DEPRESSIVE SYMPTOMS IN PREGNANCY: CONSEQUENCES OF SUBSTANCE USE.

Health Sciences

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ABSTRACT

- Objective: To investigate depressive symptoms in pregnant women and their relationships with the substance use by the partner. **Methods:** This is a cross-sectional study conducted with 375 pregnant women admitted to two public hospitals in Goiânia-GO, Brazil. To evaluate depressive symptoms among pregnant women, the validated Hospital Anxiety and Depression Scale (HAD) was used. The association between variables was performed using the bivariate and multivariate analysis. **Results:** The sample consisted mostly of young pregnant women, and 56.85% of their partners were at low risk or alcohol withdrawal. In the univariate statistical analysis, alcohol consumption was associated with depressive symptoms in the variables "alcoholism by the pregnant in the first three months of pregnancy" (RP=2.39; IC95%=1.44-3.96), "abstinent partner" (RP=2.49; IC95%= 0.77-0.94), "alcoholism by pregnant throughout the pregnancy" (RP=1.76; IC95%=1.07-2.90) and "illicit drug use by pregnant" (RP=2.03; IC95%=1.10-3.72). Finally, it became clear after multivariate analysis that, the variables with statistically significant association were "abstinent partner" (OR=3.013; p=0.002) and the "alcohol consumption by the pregnant in the first three months of pregnancy" (OR=3.90; p=0.013) which are respectively, protective and risk factors for depressive symptoms. **Conclusions:** The results warn about the association between depressive symptoms during pre-partum and the use of alcohol by pregnant and by intimate partner.

KEYWORDS:

Psychoactive Substance Use Disorder, Obstetrics Gynecology, Mood Disorders.

INTRODUCTION

It is estimated that depression affects 350 million people worldwide, mostly women. It is characterized by symptoms such as sadness, loss of enjoyment of life, feelings of guilt, low self-esteem, sleep or appetite disturbances, tiredness and lack of concentration[1].

Depression was aggravated by the increase in consumption of psychoactive substances in recent years (37.6%). As a consequence of this consumption, the most representative disturbs of these incapacities are the depressive ones, the anxiety ones, the ones originated by the illicit drug and alcohol consumption becoming the main causes of incapacities along the years worldwide[2].

Pregnant is psychologically vulnerable to stressful conditions such as alcohol use by the partner, which can increase her chances of alcohol use and dependence, creating risks for newborns[3]. Confirming this circumstance, an experimental study in female rats using a stress model that develops trauma in the beginning of pregnancy, it was discovered that early environmental diseases like repeated maternal stress can produce lasting changes in the function of neural circuits of offspring4. These neurobiological changes will have implications for a number of psychiatric conditions in the next generation, including use and substance dependence[5].

Alcohol use during pregnancy in female rats is harmful to maternal and fetal health, causing changes in the behavior of future generations, prone to alcoholism and neuropsychological disturbances[6]. Among these changes, there are the decreasing of the growth of the child and the appearance of congenital anomalies7. All these diseases can be avoided as long as the mother does not make use of alcohol during pregnancy. However, the effects of ethanol on the Central Nervous System (CNS) and other organs during embryonic and fetal development in animals depend on the dose, duration and stage of development[8].

Studies describe that the exposure to alcohol during pregnancy added to the effect of environmental characteristics can result in behavioral and cognitive deficits, which continue into adulthood. Thus, it became widely accepted the idea that adverse environmental conditions such as socioeconomic inequalities and lifestyle choices during pregnancy could result in neurological disorders in adulthood[9].

On the other hand, in addition to the proper behavioral changes of pregnancy, certain factors can influence the behavior of the pregnant. As an example the consumption of alcohol by the partner and the quality of the intimate relationship of the couple[3]. Stressful events like these can bring consequences to the mother in the form of depression and, at the worst conjecture, take her to suicide. This information is supported by WHO data, where most part of one million individuals who commit suicide each year on the planet, had depression[1].

