Antenatal Depressive Symptoms Associated with Specific Life Events and Sources of Social Support Among Italian Women

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Abstract This study aimed to identify different kinds of stressful life events and social support associated with antenatal depressive symptoms in a sample of pregnant Italian women. We conducted the study at a primary health-care centre in an urban area (northeast Italy). Mainly recruited at antenatal classes, 404 eligible pregnant women completed a socio-demographic questionnaire that included questions about the present pregnancy, the Edinburgh Depression Scale (EDS) to estimate the prevalence of depressive symptoms, the Multidimensional Scale of Perceived Social Support and List of Threatening Experiences Questionnaire to investigate the quality and nature of social support and recent negative life events. Of the 404 women, 60 (14.9 %) scored 13 or higher on the EDS. This group reported significantly lower social support from various sources—family, friends, and significant others; only in primiparous women were depressive symptoms significantly related to lower support from friends. Women with EDS scores equal or higher than 13 also reported a higher occurrence of recent stressful life events—specifically, death or a serious problem with a close friend or relative, unemployment, financial problems, and moving or housing difficulties. Regression analyses showed that women with high levels of social support or with a positive experience of pregnancy were less likely to experience antenatal depressive symptoms. Our results underscore the associations among antenatal depression, specific life stressors, and low social support from various sources. Clinical attention to these psychosocial correlates is recommended toward detecting vulnerability to antenatal depressive symptoms.

Keywords Pregnancy · Antenatal depression · Stressful life-events · Sources of social support · Edinburgh Postnatal Depression Scale

Introduction

Defined as spanning pregnancy and the 1st postnatal year [1], the perinatal period is recognized as a sensitive time for a mother's emotional well-being. It is characterized by hormone-level fluctuations, many physical and psychological changes, and social adjustment to the new parental role [2]. Following these changes, some women experience moderate to severe adjustment difficulties throughout pregnancy and the postpartum period. Depressive symptoms are fairly frequent during the perinatal period, and their estimated prevalence varies 10–20 % in Western countries. They occur during pregnancy, after birth, or during both periods [2, 3]. Recent studies have focused on antenatal depression and reported equal or higher levels of symptoms than with postnatal depression [4–9]. They have found adverse consequences on maternal self-care, obstetric and birth outcomes [10], and foetal and infant development [11]. Antenatal depression has also been recognized as a major predictive factor for postnatal depression [12, 13].

Recent international clinical guidelines underscore the importance of conducting a preventive psychosocial assessment to reduce the impact of depression during the perinatal period [1]. A common approach to conducting a

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full psychosocial assessment is the identification of the major risk factors found by meta-analyses to be largely associated with depression during the perinatal period [14]. Those factors include: a history of depression and anxiety, a family history of health or psychological difficulties, lack of social support, difficulties in the relationship with the partner, life stressors, and adverse life events [15–17]. Among those factors, lack of social support has been well investigated—especially in relation to postnatal depression—in terms of material and emotional support from the woman's partner and close family members. Lack of emotional and practical help may contribute to decreasing the coping abilities of women in facing stressful events, and this vulnerability can increase after childbirth in the presence of the newborn's demands. Low levels of social support during pregnancy have been found to be associated with depressive symptoms, negative maternal emotional well-being, and poorer quality of life, health behaviours, and lifestyle habits [18–23]. Few studies have focused on the role of support networks outside the woman's family, such as friends' support, though this would appear to be a significant area of investigation as part of a perinatal psychosocial assessment.

The association between antenatal depression and adverse life events has likewise seldom been studied. Indeed, there is strong evidence for the association between stressful life events—regarded as significant events that occur in a person's life—and depression among pregnant women [24, 25], especially in middle [12] and late pregnancy [24]. However, most studies have evaluated the occurrence of adverse life events in terms of quantity [26, 27], rather than considering the type of event. During pregnancy, stressful events may contribute to a dynamically evolving vulnerability to depression, particularly if they occur in the context of poor social support [28]. The few studies on this subject have explored the role of financial difficulties [12, 19, 24], unemployment [16], and miscarriage and stillbirth [12, 13, 30]. This highlights the need for further investigations on the role played by the different types of adversities [32].

