

RESEARCH ARTICLE

“How do we get to them?” Insights on Preconception and Interconception Health for Women in Rural Northwest Ohio

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ABSTRACT

Background: Rural women in the United States are at increased risk for poor preconception and interconception health. In a previous study, women living in Hardin County, a Primary Care Health Professional Shortage Area and maternity care desert in rural northwest Ohio expressed their concerns and their need for more resources to improve their health. As a follow-up study, key informants of Hardin County were interviewed to provide further insight on current resources for preconception and women’s health available to community members, barriers and challenges community members face, and interventions could be implemented in the county to improve health and pregnancy outcomes.

Methods: A purposive sample of 14 key informants from community assets in Hardin County were recruited and individually interviewed with semistructured questions from 2 domains: perceived needs and barriers to care. Interview recordings were transcribed, precoded, and thematically analyzed. Participants received a \$20 gift card as a token of appreciation.

Results: Three themes were characterized from the data: current resources available, community observations, and suggested intervention strategies. Key informants identified the federally-qualified health center and YMCA, among others, as potentially underutilized resources for reproductive-age women. The small-town culture was described as both an advantage and disadvantage when trying to raise awareness about preconception/interconception health. Interventions built on partnerships and utilizing various outlets were suggested. Childcare, intergenerational knowledge transfer, and trust were issues crossing multiple themes.

Conclusion: Key informants gave direction on available resources for reproductive-age women and potential approaches to provide education and outreach regarding preconception/interconception health and care.

Keywords: Preconception care; Women's health; Female; Rural population; Qualitative research

INTRODUCTION

Preconception and interconception health are wide-ranging concepts that encompass overall health for nonpregnant girls and women of reproductive age. The term “preconception” is applied to nulliparous women while “interconception” is used for multiparous women. Preconception and interconception health encompass biomedical, behavioral, and social issues that may harm a

woman or future baby. Optimizing preconception and interconception health is key to improving women’s personal health and reducing risk factors for adverse pregnancy outcomes.¹⁻⁴ However, women in the United States (US) currently report high rates of chronic disease and low rates of prepregnancy health care interventions, indicating a need for better preconception and interconception health and care.⁵⁻⁷





Rural women in the US are at even greater risk for poor preconception and interconception health due to the social determinants they often face. These may include lower socioeconomic status, geographic isolation, and limited access to health care providers, healthy food options, and transportation. Each of these contributes to health disparities.⁸⁻¹³ Furthermore, studies have found that women living in largely rural areas in the US had concerning preconception health risk behaviors, such as high rates of smoking, overweight/obesity, and physical inactivity.¹⁴⁻¹⁶ Governmental agencies, including the US Department of Health and Human Services and Centers for Medicare and Medicaid Services, have raised awareness for the need to improve rural maternal health.^{17,18} Rural experts rank maternal and infant health as a top concern, with calls to better study rural women's health.^{10,19}

However, to date, literature detailing preconception and interconception health and care for reproductive-age women specifically in the rural Midwestern US has been scant. Therefore, a series of studies has been conducted to better understand preconception and interconception health and care among women in rural north-west Ohio.²⁰⁻²² During interviews with reproductive-age women in Hardin County, Ohio, as part of a qualitative study to better understand their most pressing health needs, it became apparent that most were not aware of community assets they could utilize to improve or maintain their health.²³ Consequently, it was decided to conduct a second qualitative study with key informants in the county knowledgeable about such resources. The primary objective of this study was to gather information regarding resources available in the county for reproductive-age women. Secondary objectives were to characterize the challenges they observe reproductive-age women facing and intervention strategies they believe would be beneficial for reproductive-age women in Hardin County to improve preconception and interconception health.