Depression in prenatal can be explained as a pathology started during pregnancy. Despite being predictive of clinical implications as pre-eclampsia, gestational diabetes, increased premature labor, surgical labor and post-partum depression, it has never been studied extensively[10].

Data deficiency on mental disorders, specifically the ones related to

alcoholism indicates that, its function as a cause of these diseases is underestimated[11]. Considering the seriousness of the theme and the bibliographic lack, detecting the occurrence of maternal depression will enable the improvement of primary care[2].

Given the information above, the objective was to evaluate the consumption of psychoactive substances by pregnant women, her partner and its correlation with depressive symptoms.

METHODS

It is a descriptive cross-sectional study. The survey involved pregnant women enrolled in outpatient clinics of low and high risk prenatal in two important Public Maternity Hospitals in Goiânia-GO, Brazil. These institutions developed care activities, research and teaching, and help the local community, besides several regions of the State. Data were collected from September 2014 to May 2015.

The sample consisted of pregnant women aged over [18]. Half of the present pregnant women was invited to participate, representing the even numbers by scheduling order.

It was based a sample representation in the probabilistic selection. The sample was calculated using as a basis the total of 4,826 antenatal attendance during the two maternity hospitals during the collection period, an estimated proportion of 50% of depression during pregnancy, one type I error of 5% and 95% confidence interval. The minimum obtained universe was 356 pregnant women, but, foreseeing a possible lack of responses12, it defined the final sample size in 375 pregnant women.

To collect the data, a self-report measuring instrument was used, with the inclusion of additional information in the form of notes in bold, in order to facilitate the application, the filling and the typing, avoiding the appearance of bias.

The instrument with data on social and economic profile presented questions containing age, education level, marital status and economic status. It was determined as low education the one with eight or less years of study; average education with nine to eleven years of study and high education with 12 years of study or more. Regarding the economic situation, it was considered of low-income, the classified families, according to the socioeconomic strata, in class "E" to "C", with income up to three minimum wages per month[13].

Through issues purposed by the authors, several stressful events experienced by the pregnant women, such as the use of licit and illicit drugs, smoking and alcohol consumption by their partners, were investigated.

The pilot test was previously applied to fifteen pregnant women. The aim was to detect possible errors in the survey, as well as ambiguities in issues made by the authors of this study and comprehension difficulties. After checking the errors, the necessary corrections were done.

To detect depressive symptoms during pregnancy, we used the Hospital Anxiety and Depression Scale (HAD) of Zigmond and Snaith (1983)14, validated in Brazil for outpatients15, and it can be applied in multiple contexts16 such as maternities and prenatal services[17]. This scale consists of 14 items that mention the emotional state and does not address somatic symptoms indicating, therefore, more likely to diagnose depression. Out of these, seven are related to anxiety (HAD-A) and the other half to depression (HAD-D), with cutting points of seven and eight for anxiety and depression respectively. For Botega, et. al (1998)15, the cutting point that provided good sensitivity and good specificity was 7/8 (i.e., from 8 points on) in the subscale of the depression (85% and 72.4%, respectively).

Each question has four alternatives with a score, which ranges from zero to three, and the sum of the total points can vary from zero to 21 for each disorder. So, the evaluation of the responses was achieved with the total value of each subscale in which, the higher the score, the greater the Minor Mental Disorders (MMD).

According to the results achieved in each subscale, the patient was placed in three levels: the unlikely case (zero to seven points), the possible/doubtful case (eight to ten points) and the probable case (eleven to twenty one points) [14].

In order to know the reliability of the instrument (HAD) the calculation of Cronbach's alpha was made. Considering the higher the coefficient, the more reliable instrument[18]. Thus, the value above 0.70 was adopted as suitable for this search[19].

Pregnant women who have not agreed to complete the questionnaire, the ones who did not answer all the questions of HAD, the ones who lived outside the state of Goiás, the ones who had a previous diagnosis of neurological diseases such as movement disorders, multiple sclerosis, and the ones who were illiterate, were excluded.

We analyzed the data with the help of EPI-INFO® version 7.1.5 program. The calculation of Cronbach's alpha coefficient was done with the help of the Statistical Package for Social Sciences (SPSS) version 21.0 software.

