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Symptoms of gestational and postpartum anxiety and intention to breastfeed exclusively until six months: results of a prospective cohort in Rio de Janeiro

Sintomas de ansiedade gestacional e pós-parto e intenção de amamentar exclusivo até os seis meses: resultados de uma coorte prospectiva do Rio de Janeiro

Abstract

Objective: To evaluate association between symptoms of gestational and postpartum anxiety and intention to breastfeed exclusively until six months of age. **Methods:** This was a prospective cohort study with a population of women treated at the obstetrics service of a health center in the municipality of Rio de Janeiro. Anxiety symptoms were assessed by the State-Trait Anxiety Inventory in the first trimester of pregnancy (trait anxiety) and 30-45 days postpartum (state anxiety). Intention to breastfeed exclusively up to six months was assessed by a questionnaire administered 30-45 days postpartum. Independent variables were obtained from standardized questionnaires with socioeconomic, obstetric and nutritional data. Crude and adjusted associations were tested by Poisson regression with robust variance. **Results:** A total of 195 women were evaluated in the first trimester of pregnancy, and 185 were evaluated in the postpartum period. Prevalence of trait anxiety symptoms at the beginning of pregnancy was 53%, while postpartum state anxiety was 29%. Fifty-nine percent of women intended to breastfeed exclusively for up to six months. In the adjusted analyses, presence of trait anxiety symptoms was associated with the intention not to breastfeed exclusively until six months (PR=1.70; 95% CI = 1.07-2.72). Presence of state anxiety symptoms in the postpartum period lost its association with the outcome after adjustments (PR=1.54; 95% CI = 0.97-2.44). **Conclusions:** Presence of trait anxiety symptoms negatively influences intention to breastfeed exclusively up to six months. Emphasis is placed on the importance of evaluating the mental health of women during pregnancy and postpartum to ensure exclusive breastfeeding is maintained.

Keywords: Anxiety. Pregnancy. Breast Feeding. Longitudinal Studies..

Resumo

Objetivo: Avaliar a associação entre sintomas de ansiedade gestacional e pós-parto e intenção de amamentar exclusivamente até os seis meses. **Métodos:** Coorte prospectiva com uma população de mulheres atendidas no serviço de obstetrícia de um centro de saúde do município do Rio de Janeiro. Os sintomas de ansiedade foram avaliados pelo Inventário de Ansiedade Traço/Estado no primeiro trimestre da gestação (ansiedade-traço) e 30-45 dias pós-parto (ansiedade-estado). A intenção de amamentar exclusivamente até seis meses foi avaliada por questionário aplicado 30-45 dias pós-parto. Variáveis independentes foram obtidas de questionários

padronizados com dados socioeconômicos, obstétricos e nutricionais. As associações brutas e ajustadas foram testadas por regressão de Poisson com variâncias robustas. **Resultados:** Foram avaliadas 195 mulheres no primeiro trimestre gestacional e 185 no pós-parto. A prevalência de sintomas de ansiedade-traço ao início da gestação foi de 53%, e ansiedade-estado no pós-parto 29%. Cinquenta e nove por cento das mulheres pretendiam amamentar exclusivamente até seis meses. Nas análises ajustadas, a presença de sintomas de ansiedade-traço associou-se com a intenção de não amamentar exclusivamente até os seis meses (RP=1,70; IC95%=1,07–2,72). A presença de sintomas de ansiedade-estado no pós-parto perdeu a associação com o desfecho após os ajustes (RP=1,54; IC95%=0,97–2,44). **Conclusões:** A presença de sintomas de ansiedade-traço influencia negativamente na intenção de amamentar exclusivamente até os seis meses. Ressalta-se a importância de avaliar a saúde mental da mulher na gestação e pós-parto visando proteger a manutenção do aleitamento materno exclusivo.

Palavras-chave: Ansiedade. Gestação. Aleitamento Materno. Estudos Longitudinais.

