


“Nobody talks about it”: Preconception health and care among women in the rural, Midwestern United States

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Abstract

Introduction: Good preconception and interconception health are fundamental to optimizing women's health and reducing risk factors for adverse maternal–infant outcomes. Although rural women in the United States tend to experience health disparities, no published qualitative studies have focused on their preconception/interconception health. The purpose of this study was to determine what rural, Midwestern women perceive to be their most pressing health needs and effective ways to provide outreach and education regarding preconception/interconception health and care.

Methods: Non-pregnant, reproductive-age women in Hardin County, Ohio, regardless of parity, were recruited through convenience sampling. Semi-structured interviews with four domains (beliefs and behaviors; perceived needs; knowledge and information sources; barriers to care) were conducted in May–June 2021 until saturation was reached. Qualitative methods were used to analyze data and determine themes. Binomial tests were used to compare selected demographic characteristics of participants to the county's reproductive-age residential female population.

Results: Nineteen women aged 20–44 years were individually interviewed. Comparing race/ethnicity, education, and insurance status, participants appeared to be representative of the county population. Four themes were identified: (1) needs regarding healthcare and other resources; (2) lack of preconception/interconception care and perceived unimportance due to intergenerational knowledge transfer and paucity of healthcare providers; (3) difference in understanding of the term “women's health” and low health literacy; and (4) suggested interventions including education and outreach.

Conclusion: Interviews with rural Midwestern women revealed needs regarding preconception/interconception health and care and potential ways to raise awareness. These findings can inform strategies to improve rural women's health and birth outcomes.

Keywords

female, health services accessibility, preconception care, rural population, women's health

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Introduction

Preconception and interconception health encompass overall health for non-pregnant reproductive-age women. “Preconception” refers to a woman's health prior to her first pregnancy; “interconception” denotes health between pregnancies. Both focus on biomedical, behavioral, and social issues that may pose a risk to the health of a woman or future baby. Improvements in preconception and interconception health are fundamental to optimizing women's personal health as well as reducing risk factors for adverse maternal–infant outcomes.^{1–4}

The life course theory upholds need for good preconception and interconception health because the entire life course of the mother before conception affects pregnancy

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outcomes.⁵⁻⁷ The life course theory brings together longitudinal biomedical modules, the early programming model, and cumulative pathway model.⁵⁻⁷ This conceptual framework takes into account the biological, social, economic, and environmental factors that affect health as well as health behaviors throughout life and across generations, considering both cumulative effects and critical periods for intervention.^{2,5,6} Therefore, pregnancy is not the only period of time that impacts maternal and infant health; waiting for a woman to receive prenatal care may be too late to impact many of the risks that adversely affect a pregnancy, especially as nearly half of pregnancies in the United States are unintended.^{2,8}

Approximately 18 million reproductive-age women live in the rural United States.⁹ Women living in rural areas are often affected by social determinants of health such as lower socioeconomic status and a lack of resources (e.g. health insurance, access to healthy foods, transportation).¹⁰⁻¹⁴ Compounding these challenges is the fact that fewer and fewer obstetric units are operating in rural areas of the United States, leaving women with long travel and/or wait times to access needed care.¹⁵⁻¹⁷ For women of reproductive age, these complex issues can lead to health disparities, poorer health status, and increased risk of adverse pregnancy outcomes as compared to women living in other areas.¹⁰⁻¹² Indeed, data have shown that women living in rural areas of the United States have comparatively high rates of severe maternal morbidity and mortality.¹⁸⁻²⁰ As a result, rural experts rank maternal and infant health as a top concern,²¹ and the US Department of Health and Human Services²² as well as the Centers for Medicare and Medicaid Services⁹ have recently renewed attention to improving rural maternal health.

To our knowledge, however, there have been no published qualitative studies to date focusing on preconception/interconception health among rural women in the United States. Therefore, we wanted to gather data to add to the limited literature on this topic and to inform the development and implementation of interventions to improve health and pregnancy outcomes for rural women. The purpose of this study was to determine what rural women perceive to be their community's most pressing health needs and effective ways to provide outreach and education regarding preconception/interconception health.

