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Psychological factors associated with family functionality in pregnant women

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Abstract
Objective: To analyze the psychological factors associated with family functionality in pregnant women with pregestational and gestational diabetes.
Materials and Methods: Observational, prospective, cross-sectional, and comparative study conducted at a Family Medicine Unit in Veracruz, Mexico, between October 2024 and February 2025. A total of 135 pregnant women were included, both with and without diabetes, and normoevolutive. The FF-SIL test was used to assess family functionality, and the HADS scale was applied to evaluate psychological factors such as anxiety and depression. Descriptive statistics and chi-square tests were used to analyze associations, with significance set at $p<0.05$.
Results: Regarding family functionality, among women with pregestational diabetes, 23 (51.11%) were functional, and 17 (37.78%) were moderately functional; among those with gestational diabetes, 27 (60%) were functional, and 15 (33.33%) were moderately functional; among normoevolutive women, 33 (73.3%) were functional, and 11 (24.4%) were moderately functional.
Regarding psychological factors, among those with pregestational diabetes, 17 (37.78%) presented anxiety, 6 (13.33%) presented both anxiety and depression, and 21 (46.67%) presented neither; among those with gestational diabetes, 16 (35.56%) had anxiety, and 19 (42.22%) had none; among normoevolutive women, 19 (42.22%) had anxiety, and 18 (40%) had none of these conditions.
An association was found between psychological factors and family functionality in pregnant women with pregestational diabetes ($p = 0.0062$), as well as in normoevolutive pregnant women ($p = 0.0268$).
Conclusions: There is an association between psychological factors and family functionality in pregnant women with pregestational diabetes. Therefore, comprehensive management is important, considering not only metabolic status but also the psychological and family aspects of pregnant women.

Keywords: Functionality, anxiety, depression, pregnancy, diabetes

Introduction

Pre-existing and gestational diabetes are a multifactorial disease, [1]. It is extremely important to maintain comprehensive care, which includes social, cultural, and psychological aspects, how they develop in their environment with this diagnosis and how it has affected their family dynamics [2].

From a psychological perspective, the diagnosis of diabetes during pregnancy can trigger feelings of anxiety, fear, uncertainty, and depression, which directly impact family dynamics [3]. Family functionality, understood as the family's ability to adapt, communicate, and provide emotional support, becomes a key factor for the well-being of the pregnant woman and the healthy development of pregnancy [4].

Families physiologically go through stressful situations according to their family cycle and in this context, although pregnancy counts as part of these situations, developing a pathology places this stressor outside the family cycle, which can affect its functionality [5].

Hence the need to comprehensively understand the impact of psychological factors on family functionality, in order to identify areas of intervention that strengthen support networks, improve adherence to treatment, and reduce complications associated with high-risk pregnancies [3].

This was done by examining the psychological alterations of pregnant women with pregestational, gestational and normoevolutionary diabetes and identifying family functionality in pregnant women with pregestational, gestational and normoevolutionary diabetes [6].

