attempts for women impacted by GDM to complement other known effective lifestyle approaches for the prevention or delay of T2DM.

A major strength of this study is the large sample of diverse, low-income women that have been underrepresented in prior studies. Additionally, women were recruited across Ohio in rural and urban settings, providing greater geographic diversity and experiences. Further, data were collected on a wide range of topics, resulting in extensive contextual information to support the main themes identified. While two focus groups were not transcribed verbatim and were excluded from analyses, similar themes emerged across groups, suggesting that adequate qualitative data saturation was achieved. Finally, because data were only collected in Ohio, findings may not be generalizable to other geographic regions or other high-risk groups.

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Implications for Practice

Study findings highlight the need to refrain from taking a “one size fits all approach” to T2DM prevention. Interventions aimed at preventing and/or delaying T2DM in women with a GDM history should address multi-level barriers to lifestyle change that are unique to women with children, such as lack of access to community resources that operate outside of normal business hours or lack of access to affordable gyms with available childcare. Second, social support services should be integrated that are culturally relevant to the population served and accessible to ensure sustainability of lifestyle changes. For instance, African American and Hispanic women really emphasized the importance of social support from family and friends in the success of lifestyle change. Thus, healthcare providers and public health practitioners should consider tailored interventions that include family and friends. Lastly, healthcare providers must provide adequate information for informed decision-making (e.g., breastfeeding reduces risk of T2DM) and consider patient perceptions about lifestyle change (e.g., what is considered physical activity), which requires them to learn about their patient’s cultural beliefs and how it affects their perceived health.

Table 1.

Semi-structured Interview Guide

Preconception/Pre-Diagnosis of Gestational Diabetes Mellitus (GDM) Knowledge
<p>Before you were diagnosed with GDM, did you know anything about it? Did any of your health care providers ever discuss ways to prevent gestational diabetes either before you were thinking of becoming pregnant or early on in your pregnancy? If so, what was discussed?</p>
Pregnancy
<p>After being told you had GDM, did you receive any education on how to take care of yourself and manage your GDM? If so, what types of education did you receive? Do you remember who talked to you about how to take care of yourself and manage your diabetes? If so, who was this person? Did you ask any questions? If so, what questions did you ask? Were you referred to a nutritionist, dietitian, or diabetes educator after you were told you had GDM? If so, did you get to see this person? If not, what were some of the reasons why you did not get to see this person? For the women who were not referred, would you have liked to have been referred to a nutritionist, dietitian, or diabetes educator after you were told you had GDM? Please explain why this would have been important to you? Were you able to follow the advice given to you by your health care provider, nurse midwife, or dietitian? Is there anything that you think would have made it easier for you to take care of yourself or to make it easier to follow the advice? Did anyone talk with you about how you can reduce your risk for gestational diabetes in future pregnancies? What were you told about breast feeding? Were you encouraged to breast feed? What were you told about the potential risk for future development of type 2 diabetes? What were you told about the importance of being screened for diabetes after delivery?</p>
Postpartum
<p>Do you remember going to see your obstetrician or primary care doctor 6 weeks after you had your baby, also called the postpartum visit? Can you tell me why it was important for you to go to this appointment? If not, what were some of the reasons why you did not go to the six-week postpartum visit? Do you remember being tested for diabetes about 6 weeks after delivery? How many of you remember having this test? If not, what were some of the reasons why you did not go to get this blood test to check for diabetes? After you had gestational diabetes, has anyone been told they have diabetes? If yes, what education did you receive? Were you referred to a diabetes educator or support group? Did you attend? Can you tell me why you did or did not go to this support group or diabetes educator? Does your health care provider talk to you about preventing diabetes? What do they specifically talk to you about? Is there anything that stops you from following the advice of your health care provider to prevent diabetes? If so, what? What would you tell a pregnant friend about GDM? Is there anything that we have not asked that you want us to know about your experience with GDM?</p>

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Table 2.

Demographic characteristics of focus group participants by eligible race/ethnicity groups (N=64).

	Race/Ethnicity [*]		
	African American	Hispanic	Appalachian
Number of focus groups	3	3	4
Mean number of participants per focus group	6.7	7.3	5
Mean age (years)	33.6	31.5	33.7
Mean number of children	2.7	2	3
Current Type 2 Diabetes (%)	20	17.2	6.7
Time since gestational diabetes diagnosis (%)			
1 year	29.4	10.4	20
2–5 years	47.1	58.6	66.7
6–10 years	23.5	31	13.3

* All individual characteristics are based on self-report.