An interesting contribution on the role played by psychosocial variables was made by Bernazzani et al. [33, 34], with the development of Contextual Assessment of Maternity Experience (CAME). Taking the form of an interview, CAME was created to assist in the collection of detailed information during pregnancy and the postpartum period on the following: recent life adversities or stressors; quality of social support and key relationships, including partner relationship; and maternal feelings toward pregnancy, motherhood, and the baby. The use of CAME has, however, never entered routine practice, partly because of the long time required for its administration and coding.

With respect to Italy, few studies have investigated antenatal depression correlates [9, 35, 36]. One of the main Italian investigations on the subject was the Perinatal Depression-Research & Screening Unit study (PND-ReSCU study) [9]. Within this large longitudinal project, 1,066 women were assessed throughout the perinatal period (seven assessments from the 3rd month of pregnancy to 12 months postpartum), and specific risk factors were identified for major and minor depression. Regarding psychosocial risk factors, social support and stressful life events have been assessed using Postpartum Depression Predictors Inventory-Revised (PDPI-R) [37], but that study indicated no specific results on the type of events. However, those authors found that lack of social support and life stressors were particularly reported at the beginning of pregnancy, whereas anxiety was present as a significant risk factor in the final phases of gestation [9, 38]. Another Italian study [35] examined the role of adverse life events, and demonstrated how the occurrence of one or more stressful events in the year before pregnancy represented a relevant psychosocial risk factor for antenatal depression. Finally, Giardinelli et al. [36] investigated risk factors and their prevalence with respect to depression and anxiety in the perinatal period. They confirmed the relevant role played in antenatal depression by poor relationships with family members and partners, but the influence of life events was not investigated.

From an international perspective, Austin et al. [1] recently stressed the clinical value of investigating the nature of life events and social support. This is because of their strong connection to accuracy in evaluating perinatal psychological, social, and cultural risk factors, which constitute the distinctive elements of a psychosocial assessment. Compared with other international contexts, e.g., Australia and Britain [39, 40], Italy still needs to develop and define clinical practice guidelines for perinatal depression.

The present study aimed at investigating psychosocial and environmental correlates of depressive symptomatology in a sample of pregnant Italian women. The specific objectives of the study were as follows: (1) to present findings on the prevalence of antenatal depressive symptoms and psychosocial correlates (recent life events and social support) in an Italian sample; (2) to identify the different kinds of stressful events associated with antenatal depressive symptoms; and (3) to investigate the role played by different sources of support (family, friends, and significant person) in relation to depressive symptomatology.

Materials and Methods

Participants

All women attending the Obstetrics and Gynaecology Unit of a hospital in an urban area of north-eastern Italy (Forlì) from March 2008 to January 2010 were asked to participate

in this study. The inclusion criteria were: speaking and understanding Italian, being of Italian nationality, having fixed residence, and being 18 years of age or older. A total of 404 women, recruited during the third trimester of pregnancy at antenatal classes (n = 315; 78 %) and at outpatient visits (n = 89; 22 %), agreed to take part in the study [mean age 31.8 years; standard deviation (SD) 4.3 years; range 18–45 years]. Their babies (n = 404; 54.7 % male) were healthy at birth, as determined by paediatric examination.

Procedure

The present study was part of a wider longitudinal research project aimed at assessing the main psychosocial and psychological risk factors for maternal depression and anxiety from pregnancy to 12 months postpartum. The study was conducted in a hospital setting to test the implementation of a screening process for the early detection of depressive and anxiety symptoms. Data reported in the current study focus on the third trimester of pregnancy.

The research was conducted in accordance with recognized ethical principles and was approved by the hospital ethical committee. A psychologist contacted eligible women in the hospital. After providing their written informed consent, the participants were asked to complete a socio-demographic form and a series of self-report questionnaires on depressive symptomatology and psychosocial correlates. Two weeks later, a psychotherapist administered a clinical interview to collect further clinical data.

Measures

Four self-report questionnaires were used in the present study and completed by each participant at the time of recruitment. The first questionnaire investigated socio-demographic and obstetric data, including main demographic information, parity, gestational age, presence of obstetric complications during pregnancy (e.g., gestational diabetes, risk of preterm delivery, hypertension, foetal growth retardation), and previous abortions. A specific question assessed the woman's subjective perception of pregnancy; i.e., how she generally experienced the gestational period. The possible answers were "mostly positive/with few difficulties" and "difficult/very difficult".