Methods

This qualitative study used in-depth interviews to gather perspectives from rural, Midwestern women about their health needs and ways to raise awareness about women's health and preconception/interconception health. The Ohio Northern University Institutional Review Board deemed the study exempt (protocol number ND-PH-041421-1).

Setting

Hardin County, Ohio, is a rural, non-core county with no metropolitan or micropolitan cities, towns, or urban clusters of 10,000 residents or more, which is the smallest and most rural designation a county can have.²³ The population is roughly 31,480.²⁴ The county is considered a Primary Care Health Professional Shortage Area, meaning there are not enough primary care health professionals to serve the county, as well as a maternity care desert due to the absence of maternity health care services.^{15,25}

Sample and recruitment

We recruited participants through convenience sampling. We placed signs in various places around the county (e.g. public libraries, post offices, gyms, hair salons, food pantries, community centers, schools). In addition, organizations including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Head Start program, a pregnancy resource center, and extension services agreed to share study information with their clients. Recruitment materials specified the purpose of the study. Interested women contacted the researchers via phone or email to indicate willingness to participate. Inclusion criteria included non-pregnant women of reproductive age (18-45 years), irrespective of parity and intent or ability to conceive in the future, who were permanent residents of Hardin County. We conducted interviews until saturation in information and themes were reached.

Interview procedure

We conducted individual interviews in May and June 2021 via video call, phone call, or in-person based on participant preference. We offered three different modalities so that participants could pick the one most feasible for them given the COVID-19 pandemic and other potential challenges such as lack of high speed Internet or childcare. Both female researchers were present for each interview, with one conducting the interview. No other individuals were present other than the participant and researchers. We collected informed consent and permission to audio record from each participant verbally before the interview began as approved by the institutional review board (IRB). We first introduced ourselves and explained the reason for the study and our roles. We then asked about demographic characteristics (age, race/ethnicity, town of residence, number of children, education, employment, and insurance status). We conducted the interview using a guide consisting of 16 semi-structured interview questions with the following domains: beliefs and behaviors; perceived needs; knowledge and information sources; and barriers to care. Questions were open-ended and included probe and follow-up questions as needed; some questions were adapted from previous qualitative studies with rural or

reproductive-age women.^{26,27} One question in the guide slightly differed in wording based on whether the participant was nulliparous or not. Interviews lasted from approximately 30 min to an hour per participant. We used a Sony-PX Series Digital Voice Recorder to record the interviews and manually transcribed them verbatim. After each interview, we gave participants a \$20 general gift card.

Data analysis

We used Microsoft Office Excel 2019 (Redmond, WA) and IBM SPSS 25 (Armonk, NY) to analyze the demographic data. We utilized descriptive statistics to calculate frequencies and binomial tests to compare selected demographic variables of the sample (race/ethnicity, education, and any insurance coverage) to the values reported by the United States Census Bureau²⁴ for all reproductive-age residential females in Hardin County. Statistical significance was determined a priori as $p \leq 0.05$.

Prior to directed content analysis, we reviewed the manually transcribed data to ensure accuracy with the recordings of the interviews. We then pre-coded transcripts based on expectations of findings.²⁸ To identify and highlight the key data from each domain for the initial theoretical thematic analysis, color coordination of patterned phrases and words were used to create the parent codes. A secondary analysis using concept mapping of the parent codes allowed for grounded child codes to emerge from the phrases and keywords in the transcripts and to the discovery of similarities or differences in the data. One researcher with formalized training in qualitative methodology conducted the initial theoretical thematic analysis and interpretation of the interview data manually for consistency; no analysis software was used. The second researcher ensured validity of the data codes by reviewing the analysis findings. With each analysis, there was an iterative process of redefining, modifying, and any discussing code discrepancies between both researchers until the final code tree was completed which ensured reliability of the data. The final parent and child codes became the overarching themes and subthemes due to the overlap in the smaller data set.

