

Short Communication

Racial Differences in the Social Determinants of Health among Pregnant Women

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Submitted: 22 April 2022

Accepted: 15 Dec 2022

Published: 17 Dec 2022

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Keywords

- Social determinants of health (SDOH)
- Women
- Racial
- White
- Black
- Pregnancy

Abstract

Background: Shreveport consists of 57% of black population with poverty rate of 25 %. Poverty is the main driving force contributing majorly to the social determinants of health (SDOH). Using a convenient sample of pregnant women, we planned this study in a quest to look at the relationship between the racial disparity and the SDOH.

Methods: A formal IRB approval was obtained. The need for consent was waived as the survey questions were part of the history taking process. A cross-sectional study was performed using a convenient sample of pregnant women. All pregnant women on admission to the labor unit completed the 10-items SDOH questionnaire (financial condition, food insecurity, transport facility, physical activity, stress, social connections, housing stability, depression, tobacco, and alcohol use). The information on important variables including age, race, marital status, body mass index, birth outcome (gestational age and birth weight) was accessed electronically and analyzed for differences in SDOH among black and white women. Women were excluded if they were admitted for non-labor indications.

Results: A total of 48 responses were analyzed, 29 were from black women and 19 from white women during the period of one month. We noted no significant differences in the SDOH among both groups. The significant differences were noted in the marital status (17% and 52% married, $p = 0.009$), delivering gestational age (37.8 weeks and 38.3 weeks, $p = 0.01$) and birth weight (3021 grams and 3326 grams, $p = 0.01$) among black and white women, respectively.

Conclusions: No significant racial differences were noted between the black and white pregnant women with respect to the SDOH.

ABBREVIATION

SDOH: Social Determinants of Health

INTRODUCTION

Shreveport is the main city of Northern Louisiana. It consists of 57% of black population with poverty rate of 25 % [1]. Poverty is the main driving force contributing majorly to the social determinants of health (SDOH). With high prevalence of poverty in the area, it would be important to look at the racial disparity among the residents of the area with reference to the SDOH. Ideally, a community-based study should be done to answer this question but due to the lack of resources and availability of a convenient sample of pregnant women, we planned this study.

METHODS

A formal IRB approval was obtained. The need for consent was waived as the survey questions were part of the history taking process. The study design was cross-sectional. We selected a convenient sample of pregnant women admitted to the labor unit of our hospital. All pregnant women on admission to the labor unit completed the SDOH 10-items (financial condition,

food insecurity, transport facility, physical activity, stress, social connections, housing stability, depression, tobacco, and alcohol use) questionnaire. The questionnaire was electronic, once completed generated a color-coded circular graph (Figure 1). The cumulative SDOH score was obtained based on the level of concern (0-mild concern, 1-moderate concern and 2- severe concern). The information on the other important variables including age, race, marital status, body mass index, gestational age and birth weight was accessed electronically and analyzed for differences in SDOH among black and white women. Women were excluded if they were admitted for non-labor indications. The Cumulative SDOH was for the calculated from the 10 determinants, each having maximum of 2 (based on level of concern, 0-mild, 1-moderate, 2-severe)-the score ranges were 0-20. Individual SDOH are expressed as mean score (calculated based on level of concern, 0-mild, 1-moderate, 2-severe)- maximum score would be 2.

Individual SDOH score is expressed in % in parenthesis (total score / 2) (Table 1).

RESULTS

During the study phase of one month, a total of 48 responses

were analyzed, 29 were from black and 19 from white women (Table 2). We noted no significant differences in the SDOH among both groups. The significant differences were noted in the marital status (17% and 52% married, $p = 0.009$), delivering gestational age (37.8 weeks and 38.3 weeks, $p = 0.01$) and birth weight (3021 grams and 3326 grams, $p = 0.01$) among black and white women, respectively. White women scored high on the financial issues, food insecurity, physical inactivity, housing issues and tobacco use, while black women scored high on transport concerns, stress, social connection concerns and alcohol use (Figure 2).

DISCUSSION

Racial health disparity and inequity has been reported extensively in the literature. Our study was unique as it showed no significant differences in the SDOH between the black and the white pregnant women. The possible reason for a similar SDOH profile among the black and white women could be the poverty in the area. The recent census showed 25.7 % of poverty rate in Shreveport, which is twice the Louisiana state rate. In a study by Hackman et al. [2], neighborhood poverty was shown to be associated with low birth weight irrespective of racial makeup.

Table 1: Mesh (Grid) explaining the SDOH scoring.

Financial condition	Food insecurity	Transport facility	Physical activity	Stress	Social connections	Housing stability	Depression	Tobacco use	Alcohol use	SDOH cumulative
1	2	0	2	0	0	1	2	0	1	9
0	1	1	0	0	1	2	0	1	0	6
1	0	0	0	0	1	0	0	0	1	2
1	0	1	0	1	0	0	0	0	0	3
3/4=0.75	3/4=0.75	2/4= 0.5	2/4=0.5	1/4= 0.25	2/4= 0.5	3/4=0.75	2/4=0.5	1/4=0.25	2/4=0.5	

Adding rows values would give the cumulative SDOH score. $\rightarrow + \rightarrow + \rightarrow + \rightarrow +$

Adding column values would give the individual score. $\downarrow + \downarrow + \downarrow + \downarrow + \downarrow$

Mean individual score = total score/ number of scores

In the study 45 women were assessed, so denominator was 45

For example, if the total score for stress was 25, that would be divided by 45 to get the mean and that would be $25/45=0.55$

The percentage for this 0.55 would be calculated by dividing it by 2 (maximum possible score), so that would be $0.55/2 = 27\%$

