

Social Determinants of Health Among Pregnant Women

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Abstract

Social determinants of health (SDoH) are the non-medical factors, the conditions in which people are born, grow, work, live, and age, that influence the health outcomes. SDoH includes financial condition, food insecurity, transport facility, physical activity, stress, social connections, housing stability, depression, tobacco, and alcohol use. SDoH among pregnant women has been shown to affect neonatal outcomes. With electronic health records (EHR), SDoH is readily accessible for analysis. By utilizing the Epic® (EHR system), based on the electronically generated color-code (green 0, yellow 1, and red 2), we evaluated the SDoH. We noted a lack of physical activity as a significant SDoH concern among pregnant women. Public health measures should be taken to improve physical activity in our community.

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Introduction

As defined by World Health Organization, social determinants of health (SDoH) are the non-medical factors that influence health outcomes. (1) SDoH could include the conditions in which people are born, grow, work, live, and age. It includes financial condition, food insecurity, transport facility, physical activity, stress, social connections, housing stability, depression, tobacco, and alcohol use. In recent years, there has been increased recognition and appreciation of the impact of SDoH on an individual's health. By virtue of increased need for access to healthcare and the detrimental effect on the pregnancy outcome, pregnant women are vulnerable to SDoH.

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Previous studies have shown the effect of SDoH and adverse maternal and birth outcomes. Amjad et al. (2), in their meta-analysis, evaluated SDoH and found race and rural residence as predictors of preterm birth (PTB) while low maternal socio-economic status and illiteracy as risk factors for maternal mortality and low birth weight infants. Maness and Buhi (3) in their systematic review of seventeen studies, reported poverty and family structure as the most important SDoH in pregnancy. However, the role of some important SDoH, like the quality of housing, access to healthy foods, access to healthcare services, employment status, were not reported. Therefore, there is a gap in research regarding a comprehensive look at SDoH among pregnant women. With electronic health records (EHR), SDoH is readily accessible for analysis. By utilizing the Epic® (EHR system) (4), based on the electronically generated color-code (green 0, yellow 1, and red 2), we evaluated the SDoH among pregnant women.

Methods

The information about social determinants of health (SDoH) is built in the electronic health records (Epic) of all patients, including pregnant women. SDoH assessment consists of a questionnaire on ten factors:

1. Financial Resource Strain
2. Food Insecurity
3. Transport Needs
4. Physical Activity
5. Stress
6. Social connections
7. Housing stability
8. Depression
9. Tobacco use
10. Alcohol use

An IRB approval was obtained. On admission to the labor unit of the hospital, all pregnant women completed the SDoH questionnaire (Appendix 1) assisted by the nurse assigned to the patient. When these questionnaires are completed, a color-coded wheel is generated by the electronic record system (Appendix 2). The principal investigator collected the data on the MS excel sheet (Appendix 3)