INTRODUCTION

The benefits of breastfeeding for mother and baby are well known in the literature. Breastfeeding is associated with lower risk of diarrhea and respiratory infections,¹ lower incidence of obesity and diabetes, as well as a positive effect on the intellectual quotient² and lower mortality in children.³ Regarding maternal health, breastfeeding is associated with reduced risk of breast and ovarian cancer and a lower risk of cardiovascular risk factors such as obesity, diabetes, dyslipidemia and hypertension, in addition to acting positively on the mental health of the mother.^{4,5}

The World Health Organization (WHO) recommends exclusive breastfeeding until the sixth month of age, and from this period, the child should receive complementary feeding, maintaining breastfeeding until at least two years of age.⁶ Although there was an increase in the prevalence of exclusive breastfeeding in Brazil in children under six months of age between 2013 and 2015 - from 36.6% to 54%, this frequency is still low.^{7,8} Prevalence of breastfeeding in children under two years of age in 2013 was 52.1%.⁷

Pregnancy and the puerperium are periods marked by physical, hormonal, psychological and social changes, which may affect the mother's mental health,⁹ and maternal anxiety can influence several aspects of the baby's health, including breastfeeding.^{10,11} In contrast, the literature has also shown that cessation of breastfeeding increases maternal anxiety levels,¹² suggesting a possible bidirectionality in this relationship.

Although it has been reported in the literature that maternal anxiety is associated with intention to breastfeed,^{13,14} this relationship is not yet fully understood, and studies on the subject are still scarce.^{10,11} Thus, further studies investigating this issue are justified to fill this gap in the literature.

Given the relevance of the topic, the following guiding question was prepared: are gestational and postpartum anxiety associated with the intention to breastfeed exclusively until six months?

The present study aimed to evaluate association between symptoms of gestational and postpartum anxiety and intention to breastfeed exclusively up to six months.

METHODS

Study design, population and location

This is a prospective cohort study with pregnant women who received prenatal care at the Heitor Beltrão Municipal Health Center in the municipality of Rio de Janeiro-RJ, Brazil.

Calculation of the study sample

To calculate the sample size of the present study, 20.4% prevalence of intention not to breastfeed exclusively was considered,¹³ as were a prevalence ratio of 1.4, 80% power and a 95% confidence level, resulting in a minimum number of 171 participants. A further 30% was added for losses, thus requiring a minimum sample of 222 women.

Sample selection

Pregnant women who met the following inclusion criteria during the recruitment period were selected to participate in the study: i) gestational age between 5 and 13 weeks; ii) age between 20 and 40 years; iii) absence of chronic noncommunicable diseases (except obesity); iv) absence of infectious or parasitic

diseases; v) single pregnancy; (vi) residing in the study area; and vii) attending prenatal care sessions at the site where the study was conducted. The exclusion criteria were pregnancy over 13 weeks, twin pregnancy, presence of communicable diseases and chronic diseases, except obesity.

Data collection

All interviews were scheduled beforehand (except for recruitment) and performed face-to-face. The interviewers were trained and standardized by the research coordinators before the beginning of the field work, with theoretical and practical training and a pilot study. The theoretical training stage was conducted at the Federal University of Rio de Janeiro (*Universidade Federal do Rio de Janeiro*), and the practical training and pilot study took place at the Health Center where the study was conducted.

Recruitment occurred between November 2009 and October 2011 in the prenatal care health center, and 93% of eligible women agreed to participate. The women were interviewed three times during pregnancy, between gestational weeks 5-13, 20-26 and 30-36, and 30-45 days after delivery. This study used information from the first interview and the last follow-up interview.

All questionnaires were standardized for the collection of demographic, socioeconomic, anthropometric, behavioral and mental health data.

