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Psychobiological, clinical, and sociocultural factors that influence Black women seeking treatment for infertility: a mixed-methods study

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Objective: To provide a comprehensive and multidimensional description and conceptualization of the experiences of Black women seeking treatment for infertility.

Design: Convergent parallel mixed-methods study combining retrospective chart review data and semistructured interview data.

Setting: Private infertility clinic.

Patient(s): African American/Black women between 18 and 44 years of age who presented for an initial infertility evaluation with a male partner between January 2015 and September 2019 at an infertility clinic in the metropolitan Washington D.C. area.

Intervention(s): None

Main Outcome(s): Treatment seeking.

Measure(s): Psychobiological, clinical, and sociocultural factors.

Result(s): Along with the psychobiological, clinical, and sociocultural domains, we understood that Black women who sought treatment for infertility were older and overweight, had complex gynecological diagnoses, and experienced infertility for long periods of time. The delay in seeking treatment was possibly because of a low perceived risk of infertility, poor understanding of treatment options, inadequate referral patterns of primary care providers, and limited social support. Further, Black women experienced delays in seeking treatment because they attempted lifestyle-based self-interventions before considering medical interventions. Facilitators to care included psychological distress, complex gynecological medical history, and finding culturally competent providers.

Conclusion(s): The study findings show that Black women in the United States are vulnerable to disparities in healthcare delivery, especially within reproductive endocrinology. Our findings highlight areas where Black women are experiencing missed opportunities for teaching, early identification, and early referrals for infertility-related concerns. Future studies should seek to reduce barriers to infertility treatment at the clinical and policy levels. (Fertil Steril Rep® 2022;3:29–39. ©2022 by American Society for Reproductive Medicine.)

Key Words: Treatment seeking, Black women, infertility, access to care

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Black women in the United States have twice the prevalence of infertility (14%) than non-Hispanic White women (7%), and they are half as likely to seek treatment for family building (1–5). In the United States, it is estimated that 7.4 million women of childbearing ages 15–44 years have used some type of infertility service for family building (6), with the majority being White women who are older, wealthy, highly

educated, and married (1–4). It is known that up to 50% of White women who experience infertility seek treatment (5). However, the characteristics and rates of Black women with infertility who seek treatment have not been documented, and factors contributing to the disparities seeking treatment have not been comprehensively explored.

Infertility has well-established consequences for women's health, contributing to depression, anxiety, distress, loss of control, and lower quality of life (7–9). It is particularly crucial to address the consequences of infertility in the Black community because literature has documented that the inability to bear children is highly stigmatized in the Black culture (10, 11). Although costs may contribute to decreased treatment seeking in this population, Black women continue to lag in the usage of infertility treatment in most of the 19 states adopting state-mandated coverage of fertility treatment (12–14). Because disparities in treatment seeking remain an issue for many Black women in the United States, there seems to be additional unmet and undocumented needs, beyond providing safe, accessible, and affordable options for infertility treatment, to reduce the negative effects of this damaging disease.

Previous studies examining treatment seeking in women in the United States have found that the factors influencing treatment seeking are multifactorial. Common facilitators to treatment seeking were high desire for parenthood, especially when their partners also agreed; high social support encouraging treatment; and advanced health literacy (15–17). Common barriers to treatment seeking were internalized stigma, having access limited by obligations of their professional careers, low or no social support to seek treatment, and negative perceptions of the clinical environment (17–19).

However, in the United States, factors affecting treatment seeking have predominately been explored in samples of mostly White, educated, and wealthy women and have yet to be explored comprehensively among Black women, beyond those from low-income groups (20). Documenting the experiences of Black women who seek treatment for infertility will provide foundational contributions to the literature and could later help in developing targeted interventions or policy reform to enhance use. Therefore, the purpose of this study was to explore the psychobiological, clinical, and sociocultural facilitators and barriers influencing Black women who seek evaluation for infertility using a mixed-methods approach.