Results

Social Determinants of Health among Pregnant Women

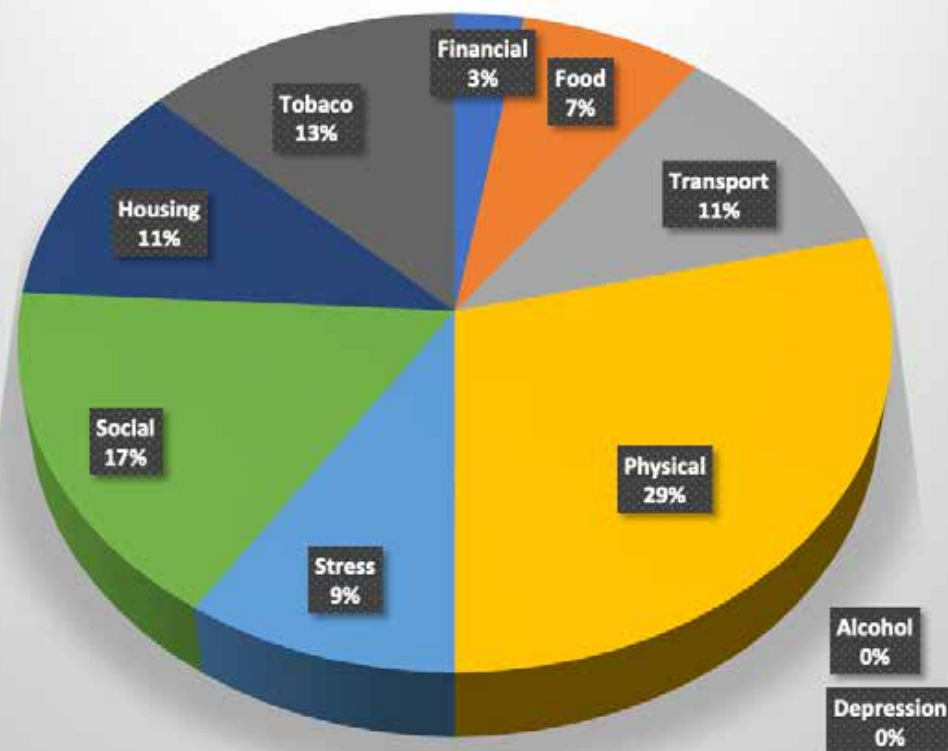


Figure 1: Distribution of Social Determinants of Health among Pregnant women

Out of 35 women, 30 women completed the questionnaire (85% response rate). Physical inactivity was noted to be of highest concern (29%), followed by social support (17%), tobacco use (13%), housing and transport (11%) each, stress (9%), food insecurity (7%) and financial instability (3%). Interestingly alcohol use and depression were zero percent (See Figure 1).

Discussion

Community health assessment is an integral part of public health wellbeing. Looking at different aspects of social determinants of health (SDoH) provides an idea about which aspect needs the most attention. Our study noted lack of physical activity as one of the major concerns among pregnant women admitted to our hospital. Our finding of high-stress levels among the participant was in line with the earlier report. (5) One important factor in SDoH is housing instability. We found a high proportion of housing problems among our cohort. DiTosto et al. (6) have shown that housing instability and homelessness during pregnancy were significantly associated with preterm birth, low birth weight neonates, neonatal intensive care unit admission, and delivery complications.

We also noted a high number of social concerns. It has been shown earlier those pregnant women with high psychosocial vulnerability face a higher risk of preterm birth. (7,8) We did not find depression a concern among our participants, which was very interesting. It would be interesting to look at the post-partum depression rate among the same cohort in a follow-up study. Although medication abuse has been reported among pregnant women in earlier re-

ports (8), we did not find alcohol use a significant problem among the study participants.

In conclusion, low physical activity is a high concern problem among pregnant women. Public health initiatives should be started on advocating physical activity. Based on our findings, community involvement with other important public health stakeholders should be an urgent need.

Appendices

A) Survey Questions:

Social Determinant of Health (SDOH)- based on ten domains.

1. Financial Resource Strain
2. Food Insecurity
3. Transport Needs
4. Physical Activity
5. Stress
6. Social connections
7. Housing stability
8. Depression
9. Tobacco use
10. Alcohol use

Financial Resource Strain

Time taken: 10/29/2021 1501 + Add Group + Add Row + Add LDA Responsible Create Note

Financial Resource Strain

How hard is it for you to pay for the very basics like food, housing, medical care, and heating?

Very hard Hard Somewhat hard Not very hard Not hard at all Patient refused

Create Note

Food Insecurity

Time taken: 10/29/2021 1501 + Add Group + Add Row + Add LDA Responsible Create Note

Food Insecurity

Within the past 12 months, you worried that your food would run out before you got the money to buy more.

Never true Sometimes true Often true Patient refused

Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.

Never true Sometimes true Often true Patient refused

Transportation Insecurity

Time taken: 10/29/2021 1502 + Add Group + Add Row + Add LDA Responsible Create Note

Transportation Needs

In the past 12 months, has lack of transportation kept you from medical appointments or from getting medications?

Yes No Patient refused

In the past 12 months, has lack of transportation kept you from meetings, work, or from getting things needed for daily living?

Yes No Patient refused

Create Note

Physical Activity

Time taken: 10/29/2021 1502 + Add Group + Add Row + Add LDA Responsible Create Note

Physical Activity

On average, how many days per week do you engage in moderate to strenuous exercise (like a brisk walk)?

0 days 1 day 2 days 3 days 4 days 5 days 6 days 7 days Patient refused

On average, how many minutes do you engage in exercise at this level?

0 min 10 min 20 min 30 min 40 min 50 min 60 min 70 min 80 min 90 min 100 min 110 min 120 min 130 min 140 min 150+ min Patient refused


Create Note

Stress

Time taken: 10/29/2021 1503 + Add Group + Add Row + Add LDA Responsible Create Note

Stress

Do you feel stress - tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time - these days?



Create Note

Social Connections


Time taken: 10/29/2021 1503 + Add Group + Add Row + Add LDA Responsible Create Note

Social Connections


In a typical week, how many times do you talk on the phone with family, friends, or neighbors?