METHODS

Setting

Hardin County, Ohio, has a population of approximately 31 000. The county is considered to be a non-core county, the most rural classification, with no cities, towns, or urban clusters of 10 000 residents or more.²³ The county is additionally labeled as a Primary Care Health Professional Shortage Area (HPSA) and a maternity care desert, without proper resources and facilities for preconception and women's health care.^{24,25} While there are a few primary health care facilities in Hardin County, some have restricted hours or are not open each day of the week. A free mobile health clinic has started in the county, providing limited secondary preventive care services, such as diabetes and hypertension screening, as well as disease state management to patients on certain days of the month; uptake among reproductive-age women has been minimal to date.²⁶ Some sources of care, such as the family planning clinic at the local health department, have recently closed.

Design

Prior to designing the study, a literature review was performed to identify gaps and determine potential design models for structuring interview questions. The study was designed to be phenomenological after bracketing that it was expected to identify resources and barriers.²⁷ The semistructured interview (Appendix) consisted of 9 questions from 2 domains: perceived needs and barriers to care. Interview questions included probes and follow-up questions for gathering additional information when needed, and all questions were open-ended. Interviews were thematically analyzed to identify reoccurring patterns in the data and characterize key informants' beliefs.²⁸

Participants and Procedures

Key informants representing community assets and stakeholders in the county were purposively recruited to participate in individual interviews to identify what resources are available in the county for reproductive-age women, what challenges they observe reproductive-age women facing, and what intervention strategies they believe would be beneficial for reproductive-age women in Hardin County. First, an email describing this study was sent to members of the Healthy Lifestyles Coalition of Hardin County, a group representing organizations involved in prevention initiatives to improve the health of Hardin County residents.²⁹ Members interested in participating in the study were asked to contact the investigators to arrange the interview. After seeing which organizations were represented by those volunteers, the investigators used personalized email messages or phone calls to individuals at agencies that they were aware of in the county that engage with reproductive-age women but had not been reached through the Healthy Lifestyles Coalition listserve. Despite multiple contact attempts, certain key informants the investigators had hoped to interview were not able to be reached.

Interviews were conducted individually using audio phone calls and video calls in June 2021. Prior to the interview questions, basic information regarding how long they have worked at their current organization and how long they have worked or lived in Hardin County were collected. The duration of the interviews was 15 to 60 minutes per participant, and each received a \$20 Dollar General gift card as a token of appreciation following the interview. Upon informed consent, interviews were recorded with a Sony-PX Series digital voice recorder and manually transcribed verbatim. Transcripts were labeled sequentially so as to not explicitly identify each key informant. Interviews were conducted until saturation was reached.

The Ohio Northern University Institutional Review Board exempted the study.

Analysis

Before analysis, the transcripts were reviewed to gain familiarity with the data. The interview transcripts were precoded based on primary expectations and ideas to identify and highlight the key



data wanted from the question script for the initial analysis. A concept map of the initial parent codes was made in order to see where there were differences and similarities in the data, leading to the identification of the emerged child codes. No analysis software was used and the coding process was done manually. For consistency, one researcher conducted the theoretical thematic analysis and interpretation of the interview data, while the other researcher ensured validity of the data codes by reviewing the analysis findings. Before the code tree was finalized, codes were redefined, modified, and discussed until discrepancies were resolved. The parent and child codes identified the reoccurring patterns in the data and became the 3 overarching themes and 8 subthemes due to the overlaps in the smaller data set (Table 1).

RESULTS

Fourteen key informants were interviewed, representing a variety of organizations and stakeholders in Hardin County. Participants had worked at their current organization in Hardin County for 1 to 35 years (mean = 8.7 years, standard deviation = 8.3 years). Twelve were residents of the county (4 to 50 years, mean = 27 years, standard deviation = 14.7 years). All but 1 of the participants were female, which gave a unique perspective as not only a key informant but also, in many cases, as a resident of the county themselves.

Organizations Represented by Key Informants (n=14)

- Chamber of commerce
- Church
- Community center
- Critical access hospital
- Federally qualified health center
- Head Start
- Health department
- Law enforcement
- Ohio Northern University
- Ohio State University (OSU) Extension
- Pregnancy resource center
- United Way
- Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)
- YMCA

Three main themes were characterized from information the key informants shared during the interviews. Table 1 displays the 3 overarching themes, subthemes of each main theme, and exemplar quotes.

