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Demographic, psychological and relationship factors are associated with resource loss among pregnant women

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ABSTRACT

Objectives: This study analysed the association between demographic, psychological and relationship factors and resource loss in pregnant women.

Methods: Quantitative descriptive correlational study. Depressive mood, social support, relationship intimacy and resource loss were assessed in a sample of 200 pregnant women recruited from public primary-care clinics.

Results: Hierarchical regression showed that being younger, having lower yearly income, and having stronger depressive mood, little relationship intimacy and little satisfaction with social support were the main factors associated with resource loss. Depressive mood accounted for most resource loss after controlling for demographic risk factors. The models show the combined influence of demographic, psychological and relationship factors in shaping resource loss.

Conclusions and implications: Depressive mood was a major risk factor for resource loss among pregnant women, whereas social support and relationship intimacy had a protective role. The results highlight the importance of screening for depressive mood and level of resources during routine prenatal care, in order to identify pregnant women at risk of depression. The findings point to interventions that foster patient's emotions to help them protect resources.

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Pregnancy; depressive mood; resource loss; social support; relationship intimacy

Introduction

Prenatal maternal stress that includes resources loss has been linked to adverse health outcomes, including mental health problems (Beydoun & Saftlas, 2008), antenatal and postpartum depression (Brummelte & Galea, 2010; Abujilban, Abuidhail, Al-Modallal, Hamaideh, & Modemli, 2014), preterm birth, low birth weight and obstetric complications (Hobel, Goldstein, & Barrett, 2008). Antenatal maternal stress is common (Woods, Melville, Guo, Fan, & Gavin, 2010), with about 58% of women reporting at least one or more stressful life event (Stone et al., 2015) and 17.1% reporting three or more stressful life events in the year before giving birth (Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012) in studies

conducted in the USA. Psychological research in this area has mainly focused on the identification of postpartum depression and its prediction, with less effort going to assess the relationship between emotional stress and loss of resources, a common measure of stress, before and during pregnancy (Emmanuel, Creedy, St. John, & Brown, 2011; Kingston et al., 2012). There is, therefore, a need to study the factors behind prenatal maternal stress measured through resources loss. Although numerous studies have studied how prenatal stress impacts mental-health outcomes like depression (Glazier, Elgar, Goel, & Holzapfel, 2004), few studies have looked at factors associated with life events that can cause prenatal stress or resources loss. In pregnant women, stressful life events have been associated with sociodemographic factors like low socioeconomic status, youth of the mother, low educational level and single-motherhood (DiPietro Mager, 2016; Richards, Papworth, Corbett, & Good, 2007; Stone et al., 2015). Additionally, depression, panic disorder, drug use, domestic violence and other psychological problems (Woods et al., 2010), as well as marital difficulties (Malary, Shahhosseini, Poursagher, & Hamzehgardeshi, 2015), have also been associated with prenatal stress.

The association between loss of resources during pregnancy and developing depression subsequently is well documented, but it remains under-researched how negative affect can contribute to stress or resource loss (Ehrlich et al., 2010). For example, Hobfoll, Johnson, Ennis, and Jackson (2003) found that greater loss of social resources is associated with increased depressive mood among women. Other studies show that negative life events tend to be associated with the loss of psychosocial resources and subsequent depression symptoms (e.g. Phillips, Carroll, & Der, 2015). However, the reverse may be true. There is evidence that psychological distress is associated with resource loss (Hall, Bonanno, Bolton, & Bass, 2014; Johnson, Palmieri, Jackson, & Hobfoll, 2007), although there is no study addressing this issue among pregnant women. The Conservation of Resources (COR) model of stress (Hobfoll, 1989) postulates that people seek to acquire, preserve and protect resources. Resources are defined as those personal characteristics, conditions, objects or contractual assets that are valued by the individual or serve as a means to attain other resources. The COR theory (Hobfoll, 1989, 1991) hypothesises that loss of resources can lead to psychological distress in vulnerable women and to further loss of resources, making such women even more vulnerable to future stressors. Therefore, the literature suggests a potential cyclical nature of the association between resource losses and depression symptoms.