Results

We interviewed 19 women from across the county. Twelve women were interviewed via phone calls, six women were interviewed via video calls, and one person was interviewed in-person. All participants finished the interview. Table 1 shows participants' demographic characteristics. Participants' ages ranged from 20 to 44 years old (yo). Ninety-five percent were White, not Hispanic, consistent with the overall demographic composition of reproductive-age women in Hardin County ($p=0.63$). While the percentage of study participants who had a college degree or any health insurance coverage was higher than the

Table 1. Demographic characteristics of interview participants ($n=19$), qualitative study on preconception/interconception health and care among reproductive-age women in Hardin County, Ohio, 2021.

Characteristic	n (%) ^a or mean \pm SD
Age, years	32.3 \pm 7.4
20–24	4 (21.1)
25–34	9 (47.4)
35–44	6 (31.6)
Race/ethnicity	
White, not Hispanic	18 (94.7)
Black, not Hispanic	1 (5.3)
Number of children	
0	6 (31.6)
1 or 2	8 (42.1)
3 or more	5 (26.3)
Education	
High school graduate/GED	4 (21.1)
Some college	9 (47.4)
College graduate	6 (31.6)
Health insurance	
Private insurance from job, partner, or parents	12 (63.2)
Insurance from the Ohio Health Insurance Marketplace or Healthcare.gov	1 (5.3)
Medicaid	5 (26.3)
None	1 (5.3)
Employment	
Full-time	8 (42.1)
Part-time	2 (10.5)
Out of work	1 (5.3)
Homemaker	5 (26.3)
Student	3 (15.8)

SD: standard deviation; GED: general educational development.

^aPercentages may not total 100 due to rounding.

reproductive-age female population of Hardin County, the differences were not statistically significant ($p=0.181$ and $p=0.321$, respectively).

We determined four main themes from the qualitative data (Table 2).

Perceived needs

As a Primary Care Health Professional Shortage Area and maternity care desert, there are inherent needs that are not able to be met in Hardin County. Understanding unmet needs and barriers to maintaining health are crucial to develop and target effective interventions, but the significant factor of this theme is that the women themselves were the ones identifying the needs which primarily included social determinants of health.

One need identified by women in Hardin County was for access and affordability for healthcare services; many women stated they had gone without healthcare due to this problem. They cited an overall lack of healthcare in the

county for primary care, mental health, pediatrics, obstetrics/gynecology, and family planning services. As one participant stated, “There is no access to . . . birth control or talking about women’s health . . . unless you want to go to the Carry Out [convenience store] and spend \$90 on condoms” (31yo, multiparous).

Affordability was a common issue, regardless of insurance status. Two women with commercial insurance shared, “The insurance sometimes is a battle, um, and having to jump through hoops to be able to receive the services that you need” (31yo, nulliparous). “Unless you’ve met the deductible it’s nearly impossible to go to the doctor” (32yo, primiparous). A participant enrolled in Medicaid indicated “I find that there are providers who do not take Medicaid here, um, and it makes it harder to get access for health care” (33yo, multiparous).

Challenges related to access and affordability were not limited to healthcare, however. Women spoke of the difficulties associated with having only three grocery stores in the county:

One thing there could be—offering positive, healthy choices for food, all we have is fast food, I think if we had healthier options—I know people say cook from home, but they don’t, that’s why McDonald’s line is always out the door, and that’s not healthy, it’s not good. (44yo, multiparous)

Transportation was often cited as a need as well. “Hardin County is not a place you can walk to get around, and there is no public transportation” (30yo, nulliparous).

Several acknowledged the poverty rate in Hardin County as a barrier to healthcare and healthier lifestyles. Women also said that they needed more resources including child-care, time, and support. Often those needs overlap:

Well, lately it’s been [a challenge] finding time, because especially with COVID, like, you’re not supposed to bring extra people to appointments but I have three children and my husband works, so sometimes finding a babysitter or time to go to the doctor is a hurdle. (44yo, multiparous)

Another participant shared, “Lots of times there are signs in the doctors’ offices that say you can’t bring your children. Well, if you can’t afford a babysitter, can’t find a babysitter—then you just opt not to go.” She went on to say that while she often hears “you have to carve out time for yourself” . . . it’s my weakest area . . . I feel like the wellness of the mothers always goes on the backburner” (44yo, multiparous).