Theme 1: Current Resources Available

Hardin County is known to be a maternity care desert and HPSA; however, there are some valuable resources in the county. Participants discussed the resources the county has readily available and sometimes not routinely tapped into, such as the federally-qualified health center, mobile health clinic, YMCA, and OSU Extension. Figure 1 shows the resources in Hardin County that the participants specifically named as potentially helpful for repro-

ductive-age women and designates the location of Kenton and Ada, the 2 communities with the largest population in the county.

While mentioning the current assets in the county, key informants also recognized there are many resources missing from both inside and outside the health care system in Hardin County that are necessary for all members of the community. For instance, one participant said:

We have no pediatricians in the county—so it's not only the health of women but it's the health of girls as well. (KI-14)

She went even further to expand on how the lack of resources can hinder the community and said:

...access is a problem, education is a problem. Unless we change generationally, it will continue as a cycle, then the children pick up the cycle and we are back to where we are before....(KI-14)

Several participants indicated that many women had to go outside of the county to access health care services or did not get needed care due to cost or transportation issues.

Theme 2: Community Observations

Many participants mentioned their observations of needs in the community or the hardships in Hardin County resulted from being a rural community and small-town culture. Some of the barriers or challenges mentioned were social determinants of health including poverty and low educational attainment, as well as geographic issues from lack of access or transportation. As a participant explained:

Our number one disparity is poverty in the county—but the health care system in the county is not going to overcome poverty itself. There are so many different players to improve the poverty within the county.... (KI-14)

Compounding these challenges is a lack of childcare options. Several participants mentioned this as a barrier preventing women from obtaining services or participating in events to improve their health. A participant shared:

...they don't always have someone to watch their kids. So you know maybe that is a stumbling point—they don't have anyone to watch their kids, so they don't even think about going to things. (KI-3)

Low health literacy and difficulty in reaching members of the community were also brought up by multiple participants. One indicated:

...we get that quite often that people believe that they are educated enough and they don't need more education. I don't know if that's a learned behavior from past generations....I think it comes down to not being educated enough about what you do 6 months prior to getting pregnant is just as important as what you do while you are pregnant. (KI-12)



Table 1. Thematic Analysis

Theme	Subtheme	Representative quotes
Current resources available	Inside the health care system	"...when you are in a very rural area and you don't have access to maybe big health organizations for care, you can still seek that care...[with the pandemic there are] virtual visits for everything.... I think that's been a good effort that will continue postpandemic." (KI-2)
	Outside of the health care system	"We have the Heartbeat of Hardin County which provides some things like car seats, smoking [sic] detectors, courses to help new moms with raising children. We have reading programs in the county, we have a GED program in the county as well that has been very beneficial in trying to help women." (KI-14)
Community observations	Determinants of health	"...I think a lot of it kind of correlates when you live in a lower income community and you have lower education status.... I don't think we are a very future-minded culture...and we don't think about how those things will affect our future or our kids' future." (KI-11)
	Barriers and needs	"I think access to care is definitely probably at the top, as far as not having professionals we need at a reasonable distance, we do have a pretty large issue with poverty here. Even if they [health care professionals] were in the county, I still think we would run into issues with transportation.... We only have 2 grocery stores [in] Kenton and 1 in Ada, besides dollar stores and such...we're kind of in a desert area." (KI-12)
	Small-town culture	"They are not very good in the county about someone coming from outside of the county and being an expert on something and telling them how it goes. They are more likely to trust a grassroots effort coming in from neighbors, friends...people that they know...a community member they trust." (KI-14)
Suggested intervention strategies	Partnerships	"...a couple of my ideas would be to partner with other agencies such as the Kenton Community Health Center, or um partnering with um ob/gyns to spread the information or hold clinics and/or um post short videos on Facebook that link with the hospital and things like that." (KI-6)
	Education and outreach	"They are going to go to some of the more entertainment components than they are to a health fair. So if we can sort of capture some of those in those areas where they are showing up because of entertainment, or they are showing up because of a club like 4H or Girls [sic] Scouts...we may be able to get to women there because that's where we have women participating in the county." (KI-14)
	Clinical	"I think women are much more comfortable with some of the women's health services when they see women health care providers or they know it's dedicated to women." (KI-14)