We conducted a statistical analysis with percentage values. The qualitative variables were presented in absolute frequencies and simple relative ones.

The Fisher's exact tests, Mantel-Haenszel test, Chi-square test and Prevalence Ratio were used for the variables correlation analysis, considering statistically significant p-associated value lower or equal to 0.05 ($p \leq 0.05$) with a confidence interval of 95% (95% CI). The presence of "depressive symptoms" in prenatal care was considered the dependent variable. To estimate the PR, we chose the analysis of logistic regression, in special, justified by the low conclusion of dependent variable20. The entry in the logistic regression model was the hierarchical type, based on borderline p-value (between p=0.05 and p=0.010) and in clinical importance[21]. The study was approved by CEP/HC/UFG/2014 under the number 786.358.

RESULTS

The sample consisted mostly by young women ranging from 19 to 29 years old, with average gestational age of 27 ± 10.60 weeks, low-risk pregnancy (56.52%) and married (47.20%). As for education level, 41.87% of pregnant women had high school with an average of 11.76 ± 3.17 years of study. Most of them (56%) had low family income with a gain up to two minimum wages and 55.95% of them were not employed (Table 1).

Table 1 – Social characteristics of pregnant women admitted to two important public hospitals. Goiânia, GO, Brazil, 2016 (n = 375).

Characteristics	n	(%)
Age Group		
19 to 29 years old	258	69,54
30 to 39 years old	97	26,15
40 to 49 years old	14	3,77
>= 50 years old	2	0,54
** Total without registration	4	1,06
Education Level		
Basic education	17	4,53
Elementary School	68	18,13
High/Technical Education	157	41,87
Incomplete Higher Education	61	16,27
Complete Higher Education	61	16,27
** Total without registration	11/375	2,93
Marital status		
Married	177	47,20
Living with partner	140	37,33
Separated/Divorced	13	3,47
Single	45	12,00
Family income		
Up to one minimum wage *	44	14,67
Up to two minimum wages *	124	41,33
Up to three minimum wages *	104	34,67
More than three minimum wages *	28	9,33
** Total without registration	75/375	20,00

* Minimum wage =R$788,00 (2015); ** Missing data for some individuals.

Pregnant women present depressive symptoms distributed between "unlikely" (59.20%), "possible or doubtful" (25.33%) and "probable" (15.47%), respectively, according to the HAD scale. As for the internal

consistency for the full range of items, Cronbach's alpha for the subscale HAD was 0.73, which admitted reliability of measurements.

Regarding to the prevalence of alcohol consumption by the partner, the majority of them (56.85%) was in abstinence, which generated an association of protection against depressive symptoms (Table 2).

Table 2 – Alcohol ingestion by partner and its association with depressive symptoms in pregnant women admitted to two important public hospitals. Goiânia, GO, Brazil, 2016 (n = 375).

Behavioral characteristics	Depressive symptoms **		Statistic	
	Yes (%)	No (%)	RP (95% CI)	p-value
Abstinent partner				
Partner Ingests alcohol	34(22,97)	114(77,03)	0,85 (0,77-0,94)	0,004*
Partner doesn't ingest alcohol	18(8,23)	177(90,77)		
Total (n=343)	52(15,16)	291(84,84)		

CI= Confidence Interval; * Chi-square test; ** Punctuation ≥ 12 in the Hospital Anxiety and Depression Scale (HAD).

Approximately one out of five pregnant women (22%) consumed alcohol at a certain time during pregnancy. In the bivariate analysis "depressive symptoms" were associated only with "alcoholism by pregnant in the first three months" (PR=2.39). Out of the total participants, 8.31% used illicit drugs (Table 3).

Table 3 – Use of legal and illegal drugs and their association with depressive symptoms in pregnant women admitted to two important public hospitals. Goiânia, GO, Brazil, 2016 (n = 375).