THEORETICAL FRAMEWORK

A theoretical framework adapted from the literature on treatment seeking and Chrisman's Health Seeking Process Model guided this study (21). The Chrisman's Health Seeking Process Model explores the relationship of the sociocultural imperatives of everyday life that affect the patterns of health beliefs and practices through its 5 conceptual domains: symptom definition, illness-related shifts in role behavior, lay consultation and referral, treatment actions, and treatment completion. These domains integrate the biologic, clinical, psychological, social, and cultural factors that form the complex environments in which individuals pursue evaluations

and act on and adhere to treatment recommendations, to varying degrees. Figure 1 shows the areas where the model was incorporated to guide qualitative and quantitative data collection of variables from the electronic medical record and semistructured interviews.

Mixed Methods

Previous research had failed to show a complete understanding of the patterns and practices of Black women who are experiencing infertility, because it often relied on using only one type of data, which was either solely qualitative (11) or solely quantitative (1). A mixed-methods approach in health sciences research is well suited for investigating complex, multilevel processes and systems (22). Using the 2 types of data can help leverage/reduce the limitations of each data set being combined (22, 23) and provide a robust theoretical and conceptual basis for future studies involving Black women who experience infertility. This study used mixed methods, as opposed to a single approach alone, because it provided multiple ways to see, investigate, and understand the experiences of Black women with infertility (24, 25).

MATERIALS AND METHODS

Study Design

This study used a convergent mixed-methods design (23), using data from a retrospective chart review and semistructured interviews of Black women who sought treatment for infertility at a large infertility clinic. Quantitative and qualitative data were collected in tandem and analyzed separately; the integrated findings are presented in this article. The process is shown in Figure 2.

Ethical Considerations

The institutional review board approval for this study was obtained at Duke University Health System with permission from the private fertility clinic's research team. The fertility clinic is a privately owned entity with no academic affiliation. Approval for analyses of these data was obtained from the Schulman institutional review board.

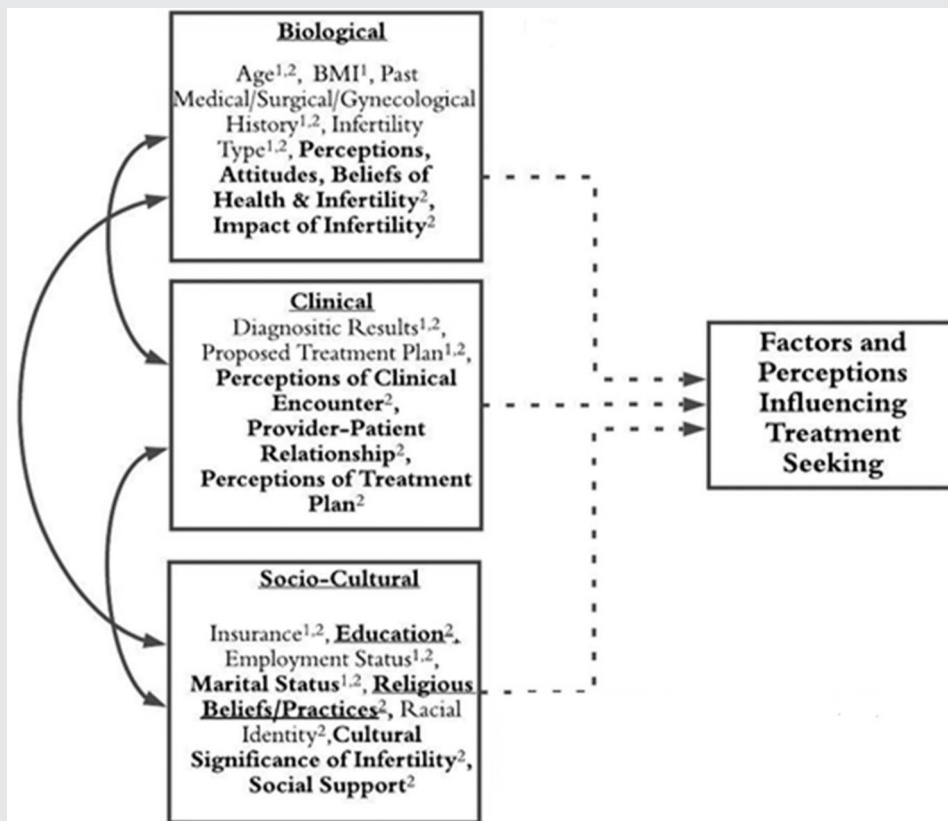
Setting

Recruitment for both the quantitative and qualitative portions was conducted at a large infertility clinic in a metropolitan area on the east coast of the United States. This clinic was selected because it was situated in a state with active private insurance mandates to cover infertility treatment services. The clinic offered broad and comprehensive services, such as treatment for male and female factor infertility, treatment for single and partnered men and women, third party services, cryopreservation, pregenetic testing, and screenings, with holistic and mental health services.