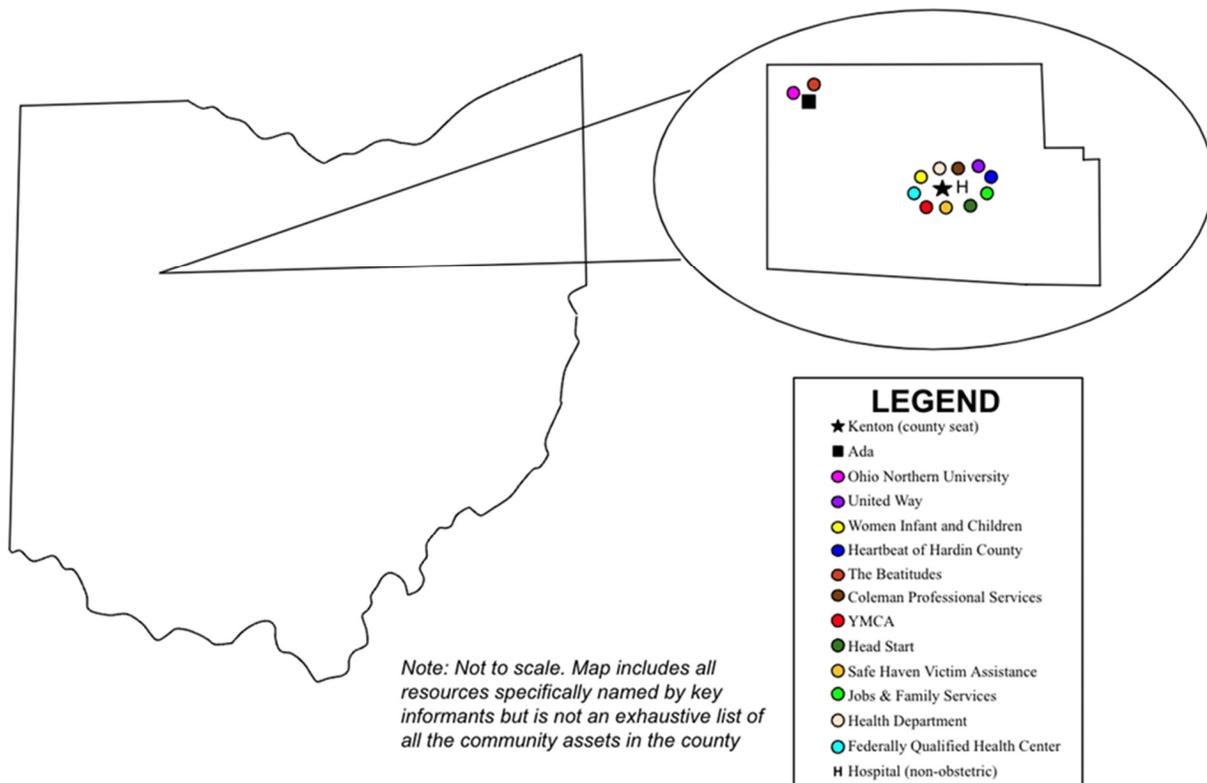


Figure 1. Resources Identified by Key Informants for Reproductive-Age Women in Hardin County, Ohio



Another said:

It's so hard with Hardin County, to try to get the word out about things is so hard. So, even if there are things available, most people don't know it.... Those of us who know what the strengths are, we can't get the information out.... How do we get to them? (KI-3)