We investigated depressive symptomatology using the Edinburgh Postnatal Depression Scale (EPDS), which Cox et al. [41] specifically designed to detect depressive symptoms in the postnatal period. Murray and Cox [42] have validated the EPDS for use in pregnancy. Recent validations in different populations and cultures, with large and representative samples, have demonstrated its reliability, validity, and acceptability for use during the gestational period [43–45]. Matthey et al. [46] have therefore suggested that the name of this instrument be changed to the Edinburgh Depression Scale (EDS) when used during pregnancy. The EDS is a 10-item self-report questionnaire that investigates the presence and severity of depressive symptoms during the previous 7 days. The items are scored from 0 to 3 (the higher the score, the more severe the symptoms), and a total (range 0–30) is obtained by summing all the scores. In the present study, we administered the Italian version [31]; this showed good internal consistency (0.79) using a cutoff value of 12/13 to screen for major depressive symptomatology, based on previous studies on Italian samples [9, 36, 47, 48].

The List of Threatening Experiences Questionnaire (LTE-Q) [49, 50] was administered to measure the presence of common negative life events that occurred during the previous 12 months. The LTE-Q consists of 12 major categories of life events (e.g., death of a close person, injury, unemployment, financial crisis) believed to represent a marked to moderate long-term threat associated with the onset of depression [51]. However, the LTE-Q omits minor common events that are unlikely to be of aetiological importance. Prior analyses have shown that the LTE-Q successfully captured 82.5 % of the life events investigated in the longer, more extensive, widely accepted Life Events and Difficulties Schedule (LEDS) [49, 51]. For the aims of the present study, two of the original items ("Did you have a separation due to marital difficulties?" and "Did you break off a steady relationship?") were combined, as previously reported by Hosang et al. [52]. We included three additional items related to miscarriage or stillbirth, moving, and housing difficulties. The possible scores were 1 (the woman had experienced that life event) or 0 (she had not). The higher the total score (adding all the items), the greater was the number of negative events that had recently occurred. The LTE-Q has shown good test–retest reliability (kappa = 0.78–1.0 for all categories, except "Something you valued was lost or stolen", where the kappa was 0.24), high agreement between participant and informant ratings (kappa = 0.7–0.9), and good agreement with interview-based ratings (sensitivity = 0.89; specificity = 0.74) [50].

We assessed perceived social support using the Multidimensional Scale of Perceived Social Support (MSPSS) [53]. The MSPSS measures the subjective adequacy of social support from three different sources—family, friends, and significant others—and produces a total score. Twelve items are rated on a seven-point Likert scale, ranging from "very strongly disagree" (score of 1) to "very strongly agree" (score of 7). The Italian version, by Prezza and Principato [54], showed good internal consistency coefficient (0.88). No cutoff scores are suggested; the

Table 1 Comparison of maternal characteristics according to EDS scores

	Total (n = 404) N (%)	EDS < 13 (n = 344) N (%)	EDS ≥ 13 (n = 60) N (%)	p value
Age, mean (SD)	31.8 (4.3)	31.7 (4.2)	32.3 (4.7)	0.517
Place of birth				0.682
North Italy	329 (81.5)	278 (81)	51 (85.0)	
Center Italy	8 (2.0)	8 (2.3)	0 (0.0)	
South Italy	44 (10.9)	39 (11.4)	5 (8.3)	
Foreign country	22 (5.5)	18 (5.2)	4 (6.7)	
Marital status				0.659
Married	231 (57.1)	199 (58.0)	31 (51.6)	
Cohabiting	151 (37.4)	127 (37.0)	24 (40.0)	
Single	18 (4.5)	14 (4.1)	4 (6.7)	
Divorced	4 (1.0)	3 (0.9)	1 (1.7)	
Education				0.441
Less than high school	39 (9.7)	31 (9.0)	8 (13.3)	
High school diploma	186 (46.0)	156 (45.5)	29 (48.3)	
University	179 (44.3)	156 (45.5)	23 (38.4)	
Profession				0.670
Unemployed or student	11 (2.7)	9 (2.6)	2 (3.3)	
Employed	393 (97.3)	335 (97.4)	58 (96.7)	
Parity				0.008
Primiparous	338 (83.7)	294 (85.8)	43 (71.7)	
Multiparous	66 (16.3)	49 (14.2)	17 (28.3)	
Subjective experience of pregnancy				<0.0005
Mostly positive/ with few difficulties	370 (91.6)	331 (96.2)	39 (65)	
Difficult/very difficult	34 (8.4)	13 (3.8)	21 (35)	
Pregnancy-related complications				0.004
No	337 (83.4)	295 (85.8)	42 (70.0)	
Yes	67 (16.6)	49 (14.2)	18 (30.0)	

general indication is to adopt continuous scores, with higher scores indicating greater levels of perceived social support. The MSPSS has frequently been used for research in the perinatal period [30, 55, 56].

