Rev Rene. 2020;21:e42198.
DOI: 10.15253/2175-6783.20202142198
www.periodicos.ufc.br/rene

Original Article

Social determinants of health of high-risk pregnant women during prenatal follow-up

Determinantes sociais da saúde de gestantes acompanhadas no pré-natal de alto risco

How to cite this article:
Gadelha IP, Diniz FF, Aquino PS, Silva DM, Balsells MMD, Pinheiro AKB. Social determinants of health of high-risk pregnant women during prenatal follow-up. Rev Rene. 2020;21:e42198. DOI: https://doi.org/10.15253/2175-6783.20202142198

Ivyna Pires Gadelha[1]
Flaviane Fabricio Diniz[1]
Priscila de Souza Aquino[1]
Denise Montenegro da Silva[1]
Marianne Maia Dutra Balsells[1]
Ana Karina Bezerra Pinheiro[1]

[1]Universidade Federal do Ceará.
Fortaleza, CE, Brazil.

Corresponding author:
Ivyna Pires Gadelha
Rua Alexandre Baraúna, 1115 - Rodolfo Teófilo.
CEP: 60430-160. Fortaleza, CE, Brazil.
E-mail: ivynapires@gmail.com

ABSTRACT

Objective: to evaluate the social determinants of health of high-risk pregnant women during prenatal follow-up. **Methods:** observational and cross-sectional study with 276 high-risk pregnant women. Data were collected by applying a structured questionnaire about the social determinants of health, as well as clinical and obstetric data from high-risk pregnant women. Data were analyzed using the Jamovi® statistical software, version 0.9, and discussed according to the Dahlgren and Whitehead's Model. **Results:** individual conditions; behavior and lifestyle; social and community network; and the condition of life, such as work, health, education, sanitation and housing may constitute a risk or health protection factor for pregnant women. **Conclusion:** determinants such as age, race, type of pregnancy, educational level, housing situation and access to health services were considered favorable to the health of most pregnant women, but the prevalence of unplanned pregnancy as unfavorable behavior.

Descriptors: Pregnancy, High-Risk; Prenatal Care; Social Determinants of Health.

RESUMO

Objetivo: avaliar os determinantes sociais da saúde de gestantes acompanhadas no pré-natal de alto risco. Métodos: estudo observacional e transversal, realizado com 276 gestantes de alto risco. A coleta deu-se mediante aplicação de questionário estruturado acerca dos determinantes sociais da saúde, além de dados clínicos e obstétricos das mulheres. Os dados foram analisados através do programa estatístico *Jamovi*®, versão 0.9, e discutidos segundo o Modelo de Dahlgren e Whitehead. **Resultados:** as condições individuais; o comportamento e estilo de vida; a rede social e comunitária; e a condição de vida, tais como: trabalho, saúde, educação, saneamento básico e habitação podem constituir fator de risco ou de proteção à saúde da gestante. **Conclusão:** determinantes como idade, raça, tipo de gestação, nível educacional, a situação de moradia e o acesso aos serviços de saúde foram considerados favoráveis à saúde da maioria das gestantes, porém, a prevalência de gravidez não planejada como comportamento desfavorável.

Descritores: Gravidez de Alto Risco; Assistência Pré-Natal; Determinantes Sociais da Saúde.

Received: Sep. 24th 2019; Accepted: Oct. 30th 2019.

Introduction

Pregnancy is a physiological phenomenon in a woman's life; however, some conditions may represent a higher probability of unfavorable outcomes for the mother and/or fetus/newborn, implying increased gestational risk.

High gestational risk may refer to individual factors, unfavorable socioeconomic conditions, previous maternal diseases, previous reproductive history and/or current pregnancy[1]. High gestational risk makes up about 15.0% of pregnancies[2].

Quality prenatal care favors the recognition of unfavorable factors in pregnancy follow-up - both those related to clinical conditions and those associated with basic living conditions - and allows the continuous assessment of gestational risk, in addition to early intervention, which favors better health outcomes[3]. In this context, it is considered essential to know the conditions that may be directly related to the health and disease situation.