How often do you get together with friends or relatives?



How often do you attend church or religious services?




Do you belong to any clubs or organizations such as church groups, unions, fraternal or athletic groups, or school groups?



How often do you attend meetings of the clubs or organizations you belong to?



Are you married, widowed, divorced, separated, never married, or living with a partner?



Create Note

Housing

Time taken: 10/29/2021 1504 + Add Group + Add Row + Add LDA Responsible Create Note

Housing Stability


In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?



In the last 12 months, how many places have you lived?

In the last 12 months, was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?



Time taken: 10/29/2021 1504 + Add Group + Add Row + Add LDA Responsible Create Note

Over the past 2 weeks, how often have you been bothered by any of the following problems?

Will the patient answer the depression risk questions?

Yes No

Tobacco

Smoking Status: [Warning Icon]

Start Date: [Search Icon]

Quit Date: [Search Icon]

Types: Cigarettes

Vaping w/o ni

Packs/Day: [Search Icon]

Years: [Search Icon]

Smokeless Tobacco:

Types: Snuff Chew

Quit Date: [Search Icon]

Counseling Given: Yes No

Comments:

Category Select

Search: [Input]

- Current Every Day Smoker
- Current Some Day Smoker
- Former Smoker
- Heavy Tobacco Smoker
- Light Tobacco Smoker
- Never Assessed
- Never Smoker
- Passive Smoke Exposure - Never Smoker
- Smoker, Current Status Unknown
- Unknown If Ever Smoked

Time taken: 10/29/2021 1506 + Add Group + Add Row + Add LDA Responsible Create Note

Alcohol Use

B) Score Calculation

How often do you have a drink containing alcohol?

Never Monthly or less 2-4 times a month 2-3 times a week 4 or more times a week Patient refused

How many drinks containing alcohol do you have on a typical day when you are drinking?

1 or 2 3 or 4 5 or 6 7 to 9 10 or more Patient refused

How often do you have six or more drinks on one occasion?

Never Less than monthly Monthly Weekly Daily or almost daily Patient refused



Social Determinant of Health (SDOH):

1. Financial Resource Strain
2. Food Insecurity
3. Transport Needs
4. Physical Activity
5. Stress
6. Social connections
7. Housing stability
8. Depression
9. Tobacco use
10. Alcohol use

Once the SDoH questionnaire is completed, a color-coded diagram would be generated based on which an SDoH score is calculated; see below.

SCORE Guide (range 0-20):

Green: 0

Yellow: 1

Red: 2

A total score is calculated using an MS excel sheet for each determinant.

“In conclusion, low physical activity is a high concern problem among pregnant women. Public health initiatives should be started on advocating physical activity. Based on our findings, community involvement with other important public health stakeholders should be an urgent need.”

A	B	C	D	E	F	G	H	I	J
Financial	Food	Transport	Physical	Stress	Social	Housing	Depression	Tobacco	Alcohol
0	0	0	0	0	0	0	0	0	0
0	0	0	2	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	1
0	0	0	1	0	-		0	0	0
0	2	2	0	0	0	0	0	0	0
0	0	0	2	0	-		0	0	1
0	0	0	1	0	2	0	0	0	2
0	0	0	2	0	0	1	0	0	1
0	0	0	1	0	0	0	0	0	0
1	2	0	1	2	-	-		0	0
0	0	0	0	0	0	0	0	0	0
1	2	0	0	2	0	0	0	0	0
0	0	0	1	0	0	1	2	0	0
0	0	0	0	0	0	1	2	0	0
0	0	2	1	0	1	0	0	0	0
1	0	0	2	2	2	2	2	0	2
0	0	0	1	0	0	0	0	0	0
0	2	0	2	0	0	0	0	0	0
0	0	0	2	0	0	1	0	0	0
0	0	0	1	0	1	0	0	0	0
0	0	0	2	0	0	0	0	0	0
0	0	2	1	2	2	0	0	0	0
0	0	0	0	0	0	0	0	1	0
0	0	0	1	0	0	0	0	0	0
0	0	-	0	2	0	2	0	1	0
0	0	0	1	0	0	-		0	0
0	0	2	1	0	2	-		0	0
0	0	2	1	0	1	2	0	2	0
0	0	0	2	0	0	-		0	2
0	0	2	2	0	2	2	0	1	0
3	8	12	31	10	18	12	0	14	0

Appendix 3 (Data)

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