Exposure variables: maternal anxiety symptoms

The independent variables (exposures) of the study were symptoms of trait anxiety at the beginning of pregnancy and symptoms of postpartum state anxiety. These variables were investigated using the State-Trait Anxiety Inventory (STAI),¹⁵ which was translated, adapted and validated for Brazil.¹⁶ This is based on the dualistic conception proposed by Cattell & Scheier¹⁷ and characterizes anxiety symptoms in two distinct concepts: trait and state anxiety symptoms.^{15,16} The former refers to more general and long-standing symptoms, while the latter refers to symptoms of temporary anxiety. On the trait anxiety scale, the person describes how they usually feel.^{18,19} The scores of this scale are less sensitive to changes resulting from environmental situations and remain relatively constant over time.¹⁵ The state-anxiety symptoms scale, in turn, evaluates the emotional state of transition generated by a stressful situation; in this case, interviewees describe how they feel at the moment, how they felt in the recent past or how they anticipate their feelings to be in a specific situation.²⁰

The STAI scale consists of 40 items, 20 corresponding to trait anxiety and 20 to state anxiety. Each item of the scale has four answer alternatives: almost never, sometimes, often and almost always, with values ranging from one to four points. Thus, for each concept of anxiety, the minimum score achieved is 20 points, and the maximum is 80 points; the higher the score, the greater the chance of the individual presenting symptoms of anxiety.^{16,18,21}

In the present study, trait anxiety symptoms were evaluated in the first trimester of pregnancy, and state anxiety symptoms were assessed in the last interview 30 to 45 days after delivery. A score above 40 points was considered to be a cutoff point for symptoms of trait/state anxiety, as also used by Rondó et al.²²

Outcome variable: intention to breastfeed exclusively

The dependent variable (outcome) of the study was the intention to maintain exclusive breastfeeding until six months. Breastfeeding practices were evaluated by a standardized questionnaire administered between 30 and 45 days postpartum. The mothers were asked about breastfeeding in the current period and breastfeeding exclusively (without water, sweetened water, teas, infusions, fruit juice and ritual liquids). Finally, the mothers were asked about their intention to breastfeed exclusively until six months, as per WHO recommendations.⁶

Covariates

At each stage of the study, questionnaires were applied to collect information, which provided covariates to adjust the statistical analysis between exposure and outcomes: age (20-29, 30-34, 35 or more years), skin color (white, black / brown), education (0-4, 5-8, 9-11, 12 or more years), marital status (with partner, without partner), work/maternity leave (does not work / works and has maternity leave, works and does not have maternity leave), total family income (in tertiles of Brazilian currency (Real), parity (0, ≥ 1), desire to become pregnant (wanted to become pregnant, did not want to/wanted to wait a little longer), pre-pregnancy body mass index (BMI) (low weight, normal weight, overweight, obesity) and guidance on breastfeeding during prenatal care (no, yes).

Nutritional status was assessed based on pre-pregnancy BMI (kg/m^2), calculated from pre-pregnancy weight and height data collected during the first interview, and categorized according to the cutoff points established by the WHO.²³ Reported pre-pregnancy body weight was obtained when the first questionnaire was administered. Height was measured twice using a portable stadiometer (Seca Ltd., Hamburg, Germany) by interviewers previously trained with standardized techniques as recommended by the Ministry of Health.²⁴

Statistical analysis

Statistical analyses were performed using Stata software version 14.0 (StataCorp, College Station, Texas, USA). A descriptive analysis of the variables was performed in order to characterize the study sample. Categorical variables were expressed as absolute and relative frequencies, and continuous variables, after being assessed for normal distribution (using the Shapiro-Wilk test, histogram, skewness and kurtosis), were expressed as measures of central tendency and dispersion (mean, median, standard deviation and interquartile range).

Association between anxiety symptoms (trait/state) during pregnancy and the postpartum period and intention in the first postpartum month not to breastfeed exclusively until six months was verified by Poisson regression with robust variance. Initially, bivariate analysis of the possible associations between the exposures (symptoms of trait anxiety and state anxiety) and the outcome (intention not to breastfeed exclusively until six months) was performed. Next, the covariates (age, skin color, education level, marital status, total family income, parity, maternal desire to become pregnant, pre-pregnancy body mass index, guidance on prenatal breastfeeding and work/maternity leave) were included in the multivariate regression analysis to obtain estimates of prevalence ratios and respective confidence intervals, adjusted for possible confounding factors. When probability was lower than 5% ($P < 0.05$), the null hypothesis was rejected.