Study Samples

Eligible women for both data types had the same inclusion and exclusion criteria. The inclusion criteria were self-identification as African American/Black, aged between

FIGURE 1



Theoretical framework on factors and perceptions influencing the treatment-seeking process of Black women experiencing infertility. BMI = body mass index. The *bold text* represents factors and perceptions guided by the Chrisman's Health Seeking Process Model (1977). The X¹ represents data abstracted from electronic medical records (quantitative data) and the X² represents data collected from semistructured interviews (qualitative data).

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18 and 44 years, and presenting for an initial infertility evaluation with a male partner between January 2015 and September 2019. Although the presence of male partners was not required at the initial evaluation, diagnostic results would have to specify that women were seeking treatment with a male partner. We excluded single or unpartnered women; women who sought fertility cryopreservation; and women seeking conception services who were in a same-sex partnership, because they may experience additional or different factors that influence treatment seeking and initiation.

Quantitative Approach

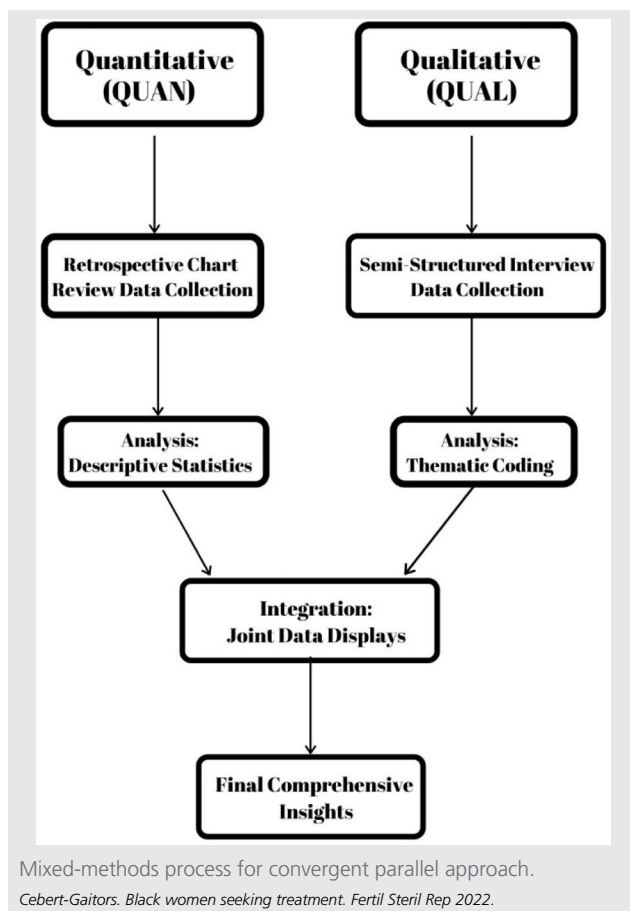
The quantitative portion described the psychobiological, clinical, and social characteristics of Black women seeking reproductive endocrinology evaluation using retrospective chart review data.

Data Collection

We generated a query of all the visits by Black women who had a reproductive endocrinology visit at the infertility clinic between January 2015 and September 2019 (N = 8,200 visits),

representing 3,326 unique patients. A sample of 391 (11.8%) women was randomly selected from the 3,326 Black women seeking treatment at the infertility clinic during the time-frame. Please note that the quantitative data in this article is a portion of the data collected for a larger mixed-methods study. To accomplish a regression analysis for the aim of the larger study, a power analysis was conducted, requiring a sample consisting at least N = 332, as in a sample of 332 individual Black women, to achieve 80% power. To account for potential missing variables, researchers agreed to obtain data from at least 390 charts. The random sample consisting 391 patients was obtained using a SAS software (SAS Institute Inc., Cary, NC) random number generator function to assign a unique random identification number (ID) to each of the 3,326 patients. The 3,326 random IDs were then sorted in ascending order. Starting at the top of the ordered random IDs, the patient records for each sequential, random ID were reviewed and screened for study eligibility. The 3,326 unique patient charts were all of Black women who sought treatment at the clinic for a variety of reasons, which included but was not limited to those seeking treatment for cryopreservation, oocyte donation, intended gestational surrogates, and other groups of people who did not fit the study's inclusion and