Prenatal maternal stress includes stressful events that only have a small or limited impact on emotional outcomes and that do not necessarily imply resource change or loss. Resource loss may include the loss of material resources such as food or shelter, family resources such as help with tasks at home, interpersonal resources such as assistance from friends, or energy resources such as time, among others. The COR-E theory posits that in the face of stress, people mobilise resources, but if these resources decrease (e.g. social, health, time, housing quality conditions and financial), people will manifest more negative emotional outcomes, 'because these resources are integral to the individual's ability to offset stress, improve their conditions and deter future stressful experiences' (Hobfoll et al., 2003, p. 632). In fact, research shows that resource loss may both mediate and moderate the impact of stress on psychological distress. Longitudinal studies of the stress process found that an increase in negative over positive life events to be associated with a diminishment in psychosocial

resources and a consequent increase in depressive mood, which shows that resource loss is a critical mechanism in the stress process and may have a mediating role (Canetti et al., 2010). On the other hand, those who lose social support or other resources experience more negative emotional outcomes than those who preserve such support or resources, suggesting that resource mobilisation may offset the negative impact of stressful life circumstances and therefore play a moderator role (Costa, Guimarães, Ferreira, & Pereira, 2016).

Additionally, various types of prenatal stress processes (e.g. maternal psychological distress) impact pregnancy outcomes through neuroendocrine, inflammatory and behavioural mechanisms (Glynn, Schetter, & Sandman, 2008). For example, chronic stress and depression are a risk factor in the aetiology of low birth weight and pregnancy anxiety is a risk factor in the aetiology of preterm birth (Dunkel Schetter, 2011). Also, Latendresse, Ruiz, and Wong (2013) found that psychological distress explained much of the variation in maternal inflammatory markers, which suggests that depression and anxiety might contribute to an immune system pathway to poor pregnancy outcome.

To explore the COR-E theory among pregnant women, this study investigates the association between depressive mood and recent loss of resources in a group of such women, with a focus on resources that women value and actually help them adjust to their pregnancy. Pregnancy can be seen as a time of particular vulnerability to depression due to the challenge of having to assume a mother role, having medical difficulties, undergoing hormonal changes and becoming socially isolated (Ehrlich et al., 2010; Runquist, 2007), all of which can imply significant loss in the four mentioned resource domains (Pakenham, Smith, & Rattan, 2007). Therefore, it is important to study the role of depressive mood in the loss of resources among pregnant women.

Relationship variables such as social support and relationship intimacy may reduce stress or loss of resources by creating a sense of well-being and of empowerment over one's life and environment (Gadalla, 2009). Studies show that support from friends and family helps pregnant women to cope with stress, consistent with the stress-buffering hypothesis, and that women with high levels of stressful life events report low social support (Glazier et al., 2004). Therefore, the level of social support can be negatively associated with loss of resources. One study by Hobfoll et al. (2003) found that individuals who lose social support experience more negative emotional outcomes than those with better and unchanging social support systems, suggesting that resource loss causes stress and that improved resources offset the negative impact of a stressful life. Additionally, poor relationship intimacy is also associated with greater resource loss (Dunkel Schetter, 2011). Malary et al. (2015), for example, stress that a couple's good relationship can have a protective effect against stressors including anxiety of pregnancy. Another study (Dunkel Schetter, Tanner, Westling, Rini, & Glynn et al., 2010) showed that the extent to which women were satisfied with the quality and quantity of partner support predicted their reporting milder psychopathological symptoms during pregnancy and postpartum. Overall, women's benefit pre- and postpartum from the social support offered by a strong relationship with a partner. Finally, some studies found both direct and interaction effects of support, stress and loss of resources on women's well-being (Hobfoll, 2013).

Because pregnancy is a demanding and changing life event and depressive mood is a well-known predictor of one's inability to deal with stress, we predict that higher

depressive mood and lower social support and relationship intimacy would be associated with resource loss.

Importantly, unlike for protective factors, there is a lack of reports of associations of psychological distress with resource loss in pregnant women (Ehrlich et al., 2010; Kingston et al., 2012). Therefore, more studies regarding the association between depressive mood, social support, relationship intimacy and resource loss are warranted. Such studies should elucidate the contribution of demographic variables, negative affect and protective factors on pregnant women's resource loss.