Statistical Analyses

For descriptive purposes, we calculated frequencies, percentages, means, and SDs. We dichotomized EDS scores using the 12/13 (<13 no depressive symptoms; ≥13 prenatal depressive symptoms) cutoff value. Before carrying out the main analyses, we used t tests for independent samples, Pearson's Chi square, or Fisher's exact tests to explore differences between the two groups in relation to demographic and obstetric characteristics. We investigated the association between EDS scores and the number of negative events (LTE-Q) and between the former and the measures of social support (MSPSS) using two-way analysis of variance. Parity emerged as significantly different between the two groups, and we included it in our analyses to control for its possible effect. We investigated the association between EDS scores and negative events (LTE-Q) by means of log-linear analyses, controlling for the effect of parity. Logistic regression models (Enter method) were estimated to examine the associations between an EDS score ≥13 (using the binary EDS score as a dependent variable) and maternal characteristics and psychosocial correlates. We also included, in the regression model, the variables that showed a significant association with prenatal depressive symptoms from the previous bivariate analyses. All statistical analyses were performed using IBM SPSS version 20.0 for Windows (IBM Corporation, Armonk, NY, USA).

Results

Demographic and Obstetric Characteristics

Table 1 shows the main socio-demographic characteristics of the sample. Most participants were married or cohabiting (94.5 %), with a high level of education (90.3 %), employment (97.3 %), and first-time motherhood (83.7 %).

Severe pregnancy complications had occurred in 16.6 % of the sample, and only 8.4 % described the present pregnancy as an overall negative experience (e.g., "I have been feeling very anxious since the first months of pregnancy" and "My experience of this pregnancy has been negative"). We found a significant association between this perception and the presence of obstetric complications: the latter occurred in about half of the women who had a negative perception of their own pregnancy (47.1 %) compared with 13.8 % of women in the group with a positive experience of pregnancy (Fisher's exact test, $p = 0.0005$).

Depressive Symptoms and Maternal Characteristics

The mean EDS score for the whole sample was 7.4 ± 4.8 (range 0–23), and the prevalence of antenatal depressive symptoms (EDS ≥ 13) during the third trimester of pregnancy was 14.9 % (n = 60). Comparing the 344 women with EDS < 13 and those with EDS ≥ 13, we found no significant differences in relation to mean age, place of birth, marital status, level of education, or employment status.

Table 2 Perceived social support (MSPSS) and negative life events (LTE-Q) according to prenatal depressive symptoms (EDS ≥ 13), parity and their interaction

Measures	Depressive symptoms			Parity			Depressive symptoms × parity
	EDS < 13 (n = 344)	EDS ≥ 13 (n = 60)	F	Primiparous (n = 338)	Multiparous (n = 66)	F	F
Number of negative life events (LTE-Q)	2.12 ± 1.81	3.35 ± 2.42	15.75**	2.23 ± 1.91	2.65 ± 2.15	1.00	0.10
Perceived social support (MSPSS)	72.55 ± 8.03	64.58 ± 14.36	17.30**	72.11 ± 9.13	67.65 ± 11.20	1.84	3.09
Family	24.30 ± 3.81	21.88 ± 5.55	6.12*	24.15 ± 4.06	22.91 ± 4.71	0.11	3.78
Friends	22.74 ± 3.81	19.39 ± 6.65	11.23*	22.55 ± 4.37	20.71 ± 4.84	0.55	5.39*
Significant other (partner)	25.51 ± 2.90	23.31 ± 5.61	15.19**	25.42 ± 3.20	23.98 ± 4.62	5.60*	0.23

Values are mean (SD)

* $p < 0.05$; ** $p < 0.0005$

Multiparity and severe obstetric complications were significantly more common in women with prenatal depressive symptoms (Table 1). Moreover, this group reported a significantly higher negative experience with their pregnancy than women with EDS < 13 (Table 1). Null findings have been reported in the literature on the role played by obstetric complications in antenatal depression, and results related to parity have been varied [26]. Because a study by Borri et al. [57] identified parity as a relevant risk factor in an Italian sample, only that variable was controlled for in the main analyses in the present investigation.