In addition to the hardships, there was also mention of the benefits of small towns, such as their close-knit relationships and trust of other community members. A participant observed:

I think in general the community really wants to help each other, and there's a lot of people in the community that care...and want it to be better—and you don't get that everywhere, so I think that if people realized that and took advantage of that, our community would be a lot better off. (KI-11)

Theme 3: Suggested Intervention Strategies

Some key informants from Hardin County have attempted interventions to improve health and mentioned their success and failures to suggest what interventions may be best for Hardin County in the future. Suggested intervention strategies included partnerships between organizations, improving education and awareness outreach, and increasing access to clinical facilities and services. Table 2 organizes the recommendations based on the socioecological model.³⁰

Participants went on to provide additional perspectives regarding their proposed intervention strategies. One participant suggested using the small-town culture of the community as a foundation of intervention strategies and said:

I think that because there are so many close families here...if you can convince one family member, you're in [laughs], because a lot of people in the county have family in the county...if you connect with someone about their health, that they likely will share it with their family members. So I think if you can get into one person it could spiral in a positive way. (KI-2)

Several participants mentioned that incorporating entertainment would be helpful to capture and maintain residents' attention. Others reiterated the importance of childcare to enable women to utilize services, or that organizations should provide on-site activities for children. As one participant stated:

If there was something for their kids to do when they came, they'd probably come more. If they have kids already, it's all about their kids—so if they've got to deal with their kids, they're not going to come...[you need] something for the kids to do. (KI-3)

Finally, many participants indicated that in their experience, providing education and outreach at an event already attended by women, such as fairs or high school football games, increased participation as compared to stand-alone events where it was hard to attract attendance.

DISCUSSION

To our knowledge, this is the first qualitative study to interview representatives of community assets to better understand the landscape regarding health among rural, reproductive-aged women in the US. The results of this study provide important insights from key informants to improve or maintain health for reproductive-age women in rural northwest Ohio. Three themes were characterized from the data: current resources available, community observations, and suggested intervention strategies.

Key informants identified resources both inside and outside of the health care system currently available in the county. This is significant as many residents who live in rural areas have low health literacy¹⁰; further compounding this challenge is that many do not know the resources available to them.²² Raising awareness about such resources is paramount to increasing their utilization and impact. However, when examining Figure 1 it becomes apparent that many of the resources cited by the key informants are concentrated in the county seat of Kenton which may limit their accessibility to women living in the outlying areas. This demonstrates a continued need to establish more assets across the county. In ad-

Table 2. Intervention Strategies Suggested by Key Informants

Socioecological Model Level	Suggested Intervention Strategies
Individual	Provide education on the importance of preconception/interconception health and care Provide information on women's health including common diseases, symptomatology, and preventative care guidelines
Community	Create partnerships between organizations and other resources in the county Perform education/outreach in-person at events such as football games, fairs, etc and utilize media such as billboards, social media, flyers, etc Develop transportation services Provide free and low-cost clinical services Recruit more female health professionals Recruit more clinical services to be based in the county Recruit clinic staff (nurses, receptionists, etc) from the county Establish a women's health center (not exclusively focused on reproductive health) to provide comprehensive care to women Expand existing clinics' hours Provide childcare options
Policy	Adapt health education standards in schools to include further depth into women's health and preconception health and care



dition, all but 3 of the resources named by the key informants had direct links to provision of or access to clinical health services. Although key informants often mentioned issues related to social determinants of health during their interviews, they did not tend to list resources addressing such challenges (such as food banks or other charitable organizations) when asked about available resources for reproductive-age women. Key informants also mentioned important deficits in the county. For example, the lack of pediatricians may mean that girls are not receiving the clinical care they need and may be entering their reproductive-years in suboptimal health. The life course perspective must be taken into account, realizing that the foundation for good preconception health begins far earlier than the onset of puberty and involves resources both inside and outside of the health care system.³¹

Key informants also shared their observations about Hardin County. Consistent with previously-published literature,⁸⁻¹³ key informants indicated poverty as well as limited access to health care resources, transportation, and healthy foods as potential barriers to optimal health for reproductive-age women. Furthermore, many stated the difficulty in making residents aware of the resources available to them, because they may not perceive the need to avail themselves of the resources and there is not one medium readily available to communicate about the resources to all members of the community. However, there was a sense that there were strengths that the community derived from its small-town culture that could be better utilized to improve or maintain women's health.