This study examines the influence of depressive mood, satisfaction with social support and relationship intimacy (independent variables) on prepartum resource loss (dependent variable). Our hypothesis was that, after controlling for demographic risk factors, stronger depressive mood and weakened protective factors like social support and relationship intimacy would be associated with resource loss among pregnant women.

Method

Sample and data collection

Participants were 200 pregnant women recruited from public primary-care clinics in Northern Portugal as they received childbirth preparation. The majority of the participants in the study were in the third trimester of their pregnancy ($M = 31.4$ weeks, $SD = 5$). These clinics attract mainly women of low socioeconomic status (SES) who seek medical services related to pregnancy. Women were asked to participate if they were pregnant, needed childbirth preparation, had basic writing and reading skills (at least the primary education level) and were free of serious medical complications. The invitation to participate was made by a nurse after she pre-screened each woman for the aforementioned criteria. All the women who were approached agreed to participate. Each woman who accepted met individually with a trained research psychologist, who explained the study and stressed its voluntary and confidential nature. After giving informed consent, participants completed a series of questionnaires in a private room after the childbirth preparation class on the same day of the recruitment. Data collection took approximately 40 minutes and participants were not paid. The study received ethics approval from the Portuguese North Regional Health Administration.

Instruments

Basic demographic and medical information included age, educational level, yearly income and gestational age (weeks).

The *Beck Depression Inventory* (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a 21-item measure of depressive mood on a four-point (0 = *does not apply* to 3 = *most of the times*) Likert scale. Scores range from 0 to 63. A total score of 0–13 is considered minimal range, 14–19 is mild, 20–28 is moderate and 29–63 is severe. Higher scores indicate more severe depressive mood. BDI has often been used in the study of depression with pregnant women (e.g. Gallagher, Hobfoll, Ritter, & Lavin, 1997) and

was adapted to Portuguese with satisfactory psychometric properties (Vaz-Serra & Abreu, 1973). In the current sample, internal consistency for the total instrument was .80.

The *Satisfaction with Social Support Scale* (SSSS) (Pais-Ribeiro, 1999) is a 15-item questionnaire that measures satisfaction with one's social life (e.g. 'Sometimes I feel alone in the world and without support'), in particular with active agents in their lives (e.g. friends) and social activities in which they participate on a five-point scale (1 = *totally agree* to 5 = *totally disagree*). Scores range from 0 to 75. Higher scores indicate higher satisfaction with social support. A score of 51–75 indicates high social support, one between 26 and 50 indicates medium social support and one of 25 and below indicates low social support. In the current sample, internal consistency was .88.

The *Personal Assessment of Intimacy in Relationships Scale* (PAIR) (Schaefer & Olson, 1981) is a 36-item measure of relationship intimacy (emotional, social, sexual, intellectual and recreational intimacy) on a five-point (0 = *strongly disagree* to 4 = *strongly agree*) Likert scale. Scores range from 0 to 144. Higher scores indicate higher levels of relationship intimacy. PAIR's adaptation to Portuguese was shown to have satisfactory psychometric properties (Moreira, Amaral, & Canavarro, 2009). In the current sample, internal consistency for the total instrument was .91.

The *Conservation of Resources – Evaluation Questionnaire* (COR-E) (Hobfoll, 1998; Hobfoll & Lilly, 1993) is a 40-item abbreviated version of COR-E and was used to assess whether women have encountered stressful conditions with concomitant loss of resources in the previous three months (e.g. 'How much loss or threat of loss have you experienced in the last three months regarding ...', e.g. adequate income), rated on a three-point scale (*no loss* = 0 to a *great deal of loss* = 2). Resource loss has been found to be the best predictor of stress reactions in a variety of studies in medical settings (e.g. Vranceanu, Hobfoll, & Johnson, 2007). Six subscales were used to assess work loss (e.g. understanding from my employer/boss; $\alpha = .76$), social (e.g. 'affection from others'; $\alpha = .79$), health (e.g. 'medical insurance'; $\alpha = .70$), loss of time (e.g. 'time with loved ones'; $\alpha = .76$), worsening of housing quality conditions (e.g. 'housing that suits my needs'; $\alpha = .70$) and loss of financial resources (e.g. 'adequate financial credit'; $\alpha = .91$). The COR-E has excellent concurrent, divergent, and predictive validity in community-based samples (Hobfoll & Lilly, 1993). COR-E's adaptation to Portuguese was shown to have satisfactory psychometric properties (Costa & McIntyre, 2006) and the internal reliability of the six subscales in this study varied between .70 and .91.