Depressive Symptoms, Stressful Life Events, and Social Support

With respect to the number of threatening life events that occurred over the previous year, the participants with EDS ≥ 13 reported a significantly higher frequency than women with EDS < 13 (3.35 ± 2.42 vs. 2.12 ± 1.81; F = 15.75, df = 1,400, p < 0.0001) (Table 2).

An analysis of the specific nature of the threatening events in the total sample (Table 3) showed that the most frequent recent events were as follows: serious illness or injury of a close relative, family member, or close friend (38.1 %); moving (32.9 %); and death of a close friend or relative (28 %). Compared with the non-depressed group, the participants with prenatal depressive symptoms referred to a significantly higher occurrence of the following: death of a close friend or relative; serious problem with a close friend or relative; unemployment or seeking work for over 1 month; moving; and housing problems (Fisher's exact tests, all p < 0.05; Table 3). The occurrence of a "major financial crisis" between the two groups produced results that were almost significantly different (Fisher's exact test, p = 0.052; Table 3). The differences related to

the item "Something valuable was lost or stolen" were not investigated owing to the very low frequencies in the two groups.

With regard to parity, multiparous women reported a significantly higher frequency of unemployment or seeking work for over 1 month (30.3 vs. 14.8 %; Fisher's exact test, p = 0.004) and of major financial crises (24.2 vs. 9.8 %; Fisher's exact test, p = 0.003) than the primiparous group; among the primiparous women, moving occurred more frequently than with the multiparous ones (35.2 vs. 21.2 %; Fisher's exact test, p = 0.031). No significant interaction emerged related to the variables of parity and depressive symptoms.

In relation to perceived social support (Table 2), participants with prenatal depressive symptoms showed significantly lower levels than non-depressed women—both in the total score (F = 17.30, df = 1,399, p < 0.005) and for each of the three different sources of support measured by MSPSS (family, friends, and significant others: F = 6.12, df = 1,399, p = 0.014; F = 11.24, df = 1,399, p = 0.001; F = 15.19, df = 1,399, p < 0.0005, respectively).

Regarding parity, multiparous women reported a significantly lower score than primiparous ones on the MSPSS "Significant other" scale (F = 5.61, df = 1,399, p = 0.018) (Table 2). A significant interaction between depressive symptoms and parity variables emerged in the MSPSS "Friends" scale (F = 5.39 df = 1,399, p = 0.021): simple effects analyses showed that, for primiparous women only, depressive symptoms were significantly related to lower perceived support from friends (p = 0.0005; Fig. 1).

We performed a logistic regression analysis, including as independent variables all the significant risk factors that differentiated participants with an EDS ≥ 13 from those with an EDS < 13. A significant model (Chi square = 76.36, df = 11, p = 0.0005) explained about 30 % of the

Table 3 Specific threatening life-events (LTE-Q) according to prenatal depressive symptoms (EDS ≥ 13)

	Total (n = 404)	EDS < 13 (n = 344)	EDS ≥ 13 (n = 60)	p value
Serious illness or injury	24 (5.9 %)	19 (5.5 %)	5 (8.3 %)	0.378
Serious illness or injury to a close relative/ family/close friend	154 (38.1 %)	127 (36.9 %)	27 (45 %)	0.251
Death of family/partner/child	84 (20.8 %)	67 (19.5 %)	17 (28.3 %)	0.123
Death of close friend and/or relative	113 (28 %)	88 (25.6 %)	25 (41.7 %)	0.013
Separation/break off a relationship	19 (4.7 %)	14 (4.1 %)	5 (8.3 %)	0.179
Serious problem with a close friend, neighbour or relative	40 (9.9 %)	27 (7.8 %)	13 (21.7 %)	0.003
Unemployed/seeking work for more than 1 month[a]	70 (17.3 %)	53 (15.4 %)	17 (28.3 %)	0.025
Sacked from job[a]	22 (5.4 %)	16 (4.7 %)	6 (10 %)	0.117
Major financial crisis	49 (12.1 %)	37 (10.8 %)	12 (20 %)	0.052
Problem with police or court appearance[b]	36 (8.9 %)	31 (9.0 %)	5 (8.3 %)	1.000
Something valuable lost or stolen	6 (10.6 %)	3 (0.9 %)	3 (5 %)	na
Miscarriage/stillbirth	69 (17.1 %)	54 (15.7 %)	15 (25 %)	0.093
Moved house	133 (32.9 %)	106 (30.8 %)	27 (45 %)	0.037
Housing difficulties	75 (18.6 %)	56 (16.3 %)	19 (31.7 %)	0.007