Ethical aspects

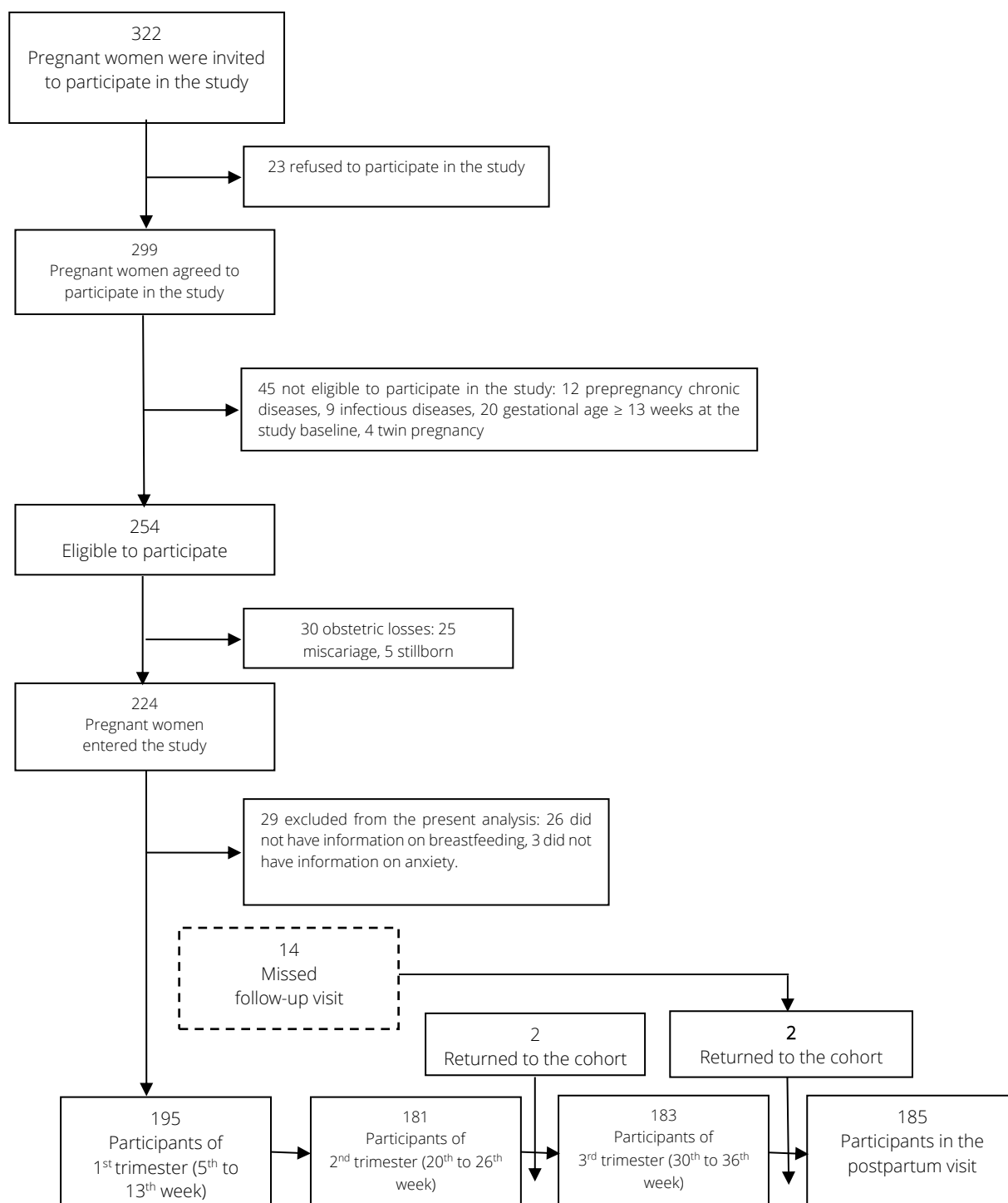
The study was submitted to and approved by the Research Ethics Committee of the Federal University of Rio de Janeiro Institute of Psychiatry (Document No. 98ALiv2-09) and the Research Ethics Committee of the Rio de Janeiro City Health Department (Document No. 168A/2009).

