

Becoming a mother during the COVID-19 national lockdown in Italy: issues linked to the wellbeing of pregnant women

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Abstract

The COVID-19 pandemic and consequent lockdown represent risk factors for the mental health of pregnant women. We explored the impact of COVID-19 restriction policies on psychological health, analysing the predictive role of social support on maternal wellbeing. A total of 212 pregnant women recruited from two public hospitals in Italy were divided into two groups: (a) a pre-COVID-19 group composed of 141 expectant women (mean age = 34.6; SD = 4.3) at their third trimester before the national lockdown period; (b) a COVID-19 group composed of 71 pregnant women (mean age = 33.3; SD = 4.5) at their third trimester during the COVID-19 national lockdown. Participants completed two self-report questionnaires: the Profile of Mood States and the Multidimensional Scale of Perceived Social Support. Moreover, the COVID-19 group was asked to respond to an open question concerning worries about their pregnancies and COVID-19. Results showed that pregnant women during COVID-19 presented higher anxiety, depression and hostility, and lower vigour, than the pre-COVID-19 group. The main concerns were related to the effect of hospital restriction policies on childbirth and fears of contracting COVID-19. Perceived partner social support represented a protective factor only for the pre-COVID-19 women. Limitations, strengths, and theoretical and clinical implications are discussed.

Keywords: COVID-19, Pregnancy, Psychological well-being, Social support, Pregnancy-related concerns

In December 2019, SARS-CoV-2 or 2019-nCoV was first reported in Wuhan, Hubei Province, China (Lu et al., 2020). Since then, the infection of coronavirus disease 2019 (COVID-19) has quickly spread all over the world, leading the World Health Organization to declare a global pandemic on March 11, 2020. In an attempt to reduce the devastating effects of this virus, varying levels of “stay at home” orders have been promoted in most countries, resulting in the closure of schools, daycares, workplaces and non-essential services. In Italy, one of the first countries involved in the pandemic after China, the Prime Minister imposed a national lockdown in March 2020, first restricting the movement of the population except for necessity, work, and health circumstances, and then ordering the shutdown of all non-necessary businesses and industries. Consequently, the impact of physical (and social) isolation, added to the COVID-19 pandemic, may have posed a high risk for mental health to the population. Studies have shown that, during a pandemic, individuals are more prone to experience fear of getting sick or dying, and feeling helpless (Hall et al., 2008). Specifically during COVID-19, the risk for psychological health is serious, with anxiety and depression affecting about one third of the population (Salari et al., 2020). Young adult women are particularly at risk of COVID-19 negative consequences on psychological wellbeing (Bruno et al., 2021; Epifanio et al., 2021). Moreover, people who are kept in isolation and quarantine experience significant levels of anxiety, anger, confusion, and post-traumatic stress symptoms (Brooks et al., 2020). Recent studies carried out during the COVID-19 pandemic on Italian samples have shown that anxiety is positively correlated with somatic symptoms (Bruno et al., 2021).

It has been confirmed that maternal stress and anxiety during pregnancy are associated with negative effects, such as preeclampsia, depression, preterm labour, low birth weight and low APGAR score (Ponti & Smorti, 2019; Smorti, Ponti, & Tani, 2019). Therefore, during the COVID-19 pandemic, the risk of negative psychological consequences may be increased in pregnant women, especially those in the third trimester who foresee delivery during a pandemic. Pregnant women may experience a condition of elevated stress and anxiety due to the potential adverse outcomes on the foetus and the infant, including intrauterine growth restriction, preterm delivery, admission to the intensive care unit, spontaneous abortion and perinatal death (Schwartz & Graham, 2020). Some of the major concerns for pregnant women during COVID-19 may regard health conditions for themselves and their babies: Is my baby healthy? Is the gestation proceeding well? Will the newborn be healthy? Will the pandemic affect the newborn-mother relationship? In addition, due to concerns of being exposed to the virus in the hospital, pregnant women tend not to visit their physicians for medical examinations (How to manage with breastfeeding, and neonatal care [i.e., screening]?) (Fakari & Simbar, 2020).