na not applicable

[a] Item referring to the woman and/or her partner

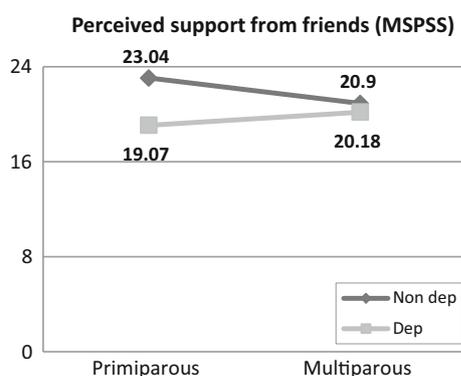[b] Item referring to the woman and/or a family member

Fig. 1 MSPSS mean scores ("Friends" scale) related to depressive symptoms and parity

Table 4 Psychosocial factors associated with prenatal depressive symptoms (EDS ≥ 13)

	OR	95 % CI	p value
Block 1: Demographic and obstetric factors			
Parity	0.71	0.31–1.59	0.40
Pregnancy related-complications	0.69	0.31–1.50	0.34
Difficult experience of pregnancy	0.11	0.05–0.26	0.0005
Block 2: Psychosocial correlates			
Perceived social support (MSPSS total score)	0.94	0.92–0.97	0.0005
Number of threatening events (LTE-Q total score)	0.96	0.74–1.25	0.76
Death of close friend and/or relative	0.63	0.30–1.35	0.24
Serious problem with a close friend/ neighbour/relative	0.47	0.18–1.25	0.13
Unemployed/seeking work for more than 1 month	0.94	0.38–2.32	0.89
Moved house	0.52	0.23–1.18	0.12
Housing difficulties	0.60	0.27–1.35	0.22

variance (Nagelkerke R^2 = 30.5 %) and showed how high levels of perceived social support (MSPSS total score) and a less negative experience of pregnancy significantly contributed to decreasing the likelihood of having an EDS ≥ 13 (Table 4).

Discussion

To the best of the authors' knowledge, the present study is one of very few that aimed at describing the nature of specific life events associated with antenatal depressive symptoms and investigating stressful events and social support within the Italian context. The study findings,

therefore, expand our understanding of the role environmental vulnerabilities play in relation to antenatal depression.

The rate of antenatal depressive symptoms we found (14.9 %) is consistent with similar results reported in larger samples in late pregnancy and other cultural contexts, such as in Sweden (13.7 %) [16], England (13.5 %) [58], Australia (16.9 %) [12], and the United States (15.6 %) [59]. Moreover, other Italian studies, based on similar samples,

have reported rates of antenatal depressive symptoms quite close to what we found: 12.3 % [9] and 12.4 % [35].

It should be noted that the characteristics of the present sample emerged as rather homogeneous, being mainly composed of middle-class women. It is thus not fully representative of the Italian pregnant population. However, a comparison of the present sample with the pregnant population in the same region in 2012 [60] shows very similar values in relation to mean age, marital status, and employment. Differences emerge in relation to the level of education and parity because the present sample showed a greater rate of primiparous women and with high educational level. To explain these sample characteristics, it should be noted that recruitment mainly took place at antenatal classes and that women attending antenatal classes in Emilia-Romagna have higher education levels and are mostly primiparous [60]. These characteristics were indeed evident in the present sample. Moreover, because the rate of pregnant women attending antenatal classes in Emilia-Romagna was 29.3 % in 2012 [60], the present sample may be representative of approximately one-third of the entire pregnant population in that region. Probably owing to these sample characteristics, the socio-demographic variables did not show any significant association with depressive symptoms.