The study respected the ethical aspects of studies involving human beings, as governed by National Health Council Resolution 466/2012. All participants signed an informed consent form after clarifying the objectives and other details relevant to the study.

RESULTS

Of the 254 pregnant women eligible to participate in the study, 30 reported miscarriage or stillbirth; thus, 224 women joined the study. In the first trimester, 29 participants were excluded due to lack of information on the breastfeeding and mental health questionnaires, resulting in a sample of 195 women with complete data for analysis. During the second and third trimesters of pregnancy there were 14 follow-up losses, but four other pregnant women returned to the study. Thus, a sample of 185 women (27% losses) were interviewed in the postpartum period (Figure 1).

Figure 1. Study flowchart



When comparing the women who remained in the study until the postpartum interview with the losses to follow-up in relation to the age ($P=0.301$), skin color ($P=0.869$), education ($P=0.314$), marital status ($P=0.089$), total family income ($P=0.456$) and parity ($P=0.642$) variables, no significant differential loss was observed.

Among the pregnant women monitored, approximately 70% were in the 20-29 years age range. The majority (74%) of the participants were nonwhite, 50% of the sample had 9-11 years of schooling, and 80% lived with a partner. Median total family income in the first tertile was R\$754.00 (interquartile range: R\$580.00

to R\$1,030.00); 42.6% wanted to become pregnant, and 56% began pregnancy with adequate BMI. At the end of prenatal care, more than half (57%) reported not having received guidance on breastfeeding during prenatal care, and 41% worked without the right to maternity leave. Regarding obstetric characteristics, 63% of the women had one or more children (Table 1).

Table 1. Socioeconomic, demographic, and cultural characteristics of women participating in the pregnancy cohort study at the Heitor Beltrão Municipal Health Center, Rio de Janeiro, Brazil, 2009-2012 (n=195).

Variables	Total		Intention to breastfeed exclusively up to six months				
			Yes		No		P*
	N	%	n	%	n	%	
Age (years)							0.293
20 to 29	136	69.7	82	60.3	54	39.7	
30 to 34	37	19.0	16	43.2	21	56.8	
35 to 40	22	11.3	14	63.6	8	36.4	
Skin color							0.141
White	49	25.1	34	69.4	15	30.6	
Black/ brown	146	74.9	79	54.1	67	45.9	
Education (years)							0.078
0 to 4	21	10.8	6	28.6	15	71.4	
5 to 8	68	34.9	46	67.6	22	32.4	
9 to 11	98	50.2	58	59.2	40	40.8	
12 or more	8	4.1	4	50.0	4	50.0	
Marital status							0.392
With partner	156	80.0	94	60.3	62	39.7	
Without partner	39	20.0	19	48.7	20	51.3	
Total family income †							0.859
1 st tertile (R\$100 – R\$1,060)	59	30.4	35	59.3	24	40.7	
2 nd tertile (R\$1,072 – R\$1,620)	66	34.0	36	54.5	30	45.5	
3 rd tertile (R\$1,639 – R\$9,500)	69	35.6	41	59.4	28	40.6	
Parity							0.138
0	72	36.9	49	67.5	23	32.5	
≥1	123	63.1	66	53.3	57	46.7	
Desire to become pregnant							0.563
Yes	83	42.6	51	61.2	32	38.8	
No	112	57.4	63	55.9	49	44.1	
Prepregnancy body mass index							0.888
Underweight (<18.5 kg/m²)	3	1.5	1	33.3	2	66.7	
Normal weight (18.5 to 24.9 kg/m²)	110	56.4	63	57.3	47	42.7	
Overweight (25.0 to 29.9 kg/m²)	59	30.3	37	62.7	22	37.3	
Obese (> 29.9 kg/m²)	23	11.8	12	52.2	11	47.8	
Guidance on breastfeeding during prenatal care							0.563
No	112	57.4	63	56.3	49	43.7	
Yes	83	42.6	51	61.4	32	38.6	
Work/maternity leave ‡							0.132
Does not work/works and has maternity leave	100	59.5	49	49.0	51	51.0	
Works without maternity leave	68	40.5	44	64.7	24	35.3	