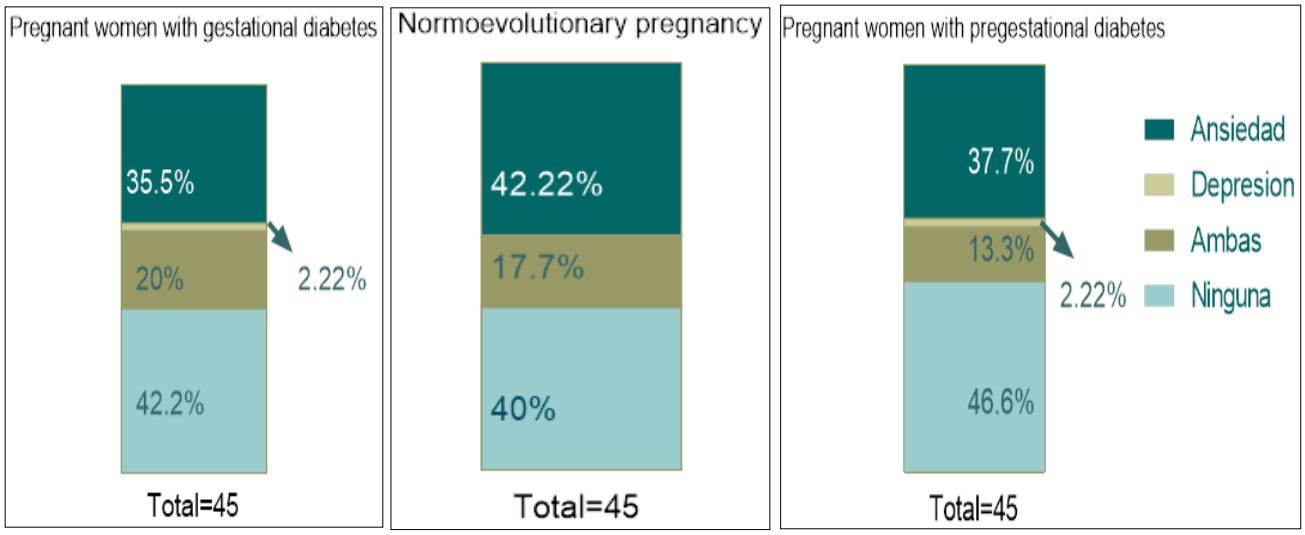
For this reason, it is considered important to consider the family functionality of both a pregnant woman who is already known to have a diagnosis of diabetes and a pregnant woman who discovers during the course of her pregnancy that she has this pathology, and within the multiple areas that have been researched on both pathologies, no look has been given to the family dynamics and the way in which it is affected, [7]. It is for this reason that it is hypothesized that psychological factors are associated with family functionality in pregnant women.

Material and Methods

After the approval of the Research and Ethics Committee 3101, obtaining registration number R-2024-3101-037, before Cofepris, a comparative cross-sectional study was carried out in the outpatient clinic of the Family Medicine Unit No. 1, in the period from October 2024 to February 2025, with a population of pregnant women in the Family Medicine Unit No. 1 of the IMSS of the City of Orizaba, Veracruz, Mexico, of 584 and given the characteristics of the research, a sample was estimated, with a 95% confidence level, (Z1-α) with a value of 1.96, an accuracy of 5% and a prevalence of 29.6% of pregnant women with diabetes in Mexico, the sample size of 135 was obtained, pregnant women from more than 24 to 40 weeks of gestation with a diagnosis before the conception of diabetes, pregnant women diagnosed with diabetes after the 24th week of gestation and normoevolutionary pregnant women, excluding those women with pregnancies of less than 24 weeks of gestation or who do not wish to participate in the study. A questionnaire was applied to them to obtain the following data: age, education, occupation, marital status, place of origin, then the FF-SIL, -8 family functionality test was applied. The HADS (Hospital Anxiety and Depression Scale) test for depression and anxiety was also applied, -9. The following variables were used: age, marital status, education, occupation, family functionality, psychological factors. Within the ethical aspects in accordance with the regulations of the General Health Law on research, in this protocol the criterion of respect for their dignity and the protection of their rights and well-being prevails, based on the Nuremberg Principles, in this study the voluntary consent of the subject was signed, beneficial results were obtained in favor of the well-being of the individual, their family and society, knowing the impact that the pathology has on the family functionality of the pregnant woman, leaving the patient free to leave the study as soon as they wish. After the data was collected in an Excel sheet, the variables were analyzed using descriptive statistics, the qualitative variables were expressed in frequencies and percentages as well as in tables and graphs, the quantitative variables were expressed through measures of mean central tendency, median and mode, in inferential statistics to analyze the sociodemographic variables and the clinical variables X2 was used considering statistically significant those in which a p> 0.05 is obtained.