Multiparity and obstetric complications were seen to occur at significantly greater frequency in the group of participants with depressive symptoms—as evident in the bivariate analyses, but not by logistic regression. A review by Lancaster et al. [26] found inconsistent findings with respect to multiparity. Conversely, a large recent Italian study [57] showed that this variable was the only one associated with a higher likelihood of a mood disorder during pregnancy. Considering that the average number of children for a woman in northern Italy is only 1.42 [61], it may be hypothesized that having more than one child to look after represents an additional stress for Italian mothers, as noted by Banti et al. [9]. Along with the co-occurrence of stressful environmental conditions, multiparity could significantly affect a mother's mood. In the present sample, the group of multiparous women did indeed show a higher frequency of unemployment or seeking work and of major financial crises in addition to lower perceived support from their partner. Future Italian studies should further examine this point, extending the representativeness of the sampling of multiparous women.

Regarding obstetric complications, the literature shows a poor or small influence on depressive symptomatology—both in the prenatal [26] and postnatal periods [17]. This was confirmed in the Italian study by Giardinelli et al. [36]. Although there is some variability in the definition of this variable, the present study included only the occurrence of serious complications; e.g., prolonged hyperemesis, gestational diabetes, and preeclampsia. This could partly explain the significant association we found between obstetric complications and depressive symptoms. When included in the logistic regression models, however, this variable no longer contributed significantly to depressive symptoms.

We found the participants' negative perception of pregnancy to be significantly associated with prenatal depressive symptoms, and this was also confirmed by logistic regression analysis. Righetti-Veltema et al. [62] and Manzano [63] have stressed the importance of investigating women's subjective experiences of pregnancy: regardless of the presence of obstetric complications, a perception of pregnancy as more difficult was found to be a distinctive element in the occurrence of depressive symptoms. More recent studies have emphasized [64] the relevance of assessing maternal feelings toward pregnancy. Using the CAME interview, Bernazzani et al. [33, 34] determined that higher scores related to negative feelings during prenatal interviews were significant predictors of high levels of postnatal depressive symptoms. Martini et al. [64] identified the perception of distress in pregnancy as a promising measure for identifying women at higher risk for prenatal depression. Meltzer-Brody et al. [65] showed how a poorer perception of pregnancy was associated with increased likelihood of antenatal depressive symptoms. In a clinical perspective, all these results suggest the benefits of asking women about their subjective experience of pregnancy as part of a perinatal psychosocial assessment.

Regarding the main objectives of this study, our results confirm a significant association between antenatal depressive symptomatology and a greater number of negative life events. This supports European findings [16, 26, 35, 57] and the results of the Italian study by Della Vedova et al. [35]. More specifically, the present study aimed at widening our understanding of the kind of environmental circumstances associated with antenatal depression and quality of life events. In contrast with the results of other studies [12, 21, 66], a history of miscarriage or abortion was not found to be significantly more frequent in women with EDS ≥ 13 in the present investigation. However, other losses, such as the death of or severe problems with a close person, were more frequent. Similarly, unemployment, moving, or housing difficulties were found to be significant adverse life events. Righetti-Veltema et al. [62] have identified the occurrence of recent financial difficulties and other losses—especially loss of job, separations, and moving—as significant risk factors for antenatal depression.

Unemployment is obviously a priority for a couple expecting a baby because it significantly increases normal worries about the couple's capacity to provide everything necessary for the child's well-being [67]. Conversely,

moving, even though it may represent both a physically and psychologically stressful event, has rarely been explored. Mobility may damage interpersonal relationships and reduce access to social support. In line with the present findings, one Italian study [68] found that women with high levels of postnatal depressive symptomatology reported a greater incidence of moving during pregnancy and considered it a stressful event. Other reports [69, 70] have suggested that residential mobility during pregnancy does not damage social support networks but that it is associated with a lower use of health-care services. For families that have positive reasons for moving and are satisfied with their home, the potential negative effects of mobility may be balanced by the beneficial effects on health [70]. In the present sample, mainly characterized by primiparous women, moving was one of the most frequent stressful events observed. Therefore, moving would seem to be associated with the need to find a house for the new baby's arrival as well as a recurrent stressful event in connection with the experience of pregnancy.