Participants also reported that women often face stigmas, pressure, and embarrassment when attempting to maintain their health and seek care. One participant explained the problems behind this when saying, “. . . parents don’t want their daughters to get on birth control because they think it means they’re going to go out and have sex, and that’s not necessarily the case, right?” (38yo,

multiparous). Another participant said, “A little less—I hate to say it—judgment and not feeling as shamed to be having issues or complications—I think that is important” (20yo, nulliparous). Several women spoke of stigma associated with women’s health or reproductive health—“I just feel like there’s a negative, almost vulgar stigma attached to a woman’s reproductive area” (38yo, multiparous). When referring to reproductive health, another participant shared “It’s something that’s almost taboo now, nobody talks about it” (44yo, multiparous).

Beliefs and behaviors of preconception/interconception health and care

Preconception and interconception health and care are crucial components of maternal and child health, but often not acknowledged. In general, participants lacked understanding of the preconception and interconception periods as being as important as the pregnancy period and spoke of limited opportunity and ability to receive preconception or interconception care.

Many participants spoke on the apparent intergenerational cycle in the county, which causes women to have the perception that they are already aware of what is essential preconception/interconception care as a result of older generations in the family being used as knowledge sources. One participant explained this when saying, “. . . to get a new mom [to change] when she has mom, grandmothers and aunts telling her they did it the other way, and they were fine, it’s generational and that’s really hard to break” (31yo, multiparous). Another participant shared, “I don’t go around looking for advice on this sort of thing, I just take it in from people around me” (28yo, nulliparous).

In addition, many participants explained that they did not have knowledge of what preconception/interconception care is or its importance. A few indicated that they took prenatal vitamins, but only after they became pregnant, while others mentioned only seeking pre-pregnancy care when they had difficulties conceiving. The emphasis on health was once they were pregnant, not before. As one participant stated,

I think that partly because you don’t necessarily think about um, leading up to the pregnancy, like, I think that people just think it’s the baby that’s important, once you’re pregnant it’s like taking care of the baby that’s important . . . I just think that women . . . think that prenatal care is once I’m pregnant, not leading up to. (43yo, multiparous)

One participant even mentioned how the conversations prior to pregnancy were nonexistent with physicians and said

. . . nobody speaks to you about it until you are pregnant. I have never went to a doctor and a doctor has never asked me, “hey do you plan on getting pregnant, are you thinking about

Table 2. Major themes and findings from interviews with rural reproductive-age women in Hardin County, Ohio, regarding preconception/interconception health and care, 2021.