From this perspective, a relevant evaluation of the social determinants of health is evident, factors related to individual behaviors, living and working conditions and the economic, social and cultural macrostructure. The model of social determinants of health proposed by Dahlgren and Whitehead describes five layers and confirms the importance of non-clinical aspects on the health status of individuals and populations[4].

Due to the gap in the literature about the social determinants of health of high-risk pregnant women, the present investigation is essential, since it enables professionals to identify the conditions of vulnerability in which pregnant women are inserted and, thus, conduct actions to promote their health and prevent diseases in this population. Moreover, the findings of this study may lead health managers to direct actions that strengthen the integrality of care for pregnant women. In this context, the guiding question is: what are the main social determinants of health present in high-risk pregnant women? The aim of the present study was to evaluate the social determinants of health of high-risk pregnant women during prenatal follow-up.

Methods

This was a cross-sectional observational study conducted at a referral maternity hospital in Fortaleza/CE, Brazil. The unit is a reference for high-risk pregnancy and serves women from various municipalities in the state. Sample was selected by convenience and consisted of 276 pregnant women under follow-up at the high-risk prenatal clinic, i.e., all pregnant women attended from August to November 2018, with a confirmed diagnosis of high gestational risk. Pregnant women with psychotic breakdown or disabilities that prevented her from answering the survey were excluded.

Data collection was performed by applying a structured questionnaire, produced by the author herself, based on the Model of Social Determinants of Health by Dahlgren and Whitehead, which contained information about the layers of the model. The first layer relates to the individual determinants: age, race, type of pregnancy, gestational trimester and previous health problem. The second refers to the behavior and lifestyle adopted by the individual: licit and/or illicit drugs use, physical activity, sleep time, sexual activity and planned pregnancy. The third covers social and community networks: religion and cohabitation with partner. The fourth deals with the intermediate determinants: educational level, labor activity, family income, housing situation, start of prenatal care, hospitalization during pregnancy and medication use. The fifth involves the distal determinants, however, it was decided not to address it, since it refers to supranational macro determinants, such as globalization[4].

Data were compiled in Microsoft Excel and descriptive analysis were performed using Jamovi® statistical software, version 0.9. Medians, interquartile range, absolute frequencies and prevalence rates were verified. It was chosen to use the median since $p<0.05$,

according to the Komolgorov-Smirnov test, showed normal deviation. Results were categorized and presented in tables. Subsequently, they were discussed according to the evaluation model of social determinants of health[5].

The study was approved by the Maternity Research Ethics Committee, as recommended by Resolution nº 466/12 of the National Health Council, which refers to research involving human beings, under Opinion nº 2,742,477/2018.

Results

The data collected were presented in tables for each layer of the health social determinants model. A Table 1 presents the distribution of pregnant women according to individual determinants.

Table 1 - Distribution of high-risk pregnant women according to the first layer of the model of social determinants of health. Fortaleza, CE, Brazil, 2018 (n=276)

Layer 1 - Individual Determinants	n (%)
Age (years)	
Up to 15	2 (0.7)
16 to 24	64 (23.2)
25 to34	139 (50.4)
≥ 35	71 (25.7)
Race	
White	27 (9.8)
Black	17 (6.2)
Brown	223 (80.8)
Yellow	9 (3.2)
Gestation type	
Single	254 (92.0)
Multiple	22 (8.0)
Gestational trimester	
First	19 (6.9)
Second	97 (35.1)
Third	160 (58.0)
Previous health problem	
Yes	155 (56.2)
No	121 (43.8)

Women's age ranged from 15 to 46 years and most, 139 (50.4%), were in the age group of 25 to 34 years. The median age was 30 years, with an interquartile range of 10. There was a predominance of brown race, 223 (80.0%), single pregnancy, 254 (92%), pre-pregnancy health problems, 155 (56.2%), and women in the third gestational trimester, 160 (58%). It is noteworthy that the gestational age ranged from nine to 40 weeks, with a median of 29 and interquartile range of 13.3 weeks.

Table 2 presents the distribution of pregnant women according to behavior/lifestyle and social/community networks.