FIGURE 2



exclusion criteria. The first 391 patients (random IDs) that met the eligibility criteria were included in the sample. A primary abstractor completed the manual abstraction of the study variables for all 391 patients. Data were abstracted from the electronic medical record, which included patient intake records and other dictated clinician notes (e.g., physician, nurse, and sonographer).

Measurements and Quality Assurance

The comprehensive list of measures collected for the quantitative portion for this article's aim is detailed in Table 1. For quality assurance, we randomly selected 30 (7.5%) of the 391 Black women in the sample to assess interrater reliability (26) of the data abstraction and coding process. A second reviewer reabstracted the predefined set of study variables for the 30 patients. We set our quality threshold for reliability as a kappa coefficient of 0.70 per variable.

Quantitative Data Analysis

Data were analyzed using the SAS software (version 9.4). Descriptive statistics were used to detail the psychobiological, clinical, and social characteristics of the 391 Black women in the analysis sample.

Qualitative Approach

The qualitative portion discussed the psychobiological, clinical, and sociocultural perspectives of Black women who sought treatment for infertility through a one-time semistructured interview.

Recruitment and Data Collection

The eligible research participants were recruited through emails directly from the research staff, an advertisement on the clinic's website, community events, and social media between September 2019 and January 2020. The interviews were conducted after the completion or refusal of an initial treatment plan, a condition in the aim of the larger study. The participants had the option to complete the recorded interviews in person or over the phone. The participants were compensated \$35 for their time in completing a short demographic survey and the interview. Based on previous literature that examined factors influencing health seeking for infertility (11), it is evident that there has been no consensus on the number of Black women that need to be interviewed to achieve theoretical saturation. Theoretical saturation is a qualitative research methods term used to describe the point at which collecting more data is unnecessary, because it has been determined that no new data or insights will emerge (27). Therefore, the study team agreed on a target sample of 20 women. To remain consistent with the coding process, transcripts were reviewed in groups of 3 until no new themes emerged (theoretical saturation achieved) (28, 29). Saturation was achieved at 12 interviews; however, recruitment continued until the end of that calendar month. Therefore, a total of 13 interviews were included in the final sample.

Measurements and Trustworthiness

We developed a semistructured interview guide with a series of closed and open-ended questions and probes to elicit information to understand the influences on the seeking infertility treatment. The interview questions were determined and developed a priori based on the literature that examined barriers and facilitators to treatment seeking (30). The guide allowed the interviewer to maintain consistency in data collection; however, other factors relevant to treatment seeking were welcomed and explored as they emerged. Further, Figure 1 shows how questions in the qualitative portion sought to collect equivalent data as the quantitative. For example, participants were asked, "Do you believe your age influenced your decision to seek treatment for infertility? Why or why not?"

Although some women completed several rounds of treatment or eventually sought treatment at other facilities, the main emphasis of the interviews was regarding their initial experiences of seeking treatment at the large infertility clinic. The participants then completed a short demographic survey that collected nonidentifiable information regarding the participant's age, length of time experiencing infertility, and sociodemographic factors such as income, education, and employment. The interviews lasted between 25 and 80 minutes, were recorded using an encrypted recorder, and

TABLE 1

Sample characteristics of the chart review sample and the semistructured interview samples.