In Italy, a cross-sectional study reported that the outbreak of COVID-19 and the subsequent national lockdown are strongly associated with an increased risk of anxiety (Saccone et al., 2020) and higher levels of fear (Ravaldi et al., 2020) in pregnant women. The anxiety seems to be related to specific concerns about the impact of COVID-19 on maternal health, foetal/neonatal health (Fakari & Simbar, 2020), and vertical transmission of virus from mother to foetus (Saccone et al., 2020).

In addition to concerns closely related to the impact of the virus on personal and newborn's physical health, other worries of pregnant women during the COVID-19 pandemic are related to separation from others due to quarantine measures. One of the major concerns of pregnant women during COVID-19 regards family and social relationships, such as whether their families will be present during the perinatal period due to quarantine measures (Fakari & Simbar, 2020), thus underlining the importance of social support. Previous studies have shown that social support constitutes a protective factor for challenges and difficulties linked to motherhood (Emmanuel et al., 2008) and for perinatal depressive symptoms (Biaggi et al., 2016). The concerns of pregnant women regarding the possibility that family members may not be present during the perinatal period may apply to hospitalisation, labour and childbirth while restriction policies in hospital settings are in place. Initiated by a letter from a group of perinatal mental health experts stating that “the public health risk of SARS-Covid-19 transmission on labour and delivery wards from the presence of visitors, including partners, is greater and less modifiable than the risk of psychological harms that come from this physical separation” (Hermann et al., 2020, p. 2), several countries, including Italy, adopted restriction policies. However, the possibility that pregnant women perceive the absence of support from family members as a risk factor for their psychological wellbeing cannot be excluded.

Based on these considerations, the aim of the present study was to explore the effect of Italian restriction policies on the wellbeing of pregnant women during the third trimester of gestation by comparing a group of pre-COVID-19 pregnant women with a group of pregnant women during the COVID-19 pandemic national lockdown. In fact, our research group has been conducting a study on the psychological wellbeing of pregnant women since 2016. However, following the outbreak of the COVID-19 pandemic, we decided to adapt the use of the data collected to investigate the impact of COVID-19 restriction policies. According to literature, we expected that the levels of psychological wellbeing were lower in COVID-19 pregnant women than those pre-COVID-19. A second aim was to explore the specific concerns of pregnant women during COVID-19. We expected that major concerns would regard childbirth and hospitalisation, both in terms of health conditions (for mother and infant) and for lack of social support during hospitalisation due to lockdown. Third, we explored the predictive role of social support on psychological wellbeing in pregnant women during pre-COVID-19 and COVID-19. We expected that social support would

positively predict the psychological wellbeing in pregnant women during both the pre-COVID-19 and COVID-19 periods.

Methods

Participants and procedures

This study constituted a section of a larger longitudinal protocol performed in two public hospitals, approved by the Ethics Committees of both Institutes, in the metropolitan areas of central (approval number 12749/2018) and northern Italy (approval number 196/2016). Moreover, all procedures performed in this paper involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all participants. Inclusion criteria were: age >18 years, Italian speaker, no pathological diagnosis of the foetus, no previous maternal psychopathological diagnosis. Women who agreed to participate signed a written consent form. They were then asked to fill out a battery of questionnaires to register their socio-demographical data, level of wellbeing and level of perceived social support. For women pregnant during COVID-19, an additional questionnaire about the fears they experienced during their pregnancies and nearing childbirth was administered.

Only completed questionnaires were accepted for this study. A total of 212 women were recruited at the third trimester of gestation from January 2019 to May 2020. Based on the date of their third trimester of pregnancy, the women were divided into two groups: (a) pre-COVID-19 group: 141 women at their third trimester of pregnancy before pandemic national lockdown (in Italy, from January 2019 to February 2020) aged 26–47 years ($M = 34.63$, $SD = 4.31$); and (b) COVID-19 group: 71 women at their third trimester of pregnancy during the first phase of the pandemic national lockdown (from 15 March 2020 to 15 May 2020), aged 21 to 43 years ($M = 33.27$; $SD = 4.51$).