Table 2 - Distribution of high-risk pregnant women according to the second and third layers of the model of social determinants of health. Fortaleza, CE, Brazil, 2018 (n=276)

Layers 2 and 3 - Behavior/Lifestyle and Social/ Community networks	n (%)
Legal drugs use	
Yes	13 (4.7)
No	263 (95.3)
Illegal drugs use	
Yes	4 (1.4)
No	272 (98.6)
Physical activity	
Yes	29 (10.5)
No	247 (89.5)
Sleep time (hours)	
< 4	11 (4.0)
4 to 8	165 (60.0)
> 8	100 (36.0)
Sexual activity	
Yes	161 (58.3)
No	115 (41.7)
Planned pregnancy	
Yes	108 (39.1)
No	167 (60.5)
Missing data	1 (0.4)
Religion	
Catholicism	131 (47.5)
Evangelical	111 (40.2)
Others	4 (1.4)
None	30 (10.9)
Cohabitation with partner	
Yes	218 (79.0)
No	58 (21.0)

Regarding the behavior and lifestyle of pregnant women, there was a predominance of non-users of legal, 263 (95.3%), and illegal drugs, 272 (98.6%). The occurrence of such habits was considered at least once during pregnancy. Smoking was the most reported practice, 10 (3.6%), followed by alcoholism, 7 (2.5%), and illegal drug use, 4 (1.4%).

Physical inactivity was constant, 247 (89.5%). It is emphasized that 15 (5.4%) pregnant women reported having ceased physical activities due to pregnancy, either for fear of losing the baby or for medical restriction. Sleeping habits were evaluated based on the number of hours of daily sleep. Variation from one to 17 hours was observed, with a median of 8 hours and interquartile range of 3.8.

Regarding sexuality, it was noticed that most pregnant women had an active sex life, 161 (58.3%). With respect to pregnancy planning, there was a predominance of non-planning pregnancy, 167 (60.7%). Concerning to social and community networks, there is a predominance of pregnant women with religion, 246 (89.1%) and living with their partner, 218 (79.0%).

Table 3 highlights the distribution of pregnant women according to intermediate determinants.

Most pregnant women, 175 (63.4%), had 10 to 12 years of schooling, suggesting relatively a good educational level. Regarding work activity, there was a predominance of women in the household, 172 (62.3%). Among those who were in paid work, less than half, 51 (18.5%), had a formal contract. Family income ranged from no income to R$ 8,000.00, with a median of R$ 1,200.00 and interquartile range of R$ 1,046.00. Regarding the housing situation, there was a predominance of own housing, 154 (55.8%).

From the perspective of access to health goods and services, it was found with respect to gestational monitoring, there was a predominance of pregnant women who began prenatal care with up to 12 weeks of pregnancy. The median gestational age at the beginning of prenatal care was 11 weeks, with an interquartile range of 6 weeks. Regarding obstetric complications, it was found that 61 (22.1%) participants experienced hospitalization during pregnancy. In addition, most of the sample, 199 (72.1%), reported medication use, added to gestational vitamins.

Table 3 - Distribution of high-risk pregnant women according to the fourth layer of the model of social determinants of health. Fortaleza, CE, Brazil, 2018 (n=276)

Layer 4 - Intermediate Determinants	n (%)
Educational level (years)	
≤ 9	59 (21.4)
10 to 12	175 (63.4)
> 12	42 (15.2)
Labor activity	
Formal	51 (18.5)
Informal	53 (19.2)
None	172 (62.3)
Monthly family income (minimum wage) *	
No income	1 (0.3)
< 1	96 (34.8)
1 to 3	148 (53.8)
> 3	28 (10.2)
Do not know/Did not answer	3 (1.1)
Housing situation	
Own house	154 (55.8)
Rented house	94 (34.1)
Leased house	28 (10.1)
Prenatal onset (weeks)	
Up to 12	169 (61.2)
> 12	100 (36.2)
Not reported	7 (2.6)
Hospitalary admission during pregnancy	
Yes	61 (22.1)
No	215 (77.9)
Medication use	
Yes	199 (72.1)
No	77 (27.9)

*Minimum wage in the year of data collection was R$ 954.00

Discussion

As limitations, it is noteworthy the present study did not evaluate housing conditions, since they were women who lived in the capital, although it is known that the population living in rural areas tends to live in more vulnerable basic sanitation conditions. Therefore, the need to assess health inequities related to basic sanitation stands out. Adversely, it is emphasized that the analyzes performed may contribute to the elaboration of intersectoral policies that encompass different contexts in search of health promotion, by improving the living conditions of these women.