Data analysis

Statistical analysis was conducted using SPSS for Mac OSX version 22 software (SPSS, Inc., Chicago, IL). Descriptive analysis of demographic and psychosocial variables was performed. Mean and standard deviation were computed for continuous variables. Categorical variables were described as absolute and relative frequencies. To analyse the association between demographic variables, depressive mood, satisfaction with social support, relationship intimacy and resource loss, Pearson product moment correlation coefficients were computed. Hierarchical regression was used to analyse the influence of depressive mood, satisfaction with social support and relationship intimacy on the loss of work, social, health, time, housing quality conditions and financial resources, after controlling for the demographic variables that were significantly

associated with the dependent variables in the aforementioned preliminary analysis. Every independent variable that was significant in the bivariate analysis was included in the multiple linear regression equations. A two-step procedure was followed, with the demographic variables being entered first and psychosocial variables (depressive mood, satisfaction with social support and relationship intimacy) entered second. Multicollinearity was tested, with Variance inflation factor (VIF) values being well below 10 and the tolerance statistics all being well above 0.2 (Field, 2009), which showed that there was no collinearity.

Results

Characteristics of participants and preliminary analysis

The demographic and clinical characteristics of those who participated are shown in Table 1. The average participant was 30 years of age ($SD = 4.4$; range 17–41). The majority of the women had a high-school degree (36.7%), about a third had formal education beyond high school (35.7%) and 27.6% only attended high school. Most of the women belonged to the urban poor, with the vast majority reporting a yearly income below €6000/\$6584 (46.5%) and 41% reporting one below €12,000/\$13,169. Gestation ranged between 12 and 39 weeks ($M = 31.4$, $SD = 5$). The mean score for the BDI was 6.58 ($SD = 4.74$) with a range from 0 to 25; 186 (93%) were in the minimal range, nine (4.5%) had mild depression and five (2.5%) had moderate levels of depression, according to the BDI thresholds, which indicates that most pregnant women in our sample had low levels of depressive mood. There were clinical psychology consultations available in the public primary-care clinics to refer these mothers who presented some

Table 1. Demographic and psychosocial characteristics of pregnant women ($n = 200$).

	<i>n</i>	%
<i>Demographic variables</i>		
<i>Educational level</i>		
High school attendance	55	27.6
High school diploma	73	36.7
College degree	71	35.7
<i>Yearly income</i>	93	46.5
Less than €6000/\$6584	82	41.0
Between €6,000 and €12,000/\$6584–\$13,169	25	12.5
More than €12,000/\$13,169		
	<i>M</i>	<i>SD</i>
Age	30.24	4.41
Gestational age (weeks)	31.4	5.0
<i>Psychosocial variables</i>		
Depressive mood	6.58	4.74
Social support	58.65	10.15
Relationship intimacy	90.90	1.51
Work resource loss	1.51	2.11
Social resource loss	1.12	1.79
Health resource loss	1.06	1.32
Time resource loss	1.35	1.41
Housing resource loss	1.69	1.85
Financial resource loss	4.33	4.23

Note: *M*, mean; *SD*, standard deviation.

level of depressive symptoms for follow-up. The mean score for total Social Support Scale (SPS) was 58.65 ($SD = 10.15$; range from 30 to 75) and the mean value for PAIR state score was 90.90 ($SD = 13.70$), with a range from 45 to 119. Finally, the mean work resource loss subscale score was 1.51 ($SD = 2.11$; range: 0–9), the mean social resource loss subscale score was 1.12 ($SD = 1.79$; range: 0–9), the mean health resource loss subscale was 1.06 ($SD = 1.32$; range: 0–6), the mean time resource loss subscale was 1.3 ($SD = 1.41$; range: 0–5), the mean housing resource loss subscale was 1.69 ($SD = 1.85$; range: 0–10) and the mean financial resource loss subscale was 4.33 ($SD = 4.23$; range: 0–17) (Table 1).