Additionally, key informants made recommendations to improve preconception and interconception health at the individual, community, and policy levels. This is valuable as it can be used to inform the development of needed interventions. Many spoke of the need for a multipronged approach built on partnerships and utilizing both traditional and social media outlets as well as established venues that women already attend. When developing these interventions, planners should take care to ensure they are comprehensive and address both upstream (social and policy issues) as well as downstream (biomedical and lifestyle issues) factors that impact health.³¹⁻³³

Finally, 3 issues emerged that crossed multiple themes, indicating these may be priority areas to address. One of these was lack of childcare readily available in the county that serves as a barrier for women to receive services or attend programming. Another regarded the intergenerational cycle where women use older generations in the family as knowledge sources. This was indicated to be, at times, both a barrier (eg, when women have the perception that they do not need any education about a particular topic) and a benefit (eg, recognizing that information is likely to be shared among family members) when trying to raise awareness about preconception/interconception health. The third was trust, with a recognition that improving women's health in the county will like-

ly not be successful if it is not a grassroots effort or if residents don't see their peers represented.

There are 2 major limitations to this study. The key informants consulted were extensive, but not exhaustive. For example, there was not an opportunity to speak with a physician or with staff from certain nonprofit organizations, such as food banks, who may have been able to provide further insights. In addition, the population of Hardin County is not racially or ethnically diverse³⁴; therefore, while these findings and recommendations may be helpful to counties with similar demographic profiles, they may not be applicable in rural communities with more diversity.

Future studies could utilize the methodology described here to ascertain barriers and recommendations for preconception and interconception health in other type of communities, such as urban areas, or other rural areas such as rural Appalachia, which has distinct cultural differences when compared to northwest Ohio. This information could then be used to guide potential interventions to improve preconception/interconception health at the individual, community, and policy level. Once the interventions are implemented, repeating interviews with key informants may yield insights into their effectiveness, needed changes, and new gaps to be addressed.

PUBLIC HEALTH IMPLICATIONS

Good preconception/interconception health is important for all reproductive-age women, regardless of their intent to conceive, as it reflects their personal health.¹⁻⁴ In addition, given that fact that nearly half of pregnancies in the US are unintended,³⁵ ensuring good preconception/interconception health can help to mitigate risks that could adversely affect a pregnancy.¹⁻⁴ However, women may not know of or utilize local resources that can improve or maintain their health.²² Key informants can be consulted in order to collate information regarding community assets. Furthermore, they can provide perspectives regarding new strategies or services. The findings from this study will be helpful not only to Hardin County but also for similar rural communities. Communities that are different than Hardin County can utilize the methodology shared here to do their own studies to gain insights relevant for them.

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APPENDIX. Key Informant Interview Guide

INTRODUCTION

Thank you for taking the time to participate in this interview. During the next half hour, I will be asking questions about women's health in Hardin County. First, I would like to hear about your beliefs on the health needs of your community. I will then ask questions about health care access for women in your community. We will end our discussion by asking you to provide any information that you feel is important that we may have missed. The information you give us will allow us to better understand what women in Hardin County believe to be their most important health needs. It will also give us information on how to best provide education about prepregnancy health.

We would like to audio record our discussion today so that I can go back and listen to make sure we don't forget anything you say. You may ask for the recorder to be stopped at any time.

At the end of the interview, we will gather your contact information so we can send you a \$20 Dollar General gift card as a thank you for your time. We will not use your name or give any information that would allow someone to recognize you. Do you give us permission to interview you for this study and share your anonymous answers publicly?