Given the individual characteristics of pregnant women, it was noticed that most of the sample is in the ideal age range for reproduction, from 20 to 34 years. Extremes of maternal age (≤15 or ≥35 years) are known to be related to worse perinatal outcomes[6].

From the perspective of obstetrics, the importance of investigating race in the scenario of social determinants of health is justified by the fact there are differences between pregnant women according to ethnicity. African women have a higher risk of developing preeclampsia and pelvic anomalies[7]. Therefore, the predominance of brown women was considered favorable to the protective factor to their health.

Influenced by genetic factors, the type of pregnancy was considered an individual trait. Multiple pregnancies are known to be a risk factor for the development of preeclampsia[3]. The fact that most of the sample had a single fetus was considered favorable to the health of high-risk pregnant women.

Regarding previous clinical conditions, most high-risk pregnant women had some pre-existing disease. It is known that previous clinical conditions may be related to complications during pregnancy, as well as worse perinatal outcomes, which may interfere with women's health[8].

Related to the second layer of the model, licit drugs use, it is known that drug and alcohol use is associated with the incidence of premature birth, low birth weight and adverse impact on the duration of pregnancy[9]. This finding confirms the need to know the non-clinical aspects that interfere with the health of high-risk pregnant women.

Concerning the practice of physical activity, a low prevalence was observed. Interventions based on physical activity associated with diet result in significantly lower weight gain during pregnancy. In addition, the habit is significantly associated with the reduction in the occurrence of gestational diabetes mellitus[10]. Thus, the correct orientation and encouragement of physical activity may be favorable to the health of these women.

As for sleep habits, it is known that pregnant women who sleep less than eight hours a day are twice as likely to develop depression and anxiety[11], conditions that can negatively influence their health and well-being.

Regarding the sexual aspect, although most women reported sexual activity during pregnancy, the number of pregnant women who denied an active sex life was considered high. When assessing high-risk pregnant women in Turkey, there was a predominance of impaired sex life from the onset of risks during pregnancy[12]. The main changes pointed out by women were decreased frequency of sexual intercourse, lower sexual desire, pain and suffering during the act, not considering themselves attractive and sexual dissatisfaction. It was noticed that the condition of high gestational risk had a negative effect on women's sexual life[12] and, consequently, on their quality of life. In this context, it becomes clear the importance of sex education during pregnancy. It is also emphasized the need for educational techniques about pregnancy planning[13], since in the present study there was a predominance of women with unplanned pregnancy.

Evidently, unplanned pregnancy is directly related to socioeconomic conditions, family and marital life and biopsychosocial aspects. Moreover, it is clear that although women have access to contraceptive methods, there is a gap characterized by their lack of knowledge[13]. It is believed that the non-planning of pregnancy may reflect in its late discovery and late

prenatal onset. Therefore, it interferes with the early recognition of gestational risk factors[6].

Besides, it is suggested the higher the number of children, the greater the chance of financial worries and physical distress, which implies a worse quality of life. The high number of pregnancies is associated with the occurrence of gestational syphilis, confirming the need to strengthen reproductive planning strategies[14], in order to improve the health conditions of this population.

As determinants of the third layer, the social and community networks are highlighted, which reflect the level of social cohesion between pregnant women and their families, neighbors, friends and groups, as well as the formation of social capital, encompassing their interrelations[4].

Pregnancy portrays an experience that may reflect on the behavior not only of the woman, but also of her family and the people with whom she relates, since it is a process permeated by physical, emotional and social changes. These changes may have a direct impact on women's health. From the perspective of pregnant women, the participation of the partner in the gestational process is essential and may have a direct impact on maternal and fetal well-being[15]. Therefore, the fact that most high-risk pregnant women live with their partners is perceived as favorable to their health.

Also noteworthy are the relations with religious groups. It is pointed out that the type of religion has a significant relationship with the frequency of alcohol use between pregnant women, so that Catholics claim greater use on weekends. Nevertheless, religiosity may be a protective factor during pregnancy, as it motivates the reduction of alcohol consumption and even abstinence[16].