* P-value refers to the chi-square test;

† variable with one missing information; ‡ variable with 27 missing information.

Prevalence of trait anxiety symptoms among the women evaluated was 53%, and state anxiety in the first month postpartum was 29%. Regarding breastfeeding in the first month postpartum, 96% of women reported breastfeeding; of these, 64% exclusively breastfed, and 59% reported having the intention to breastfeed exclusively up to six months.

It was found that the women evaluated had more trait anxiety symptoms when they had less education and parity equal to or greater than one. Regarding postpartum state anxiety, White women who lived without a partner and who had had one delivery or more had more symptoms of state anxiety (Table 2).

Table 2. Mean (95% CI) of symptoms of gestational trait anxiety and postpartum state anxiety according to characteristics of the women participating in the pregnancy cohort at the Heitor Beltrão Municipal Health Center, Rio de Janeiro, Brazil (2009-2012).

Variables	Follow-up period					
	Trait-anxiety 5 th -13 th gestational week (n=195)			State-anxiety 30-45 days postpartum (n=185)		
	n	Mean (95% CI) [†]	P*	n	Mean (95% CI) [†]	P*
<i>Age (years)</i>			0.613			0.386
20 to 29	136	42.43 (40.93-43.94)		129	37.11 (35.87-38.35)	
30 to 34	37	42.00 (38.76-45.24)		35	39.17 (35.49-42.85)	
35 to 40	22	44.30 (39.83-48.77)		21	38.50 (33.98-43.02)	
<i>Skin color</i>			0.755			0.038
White	49	42.81 (40.31-45.31)		47	39.65 (36.98-42.33)	
Black/ brown	146	42.36 (40.84-43.88)		138	36.85 (35.56-38.14)	
<i>Education (years)</i>			0.008			0.649
0 to 4	21	46.10 (41.11-50.99)		20	38.27 (34.56-41.99)	
5 to 8	68	44.66 (42.22-47.11)		63	38.49 (36.26-40.73)	
9 to 11	98	41.32 (39.62-43.02)		94	37.02 (35.47-38.56)	
12 or more	8	37.29 (33.69-40.88)		8	36.00 (27.81-44.19)	
<i>Marital status</i>			0.599			0.015
With partner	156	42.40 (40.95-43.85)		147	37.10 (35.95-38.25)	
Without partner	39	43.26 (40.25-46.26)		38	41.52 (36.37-46.67)	
<i>Total family income[‡]</i>			0.076			0.890
1 st tertile (R\$100 – R\$1,060)	59	44.97 (42.21-47.72)		55	37.71 (35.71-39.70)	
2 nd tertile (R\$1,072 – R\$1,620)	66	41.17 (38.91-43.43)		62	37.09 (35.15-39.70)	
3 rd tertile (R\$1,639 – R\$9,500)	69	42.19 (40.20-44.18)		67	37.71 (35.21-40.2)	
<i>Parity</i>			0.012			0.037
0	72	40.85 (39.21-42.5)		71	36.03 (34.41-37.65)	
≥1	123	43.99 (42.33-45.65)		114	38.59 (36.98-40.21)	
<i>Desire to become pregnant</i>			0.328			0.491
Yes	83	42.01 (40.14-43.88)		80	37.14 (35.41-38.88)	
No	112	43.23 (41.64-44.82)		105	37.98 (36.35-39.61)	
<i>Prepregnancy body mass index</i>			0.119			0.686
Underweight (<18.5 kg/m ²)	3	41.13 (34.42-47.83)		3	38.75 (25.73-51.77)	
Normal weight (18.5 to 24.9 kg/m ²)	110	41.59 (39.93-43.24)		101	37.63 (36.05-39.22)	
Overweight (25.0 to 29.9 kg/m ²)	59	44.04 (41.75-46.33)		58	36.79 (34.86-38.72)	
Obese (> 29.9 kg/m ²)	23	45.32 (41.97-48.68)		23	39.19 (34.71-43.66)	
<i>Guidance on breastfeeding during prenatal care</i>			0.899			0.759
No	112	42.54 (40.69-44.39)		106	37.82 (36.27-39.37)	
Yes	83	42.37 (40.42-44.31)		79	37.44 (35.52-39.36)	
<i>Work/maternity leave[§]</i>			0.471			0.208
Does not work/works with maternity leave	100	41.41 (39.53-43.28)		95	37.46 (35.76-39.16)	
Works without maternity leave	68	42.45 (40.25-44.66)		63	39.12 (37.13-41.10)	