Women belonging to the first group were subjected to “usual care,” thus they could have a support person of their choice during check-ups throughout pregnancy, during labour and childbirth, and receive visits during postpartum hospitalisation. Face-to-face prenatal classes were provided by health institutions. In compliance with World Health Organisation (WHO) directives (April 2020), women in the second group were subjected to security measures, due to which the presence of a partner or significant other was limited during assistance interventions, and the risk of contagion was prevented by reducing social contact. Face-to-face prenatal classes were cancelled because of COVID-19, in order to limit contagion risk. Only the pregnant women were admitted to routine check-ups, and accompanying persons

(partner or significant other) had to wait outside. The partner (or another support person) was neither permitted during hospitalisation nor during labour, delivery or post-partum. If the mother tested positive for COVID-19 at the time of hospital admission, she was isolated during the entire stay (labour, delivery), and separation from the baby was considered, depending on the health conditions of the mother and baby.

Measures

- *Socio-demographical data*: Women were asked to indicate age, marital status, educational level, work status, parity and previous miscarriages.
- *Women's wellbeing*: The Italian version (Farnè et al., 1991) of the Profile of Mood States (POMS) developed by McNair et al. (1992) was employed. The POMS is a self-report questionnaire that consists of 58 adjectives that describe feelings (e.g., relaxed, sad, annoyed, energetic). Participants rate each item on a 5-point Likert scale from 0 (*not at all*) to 4 (*extremely*) to assess six mood-state scales: tension-anxiety, depression, anger-hostility, vigour, fatigue, and confusion. In the present study, the Cronbach's alpha coefficients were .78, .83, .80, .90, .73, and .72 for the six mood-state scales, respectively.
- *Perceived social support*: The Italian version (Prezza & Principato, 2002) of the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al. (1988) was used. The MSPSS is a self-report questionnaire that consists of 12 items rated on a 7-point Likert scale, ranging from 1 “*very strongly disagree*” to 7 “*very strongly agree*”, aimed to assess the level of perceived support from three different sources, such as significant other/special person (here specified as “partner”), family, and friends. In the present study, the Cronbach's alpha coefficients were .94, .93, and .95 for partner, family, and friends, respectively.
- *Additional question for women pregnant during COVID-19*: After quantitative data collection, women in the COVID-19 group were asked to respond to an open-ended question concerning the presence of any fears and concerns related to their pregnancy and childbirth: If you have any, could you describe your fears and concerns regarding your pregnancy and childbirth during the COVID-19 pandemic?

Data analysis

The total number of women to be included in the current study was calculated by using G-Power 3.1. Based on a medium effect size (Cohen's $d = 0.5$) of a group interaction in a MANOVA and power = 0.95, the calculation resulted in a total sample size of 52 women.

Descriptive statistics of quantitative data was performed for all dimensions. The normality of the dimensions was tested using the directions of Curran and colleagues as criterion, which identified an accepted range for skewness from -2 to $+2$ and for kurtosis from -7 to $+7$ (Curran et al., 1996). In order to compare the two groups of pregnant women, a t-test for independent data or a chi-square test was performed, depending on the dichotomous or continuous nature of variables. Then, a multivariate analysis of variance (MANOVA) was carried out to explore whether pre-COVID-19 and COVID-19 pregnant women differ on the POMS dimensions, after controlling the assumptions of homogeneity of variance–covariance matrices using the Box's M test and the variance using the Levene's test. Where the homogeneity assumptions are violated, the most robust Pillai's Trace was reported. Univariate ANOVAs were performed when the MANOVA results were significant. Bonferroni correction was used for multiple comparisons. In particular, the independent variable was group (pre-COVID-19 and COVID-19 pregnant women). The dependent variables were the five dimensions of POMS.

In order to verify whether the level of perceived social support predicts the level of psychological wellbeing, a series of linear regression analyses (stepwise method) was conducted using the three sources of social support of MSPSS (partner, family and friends) as predictors and the six POMS dimensions, in turn, as the dependent variable, separately for pre-COVID-19 and COVID-19 pregnant women. All these analyses were carried out using the IBM SPSS Statistics, version 24 (2017), and the alpha level was set at $p = .05$ with confidence interval at 95%.

Qualitative data regarding the answers to the open-ended question were analysed by two coders. The two coders independently identified the content of the fears reported by the women. They then worked together to obtain an agreement where there were indecisions or discrepancies in their evaluations. The coders agreed on 100% of responses.