Domain	Chart review, quantitative (N = 391)	Interview, qualitative (N = 13)
Psychobiological factors	Median (25th, 75th)	Minimum, maximum
Age (y)	36 (32, 39)	32, 44
Length of time experiencing infertility before seeking evaluation (mo)	24 (12, 36)	1, 120
	n (%)	n (%)
Body mass index >25	276 (70.6)	NC
One or more comorbidity diagnosis ^a	55 (14.2)	NC
One or more gynecological disorders ^b	155 (39.9)	
Clinical factors		
Primary infertility	302 (77.2)	11 (84.6)
Fertility factors		
Female-only factor	178 (45.6)	4 (30.8)
Male-only factor	60 (15.4)	2 (15.3)
Combination male and female factor	112 (28.7)	1 (7.69)
Unexplained/other factor	40 (10.3)	6 (46.2)
Social factors		
Employed	356 (92.0)	13 (100)
Qualifying insurance	294 (75.2)	NC

Note: Median (25th, 75th) percentile reported for continuous variable because of skewness. NC = not collected/no comparable data.

^a Diagnoses could be hypertension, anxiety, diabetes, or thyroid disorder. Diagnoses were abstracted separately initially and then collapsed together to form the variable presented in the table.

^b Disorders could be fibroids, endometriosis, or polycystic ovarian disease. Diagnoses were abstracted separately initially and then collapsed together to form the variable presented in the table.

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were transcribed verbatim. Interview transcripts were checked for accuracy by the primary investigator (M.C.G.) and a second member of the team of paid research assistants.

Qualitative Data Analysis

The transcripts were uploaded into the QSR International's NVivo 12 software. Attribute and descriptive coding schemes were used as the first cycle of coding to label the general characteristics of the participants (27), such as length of time experiencing infertility, income, age group, and responses to the semistructured interview questions. Then, descriptive coding was used to identify the main ideas and responses that emerged. Values coding was then used as the second cycle coding method. Values coding is an Affective Method of coding that allows for understanding individual perspectives by intentionally investigating the participant's values, attitudes, and beliefs (27). Finally, thematic analysis was used to explain and describe the findings (31). M.C.G. developed the initial coding scheme with definitions. Three transcripts were selected at random for the second coder to code. The differences in codes and interpretation were resolved through discussion.

Mixed-Methods Integration

Quantitative results and qualitative themes were integrated to provide a comprehensive, multidimensional description and conceptualization of the psychobiological, clinical, and sociocultural experiences of Black women who sought treatment for infertility. We used the parallel-databases variant strategy, which is commonly used in convergent designs, to combine the 2 types of databases by merging all data after they were individually analyzed and interpreted (23). This integration strategy was shown using joint displays, which are a visual representation of integrated quantitative and

qualitative data (23, 32). Using this strategy is favorable because it visually portrays the findings and interpretations that support the study's claims (33). The joint displays can be helpful in identifying convergent and discordant findings between the quantitative and qualitative data sets (22, 23, 25). We categorized the themes and discussed how the themes within the psychobiological, clinical, and social domains were similar, different, and related across the 2 data sets (27). Finally, a third column provided an integrative summary of the mixed-methods analysis.

RESULTS

The mixed-methods study integrated data from 391 patient charts and 13 individual interviews. Sample characteristics for both data types are found in Table 1. For the quantitative sample, the median age was 36 years and the median time of experiencing infertility before seeking treatment was 24 months. For the qualitative sample, ages ranged from 32 to 44 years, and the time of experiencing infertility before seeking treatment ranged from 1 month to 120 months (10 years). The comparison and merging of the data resulted in numerous convergent, divergent, expanded, and emergent findings. The joint data display of the psychobiological, clinical, and sociocultural description of Black women who sought an evaluation for infertility is found in Table 2. The names presented in the joint data display table are pseudonyms that were chosen by the participants.

Psychobiological Barriers and Facilitators

For this article, we defined psychobiological as a category of factors that examined biologic characteristics and their influences on psychological and behavioral decisions. In examining barriers to care, quantitative and qualitative data converged, and qualitative data expanded on the reasons

TABLE 2

Joint display of the factors influencing treatment seeking among Black women.

