Miscarriages during the pandemic: Relationships between social determinants of health and

patient experience

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A Signature Honors Project Presented to the
Honors College
East Carolina University
In Partial Fulfillment of the
Requirements for
Graduation with Honors
by
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Greenville, NC
May, 2023


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**Introduction**

Miscarriage is considered the most common complication of pregnancy in the US, with 750,000-1,000,000 cases reported annually and 15-20% being clinically reported (Bardos et al., 2015). In the United States (US), miscarriage is the natural loss of pregnancy before twenty weeks of gestation (Alves & Rapp, 2022). Early pregnancy loss refers only to miscarriage in the first trimester. However, the first trimester is when most (10-20%) miscarriages occur (Alves & Rapp, 2022).

Women suffering from a miscarriage often experience an array of consequences resulting from their experiences with health care providers (HCPs). The negative experiences associated with biased HCPs can include racism, discrimination, decreased communication, limited access to resources, and limited autonomy in decision making. Furthermore, these experiences can be exacerbated by an individual's social determinants of health.

Social determinants of health (SDOH) are defined as the conditions in the environments in which people are born, work, live, learn, worship, play, and age that influence an array of health risks and outcomes (Healthy People 2030, 2020). SDOH include type of insurance, education, income, age, employment status, marital status, and race/ethnicity (Singh et al., 2017). SDOH may be responsible for 50% of US variations in health outcomes and are a large contributor to health disparities (White House, 2022).

Women of lower socioeconomic status often experience disadvantages and inequality in healthcare, specifically antenatal care (Origlia et al., 2017). Type of insurance a woman has often dictates the quality of care that she will receive and restricts her access to a limited number of providers to choose from (Origlia et al., 2017). Educational status of a woman also plays a role in the level of attention that she will receive from the HCP. Studies have shown that a lower education level has a negative impact on the quality of communication between the client and the HCP (Rademakers et al., 2012). The income of a client can contribute to the quality level of health care received. Furthermore, a woman's income determines what resources she is able to receive and what orders she is able to follow. A woman with a lower income can often experience frustration and decreased satisfaction when given health care orders that she cannot afford (Rubio et al., 2007).

Age is an additional factor that plays a role in the satisfaction of a woman with her care. Studies have shown that, overall, satisfaction levels are higher with older clients (Jaipaul &

Rosenthal., 2003). Employment status of a woman can contribute to a lower quality of care delivered by the HCP. If a woman is unemployed, they tend to have a lower income. Women with lower incomes are more likely to have government insurance or no insurance at all, which can lead to problems paying for medical expenses and resources such as medical bills and prescription drugs (Becker & Newsom, 2003). Furthermore, the marital status of a woman can have a significant impact on her health care experience. Women who are not married are often the victim of HCP biases in the context of family planning and contraception (Solo & Festin, 2019).

Although the abovementioned SDOH play a significant role in the care provided by HCPs, race/ethnicity is the primary influencing factor. A recently published report from the White House on the maternal health crisis states that conscious and unconscious bias from HCPs strongly contribute to the disparities in quality health care services, biases often associated with the race/ethnicity of a client (White House, 2022). In a qualitative study in Denver, Colorado, 24 out of 27 African American women reported that their race negatively affected their prenatal care experience (Kalata et al., 2020). Women who identify as an ethnic minority are often faced with racial discrimination in the health care field which decreases the quality-of-care of services provided by HCPs (Sorkin et al., 2010). Thus, the recent White House report (2022) emphasizes the necessity for an increased understanding of the conscious and unconscious biases expressed by HCPs and the accountability that needs to be taken when poor maternal health outcomes result.

There is a dearth of research on women regarding impacts of SDOH within the realm of miscarriage care and more so during the COVID-19 pandemic. According to the White House report (2022), there is incomplete and inconsistent data collection of race, ethnicity, and other demographic information, which makes it difficult to locate which populations are experiencing poor health outcomes. Further, there is a lack of studies assessing SDOH on perceptions of miscarriage care from HCPs, and even fewer conducted within the US. These gaps in research need to be addressed to improve women's perception of quality of care provided by HCPs during the traumatic experience of having a miscarriage. No woman should be discriminated against due to her race/ethnicity or SDOH, especially not during a time in which she has lost a child. Additionally, findings from this study will provide insight into the patient experience received post-miscarriage during the most isolating periods of the COVID-19 pandemic. The current

study aims to examine the relationships between the SDOH (age, income, health insurance status, marital status, education level, employment status, and ethnicity/race) and the patient experience of women in North Carolina (NC) who miscarried during the COVID-19 pandemic.

## Methods

### Design

The proposed study is a secondary data analysis that used quantitative data from the parent study. The parent study used a mixed methods design to identify and explore the experiences, perceived stress, coping strategies, and social support of women in North Carolina after suffering a miscarriage between March 30, 2020, and February 24, 2021 (period of mandated quarantine), of the COVID-19 pandemic and their preferences in receiving psychosocial care. The parent study also aimed to examine women's level of psychological distress 1-2 years after the loss. The University and Medical Center IRB (Institutional Review Board) at East Carolina University approved the study before the commencement of recruitment.