Results

One hundred and ninety-six women (92.5%) were Italian and 16 (7.5%) came from other countries. One hundred and twelve (52.8%) were married, 97 (45.8%) were cohabitant, and 3 (1.4%) were separated or divorced. Regarding their socio-educational levels, 198 (93.4%) had a high school diploma or university degree; 191 (90.1%) had a job. Finally, 185 (87.3%) were primiparous and 166 (78.3%) had not had previous miscarriages.

All variables showed acceptable values of skewness and kurtosis, with a range from -1.85 to 1.98 for skewness and from $.22$ to 5.33 for kurtosis. No significant differences emerged among the pre-COVID-19 and COVID-19 pregnant women

groups with respect to origin ($\chi^2(1) = .82, p < .001$), marital status, $\chi^2(2) = 1.74, p = .419$), educational level ($\chi^2(2) = 2.63, p < .001$), work status ($\chi^2(1) = .25, p < .001$) and previous miscarriage ($\chi^2(1) = .04, p < .001$). On the contrary, significant differences emerged in reference to mean age ($t(210) = 2.14, p < .001$) with the COVID-19 group being younger than the pre-COVID group, and parity ($\chi^2(1) = 31.99, p = .000$), with a greater prevalence of primiparous within the pre-COVID-19.

The MANOVA test, conducted by controlling differences between groups (age, parity), highlighted a significant main effect [Pillai's trace: $F(6, 203) = 7.59, p < .000, \eta^2 = .18$]. Subsequent ANOVAs indicated that this main effect was primarily explained by the Depression, Anger-hostility, and Vigour dimensions, with a medium effect size (Cohen, 1988). More specifically, pre-COVID-19 pregnant women had significantly lower scores on Tension-anxiety, Depression, and Anger-hostility and higher levels of Vigour than those pregnant during COVID-19. **Table 1** shows this in more detail.

Results of regression analyses, conducted by controlling differences between groups (age, parity), showed that the significant sources of social support involved in women's wellbeing are the perceived social support from partner and friends only for pre-COVID-19 pregnant women. More specifically, the perceived social support from partner was negatively associated with the level of Tension-anxiety, Depression, and Anger-hostility; and positively associated with Vigour. Moreover, perceived social support from friends was negatively linked to Anger-hostility. On the contrary, no sources of social support were significant for the group composed by COVID-19 pregnant women (see **Table 2**) with respect to the six POMS dimensions.

The open-ended question related to the fears and concerns of pregnant women during COVID-19 highlighted three main issues that can be conceptualised as: (a) fear that the partner will not be able to participate in childbirth (reported by 30 women); (b) fear of contracting COVID-19 virus (reported by 13 women); (c) fear of not being able to have epidural analgesia (reported by 13 women). Moreover, from the analysis of the responses recorded, other fears emerged which, although less frequent, are nevertheless important, such as fears of child health or childbirth complications (reported by five women), fear of passing COVID-19 virus to the child (reported by three women); fear that other children, already born, could pass COVID-19 virus to the newborn (reported by two women); fear about isolation (reported by three women); fear of the progress of pregnancy due to possible delayed medical visits because of the pandemic situation (reported by one woman); fear for economic situation (reported by one woman).

Discussion

The aim of the present study was to explore the effect of Italian restriction policies on the wellbeing of pregnant women during the third trimester of gestation by comparing a group of pre-COVID-19 pregnant women with a group of women who were pregnant during the COVID-19 national lockdown. Our findings show that pregnant women during COVID-19 presented higher levels of anxiety, depression and hostility (according to the POMS questionnaire) than counterparts expecting in the pre-COVID-19 period, confirming a negative impact of pandemic on psychological wellbeing during gestation (Ravaldi et al., 2020; Saccone et al., 2020) in women in Italy. Moreover, our data allowed us to understand that the main concerns about pregnancy and COVID-19 were related to childbirth, in terms of: (a) loneliness and lack of partner support due to restriction policies in the hospital setting and delivery wards, and (b) lack of confidence in tolerating labour pain without pharmacological relief, due to the fact that anaesthetists may be busy in COVID-19 wards. The limitations due to the COVID-19 pandemic in hospital settings may justify these concerns. On the other hand, from literature, we know that when painful experiences occur, individuals seek proximity to or support from attachment figures, such as partners (Mikulincer & Shaver, 2003), and that this support seems effective in reducing pain perception. In fact, regarding childbirth pain, women who receive greater support from caregivers during labour and delivery use fewer labour pain medications and analgesics (McGrath & Kennell, 2008). Thus, the lack of partner (or significant other) support in the delivery room may be particularly stressful for pregnant women in the third trimester of gestation (especially if analgesics are unavailable), confirming the relevance of social support during the COVID-19 pandemic found by Fakari and Simbar (2020). Other major concerns are related to fear of contracting the COVID-19 virus in hospital settings and fear for the baby's health conditions, in line with Fakari and Simbar (2020).