Behavioral characteristics	Depressive symptoms (a)		Statistic	
	Yes (%)	No (%)	RP (b) (95% CI(c))	p-value
Alcoholism by pregnant in the first three months[**]				
Yes	19(27,54)	50(72,46)	2,39 (1,44-3,96)	0,001[(d)]
No	31(11,52)	238(88,48)		
Total (n=338)	50(14,79)	288 (85,21)		
Alcoholism by pregnant throughout pregnancy[**]				
Yes	18(23,38)	59(76,62)	1,76 (1,07-2,90)	0,029[(d)]
No	39(13,27)	255 (86,73)		
Total (n=354)	57(15,36)	314(84,64)		
Use of illicit drugs by pregnant women[**]				
Yes	9(29,03)	22(70,97)	2,03 (1,10-3,72)	**0,030**[(d)]
No	49(14,33)	293(85,67)		
Smoker[**]				
Yes	5(27,78)	13(72,22)	1,88 (0,86-4,14)	0,136[(d)]
No	50(14,75)	289(85,25)		

[(a)] Punctuation ≥ 12 in the Hospital Anxiety and Depression Scale (HAD); [(b)] RP = Prevalence ratio; [(c)] CI= Confidence Interval; [(d)] Chi-square test; ** Some individuals did not respond.

Finally, it became clear after the multivariate analysis (Table 4), that the consumption of alcohol by the partner (OR=3.013) and consumption of alcohol by the pregnant in the first three months of pregnancy (OR=3.900) remained significantly associated with

depressive symptoms, as the first being of inverse relationship.

Table 4 – Analysis of Regression logistics of events associated with depressive symptoms, according to the behavioral variables in pregnant women. Goiânia, GO, Brazil, 2016 (n = 375).

Characteristics	Statistics - Depressive symptoms *		
	OR	(95% CI)	p-valor
Behavioral styles			
Alcoholism by pregnant in the first three months	2,230	1,013-4,910	0,047
Illicit drug use	0,852	0,243-2,983	0,802
Abstinent partner	0,403	0,201-0,809	0,011
Alcoholism by pregnant throughout pregnancy	1,390	0,373-5,171	0,624

OR= Odss Ratio; IC= Confidence Interval

DISCUSSION

Depression in pregnancy is a topic of great importance in view of the repercussions for the mother and especially for the fetus. The results obtained in this study contribute to increase knowledge about the roles of psychoactive substances in the onset of depressive symptoms that should be considered when planning interventions in the prenatal.

Regard to socioeconomic aspects, this study showed that the education level was not a guarantee to have an occupation, since most pregnant women were unemployed possibly due to the historical inequality observed between genders[22]. However, it is necessary to consider that, there are complex relationships between education, social environment, biological and genetic influences, the consumption of alcohol and the health of the pregnant[23].

Although there are other instruments that allow the measurement of depressive symptoms, the HAD14 was chosen because of the easiness of application. As a result, we found a percentage of 15.47% of "likely" depressive symptoms correlated with substance use by the pregnant; in other words, this population was at high risk of depressive symptoms.

In the bivariate analysis, it was found that pregnant women, whose partners abstained from alcohol consumption, showed an association of 149% with the emergence of depressive symptoms. Such result was confirmed by multivariate analysis, which showed association of almost four times more between partners who consumed alcohol and the emergence of depressive symptoms. These findings admit the relationship between the welfare of the pregnant and the partner's behavior. A partner who abstains himself from alcoholic beverages provides a better quality of life by ensuring more security, companionship and reducing stress factors, because the alcoholism by partner may be a family breakdown generator, weakening emotional relationships, causing unemployment and pregnancy complications[24].

In this context, the consumption of alcoholic beverages by a family member can cause anxiety, stress and traumas in the other members[25]. It may also increase, by almost seven times, the cases of domestic physical violence. Similarly, living with close relatives who are alcohol consumers, can trigger episodes of depression[26].