Theme	Explanation of theme	Finding	Representative quotes
Perceived needs	What women perceive to be their most pressing health needs or barriers to being and staying healthy	Access and affordability are the main concerns when facing barriers to care, as well as a lack of resources in the rural community for both healthcare and other social determinants such as healthy foods and transportation. Lack of childcare and stigmas placed on women's reproductive health were also challenges	"... a lot of our county is very rural, so if you don't have transportation or a provider closer or somebody you feel comfortable with that may definitely affect being able to see somebody, you know. If... you live out in the middle of nowhere, that makes it definitely more difficult" (38yo, multiparous) "[personally don't have a lot of babysitters, but also if there were more clinics like nearby and I didn't have to drive so far, it might be easier to find care... I have to go out of the community, normally. I have to go out of Hardin County normally to go to the doctor" (29yo, multiparous) "There is just a negative stigma about taking care of your health, your female health" (38yo, multiparous) "I just had always known [about pre-pregnancy health] from what my mom had told me" (37yo, multiparous) "I think that part of it too is a generational thing. We see a lot of poverty, and we see a lot of what I feel is generational poverty where, it's like, 'this is how my mom did it, or this is how my grandma did it, and this is how we've always lived, and it works, and it's fine, it's not broken'" (43yo, multiparous)
Preconception/interconception health and care	What women do for preconception/interconception health and care, the knowledge they have of its importance, and why they do (or don't) seek preconception/interconception care	There is an intergenerational cycle suppressing the advancements of health literacy. There is often no preconception/interconception care being utilized in the county, as women are unaware it is crucial for positive maternal and child health outcomes and are not receiving information about it from healthcare providers	"Um, I think of it as all the things related to health that are specific to women so I mostly think of like reproductive stuff even though it probably doesn't exclusively include reproductive stuff... it means, like, eating right, exercising, but also, like, using protection when you, like, have sex..." (28yo, nulliparous) "... if something is wrong with me, it's not as well-investigated or known about it because I am a woman" (30yo, nulliparous) "... [it would be good to know] things to expect at different decades at your life, whether you're trying to get pregnant or not" (41yo, primiparous) "Um, I think it would be beneficial to have, um, if there was like a woman's health group specifically or introducing that thing like in schools or when they are learning about different changes... where younger women could go and feel comfortable enough talking about that kind of stuff, their bodies, their health..." (20yo, nulliparous) "Um, I think a lot of people in Hardin County are, like, bull-headed... I feel like they don't reach out to resources to better [their health]" (22yo, multiparous)
Understanding of women's health	What women perceive women's health to consist of, the gaps in knowledge of women's health and research, and the need for knowing guidelines for preventive and proactive women's health care	The term "women's health" does not hold the same definition for all the women in the county, making messaging for education and awareness difficult. The lack of knowledge and research about gender-specific health is a concern for women, as well as the lack of health literacy surrounding guidelines for age-appropriate care	
Suggested interventions	What women think could be done for the community to improve health outcomes for women	Education and outreach should be provided to all girls and women, regardless of their age, in both school settings and public locations, such as community events. There is a need to raise awareness of the resources already in place, as many women felt that they or others did not know of all the community assets	

yo: years old.

having a baby?" Like, it doesn't get talked about. They only discuss whatever it is that you're at the doctor's appointment for. So it's an afterthought. (44yo, multiparous)

Another participant indicated,

As hard as it is to get into those types of people, I don't even know if these doctors would even take you before you are pregnant—I know I struggled for my second child to get the doctor I wanted because she wouldn't even see you until you were pregnant. (44yo, multiparous)

Understanding of women's health

When discussing the perceived needs and recommendations for intervention, the theme of the ill-defined meaning of women's health and what is encompassed emerged. Participants often conceptualized it differently than one another, with the majority focusing on the reproductive aspects. Some women even mentioned that although they knew women's health extended to every domain of health, their initial thoughts were toward reproductive health.

While participants differed in their conceptualization of women's health, expressing a desire to better understand preventive and/or proactive care for women's health was common. Participants freely voiced their concerns on the lack of health knowledge in their county. One participant explained, "I wish it [health information] could be more, like, consolidated and more, um, clear and easy and obvious to get for everybody" (30yo, nulliparous). Another participant shared,

I recently went to an ob/gyn and it was my first time and I'm 28. And she told me, like, years and years ago I should have had, like, a pap smear and other normal stuff like that, and I was like "nobody ever told me this," I don't know what a pap is and I don't want anybody smearing it and I just don't want to do this . . . I feel like that should have been done, like I should have been talked to about this when I was like 20, not 28. (28yo, nulliparous)

Another stated, "It's a massive hurdle, people don't want to feel stupid, they don't want to say that they don't know what to do or what steps to take" (41yo, primiparous).

In addition, participants expanded their concerns by mentioning the lack of research and knowledge of women's health in general by even their physicians. As one participant stated, "I know there's not enough studies done of how women's [hormonal] fluctuations through life and through the month . . . impacts how her body reacts. Those kinds of things aren't necessarily studied enough" (41yo, primiparous). Another indicated,

I feel like my doctor doesn't, like, know a whole lot . . . I wish they would, at least the female doctors—um, like the gynecologists—I wish they would know more about

[women's health] or be able to give me more information. (23yo, nulliparous)

Women also mentioned feelings of being ill-equipped to navigate the health care system, ask questions about their health problems, or take proactive measures for their health.

Suggested intervention strategies

It is important that the women of Hardin County feel a part of the initiative to improve health outcomes in the county. Participants provided ideas on what could be done for their community to improve women's health.