When we considered the protective role of perceived social support on psychological wellbeing during pregnancy, we found that, in women who were pregnant during the pre-COVID-19 period, the presence of high levels of perceived social support from partner was negatively predictive of anxiety, depression, and anger-hostility, and positively predictive of vigour. In the group of women who were pregnant during the COVID-19 lockdown, this relationship was not maintained; in fact, the levels of perceived support from the partner did not predict psychological wellbeing.

A possible explanation could be found in the concept of perceived social support that refers to a belief concerning a subjective feeling of availability of potential sources of support. Research has shown that perceived social support is protective for psychological wellbeing during pregnancy and the perinatal period (Ponti et al., 2020; Smorti, Ponti, & Pancetti, 2019). However, it is possible that, because of restriction

policies in the hospital setting due to COVID-19, pregnant women perceive that their partners are not available as an effective and real social support at the time of labour and childbirth and, therefore, may not constitute a protective factor for anxious, depressive and anger feelings. On the contrary, women who perceived lower levels of social support by partner may be aware of the lesser availability of their partner, so they may be less worried about their partner's absence during childbirth. This awareness could be related to the relationship between social support and psychological health.

Despite the relevance of this study, it does present some limitations. First, the difference between groups in terms of age and parity may have affected the difference revealed in POMS level. However, especially for parity, given that literature has shown that primiparas typically show greater levels of anxiety, depression and worries than multiparas (Smorti, Ponti, & Pancetti, 2019), as the transition to parenthood is associated with individual and relationship distress and marital crisis (Condon et al., 2004), we would expect lower levels of psychological wellbeing in the pre-COVID group, as it was made up mainly of primiparas. On the contrary, we found higher levels of psychological wellbeing in the pre-COVID group, underlining that the influence of the lockdown and restriction policies in the COVID-19 group is particularly relevant in increasing depression, anxiety and concerns related to becoming a mother during the pandemic. Regarding age, literature showed that older mothers could be more at risk of clinical perinatal complication (Mills & Lavender, 2014), although results of maternal age on psychological outcomes in the perinatal period are inconsistent. For example, McMahan et al. (2011) found that older mothers present lower levels of psychological symptoms during pregnancy, while other authors have found that the prevalence of depression was higher in older women (Muraca & Joseph, 2014). At the moment, it might be difficult to understand the role of maternal age on perinatal wellbeing.

Second, the sample of pregnant women (especially those of the COVID-19 group), although appropriate in sample size, could result smaller than total samples found by other studies on pregnant women during the Italian COVID-19 lockdown (Ravaldi et al., 2020; Saccone et al., 2020). However, considering that participants in this study were pregnant women at their third trimester of gestation only, sample size is comparable. A larger sample would probably have made these data more clear, but given the unpredictability of the event and its traumatic nature, for the moment we must stop and consider the data that we have. Surely, all research on the effects of a global pandemic is fundamental and necessary to increase our understanding of human mental functioning.

An innovative aspect of this study is that, in order to explore the main concerns regarding COVID-19 and pregnancy in expectant women, we used an open-ended

question. In fact, previous Italian studies that analysed the worries and concerns of pregnancy during the COVID-19 lockdown period used a forced-choice question specifically related to the vertical transmission of COVID-19 (Saccone et al., 2020) or to other issues that were defined by researchers (i.e., baby's, partner's or own health...) (Ravaldi et al., 2020), thus not allowing exploration of the women's concerns related to the forced distance of the partner while in the hospital during labour, the unavailability of epidural administration, and the consequent fear of experiencing pain and not being supported by their partners. From these considerations, the present study allows us to highlight important theoretical and clinical implications. The lockdown situation represents a risk factor for pregnant women who find themselves deprived of their normal sources of social support. A solution within hospitals, where women are faced with this particularly critical moment in life without the support from which they would normally benefit, should be found. From a public health point of view, it would therefore be necessary to provide various support figures, trained specifically if possible, who can help women feel less isolated while facing this moment in their lives.