Correlations between demographic variables, depressive mood, social support, relationship intimacy and resource loss

Table 2 presents the correlations between resource loss (work, social, health, time, housing quality and financial), demographic variables, depressive mood, satisfaction with social support and relationship intimacy. Depressive mood was positively and significantly correlated with resource loss. Satisfaction with social support and relationship intimacy were negatively and significantly correlated with resource loss. Finally, age and income were also negatively and significantly correlated with resource loss, mainly work, social and housing resource loss. Moreover, the major independent variables were correlated with resource loss.

Factors associated with resource loss

The standardised regression coefficients show that age was the only demographic variable significantly associated with work resource loss ($\beta = -0.22$, $p < .01$; Table 3). The negative regression coefficient for the variable age suggests that younger women had higher levels of work resource loss than older women. Depressive mood and work resource loss were also associated ($\beta = 0.27$, $p < .001$). Furthermore, satisfaction with social support was associated with work resource loss ($\beta = -0.17$, $p < .05$), but intimacy was not. The negative regression coefficient for social support suggests that women reporting little satisfaction with social support had experienced more work resource loss than those reporting more satisfaction with such support.

Age and income ($\beta = -0.14$, $p < .05$; $\beta = -.014$, $p < .054$, respectively) were the only demographic variables significantly associated with social resource loss (Table 3). Younger women reported higher levels of social resource loss than did older women. Additionally, women with lower yearly income reported higher levels of social resource loss than women with higher yearly income. Depressive mood was significantly and positively related to social resource loss ($\beta = 0.30$, $p < .001$) and relationship intimacy was significantly and negatively related to social resource loss ($\beta = -0.25$, $p < .001$). Furthermore, satisfaction with social support was not significantly associated with social resource loss in the multivariate analysis model.

Of the demographic variables only age was significantly related to housing quality loss ($\beta = -0.20$, $p < .01$; Table 3). Additionally, depressive mood ($\beta = 0.43$, $p < .001$) and low relationship intimacy ($\beta = -0.16$, $p < .05$) were significantly related to housing quality loss in the sample, but satisfaction with social support was not.



Table 2. Pearson's product moment correlation matrix for demographic variables, depressive mood, social support, relationship intimacy and resource loss.

	1	2	3	4	5	6	7	8	9	10	11	12
1 Age	.270**											
2 Education	.144*	.273**										
3 Income	-.154*	-.082	-.095									
4 Depressive mood	-.042	.048	.115	-.449**								
5 Social support	.069	.076	.138	-.250**	.342**							
6 Relationship intimacy	-.211**	.009	-.048	.366**	-.279**	-.143*						
7 Work resource loss	-.175*	-.044	-.154*	.393**	-.250**	-.348**	.534**					
8 Social resource loss	-.137	.001	.069	.377**	-.226**	-.182*	.503**	.428**				
9 Health resource loss	-.047	.020	.097	.375**	-.213**	-.167*	.402**	.485**	.466**			
10 Time resource loss	-.195**	.020	.015	.541**	-.361**	-.318**	.509**	.423**	.650**	.474**		
11 Housing resource loss	-.046	-.039	-.047	.391**	-.271**	-.211**	.483**	.412**	.537**	.344**	.624**	
12 Financial resource loss												-.624**

* $p < .05$; ** $p < .01$.

Table 3. Effects of demographic variables, depressive mood, social support and relationship intimacy on work, social and housing resource loss.

	Work resource			Social resource			Housing resource		
	B	SE	t	B	SE	t	B	SE	t
Step 1									
Constant	4.71	1.02		3.44	0.88		4.24	0.90	
Age	-0.11	0.03	-2.2	-0.06	0.03	-1.4	-0.08	0.03	-2.02*
Income			-3.14**	-0.36	0.18	-1.4			-1.94†
F		(1,196) = 9.89			(2,195) = 4.54			(1,196) = 8.16	
R ²		0.05**			0.05*			0.04**	
Step 2									
Constant	5.60	1.65		5.06	1.35		5.48	1.29	
Age	-0.09	0.03	-1.9	-0.04	0.03	-0.9	-0.06	0.03	-1.40
Income			-2.82**	-0.21	0.17	-0.8			-1.24
Depressive mood	0.12	0.03	.27	0.11	0.03	.30	0.17	0.03	4.08***
Social support	-0.04	0.02	-1.7	-0.01	0.01	-0.3	-0.02	0.01	-0.42
Relationship intimacy	-0.00	0.01	-0.1	-0.03	0.01	-2.5	-0.02	0.01	-3.63***
F change		(3,193) = 11.00			(3,192) = 16.07			(3,193) = 31.39	
R ²		0.19***			0.24***			0.36***	
ΔR ²		0.14***			0.19***			0.32***	