Factors	Quantitative	Qualitative	Mixed-methods analysis and integration
Psychobiological	The median age when women sought treatment was 36 (32–39) years.	This didn't apply to me: low-risk perceptions of needing infertility treatment.	Expansion—the quantitative data and the qualitative data align. The qualitative data expands our understanding of why Black women wait longer to seek treatment.
	Median time experiencing infertility: 24 (12–36) months.	I never thought I'd have any problems having kids, my mother has birthed 6 children and I come from a lot of very fertile people. But my mother had me at 19 so I never imagined having any problems. It was a surprise to me...Quite honestly, it wasn't on my radar as something that I needed to worry about. And I honestly didn't know it was going to be this important to me... I never thought of it as being my issue. (Joy, 43 years) ^a	Black women who seek treatment for infertility are often older, experience infertility for significantly longer time than the treatment guidelines and have lower perceptions of their risk for infertility.
	1 or more comorbidity (14.2%).	Tired of feeling this way: emotional distress prompting self-referral ...every time there was a period, I would get sad. I was like oh my periods back again. Which is funny because when I was single. I was happy like, 'yay I'm not pregnant!' Once I got married, you know, I would be sad and even when my husband would find out....we'd both get sad. (Sylvia, 39 years) ^a	Divergence—the quantitative data does not align with the qualitative data.
	Anxiety or Depression diagnosis (<2.0% for each diagnosis respectively).		Black women who seek treatment often experienced high levels of fertility-related psychological disturbances, however, they were least likely to have documented psychological disorders.
	Overweight or obese with body mass index scores of ≥ 25 kg/m ² (63.5%).	Failed first line treatment: looking beyond lifestyle modifications. So, the first 7 years it was just kind of like hey let's try to be more active, follow some of these apps, change our diet, increase our vitamins, you know stuff like that we were trying to do on our own. Year 7. I want to say for sure, your 7 was right before we purchased our home was when we decided to talk to the doctors about it. (Mary, 32 years) ^a	Emergence and Expansion—the qualitative data expanded on the quantitative data.
	Median time experiencing infertility: 24 (12–36) months.		Black women who sought treatment were more likely to be overweight, despite previous attempts at adopting lifestyle modifications. Black women who attempt their own interventions may experience longer time periods to seeking treatment.

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TABLE 2

Continued.

Factors	Quantitative	Qualitative	Mixed-methods analysis and integration
Clinical	<p>Of the women who sought treatment (N = 391), 30.2% were likely to experience fibroids and 36.3% were likely to experience tubal disorders. 39.9% had 1 or more gynecological disorder.</p> <p>Median time experiencing infertility: 24 (12, 36) months.</p>	<p>It's complicated: physician referral after complex gynecological challenges. Well, I never really tried to have a child. In one of my other marriages, I had gotten pregnant and it was an ectopic pregnancy. So, I had both of my tubes removed and I had like fibroid issues and cysts and things of that nature, where I had to have, uhm, an ovary removed. (Meg, 37 years)^a</p> <p>Slipped through the cracks: delayed referral despite clinical disclosure. My husband had cancer when he was a baby. Actually, before we got married, he told me I can't have kids. He's like, are you sure you want to marry me? And I'm like, did the doctor tell you that? He's like, no. So, I was like, how do you know you can't have kids? I'm just sure I can't have kids. So I didn't believe him.... (Sylvia, 39 years)^a</p>	<p>Convergence—the qualitative data aligns with the quantitative data.</p> <p>Black women who sought treatment experienced multiple gynecological diagnoses when they sought treatment.</p> <p>Expansion—qualitative data provides additional information on the quantitative data.</p>
Sociocultural	<p>No relevant data.</p> <p>75.2% of women who sought treatment had qualifying insurance for infertility.</p>	<p>Have they treated someone like me?: valuing reviews from previous Black female patients. I specifically researched... a profile of different plethora of different doctors. And I was able to, you know, research him heavily. Look at different reviews. And specifically, there's a website called Fertility IQ and I was looking for doctors that had African American patients... I literally was like, OK, which doctor had the most reviews from African American, you know, patients?" (Ella, 36 years)^a</p> <p>I wish I would have known: low awareness of treatment options. In my neighborhood Black women are the ones that get put on birth control because we the ones who having them, you know what I mean ... I said I didn't know anybody who went through a situation similar. I know people who had to get on birth control so they don't get pregnant, like intrauterine devices. Like this is the kinda stuff that, you know, I was exposed to that I knew about. I didn't know anybody who needed assistance with getting pregnant. (Nae, 39 years)^a</p>	<p>Divergence—The quantitative data does not align with the qualitative data.</p> <p>Black women who seek treatment are often not aware of the treatment options available to them, despite having qualifying insurance.</p>

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TABLE 2

Continued. Factors	Quantitative	Qualitative	Mixed-methods analysis and integration
	No relevant data.	Not coffee table conversation: delayed peer disclosure This is not just coffee table conversation. I'm not opening myself up to other people's energy surrounding the topic, their opinions, [and] their unsolicited advice. (Hannah, 44 years) ^a	Emergent—there was no quantitative data that supported the qualitative data. Black women experienced limited social support when they sought treatment because of limited disclosure to social circles.