Notes

Martina Smorti and Chiara Ionio have contributed to the drafting of introduction and discussion sections of the manuscript. Lucia Ponti has contributed to the analysis, interpretation of data and the drafting of method section. Marta Gallese gave substantial contribution to the acquisition of data. Angelica Andreol gave substantial contribution to acquisition of data. Lucia Bonassi revised critically the manuscript for important intellectual content.

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Table 1. Differences in the POMS dimensions mean scores between the two groups

	Pre-COVID-19 pregnant women		COVID-19 pregnant women		F (1,208)	p	Cohen's D
	M	SD	M	SD			
POMS—Tension-anxiety	6.47	3.64	7.89	5.39	2.60	.109	.3
POMS—Depression	2.26	2.92	5.60	5.69	21.81	.000	.7
POMS—Anger-hostility	2.17	2.67	3.72	4.37	4.94	.027	.5
POMS—Vigour	17.71	5.43	14.39	5.98	10.42	.001	.6
POMS—Fatigue	4.95	3.49	5.86	3.56	2.33	.128	.3
POMS—Confusion	7.01	4.02	7.02	3.99	.013	.909	.0

Table 2. Summary of the linear regression analyses of MSPSS dimensions (partner, family and friends) as predictor of POMS dimensions (Tension-anxiety, Depression, Anger-hostility, Vigour, Fatigue, and Confusion)

	Pre-COVID-19 pregnant women					COVID-19 pregnant women				
	β	t	P	95% CI		β	t	p	95% CI	
Tension-anxiety as outcome variables										
MSPSS-partner	-.20	-2.14	.034	-1.69	-.07	.23	1.31	.194	-.48	2.33
MSPSS-family	.02	.18	.858	-.57	.68	-.36	-1.60	.115	-2.83	.31
MSPSS-friends	-.06	-.62	.540	-.70	.37	.10	.50	.617	-1.17	1.95
Depression as outcome variables										
MSPSS-partner	-.23	-2.50	.014	-1.46	-.17	.23	1.34	.184	-.48	2.44
MSPSS-family	.03	.29	.772	-.42	.57	-.39	-1.77	.081	-3.07	.18
MSPSS-friends	-.09	-1.05	.298	-.64	.20	.05	.26	.800	-1.41	1.82
Anger-hostility as outcome variables										
MSPSS-partner	-.29	-3.24	.001	-1.51	-.37	.13	.73	.468	-.73	1.57
MSPSS-family	.07	.77	.443	-.27	.61	-.38	-1.70	.093	-2.35	.19
MSPSS-friends	-.19	-2.14	.035	-.78	-.03	.21	1.26	.213	-.40	1.77
Vigour as outcome variables										
MSPSS-partner	.27	2.93	.004	.58	2.96	.26	1.71	.092	-.20	2.52
MSPSS-family	-.00	-.02	.988	-.92	.91	-.01	-.07	.949	-1.47	1.56
MSPSS-friends	.05	.57	.572	-.56	1.00	.33	1.88	.064	-.09	2.92
Fatigue as outcome variables										
MSPSS-partner	-.06	-.63	.531	-1.04	.54	.32	1.82	.074	-.09	1.83
MSPSS-family	.02	.16	.872	-.56	.66	-.34	-1.48	.147	-1.86	.28
MSPSS-friends	-.13	-1.35	.179	-.87	.16	.01	0.3	.980	-1.05	1.08
Confusion as outcome variables										
MSPSS-partner	-.08	-.81	.417	-1.29	.54	.29	1.59	.117	-.22	1.92
MSPSS-family	-.01	-.09	.928	-.73	.67	-.37	-1.60	.115	-2.14	.24
MSPSS-friends	-.09	-.98	.328	-.89	.30	.07	.32	.748	-.99	1.37