Results

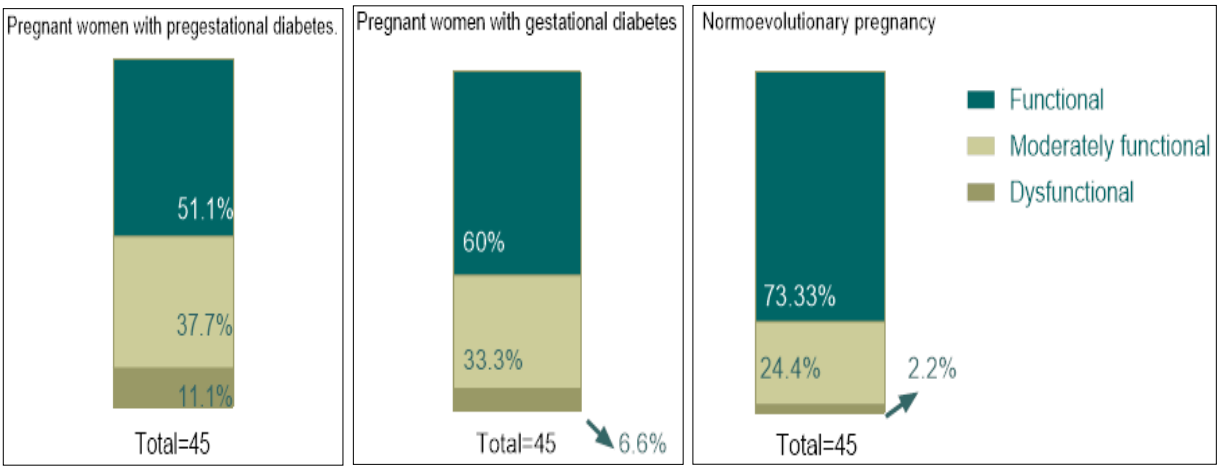
As for psychological factors, the HADS (Hospital Anxiaety and Depression Scale) test was applied in order to assess whether pregnant women were carriers of anxiety, depression, both or neither. Of the pregnant women with pregestational diabetes, we found that of the 45, 17 (37.78%) presented anxiety, 1 (2.22%) presented depression, 6 (13.33%) had both, and 21 (46.67%) did not have any. Of those with gestational diabetes, 16 (35.56%) had anxiety, 1 (2.22%) had depression, 9 (20%) are carriers of both, and 19 (42.22%) have none. Finally, of those with normoevolutionary pregnancy, 19 (42.22%) had anxiety, 8 (17.78%) had both diseases, 18 (40%) had none of these, and none presented depression (See Figure 1).



Source: Authors. In total, 52 (38.52%) of the pregnant women present anxiety. n = 135.

Fig 1: Distribution according to psychological factors of pregnant women

To assess family functionality, we applied the FF-SIL test, which assesses the fulfillment of basic functions and the dynamics of internal relationships in the family, the relational and interactive dynamics between the members. When applying this test, we found that of the 45 pregnant women with pregestational diabetes, 23 (51.11%) had a functional family dynamic, 17 (37.78%) a moderately functional dynamic, 5 (11.11%) a dysfunctional dynamic, and none a severely dysfunctional dynamic. Of the pregnant women with gestational diabetes, 27 (60%) have functional family dynamics, 15 (33.33%) moderately functional dynamics, 3 (6.67%) dysfunctional dynamics, and none severely dysfunctional dynamics. Finally, of the pregnant women with normoevolutionary pregnancies, we found that 33 (73.3%) had a functional family dynamic, 11 (24.4%) had moderately functional family dynamics, 1 (2.22%) had dysfunctional dynamics, and none had severely dysfunctional dynamics. (See Figure 2).



Source: Authors. Of the total of 135 pregnant women, 83 (61.48%) have a functional family dynamic. n=135.