Using education to improve health outcomes for women was suggested frequently by participants. Responses ranged from starting education about health and all it encompasses at an early age, such as kindergarten, while others mentioned it would be beneficial for more education on women's health at later stages of adulthood:

I know I took some health class in 9th grade in high school and, um, I feel like it was definitely, it was definitely good to have that so early on for people for who, for who, you know, maybe sexual activity was part of their lives at that time . . . But for me it wasn't, and now that was like half my life ago, and now . . . I'm like "what the heck did we talk about in that class in 9th grade?" So, definitely, I feel like I need a refresher, I need, like, you know, uh, 9th grade health class but for 30-year-olds. (33yo, nulliparous)

Other suggestions included outreach events at public locations, such as churches, libraries, or local business, or at community events, such as the county fair, to help ensure that all women in the community were being reached. Some of the outreach suggested included the use of flyers and pamphlets with important health information distributed in the community or via mail, while others mentioned social media, texts, or email as the best way to disseminate information.

In addition to developing new strategies, participants also suggested increasing awareness of existing community assets. Many of the participants mentioned they were not sure of all the resources available, or they knew of other women who did not know or utilize all that they could in order to maintain their health:

I don't necessarily know what resources and programs are that are out there. I think that the more information can be given, the better, so maybe just trying to get out there a little bit more and show women, you know, what is available in the community. (38yo, multiparous)

Discussion

Our findings validate general concerns for rural women's health reported in the literature regarding less access to

health care resources, fewer health care providers available, long travel or wait times to receive care, and lack of transportation to receive health care or purchase healthful foods.¹⁰⁻¹⁴ However, we found it striking that although participants live in an area where chronic health conditions (e.g. hypertension, obesity) and unhealthy behaviors (e.g. tobacco use) are prevalent among reproductive-age women,²⁹ the majority cited upstream factors such as social determinants of health, not downstream factors such as clinical health concerns, as their community's most pressing needs. We cannot glean from the interviews whether this is due to a general lack of knowledge about clinical factors or whether it indicates acceptance of such health behaviors due to the structural limitations present in their community or intergenerational knowledge transfer.

In addition, we identified three findings that have implications for potential interventions to improve preconception/interception health and care for rural women in the United States. The first is that in general, participants did not recognize the preconception or interconception periods as times to address health or behaviors that may impact pregnancy. For example, many participants talked about the importance of prenatal vitamins during pregnancy but not prior to conception. Most of the dialogue regarding pre-pregnancy care surrounded infertility or concerns about conceiving rather than germane topics such as smoking cessation or chronic disease state management. The shortage of healthcare providers in the area and paucity of such conversations with healthcare providers further compounds the issue. While some previously published studies with reproductive-age women in the United States have shown a recognition that preconception health impacts pregnancy outcomes, the majority have found a lack of awareness regarding preconception health.³⁰⁻³⁷ Our findings demonstrate a need to raise awareness both inside and outside of the healthcare system about the concepts of preconception and interconception health among rural, reproductive-age women. Based on participant feedback, engaging women through comprehensive medical care and channels outside of the health care system are central strategies to increase understanding of preconception/interconception health. Organizations including health departments, schools, churches, and community groups can utilize social media and outreach events at various locations to raise awareness on this topic.

The second finding regarded participants' conceptualization of women's health. Previous literature suggested that rather than using the terms "preconception health" or "interconception health," the terms "women's health" or "women's health management" may be better to appeal to all reproductive-age women and not inadvertently exclude women not currently planning a pregnancy.³⁵ However, we found that most participants viewed women's health as primarily reproductive health, not a global term representing overall health and wellness. Moreover, many women

talked of stigma or embarrassment associated with women's health. The term "women's health" may not resonate as intended with rural women. The "Show Your Love" campaign to promote preconception wellness in the United States recently re-branded its tagline to "Show Your Love. Your Health Matters."³⁸ As the revised messaging is disseminated, it will be interesting to see whether rural women will be exposed to it and if it will prompt them to modify their health behaviors.