95% CI, 95% confidence interval; * P-value refers to the chi-square test; [†] State-Trait Anxiety Inventory of Spielberger et al. (1970); [‡] variable with one missing; [§] variable with 27 missing information.

Regarding association between symptoms of trait/state anxiety and intention not to breastfeed exclusively until six months, in the crude analyses, the intention to not breastfeed exclusively until six months was 77% higher among mothers who showed symptoms of state anxiety postdelivery (PR = 1.77; 95% CI: 1.17-2.66). In the adjusted analyses, it was found that the intention to not breastfeed exclusively until six months was 70% higher among those with greater trait anxiety symptoms. In addition, there was a borderline association between symptoms of state anxiety in the postpartum period and intention not to breastfeed exclusively until six months of age (Table 3).

Table 3. Crude and adjusted analysis of association between intention not to breastfeed exclusively until six months and symptoms of gestational trait anxiety and postpartum state anxiety. Rio de Janeiro, Brazil (2009-2012).

	Prevalence (%)	Intention not to exclusively breastfeed until six months	
		Crude PR (95% CI)	Adjusted PR [†] (95% CI)
Gestational trait-anxiety symptoms			
No	34.4	Reference	Reference
Yes	47.1	1.37 (0.89 – 2.10)	1.70 (1.07 – 2.72)
Postpartum state-anxiety symptoms			
No	33.0	Reference	Reference
Yes	58.3	1.77 (1.17 – 2.66)	1.54 (0.97 – 2.44)

[†] Adjusted for age, skin color, education, marital status, total family income, parity, desire to become pregnant, prepregnancy body mass index, guidance on breastfeeding during prenatal care, and work/maternity leave.

Abbreviations: PR, Prevalence ratio; 95% CI, 95% confidence interval.

DISCUSSION

In this study, there was high prevalence of anxiety symptoms during pregnancy and postpartum, and just over half of the women intended to continue exclusive breastfeeding until six months. In addition, presence of gestational trait anxiety symptoms was associated with the intention to not breastfeed exclusively until six months.

Regarding the prevalence of anxiety symptoms in the first trimester of pregnancy, other Brazilian studies with pregnant women have shown different results. Rondó et al.²⁵ reported similar prevalence (51%) to that of our study, while in the study by Cunha et al.²⁶ prevalence was 36%.