Thus, when alcohol consumption reaches the pregnant woman herself, the problem assumes more complex contours, as it can directly affect the baby. In this study, we confirmed the association between depressive symptoms (in bivariate and multivariate analyses) and alcoholism in the first three months of pregnancy. The consumption of alcohol may be a leak to stressful situations, but, at the same time, it contributes to the development of depression. In this circumstance, the women who consumes alcohol and who is depressed, will not have enough mood to take care of herself and nor of the child.

In a recent survey in the United States to non-pregnant women, 3.4% were at risk of a pregnancy exposed to alcohol because they continued to drink even after they stopped using contraceptives. These women were at risk of having children born with Fetal Alcoholic Syndrome (FAS). According to the study, for pregnant women or the ones who intend to become pregnant, there is an urgent need for an implementation of prevention programs, because the worst damages occur in the embryonic period. The rule is to abstain from alcohol at any stage of pregnancy since the injuries are permanent and irreversible[27]. As the risks are dangerously higher for the offspring than for mothers[28], it is evident the urgent need for awareness campaigns.

In the present investigation, when we analyzed the consumption of ethanol throughout pregnancy, the association in multivariate analysis was not confirmed. This fact possibly occurred because it would be less embarrassing for pregnant woman to admit the consumption of alcohol in the beginning of pregnancy. Moreover, because it is a sensitive question, it is expected a rate of underestimated answer, that is, that the pregnant does not exactly express her opinion, preference or the authentic behavior of the interviewed person[29].

A survey conducted in Brazilian public hospitals30 found one out of six pregnant women consuming alcoholic beverages. As the present study found approximately about one out of five pregnant women, it means that the situation of patients in Goiânia is relatively more serious. This difference is probably due to the fact that the surveyed women mentioned in the research above, showed only low-risk pregnancy, while in this study, women at low and high risk pregnancy were mentioned.

The analysis of the factors that influenced the consumption of alcohol by pregnant women who attended bars in South Africa in 2013, it was found that, the beverage was as an escape valve to handle stress and negative emotions, to live with an unplanned pregnancy or to maintain social connection[31]. As a result, the chronic exposure to alcohol or to drugs during prenatal care can lead to premature births by placental abruption and abortion[32]. In addition, children of alcoholic mothers may have motor difficulties, difficulties in relationships, mental disabilities, hearing and visual disabilities[26], which makes the work of health professionals more relevant referring to counseling of this population. The alcoholism by pregnant woman, besides the previous known disorders caused in the offspring[33], can take her into depression[34] with additional implications for the child in both prenatal and postpartum[10].

In a similar research conducted by the University of San Diego, California with women in the perinatal period in obstetric and gynecological clinics, it was found that, pregnant women who were psychoactive substances consumers were the most depressed ones34. This result is similar to the one found in this present study which observed a relationship between drug use and depressive symptoms in bivariate analysis. However, as cross-sectional studies do not differentiate on the cause and effect timescale, it is expected that many of those women were already drug addicted before getting pregnant.

The consumption of psychotropic drugs may represent low self-esteem and, when it occurs during pregnancy, it indicates more serious behaviors such as tendency to reckless actions, disregard to the child or an unwanted pregnancy. One example is the fact that drug users have difficulty adhering to prenatal care and therefore, they attend to the control of pregnancy only sporadically[35]. To a care of quality, the mothers would need to present themselves to the institution constantly to a support prenatal care.

Prevalence studies prevent a causal analysis between depressive symptoms and associated factors. Nevertheless, the results have not been compromised and they have brought important contributions to the understanding of the problems experienced by pregnant women.

On the other hand, the present work exposes multiple strengths as the use of an instrument internationally recognized and validated in Brazil. Finally, it is noteworthy that the sample calculation increased the statistical power of the study, that the sample was representative, minimizing a possible sampling bias and that the methodology allowed us to extrapolate the results to similar populations.

The results reinforce the importance of knowing the extent of alcohol consumption by pregnant women when regarding to the association of depressive symptoms during prenatal care. They also suggest that, the interventions done during pregnancy should be based on strategies that also involve the partners, since the alcohol consumption by the partner have relevant association with depressive symptoms during pregnancy.

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CONFLICT OF INTEREST
There is none.

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