Fig 2: Distribución conforme a la funcionalidad familiar de las embarazada

The association between family functionality and psychological factors of pregnant women was made, finding that of the 45 pregnant women who had pregestational diabetes, 17 (37.78%) had anxiety, of these 5 (11.11%) had a functional family dynamic, 9 (20%) had a moderately functional dynamic and 3 (6.67%) had a dysfunctional family dynamic. The statistical test of X2 was performed where we obtained a p of 0.0062 showing a statistical relevance and association between these variables. Regarding pregnant women with gestational diabetes, it was found that 16 (35.56%) present anxiety during their pregnancy, of these 10 (22.22%) have a functional family dynamic, 5 (11.11%) a moderately functional family dynamic, while only 1 (2.22%) has a dysfunctional family dynamic, in the same way the statistical test of X2 was carried out obtaining a p of 0.8748, thus showing no association of these variables. Finally, regarding pregnant women undergoing a normoevolutionary pregnancy, it was found that 18 (40%) do not have any psychological risk factor, of these 15 (33%) have a functional family dynamic, 2 (4.44%) a moderately functional dynamic, and only 1 (2.22%) a dysfunctional dynamic. When performing the statistical test of X2 with Monte Carlo simulation, we found a p of 0.0268, showing an association between both variables, and giving a statistical significance. (See table 1.).

Table 1: Association between family functionality and psychological factors of pregnant women

Pregnant women with pregestational diabetes						
Psychological factors	**Functional**	**Moderately functional**	**Dysfunctional**	**Severely dysfunctional**	**Totals**	**p**
	F (%)	**F (%)**	**F (%)**	**F (%)**	**F (%)**	
Anxiety	5(11.11)	9(20.00)	3(6.67)	-	17(37.78)	0.0062
Depression	-	-	1(2.22)	-	1(2.22)	
Both	2(4.44)	3(6.67)	1(2.22)	-	6(13.33)	
None	16(35.56)	5(11.11)	-	-	21(46.67)	
Total	23(51.11)	17(37.78)	5(11.11)	0	45(100)	
Pregnant women with gestational diabetes						
Anxiety	10(22.22)	5(11.11)	1(2.22)	-	16(35.56)	0.8748
Depression	-	1(2.22)	-	-	1(2.22)	
Both	5(11.11)	3(6.67)	1(2.22)	-	9(20.00)	
None	12(26.67)	6(13.33)	1(2.22)	-	19(42.22)	
Total	27(60.00)	15(33.33)	3(6.67)	0	45(100)	
Normoevolutionary pregnant women						
Anxiety	10(22.22)	9(20.00)	-	-	19(42.22)	0.0268
Depression	-	-	-	-	-	
Both	8(17.78)	-	-	-	8(17.78)	
None	15(33.33)	2(4.44)	1(2.22)	-	18(40)	
Total	33(73.33)	11(24.44)	1(2.22)	0	45(100)	

Source: Authors.

Of the total number of pregnant women, 52 (38.51%) present anxiety. n=135.

Discussion

The results obtained in this study reveal a significant association between psychosocial factors —mainly anxiety and depression— and family functionality in pregnant women with pregestational diabetes, which coincides with what was reported by Maury-Mena *et al*. (2023), -10. In a systematic review in English and Spanish, conducted in 41 studies with pregnant women, over 18 years of age, diagnosed with gestational diabetes, diagnosis of pregestational diabetes and without diabetes, from 2010 to 2020, who identified that having diabetes before pregnancy generates a considerable emotional impact, including anxiety, fear and uncertainty [10].

In this study, mental health, anxiety and depression are related to the degree of family functionality, finding a p=0.0062, statistically significant; which differs from what was reported by Águila-Pérez *et al*. (2024), -11. who interviewed 72 pregnant women, between 20 and 40 years

old, in the Family Medicine Unit No. 19 of Apizaco, Tlaxcala, using the family Apgar and the Edinburgh scale, to relate the risk of psychological factors, depression, with family functionality, where no statistical significance was observed p=0.982. This difference probably occurred due to the comorbidities presented by the pregnant women in this study, since in what was reported by Águila, pregnant women were taken into account globally, while in this study he focused on pregnant women with pregestational and gestational diabetes [11].