^a All names provided are pseudonyms that were chosen by the participants. Cebert-Galtors. Black women seeking treatment. *Fertil Steril Rep* 2022.

why these delays occurred. The quantitative findings showed that Black women who sought evaluation were often of advanced age (median age 36 years), experienced infertility a median of 24 months before reproductive endocrinology evaluation, and were overweight or obese with body mass index scores of ≥ 25 kg/m² (63.5%). The qualitative findings supported that these women experienced barriers that delayed care because of perceptions of having a low risk of being clinically infertile and a desire to adopt lifestyle modifications before seeking treatment. The women often attributed this low-risk perception (low-risk, meaning participants in the study had a general belief that they would not be affected by infertility) on the basis of their past medical histories and family histories that seemingly did not raise any concerns for future fertility issues. Further, participants discussed attempting to enhance conception by adopting new nutritional and lifestyle strategies. When these strategies did not help them achieve their family-building goals, they eventually sought treatment.

A facilitator to treatment seeking was psychological distress. Black women in the qualitative sample often reported high levels of fertility-related psychological disturbances; however, <5% of the quantitative sample had documented psychological disorders. Women who eventually sought treatment were often prompted with the emotional distress of not being able to conceive. The participants often stated that they experienced numerous tearful and negative reactions to their menstrual cycle, which prompted them to seek treatment for their challenges.

Clinical Barriers and Facilitators

A clinically associated barrier that influenced the prolonged wait time to treatment (median 24 months) was due to inadequate clinical referrals to reproductive endocrinology. Many women shared that they discussed concerns about trying to conceive with their general practitioners before seeking specialized care. However, there were continued delays in treatment seeking owing to not receiving referrals to reproductive endocrinology and potentially inadequate clinical assessments.

A clinical facilitator included referrals by providers after gynecological challenges. In the quantitative sample, the women who sought treatment had comprehensive testing and revealed more structurally associated abnormalities on examination, most notably fibroids (30.2%) and tubal disorders (36.3%). Women experienced mostly primary fertility (77.2%), of female factor only origin (45.6%). This converged with the qualitative data. Women who sought treatment early often had previously occurring gynecological concerns that were being treated by surgeons or other health providers. It was after receiving treatment for complicated gynecological issues that some of the participants were educated by physicians that to conceive, they would need to use assisted reproductive technologies.

Sociocultural Barriers and Facilitators

Barriers to seeking treatment included not knowing available treatment and financial options and having limited social

support. A total of 75.2% ($n = 294$) of women in the quantitative sample who sought treatment had qualifying private insurance for infertility treatment. This contrasted the qualitative data because many participants discussed delays in treatment seeking because of limited knowledge of infertility and the availability of treatment. However, an emergent barrier (where there was no quantitative data that supported the qualitative data) showed that the participants discussed delaying disclosure of infertility experiences to peer groups. This limited social support led to delays in seeking care, because many of them discussed finally seeking treatment once recommended by a member in their social circles.

Women who found a provider who they felt was culturally competent positively influenced treatment seeking. There was no comparable quantitative data; however, women in the qualitative sample expressed an importance in having providers who had culturally diverse clientele when they considered seeking treatment for their infertility concerns. Although clinical competence was valued, proven cultural competency, as evidenced by positive reviews from diverse populations, seemed to be regarded higher.

DISCUSSION

This study sought to provide a comprehensive multidimensional description and conceptualization of Black women's experiences with seeking treatment for infertility using a convergent mixed-methods design approach. Along with the psychobiological, clinical, and sociocultural domains, we understood that Black women who sought treatment for infertility were of advanced age, overweight, had complex gynecological diagnoses, and experienced infertility for long amounts of time. This delay in treatment seeking was possibly because of low perceived risk for infertility, poor understanding of treatment options, inadequate referral patterns of primary care providers, and limited social support. Further, Black women experienced delays in treatment seeking because they attempted lifestyle-based self-interventions before considering medical interventions. Facilitators to care included psychological distress, complex gynecological medical history, and finding culturally competent providers.