Overall, our findings suggest the value of assessing the nature of threatening life events in a low-risk sample and that their association with depressive symptoms deserves further analysis. This should be done by also taking into consideration the possible interaction with specific coping patterns and different networks of support [71, 72]. When included in the logistic regression analyses, life events (number and type) did not significantly contribute to antenatal depressive symptoms. This was not the case for social support as a strong association was found between this variable and depressive symptoms during pregnancy—in both the bivariate analysis and logistic regression. We found that participants who perceived a high level of support were, in fact, less likely to suffer from antenatal depressive symptoms. This is in line with the results of other studies on pregnant women [26, 29, 30]. Lee et al. [73] have underscored the effectiveness of social support in protecting women from depression, especially during the third trimester of pregnancy, which was the period assessed in the present study.

In relation to the MSPSS subscales, the participants with depressive symptoms also perceived significantly lower levels of support from their significant other, family, and friends. This finding confirms the results of Husain et al. [56]. The variations seen in different sources of social support are indicative of the relationship-specific perceptions of support, which may be closely linked to the connections between mothers and specific individuals in their lives [74]. For example, poor family support—in terms of conflicting relationships with the mother-in-law [29] or other family members [36]—has been shown to predict the onset of depressive symptomatology in pregnancy. In contrast, maternal support—in terms of economic support, help in daily housework, and emotional and psychological

support—has been found to be a significant protective factor, contributing to an increase in self-confidence and decrease in stress levels [17]. A general perception of support may reflect stability in terms of overall acceptance of the helpfulness of others during times of difficulty [73].

The present results differ from those reported by Della Vedova et al. [35], who did not find any particular association between social support and depressive symptoms. As noted by those authors, however, their sample was characterized by high levels of perceived support from the partner and family, which may have influenced their results. Moreover, those authors did not explore the role of support by friends, which has not been adequately examined with respect to perinatal depression [74]. The lack of informal support from a network of friends may increase feelings of loneliness and the likelihood of developing antenatal depressive symptoms. The results reported by Grussu et al. [68] seem to agree with this hypothesis. They identified the lack of support from friends as a significant predictor of perinatal depression. In their study, women who were less likely to suffer from high levels of postnatal depression felt they had received understanding and help from friends during pregnancy. Recent socio-cultural changes in the structure of Italian families—now mostly represented by smaller nuclear structures—may have led women to rely more on support from outside the family. This interpretation would explain the results of the present study—especially in relation to primiparous women, considering that the northeastern Italian sample investigated showed socio-demographic characteristics very similar to the ones described by Grussu et al. [68].

Given the relevance of this topic, further studies should examine the role of support from friends, clarifying the direction of the association between social support and depressive symptoms. It remains unclear whether depression affects the capacity to seek help or the perception of received support.

The present study has limitations, which deserve consideration. First, the data included in this study were collected using self-report instruments: a clinical interview would have led to more detailed information on psychosocial variables and would have allowed reliable diagnosis of a depressive episode. Second, one limitation is tied to the homogeneity of the sample—mostly married or cohabiting, employed, and middle-class women. Moreover, the participants were recruited mainly at antenatal classes and may therefore not be adequately representative of the Italian pregnant population. In line with previous Italian studies on similar samples [35, 36], we would suggest that future studies include women from lower social classes recruited from the health services. Third, based on previous studies on Italian pregnant women, a score of at least 13 was used as the cutoff value for the EDS. Because there are

no Italian validations for using the EDS in pregnancy, the use of this cutoff may have led to underestimating the number of women with clinically relevant depressive symptoms. Fourth, no other relevant risk factor for antenatal depression (such as a personal or family history of depression, or antenatal anxiety) was taken into account. That would have provided a more exhaustive description of the role played by the various variables in antenatal depressive symptomatology. Finally, because the present study focused exclusively on the third trimester of pregnancy, future studies should investigate the impact of the same risk factors throughout the different trimesters of pregnancy.

Conclusions

The prevalence of antenatal depressive symptoms reported in this study emphasizes the importance of focusing on the antenatal period to promote the early detection of significant psychosocial risk factors. Clinical recommendations suggest the importance of health professionals asking women in the antenatal period about recent stressful changes and the availability of social support from different sources, rather than simply focusing on general support and support from the partner, which are most commonly investigated. Clinicians need to detect vulnerability to depressive symptoms among women in the antenatal period who receive low support from different sources and have undergone recent cumulative stressful events.

The introduction of an antenatal psychosocial assessment in the Italian National Health Service, where specific screening programmes for perinatal depression have yet to be implemented, may represent a significant step in reducing the severe consequences of undetected and untreated perinatal depression. Future research should, therefore, focus on exploring how to implement this kind of assessment.

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