Studies conducted in Brazil investigating prevalence of anxiety disorders in the first postpartum months are scarce.²⁷ Tavares et al.²⁸ reported 17% prevalence of some form of anxiety disorder 30-90 days postpartum in Pelotas/RS. In developed countries, lower prevalence rates of anxiety symptoms have been reported in both the first trimester and the first postpartum months.^{29,30}

Prevalence of intention to breastfeed exclusively up to six months in our study was low when compared to other studies conducted in Brazil and other countries.³¹⁻³³ This result is of concern because introducing other foods before the sixth month can harm the child's health. Early introduction of other foods is associated with a greater number of episodes of diarrhea and hospitalizations due to respiratory disease, as well as higher risk of malnutrition if the foods are nutritionally inferior to breast milk, less absorption of important nutrients from breast milk, and shorter duration of breastfeeding.³⁴

The negative association between gestational anxiety and intention to breastfeed corroborates the results of previous studies. It is noteworthy, however, that there is a lack of studies related to the subject,

especially in recent years. A study conducted with pregnant American women in the first trimester showed that women with high levels of gestational anxiety were approximately twice as likely to plan feeding their children with formulas in partial or total replacement of breast milk in the first week of life.¹³ Another study with Hispanic women found that prevalence of intention to breastfeed exclusively or to bottlefeed simultaneously among pregnant women in the highest quartile of trait anxiety at the beginning of pregnancy was 34% lower when compared to those in the lowest quartile.¹⁴

Many women make their decision about breastfeeding before delivery, and the majority who plan to breastfeed during pregnancy do initiate breastfeeding.³⁵ Thus, prenatal anxiety symptoms may affect a woman's plans to breastfeed and may be early risk factors for breastfeeding failure.¹⁰

Our study has strengths to be considered. This is a prospective cohort study in which we followed women from the first trimester of pregnancy and in the postpartum period, with no doubts about temporality of exposure and outcomes. In addition, the instrument used to assess anxiety had been previously translated, adapted and validated for the Brazilian population and has a dualistic concept, allowing us to distinguish the concepts of trait and state anxiety.

Some limitations of the present study can be noted. These include postpartum evaluation in a short period of time, since one month after birth was not enough time to observe higher frequencies of early weaning and non-exclusive breastfeeding. However, early questioning of the intention to maintain breastfeeding is relevant for identifying fragile periods and which interventions may be necessary.

It was also not possible to predict whether the mothers who reported not having the intention to continue breastfeeding exclusively until six months of age introduced formulas or other foods/liquids during this period. In addition, we cannot rule out the possibility of bias in the implementation of the study. Selection bias may have been introduced, since the study was conducted in a single health institution in the municipality, and the women attending the health center where the study was conducted may have distinct and particular characteristics in relation to the other women in the municipality studied in general. Thus, the results observed may not be representative of the entire female population of Rio de Janeiro.

The data collected may also be subject to information bias. Regarding the pre-pregnancy weight variable, which was collected retrospectively, there is the possibility that some women did not remember accurately their weight before becoming pregnant (memory bias). However, as this information was collected at the beginning of pregnancy, it is believed that this bias has been minimized. To minimize these and other biases of participation in the study, such as false answers, the study was conducted with methodological rigor and application of standardized questionnaires and interviewers trained to conduct the questions in a clear and neutral manner.

CONCLUSION

Some of the results of the present study are of concern with regard to high prevalence of symptoms of maternal anxiety and the low percentage of intention early in the postpartum period not to breastfeed exclusively until six months. Presence of trait anxiety at the beginning of pregnancy and postpartum state anxiety showed a significant and borderline association, respectively, with intention not to breastfeed exclusively until six months. These findings highlight the importance of evaluating the mental health of women during pregnancy and postpartum, aiming at prevention and intervention (if necessary), in order to avoid occurrence of non-exclusive breastfeeding until the age of six months and early weaning.

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Contributors

Moraes AOS, Magalhães EIS and Vilela AAF collaborated with data analysis and interpretation and drafting the manuscript; Kac G and Vaz JS were responsible for the study design and critical review of the intellectual content of the manuscript. All the authors have approved the final version to be published and assume responsibility for all aspects of the study, including ensuring its accuracy and integrity.

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