†p < .054; *p < .05; **p < .01; ***p < .001.

No demographic variable was significantly related to health, time and financial resource loss. Depressive mood was significantly related to health, time and financial resource loss ($\beta = 0.34, p < .001$; $\beta = 0.35, p < .001$; $\beta = 0.33, p < .001$, respectively), but satisfaction with social support and relationship intimacy were not (Table 4).

The first model with only the demographic variables explained approximately 5% of the variance in work resource loss ($R^2 = 0.05$). In the second and third models, the demographic variables had similar R^2 s of 0.05 and 0.04, suggesting a role for demographic variables in explaining social (5%) and housing quality loss (4%). Adding psychosocial variables (depressive mood, satisfaction with social support and relationship intimacy) delivered a significant improvement (R^2 change = .14, $F(3,193) = 11.00, p < .001$; R^2 change = .19, $F(3,192) = 16.07, p < .001$; R^2 change = .32, $F(3,193) = 31.39, p < .001$, respectively). Specifically, an additional 14% of the variance in work resource loss, 19% of the variance in social resource loss and 32% of the variance in housing quality loss was explained by depressive mood and low satisfaction with social support in the first model, and by depressive mood and low relationship intimacy in the second and third models, respectively. In the fourth, fifth and sixth models, the psychosocial variables explained between 15% and 17% of health, time and financial resource loss ($R^2 = 0.15, F(3,194) = 11.67, p < .001$; $R^2 = 0.15, F(3,194) = 11.49, p < .001$; $R^2 = 0.17, F(3,194) = 13.49, p < .001$, respectively), with depressive mood delivering a consistent and stronger association. The percentages of the total variance in work, social, housing quality, health, time and financial resource loss explained by the independent variables were 19%, 24%, 36%, 15%, 15% and 17%, respectively (Tables 3 and 4).

Therefore, being younger, having lower yearly income, having more depressive mood and having low relationship intimacy and low satisfaction with social support were the main factors associated with resource loss in our sample, with depressive mood in particular being consistently positively associated with work, social, housing quality, health, time and financial loss.

Discussion

Overall, our final models are consistent with previous results on the factors associated with stressful life events in pregnant women (Kingston et al., 2012; Stone et al., 2015). Our finding that depressive mood is related to loss of resources during pregnancy, after controlling for demographic risk factors, is indeed consistent with the known association between depression and stressful life events in pregnant women (Woods et al., 2010). More specifically, depressive mood was associated in our sample with loss of resources across several resource domains, as also shown by other researchers (e.g. Hall et al., 2014; Johnson et al., 2007; Phillips et al., 2015). These results are also consistent with the COR theory (Hobfoll, 1989, 1991), as in this study depressive mood during pregnancy is associated with loss of resources, making these women vulnerable to additional stressors. Although other studies have assessed the impact of psychopathological distress on resource change, we found only one study of the factors associated with stressful life events in pregnant women, but it did not study resource loss (Kingston et al., 2012).

The role of social support and relationship intimacy has been studied and shown both to be inversely related to loss of resources (Dunkel Schetter, 2011; Hobfoll et al.,

Table 4. Effects of demographic variables, depressive mood, social support and relationship intimacy on health, time and financial resource loss.