The third finding has direct implications for routine data collection and surveillance for women in Ohio who have recently had a live birth. The Ohio Pregnancy Assessment Survey (OPAS) collects self-reported data on maternal conditions, behaviors, and experiences that occur before, during, and shortly after pregnancy.³⁹ This standardized survey assesses possible barriers that may prevent women from attending a post-partum appointment; current choices include lack of insurance, lack of transportation, lack of time, inability to be away from work, and inability to get an appointment.³⁹ While these barriers to receipt of healthcare services were brought up by the participants in our study, they also talked of others not specifically included in OPAS including lack of childcare, out-of-pocket costs, long travel times to healthcare providers, and stigma associated with women's health. Although OPAS does contain an "other" option for the barriers question with a free text box, the formalized choices provided in the OPAS survey and similar surveys conducted in other states should be revised to better systematically capture potential barriers faced particularly by rural women so that the experiences of all residents can be more fully characterized and addressed.⁴⁰

A limitation of this study is the use of a convenience sample; however, when compared to Census data, the study participants appeared to be representative of the county's female reproductive-age population. While the demographic composition of Hardin County is similar to contiguous rural counties, results may not be generalizable to more diverse rural areas of the United States. In addition, women younger than 18yo were not eligible to participate in the study and we recruited no participants younger than 20yo; gaining insights from adolescents and younger women is important given the life course model of preconception/interconception health. Other potential limitations were due to logistical issues of the study. Although participants seemed comfortable to share their thoughts and experiences, an existing relationship had not been established between the interviewers and the participants prior to study commencement. Participants were able to select the interview method that worked best for them given the COVID-19 pandemic and other obstacles they may have had to taking part in the study. While the multiple interview formats allowed more women to participate in spite of potential barriers, it may also have resulted in varied levels of trust with the interviewers. The

interview guide was not pilot-tested, although some questions were adapted from previous studies.^{26,27} Transcripts were not returned to participants for comment or correction, but because the recordings were clear and complete the audio records were able to be consulted as needed during transcription and data analysis.

Notwithstanding these limitations, this study is significant as it is the first to describe attitudes and experiences regarding preconception/interconception health and care among rural Midwestern women in the United States. Women's perspective about their needs and potential solutions are important because their buy-in is key to improving health outcomes.⁴¹ Understanding their lived experiences and impact of social determinants of health is crucial for developing effective interventions strategies to address the health needs of rural women, and such input from community members improves effectiveness of interventions.⁴¹

Future studies should examine preconception/interconception health and care for rural adolescents and younger women as well as for rural women from diverse populations of race/ethnicity, sexual orientation/gender identity, and disabilities. Future studies should also identify the most suitable term(s) related to overall health and wellness that rural women will relate to as well as to better assess rural women's awareness of health concerns and important clinical factors related to their health. As many rural women were not aware of community assets, additional interviews with local key informants should be performed to identify underutilized resources and glean recommendations to increase use. Effectiveness of existing social media campaigns and other programs to improve preconception/interconception health should be explicitly explored among rural women. This information, along with our findings, can be used to develop interventions to improve health for rural women. Interventions must address needed upstream social systems change as well as immediate biomedical and lifestyle risk factors⁴²⁻⁴⁴ and take into account the challenges rural women face with the intergenerational transfer of knowledge and low health literacy. Novel strategies, such as the use of community health workers or physician extenders, should be explored in the short term to help alleviate the lack of healthcare access rural women experience. In the longer term, cross-sector policies and programs aimed to reduce geographic disparities are needed to achieve health equity.⁹

Conclusion

Good preconception/interconception health is important for all reproductive-age women. Interviews with rural Midwestern women revealed needs related to access and affordability of healthcare; education and reducing stigma; and other challenges such as lack of transportation, healthy foods, and childcare; intergenerational knowledge transfer;

low health literacy; and unfamiliarity with available resources. They also suggested potential interventions to raise awareness about health. These findings can inform strategies to improve rural women's health and birth outcomes.

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Author contribution(s)

Akia D Clark: Conceptualization; Formal analysis; Investigation; Methodology; Writing – original draft; Writing – review & editing.

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Guarantor

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Supplemental material

Supplemental material for this article is available online.

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