Concerning the intermediate determinants, as regard to educational level, it is known that pregnant women with higher education levels are less likely to develop depressive symptoms[17], being considered a protective factor for their health. In contrast, low education is a barrier to information access and is a significant predictor of mortality[18].

With reference to family income, when low, it is associated with a higher incidence of obstetric complications, not reaching quality information and multidisciplinary care[18], confirming the influence of the economic layer on the health-disease process. About the housing situation, it was observed that pregnant women lived mainly in their own homes. The housing situation is considered a determining factor for vulnerability to health problems and other risk situations, such as the use of psychoactive substances. Women living on rent were 2.8 times more likely to use drugs[19]. As a result, it is considered essential to know the social determinants of health during prenatal care.

The results about the start of prenatal care showed that most pregnant women started prenatal care before 12 weeks, in line with the recommendation of the current policy on maternal and childcare, the Stork Network Strategy, which aims at expanding access and improvement in the quality of prenatal care. Early initiation of prenatal care favors the timely recognition of conditions that pose a risk to the development of pregnancy and is favorable in preventing gestational complications[20].

Regarding medication use, most of the sample mentioned it. In consequence, the importance of promoting self-care among women is perceived, so they understand the use of medicines, as well as their effects, and achieve better health conditions.

Although compliance with access to prenatal care has been observed, it is still necessary to create new intersectoral policies to improve living and working conditions, which are fundamental to achieving health equity. Understanding that high gestational risk is due to several factors, recognition of the social determinants of health, from individual to distal conditions, provides subsidy to achieve comprehensive care for women, identify vulnerabilities, foster new policies, with a view to achieve better maternal and fetal outcomes, reducing morbidity and mortality rates in this population.

Conclusion

The present study allowed the recognition and evaluation of the social determinants of health of high-risk pregnant women. Individual determinants, such as age, race and type of pregnancy, were considered favorable to the health of most pregnant women. As for the proximal determinants, most high-risk pregnant women denied legal and/or illegal drug use, being considered a favorable behavior. However, the prevalence of unplanned pregnancy was found to be unfavorable behavior. Regarding social and community networks, it was perceived as favorable the fact that most pregnant women live with a partner and participate in a religious support network. Concerning the intermediate level determinants, it was found that educational level, housing situation and access to health services were favorable determinants of the health of most women, while low income was a harmful condition in a high-risk context.

Collaborations

Gadelha IP and Aquino PS contributed to the conception and design, analysis and data interpretation, writing of the article, relevant critical review of the intellectual content and final approval of the version to be published. Diniz FF, Silva DM and Balsells MMD collaborated in the writing of the article and relevant critical review of the intellectual content. Pinheiro AKB contributed to the writing of the article, relevant critical review of the intellectual content and final approval of the version to be published.

References

1. Peixoto S, Mendes ETR. Risco gravídico. In: Peixoto S, organizador. Manual de assistência pré-natal. São Paulo: FEBRASGO; 2014. p. 114-19.
2. Word Health Organization. Managing complications in pregnancy and childbirth: a guide for midwives and doctors. Geneva: Word Health Organization; 2017.
3. Ferreira ETM, Moura NS, Gomes MLS, Silva EG, Guerreiro MGS, Oriá MOB. Maternal characteristics and risk factors for preeclampsia in pregnant women. Rev Rene. 2019; 20:e40327. doi: https://dx.doi.org/10.15253/2175-6783.20192040327
4. Mendes EV. O cuidado das condições crônicas na atenção primária à saúde: o imperativo da consolidação da estratégia da saúde da família. Brasília: Organização Pan-Americana de Saúde; 2012.
5. Dahlgren G, Whitehead M. Policies and Strategies to promote social equity in health. Background document to WHO – Strategy paper for Europe. Stockholm: Institute for Future Studies; 1991.
6. Felczak C, Ravelli APX, Skupien SV, Ricken MH, Bayer LCD, Almeida EA. Profile of cardiac pregnant women: high-risk. Cogitare Enferm. 2018; 23(2):e49605. doi: http://dx.doi.org/10.5380/ce.v23i2.49605
7. Burton GJ, Redman CW, Roberts JM, Moffett A. Pre-eclampsia: pathophysiology and clinical implications. BMJ. 2019; 366:1-15. doi: https://doi.org/10.1136/bmj.l2381
8. Antunes MB, Demitto MO, Gravena AAF, Padovani C, Pelloso SM. Hypertensive syndrome and perinatal outcomes in high-risk pregnancies. Rev Min Enferm. 2017; 21:e-1057. doi: http://dx.doi.org/10.5935/1415-2762.20170067
9. Hamulka J, Zielińska MA, Chądzyńska K. The combined effects of alcohol and tobacco use during pregnancy on birth outcomes. Rocz Panstw Zakl Hig [Internet]. 2018 [cited Oct 13, 2019]; 69(1):45-54. Available in: wydawnictwa.pzh.gov.pl/roczniki_pzh/files/pzhissues/RPZH_2018_Vol_69_No_1_calosc__z_okladka.pdf#page=51
10. International Weight Management in Pregnancy (i-WIP). Collaborative Group. Effect of diet and physical activity based interventions in pregnancy on gestational weight gain and pregnancy Outcomes: meta-analysis of individual participant data from randomized trials. BMJ. 2017; 358:j3119. doi: doi.org/10.1136/bmj.j3119
11. Yu Y, Li M, Pu L, Wang S, Wu J, Ruan L, et al. Sleep was associated with depression and anxiety status during pregnancy: a prospective longitudinal study. Arch Women's Mental Health. 2017; 20(5):695-701. doi: https://dx.doi.org/10.1007/s00737-017-0754-5