	Health resource			Time resource			Financial resource		
	B	SE	t	B	SE	t	B	SE	t
Step 1									
Constant	1.51	0.80		1.61	0.86		7.41	2.54	
Depressive mood	0.09	0.02	.34	0.10	0.02	4.55***	0.29	0.07	4.44***
Social support	-0.01	0.01	-0.04	-0.01	0.01	-0.48	-0.04	0.03	-1.17
Relationship intimacy	-0.01	0.01	-0.08	-0.01	0.01	-0.95	-0.03	0.02	-1.42
F	(3,194) = 11.67			(3,194) = 11.49			(3,194) = 13.49		
R ²	0.15***			0.15***			0.17***		

*p < .05; **p < .01; ***p < .001.

2003). In our sample, little satisfaction with social support and poor relationship intimacy were associated with resource loss. Indeed, support from friends and family and satisfaction with social activities may help pregnant women cope with stress, reducing stress and resource loss by creating a sense of well-being and mastery (Gadalla, 2009; Glazier et al., 2004). Therefore, being unhappy about one's social support and relationship intimacy may compromise a pregnant women's capability to acquire and maintain resources, being associated with the loss of resources, as our findings suggest. This result is consistent with studies of the importance of relationships factors for pregnant women's resilience (e.g. Dunkel Schetter et al., 2010; Malary et al., 2015).

Sociodemographic factors have been also associated with stressful life events (Kingston et al., 2012). Our findings suggest that being younger and having lower yearly income makes pregnant women vulnerable to work, housing quality and social losses. This result is consistent with other studies that found stressful life events during pregnancy to be associated with low SES and younger maternal age, among other demographic factors (DiPietro Mager, 2016; Richards et al., 2007). However, our sociodemographic variables are less significant when additional factors are included in the model.

Overall, our findings suggest that different forms of resource loss among pregnant women are related with sociodemographic, psychological and relationship factors, consistent with Kingston et al.'s (2012) finding that psychosocial variables and demographic factors are often associated with stressful events in the year prior to giving birth. To the best of our knowledge, no other studies have analysed the association between sociodemographic, psychological and relationship factors, and pregnant women's resource loss using multivariate analyses. The main difference among our final models was that demographic and relationship factors are associated mainly with work, social and housing quality loss, but not with health, time and financial loss. As such, demographic and relationship variables, in addition to depressive mood, should be considered risk markers for resource loss and vice versa.

Among this study's limitations is its cross-sectional nature that makes it difficult to make causal inferences and limits the conclusions that can be drawn from the present data. Indeed, in this study time was not included as a variable and future studies should consider a longitudinal design. Another limitation is that the findings are limited by the validity of the self-reported data because our variables were all based on self-report. Likewise, most pregnant women in our sample had low levels of depressive mood, and this should be noted as a potential limitation due to restriction of range. Additionally, with most women being described as belonging to the 'urban poor' and reporting low income, it is more likely that they would report difficulty with structural factors (e.g. housing quality). The significant positive correlations we report with age also suggest that younger women are more at risk. Therefore, such structural features should be acknowledged. Assessing such structural features would be amenable to interventions because it would allow us to identify women at risk of greater resource loss. Finally, we did not study several potential factors that could also be associated with resource loss during pregnancy, such as ethnicity, formal marital and occupational status, mental problems other than depressive mood, chronic health problems, domestic violence, pregnancy complications and multiparity, among other confounding variables. It is likely that their inclusion would help improve the hierarchical regression models presented above as there is a substantial amount of the variance unaccounted for.

Our study identified factors associated with resource loss in pregnant women that should be considered when carrying out psychosocial risk assessment. The results indicate that psychosocial risk assessment should also assess depression and life stressors. However, the lack of mental-health staff in primary-care settings is a major barrier to implementing these recommendations. At the very least, our findings should help identify women at risk and inform psychosocial interventions that seek to reduce pregnant women's resource loss.

In conclusion, we showed above that depressive mood and relationship factors are associated with women's loss of resources during pregnancy after controlling for socio-demographic variables. Interventions to prevent resource loss should target younger, lower-income women with depressive mood, unhappy about their relationship intimacy and with low social support. Our findings benefit future research on the relationships between risk factors and loss of resources, in that they show that sociodemographic, psychological, and relationship variables are associated with resource loss to a statistically significant extent. The results highlight the importance of screening for depressive mood and depleted resources during routine prenatal care in order to identify pregnant women at risk of depression and of resource loss. Our findings also highlight the need for interventions that counter the link between emotional distress and additional resource losses.

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