### Sample and Data Collection

Purposeful and snowball sampling were used to recruit participants. Inclusion criteria included: 1) women (as identified by biological sex), 2) experienced a miscarriage of a desired pregnancy between March 30, 2020 – February 24, 2021, 3) reside in North Carolina, 4) 18 years or older, and 5) able to read and write in English or Spanish. Recruitment and data collection occurred between May and September 2022. Participants were recruited by sharing access to a Research Electronic Data Capture (REDCap) survey link that was posted on a public Facebook page created for the parent study. The survey link was shared with NC-based Facebook miscarriage support group administrators who were asked to share the link with their users. A study flyer was also created with information on the study, the primary investigator's contact information, and the link to the survey in both English and Spanish. The study flyer was posted and delivered to various NC-Facebook groups, health departments, and OB/GYN facilities.

The survey included the electronic consent form, screening and demographic questions, and study questionnaires. The screening questions addressed the previously mentioned inclusion study criteria. The survey took approximately a total of 20 minutes to complete. This secondary data analysis study analyzes demographic and patient experience data from the parent study.

**Measures**

The demographics survey consisted of 18 items on age, marital status, race, ethnicity, income, education level, employment status, type of insurance coverage, residential area, and additional reproductive history questions. Patient experience was measured using a modified CAHPS Clinician and Group Survey (CAHPS), as seen in Table 1. The patient experience survey contains 9 items and utilizes a 3-point Likert scale with 1 = no, 2 = yes somewhat, 3 = yes, definitely. The possible total score could range from 7 to 21, higher scores indicate a better patient experience.

**Table 1**

*Patient Experience Survey*

| Items |
| --- |
| 1. Did this provider explain things in a way that was easy to understand? |
| 2. Did this provider listen carefully to you? |
| 3. Did this provider show respect for what you had to say? |
| 4. Did this provider spend enough time with you? |
| 5. Did this provider address your emotional needs? |
| 6. Did this provider offer you information on support groups, therapy, or counseling services? |
| 7. Did this provider schedule a follow up visit for you or call to check on you after the initial visit? |
| 8. Did this provider order a blood test, x-ray or other test? |
| 9. If yes, did this provider's office follow up to give you results? |

**Data Analysis**

Data was analyzed using SPSS 28. Prior to analysis, the data was checked for missing data, outliers removed, and any deviation from normalization removed. Descriptive and inferential statistics were used to describe and interpret data, respectively. Two-step cluster analysis was used to identify naturally occurring subgroups of the study sample who had good and poor health service provider experiences. Chi-square tests of independence were used to examine relationships of social determinant of health categorical variables with subgroups of women who had good and poor health care provider experiences. Independent-samples t-tests were used to compare continuous age and total provider health care score. Significance was assessed with p-values less than .05.

## Results

**Participant Characteristics**

Our sample included a total of 71 participants. Most were non-Hispanic (93%), of which 83% were White. The majority were married (78.9%), with a bachelor's degree or higher (52.1%), with an income of 51k or more (69%), had private insurance (73.2%), and were employed full-time (54.9%). The mean of the total patient experience survey score (range 7-21) for the sample is 13.4 ($SD = 4.4$). See Table 2 for full sample demographic characteristics.

**Table 2**

*Demographic Characteristics*

| Characteristic | N = 71 |
|---|---|
| Age in years, mean (*SD*) | 32.68 (6.249) |
| Ethnicity, n (%) | |
|   Hispanic | 5 (7.0%) |
|   Non-Hispanic | 66 (93.0%) |
| Race, n (%) | |
|   Caucasian/white | 59 (83.1%) |
|   African American/Black | 6 (8.5%) |
|   Native Hawaiian/ Other Pacific Islander | 1 (1.4%) |
|   Am Indian or Alaska Native | 3 (4.2%) |
|   Multi/Mixed Race | 1 (1.4%) |
|   Other | 1 (1.4%) |
| Married, n (%) | |
|   Never married | 5 (7.0%) |
|   Committed relationship | 8 (11.3%) |
|   Married | 56 (78.9%) |
|   Divorced/separated | 2 (2.8%) |
| Education, n (%) | |
|   High School Graduate/ GED | 9 (12.7%) |
|   Some Technical School | 4 (5.6%) |
|   Some 4-year college | 8 (11.3%) |

| | |
|---|---:|
| Bachelor's Degree | 18 (25.4%) |
| Some Graduate School | 4 (5.6%) |
| Graduate Degree/Masters or Doctorate | 15 (21.1%) |
| Employment Status, n (%) | |
| Currently Unemployed | 17 (23.9%) |
| Currently Seeking Employment | 2 (2.8%) |
| Currently Employed Part-time | 13 (18.3%) |
| Currently Employed Full-Time | 39 (54.9%) |
| Income, n (%) | |
| </= 25k | 7 (9.9%) |
| 26-50k | 15 (21.1%) |
| 51-75k | 15 (21.1%) |
| 76-100k | 8 (11.3%) |
| 101-150k | 15 (21.1%) |
| 151-200k | 6 (8.5%) |
| >200k | 5 (7.0%) |
| Insurance Status, n (%) | |
| None | 3 (4.2%) |
| Private | 52 (73.2%) |
| Medicare/Medicaid | 14 (19.7%) |
| Other | 2 (2.8%) |

Table 3 presents results of the relationship between the SDOH and the patient experience.