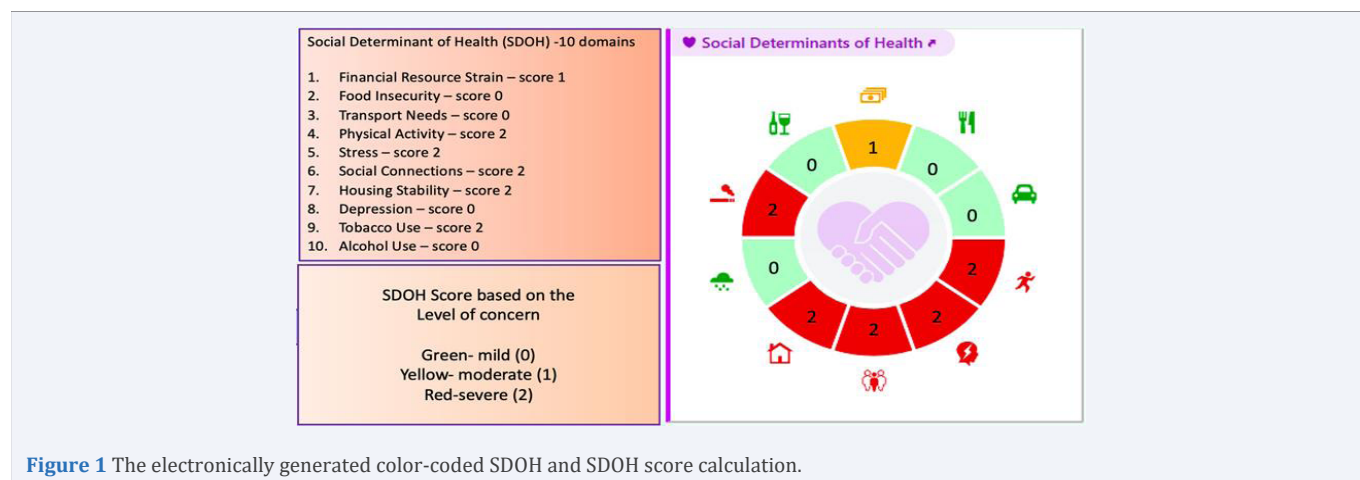


Figure 1 The electronically generated color-coded SDOH and SDOH score calculation.

Table 2: Racial Differences among Pregnant Women.

Variables	White n = 19	Black n = 29	p value
Age (years)	27.5	27	0.39
Married	10/19 (52%)	5/29 (17%)	0.009*
BMI	30.3	34.08	0.07
Gestational Age (weeks)	38.3	37.8	0.01*
Birth Weight (grams)	3326	3021	0.01*
Cumulative SDOH score	3.1	3.2	0.43
Financial issues	0.10 (5%)	0.06 (3%)	0.33
Food Insecurity	0.21 (10%)	0.20 (10%)	0.49
Transport issues	0.10 (5%)	0.41 (20%)	0.07
Physical Inactivity	1.1 (55%)	0.89 (44%)	0.17
Stress	0.21 (10%)	0.41 (20%)	0.17
Social connection issues	0.52 (26%)	0.55 (27%)	0.45

Housing issues	0.31 (15%)	0.20 (10%)	0.29
Depression	0	0	—
Tobacco use	0.52 (26%)	0.31 (15%)	0.14
Alcohol use	0	0.13 (6.5%)	0.12

n = number of patients, p < 0.05 statistically significant (T-test and Chi square)
 Variables expressed in mean or percentages as indicated
 BMI: Body Mass Index
 Cumulative SDOH (Social Determinants of Health score) is expressed as mean
 Individual SDOH are expressed as mean score and % in parenthesis

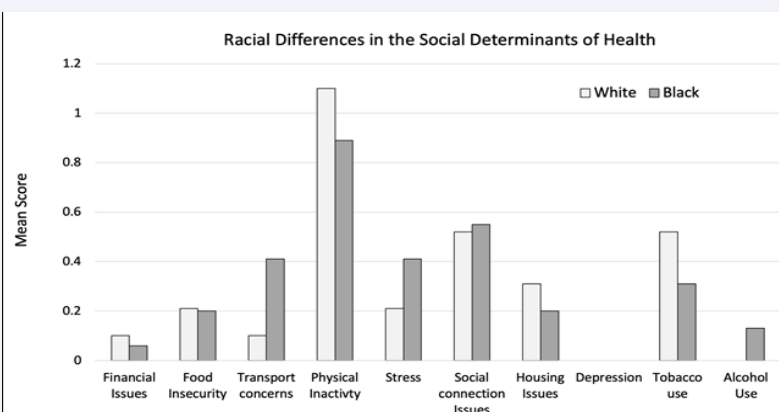


Figure 2 Vertical bars showing the individual determinants of health.

A high prevalence of adverse pregnancy outcomes among the black pregnant women have been reported in previous study [3]. Our findings of black women delivering babies at lower gestational age and lower birth weight was also congruent to the previous report [4].

The major concerning determinant noted in our study was the high rate of obesity and lack of physical activity. The study also provided the evidence to address stress management, social support networks, and need for supplemental nutrition assistance programs to the whole community irrespective of race and ethnicity. These concerns were highlighted earlier by Di Renzo et al., [5]. The limitation of the study was the small sample size using a convenient sample. A larger community-based study would be needed to confirm our findings.

CONCLUSION

In conclusion, we did not find any significant racial differences

among pregnant women with respect to the SDOH. Interventions on concerning SDOH should be targeted irrespective of race or ethnicity.

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