This is confirmed by the study carried out by Villa Olvera (2023), -12. in 156 pregnant women assigned to the Family Medicine Unit #15 of Querétaro, who were at that time over 20 years old, with a sentimental partner and current cohabitation, who were pregnant in the second or third trimester and who had no previous diagnosis of mental illness; in which dysfunction in family relationships—whether in the marital nucleus or in the extended family structure—significantly increases the risk of developing depressive symptoms during pregnancy and the postpartum period. (hard fact). In the case of Villa Olvera, it was found that dimensions such as consensus, cohesion, satisfaction, and expression of affection within the couple have a direct correlation with the presence of prenatal depression. In addition, both studies highlight that sociodemographic factors such as educational level, occupation, marital status and the number of children also have an impact on the appearance of depressive disorders [12].

However, in the present study, no significant association was found between the occupation of pregnant women and family functionality (p 0.9831), which differs from what was reported by Ocampo Rivero *et al* (2025) [13, where the relationship between family functioning and sociodemographic and gyneco-obstetric characteristics in pregnant women attending prenatal care was evaluated, where 679 pregnant women who attended prenatal care at a First Level of Care Health Institution, located in a municipality in the department of Córdoba, Colombia, were studied, where statistical significance was found between these two variables (p 0.033). On the other hand, this agreement agrees with what was found in this study on the association between schooling and family functionality, where we found a non-statistically significant association (p 0.738) and in the study carried out by Ocampo Rivero no significance was found either (p 0.296), so in both there is no relationship with the level of education of the patients with the dynamics of their families. In the same way, there is similarity in both studies between the association between marital status and family functionality, there is agreement between the fact that most pregnant women were in a common-law union, in our study a statistical significance was found (p 0.806) while in what was reported by Ocampo Rivero it was found (p 0.097), although it does not make the association statistically significant in either of the two, in the study carried out in Colombia it is closer than in ours, this is important because having the support of the conjugal system during pregnancy is substantial in the psychological state of women [13].

Conclusion

This study confirms that psychological factors, especially anxiety, are significantly associated with family functionality in pregnant women with pregestational diabetes. Although pregnant women with gestational diabetes also face emotional challenges, in this study, their family functionality tends to be more favorable, possibly due to the opportunity for early intervention and the strengthening of support networks, reported by Maury-Mena [10]. that she mentions at the time of diagnosis of diabetes, psychological and nutritional intervention is carried out and their family support networks are strengthened.

The findings support the existing literature that underscores the importance of comprehensive care that considers not only metabolic control, but also the patient's emotional and family environment. The implementation of psychological and family support strategies could improve the quality of life of these women and reduce the negative impact of diabetes on pregnancy [14].

According to the results obtained in this study, the alternative hypothesis is accepted, where it is established that there is an association between psychological factors and family functionality in pregnant women with pregestational diabetes in this case.

The lack of information on the relationship between family functionality and pregnant women with pregestational and gestational diabetes was limited by the lack of information on the relationship between family functionality and pregnant women with pregestational and gestational diabetes, since not enough studies specifically associated with pregestational and gestational diabetes have been carried out.

When the follow-up of the prenatal control of a pregnant woman begins, the medical approach of the binomial is made, however, their psychological and family factors to cope with the pregnancy are not considered, that is, in a normoevolutionary pregnancy, at the time of having some comorbidity at the time of pregnancy, less attention is paid to these factors that are of vital importance for the adequate evolution of the high-risk pregnancy.

That is why it is expected that the information derived from this study will encourage a comprehensive assessment of pregnant patients, especially if they are at high risk, in order to identify their organic, psychosocial, sociodemographic, as well as family risk factors to allow primary care to provide a better approach to avoid complications of high-risk pregnancies.

Authors' contribution

DMED: Study planning. Database review. Revision of manuscript writing.

MFLM: Study planning, data collection, interpretation of the results and initial writing of the manuscript.

ARJ: Study planning. Revision of manuscript writing.

BSRV: Revision of manuscript writing.

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