A little over half of participants (52%) reported a poor patient experience. Annual household

income ($p$ = .022) and employment ($p$ = .039) were significantly associated with good patient experiences. Women who worked full-time and reported a household income of \$51,000 or higher reported significantly better experiences with their provider, compared to those who did not work full-time and reported a household income of \$50,000 or less. The following SDOH measures were not significantly different between those reporting good or poor experiences: education, insurance, marital status, residence, race/ethnicity.

**Table 3**

*SDOH Measures and Provider Experience*

| SDOHs (n =71) | Poor Experience (n = 37) | Good Experience (n = 34) | $p$ | X^2 |
| --- | --- | --- | --- | --- |
| Household Income | | | .022 | 5.43 |
| <=50k (n = 22) | 16 (43.2%) | 6 (17.6%) | | |
| 51k+ (n = 49) | 21 (56.8%) | 28 (82.4%) | | |
| Employment | | | .039 | 4.26 |
| Full Time (n = 32) | 21 (56.8%) | 11 (32.4%) | | |
| Other (n = 39) | 16 (43.2%) | 23 (67.6%) | | |
| Education | | | .119 | 2.44 |
| <Bach (n = 34) | 21 (56.8%) | 13 (38.2%) | | |
| >=Bach (n = 37) | 16 (43.2%) | 21 (61.8%) | | |
| Insurance | | | .556 | 0.35 |
| Private (n = 52) | 26 (70.3%) | 26 (76.5%) | | |
| Other (n = 19) | 11 (29.7%) | 8 (23.5%) | | |
| Marital | | | .491 | 0.47 |

| | | | | |
|---|---|---|---|---|
| Married (n = 56) | 28 (75.7%) | 28 (82.4%) | | |
| Other (n = 15) | 9 (24.3%) | 6 (17.6%) | | |
| Race/Ethnicity | | | .634 | 0.23 |
| White (n = 56) | 30 (81.1%) | 26 (76.5%) | | |
| Non-white (n = 15) | 7 (18.9%) | 8 (23.5%) | | |

## Discussion

Miscarriage is the most common complication related to pregnancy in the US (Bardos et al., 2015). Women who are suffering from a miscarriage are often exposed to poor experiences with their healthcare providers (HCPs) which are augmented by their SDOH (Arpey & Rosenbaum, 2017). This secondary data analysis aimed to examine the relationships between the SDOHs and the patient experience of women in North Carolina who miscarried during the COVID-19 pandemic.

Results indicate that good patient experience was associated with higher annual household income (> $51,000) and full-time employment, suggesting that there may be some implicit bias from HCPs when interacting with low-socioeconomic-status patients. However, age, education, insurance, marital status, and race/ethnicity were not found to be significantly different between women with good versus poor patient experiences.

An integrative review on antenatal care experiences of low SES women in high-income countries reported that women were discriminated based on income, insurance status, age, marital status, number of children, and race (Origlia et al., 2017). Women of low SES, across the literature, reported generally being treated worse than those of a higher socioeconomic status (Origlia et al., 2017; Tocchioni et al., 2018). Individuals with a lower socioeconomic status are more likely to be Medicaid recipients or uninsured, have poor-quality health care, and seek healthcare less often. These individuals are often the victim of substandard care provided by healthcare professionals based on implicit biases (Becker & Newsome, 2003; Kalata et al., 2022).

Similar to our results, the literature suggests that SES variables such as income and employment status are significant factors in the quality care that women receive during antenatal

care. However, in contrast to the literature, our study did not find significance for all other SDOH variables assessed which could be attributed to most of our sample population being non-Hispanic White (n = 56) and only 15 participants being non-White.

Although we aimed to purposefully recruit minority participants, some possible causes as to why we were unable to achieve adequate representation include recruiting in Facebook groups which minority women may not participate in, mistrust of minority populations towards research/researchers due to historical unethical events related to research, and covid-related social turbulence. Potentially, with a larger representation of minority participants, more SDOH variables could have shown statistical significance. Therefore, studies with larger sample sizes of minority women are warranted.

This study also focused on care provided during the COVID-19 pandemic which caused increased social turbulence and fear, possibly having compounding negative effects on the attitudes and care from providers. However, focusing on care delivered during the pandemic provides a unique population sample in which the quality of care provided before and during the pandemic can be compared, which helps determine the effects on overall health.

## Conclusion

This study provides a fresh insight into an understudied topic and helps contribute to an enhanced understanding of the relationship between SDOHs and post-miscarriage patient experiences. The results of this study are important for the future of the nursing profession because providing good, quality patient experience and in such a sensitive time in people's lives is the primary goal of health care. Every patient deserves to receive quality health care-regardless of socioeconomic status.

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