Do you have any questions before we begin?

Begin Recording

Please state your current job title and the name of the organization you work for.

How long have you worked at [insert name of organization]?

How long have you lived in Hardin County?

Follow-up: If you do not live in Hardin County, how long have you worked in Hardin County?

I will ask questions about "pregnancy health" and "pregnancy care". "Pregnancy health" is the state of health and well-being during the years when women can become pregnant, usually up to age 45 or so. "Pregnancy care" refers to health care services that improve women's health and the health of the baby before becoming pregnant. When we ask questions about your thoughts regarding health for women in Hardin County, we are talking about younger women who are under 50 years old.

Do you have any questions?

We are going to begin with talking about the needs of women in your community.

PERCEIVED NEEDS

1. What do you think is the most important health need for women in Hardin County?

Follow Up: What do you think are the causes of the health problems that you mentioned?

Follow Up: How are women affected by these needs or problems?

2. Is there anything being done to solve the health problems that you talked about? If so, could you explain them to me?

Follow Up: What specific activities or services are targeted at women? If so, what are they? If not, what could there be?

Follow Up: Do you think more can be done for women in the community, and if so, what could be done?

3. A recent study identified high blood pressure, overweight/obesity, smoking, and lack of exercise as problems for women in Hardin County. Do you think these are important issues to be addressed? Why or why not?

Probe: Do you think these problems are bigger than the ones you told me? Why or why not?

4. Many women we talked to in Hardin County did not want information on how to be a healthy woman or how to have a healthy baby. Why do you think that might be?

Follow Up: What do you think is the most important information to educate and talk to women about?

Follow Up: What do you feel like is the best way to educate and talk to women in Hardin County about women's health?

Probe: When is the best time to inform women and why?

Now that we have talked about the health needs, we are going to talk about the access to health care and the barriers that women in your community face.

BARRIERS TO CARE

1. What barriers or challenges do women face when trying to use health care services?

Probe: Would you say the barriers/challenges for women are more because of personal reasons like not having the time, reasons out of their control like transportation, or reasons regarding the providers or clinics themselves?

Follow Up: What do women do if they cannot access care in your community?

2. Why do you think so many women are turning to doctors and midwives only after they get pregnant or if they are having trouble getting pregnant, and not before?

Follow Up: How do you think we can talk to women about utilizing other health services prior to pregnancy/trying to get pregnant?

3. What do you see as the strengths in your community that can help people be healthy or stay healthy?

Probe: Are there services, organizations, resources, or facilities there? If so, what do they provide?

Follow Up: How do you think we can talk to women about utilizing these strengths [insert their response]?

4. Are you aware of the mobile health clinic from Ohio Northern, called HealthWise?

Follow Up: Have you recommended women ages 18-45 in the community use it? Why or why not?

Follow Up: How do you think we could increase use of HealthWise services among women ages 18-45?

5. What support do you think women in your community need for improving their health (whether that's from a partner, other family member, community, organization, etc)?

CLOSING

Those are all of the questions I have for you today. Before we end, is there anything that you feel is important that we missed and you would like to tell me?

Are there any questions you have for me?

Thank you again for taking the time to participate!

End Recording

Collect address to send gift card.

Note:
 Questions 2 under "Perceived Needs" and "Barriers to Care" were adapted from Bortolus R, Oprandi NC, Rech Morassutti F, et al. Why women do not ask for information on preconception health? A qualitative study. *BMC Pregnancy Childbirth.* 2017;17(1):5. <https://doi.org/10.1186/s12884-016-1198-z>
 Question 3 under "Barriers to Care" was adapted from Carnahan LR, Zimmermann K, Peacock NR. What rural women want the public health community to know about access to healthful food: A qualitative study, 2011. *Prev Chronic Dis.* 2016;13:E57. <https://doi.org/10.5888/pcd13.150583>