12. Tugut N, Golbasi Z, Bulbul T. Quality of sexual life and changes occurring in sexual life of women with righ risk pregnancy. J Sex Marital Ther. 2016; 43(2):132-41. doi: http://dx.doi.org/10.1080/0092623X.2016.1141816

13. Kornides ML, Kitsantas P, Lindley LL, Wu H. Factors Associated with Young Adult's Pregnancy Liklihood. J Midwifery Womens Health. 2015; 60(2):158-68. doi: https://dx.doi.org/10.1111/jmwh.12258

14. Macedo VC, Lira PIC, Frias PG, Romaguera LMD, Caires SFF, Ximenes RAA. Risk factors for syphilis in women: case-control study. Rev Saúde Pública. 2017; 51-78. doi: https://doi.org/10.11606/S1518-8787.2017051007066

15. Martello NV, Wilhelm LA, Cremonese L, Prates LA, Timm MS, Ressel LB. Care practices carried out by the partner in the pregnant woman's. Rev Enferm UFPE on line [Internet]. 2017 [cited Sep 30, 2019]; 11(11):4574-8. Available from: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/231196/25188

16. Santos MM, Porto PN, Oliveira JF, Pires CGS, Araújo AJS. Associação entre características sociodemográficas e frequência de uso de álcool por gestantes. Rev Baiana Enferm. 2016; 30(2):1-9. doi: http://dx.doi.org/10.18471/rbe.v30i2.14562

17. Lima MOP, Tsunechiro MA, Bonadio IC, Murata M. Depressive symptoms in pregnancy and associated factors: longitudinal study. Acta Paul Enferm. 2017; 30(1):39-46. doi: http://dx.doi.org/10.1590/1982-0194201700007

18. Amjad S, MacDonald I, Chambers T, Osornio-Vargas A, Chandra S, Voaklander D, et al. Social determinants of health and adverso maternal and birth outcomes n adolescent pregnancies: A systematic review and meta-analysis. Paediatr Perinat Epidemiol. 2019; 33(1):88-99. doi: http://dx.doi.org/10.1111/ppe.12529

19. Porto PN, Borges SAC, Araújo AJS, Oliveira JS, Almeida MS, Pereira MN. Factors associated with the use of alcohol and drugs by pregnant women. Rev Rene. 2018; 19:e3116. doi: https://doi.org/10.15253/2175-6783.2018193116

20. Balsells MMD, Oliveira TMF, Bernardo EBR, Aquino PS, Damasceno AKC, Castro RCMB, et al. Evaluation of prenatal care process for habitual-risk pregnant women. Acta Paul Enferm. 2018; 31(3):247-54. doi: http://dx.doi.org/10.1590/1982-0194201800036

CC BY

This is an Open Access article distributed under the terms of the Creative Commons