Although the Black women in this study were highly educated, employed, partnered, and from high socioeconomic groups, they were vulnerable to barriers that were similar to those experienced by Black women from lower socioeconomic groups. Previous studies examining the experiences of ethnic minorities from low-resourced areas found that common barriers to early-stage treatment seeking for infertility were internalized stigma, having access limited by the obligations of their professional careers, low or no social support supporting treatment seeking, and negative perceptions of the clinical environment (11, 18, 34, 35). The women in our study were situated in a region with private insurance mandates, and this specific fertility clinic provided their patients with access to over a dozen satellite locations to manage their needs. Nevertheless, these women faced additional barriers to treatment evaluation because of inadequate knowledge of resources, poor clinical management at the pri-

mary care level, and limited social support. This was evident because many were not evaluated by or referred to reproductive endocrinology within 12 months of infertility symptoms, which is the gold standard of treatment (36). Further, this leads us to posit that the disparities in fertility access and utilization may come with additional barriers for Black women who live in states without insurance mandates.

In addition, the qualitative portion highlighted a need for further exploration of the psychological and emotional status of Black women who seek treatment for infertility. Less than 5% of the charts reviewed reported diagnosed anxiety or depression. However, symptoms related to prolonged sadness and grief were reported when participants in the qualitative sample discussed the impact of infertility. It is well established that infertility is often accompanied by severe psychological effects, including anxiety, depression, and social isolation (37). Further, national estimates suggest that the incidence of depressive symptoms in non-Hispanic Black adults is nearly 20% (38). This may suggest that either Black women who experience fertility-related mental health challenges may be underreporting at their intake appointment or may not be having their concerns adequately assessed by providers for mental health diagnoses.

Additionally, this study highlights other areas where Black women are experiencing missed opportunities for teaching, early identification, and early referrals for infertility-related concerns. Women in the qualitative portion of the study reported seeking treatment when taught or referred by general practitioners. Primary care providers are known to be the gatekeepers of referrals to specialized care (39). However, Black women in the United States are more likely to experience inequitable care delivery in reproductive health because of provider bias and institutionally racist practices than White patients with similar diseases (40–43). Therefore, this study suggests that Black women are experiencing care not equivalent to the gold standard treatment. The barriers and facilitators to fertility-related education and referral practices among general practitioners should be further explored.

Finally, the importance of culturally compatible/sensitive providers was widely reported among the women in the qualitative sample. The literature has shown the racial concordance between patient and provider increases trust and perceived quality of decision making (44). However, this compatibility is a huge barrier for Black women because estimates show that of the 1,100 certified reproductive endocrinologists, only 3% are African American (45, 46). There were no African American reproductive endocrinologists in this clinical setting where these women sought treatment. Therefore, patients sought physicians who were known to have a compatible communication style that was patient-centered and agreeable with other Black women. It is important to note that the study did not collect specific characteristics of the providers (e.g., gender, age, and general medical background, among others). However, our findings suggest that future research should examine associations between provider characteristics and communication style on treatment-seeking patterns among Black women who experience infertility.

CONCLUSION

Although these findings were a result of a rigorous research process, they are not without limitations. First, the study was descriptive, exploratory, and cross-sectional in nature; therefore causation could not be established. Further, the findings represent a sample of Black women from 1 state and 1 fertility clinic; therefore, generalizability to the larger population of Black women experiencing infertility is limited. Further, there was the potential for recall bias because treatment may have occurred for some participants as early as 5 years before data collection. However, we were granted access to patient records to cross-check notes and confirm certain details if it became crucial to understand for the larger study's aims. Nevertheless, the findings of this mixed-methods study contribute to our limited understanding of Black women experiencing infertility in the United States. Additionally, the merging of qualitative data helps to elucidate reasons why current disparities and inequities in reproductive endocrinology exist while beginning to provide the foundation for future intervention development. Moreover, the study shows us that Black women in the United States are vulnerable to disparities in healthcare delivery, especially within reproductive endocrinology.

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