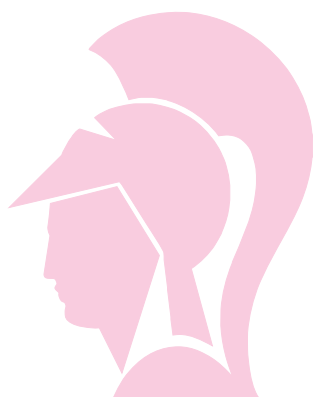


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Poor social support is associated with preterm birth rather than maternal prenatal anxiety and depression: a retrospective case-control study

Maternal psychological adversities experienced during pregnancy appear to be associated with a trend towards suboptimal birth outcomes, including a shorter gestation period.¹ Preterm birth (*i.e.* birth before 37 completed weeks of gestation) is the leading cause of neonatal morbidity and mortality,² and is associated with adverse effects on mothers' mental health³ as well as mother-child relationships.⁴ This indicates that preterm birth has a significant emotional impact on families, as well as economic implications for public-sector services. However, despite growing research on this topic, evidence of the specific effects of women's prenatal mental health on birth outcomes remains unclear and conflicting at times.⁵

Therefore, we aimed to examine the impact of pregnant women's psychosocial distress (specifically, anxiety, depressive symptoms, and level of perceived social support) on preterm birth.

The sample for this retrospective case-control study

included participants from a longitudinal investigation (2017–2018) of maternal perinatal mental health.⁶

Participant recruitment was carried out in perinatal health care centers, facilities associated with the Observatory of Perinatal Clinical Psychology, Department of Clinical and Experimental Sciences, University of Brescia (<https://www.unibs.it/it/node/988>), Italy. This study was conducted in collaboration with the Italian National Institute of Health (Istituto Superiore di Sanità).

The inclusion criteria were being pregnant or having a biological child aged ≤ 6 months and being able to speak and read Italian. Exclusion criteria were being under 18 years of age, having current psychotic symptoms, or having issues with substance misuse.

All participants provided written informed consent prior to entering the study. Before signing the consent form, a healthcare professional involved in the study provided each potential participant with detailed information about the study aims and methods, as well as the observational nature of the study. The participant information sheets and consent form made explicit the voluntary nature of their involvement and the right to withdraw from the study at any time. Ethical approval for the study was obtained from the ethics committee of the Healthcare Centre of Bologna Hospital (Register Number: 0077805, June 27, 2017).

The Psychosocial and Clinical Assessment (PCA) form was used to collect information about participants' sociodemographic characteristics as well as obstetric, clinical, and treatment-related factors. An unstructured clinical interview was used to collect information on both past and current emotional and psychiatric conditions. Both, the PCA and the clinical interview, were administered in person by female clinical psychologists trained in perinatal mental health assessment.

To compare categorical data, a χ^2 test or the exact Fisher's Test, whenever appropriate ($N < 5$ in any cell), were used. All tests were two-tailed with statistical significance set at $P = 0.05$. All data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS, version 26 for Windows Chicago, 69606 IL, USA).

Two hundred and sixty-four Italian women (mean age: 34.2 years, SD: 4.8) were included in the analysis. The total sample comprised 43 mothers who had delivered preterm infants, born before 37 gestational weeks (*i.e.* cases), and 221 mothers who had had full-term deliveries (*i.e.* controls). The mean gestational age at delivery in the cases and controls was 34.4 ± 2.9 and 39.6 ± 1.1 weeks, respectively. The two groups did not differ in any sociodemographic characteristics (*i.e.* age, marital status, educational level, employment status, and socioeconomic status), excluding confounding for the main confounding variables, obstetric aspects (*i.e.* first pregnancy, history of abortions, and assisted reproductive technology), and mental health features (*i.e.* mild to severe anxiety or depressive symptoms during pregnancy and number of participants taking medication for anxiety or depression). Furthermore, the two groups did not differ in levels of perceived support

from partners (it must be noted that more than 80% of full-term mothers and 90% of preterm mothers reported receiving enough or more than enough emotional as well as practical support from their partner). However, compared to the controls, the cases were significantly more likely to perceive less or no practical ($\chi^2 = 7.1$, $P = 0.029$) and emotional ($\chi^2 = 6.2$, $P = 0.045$) support from friends and relatives during pregnancy.

This study contributed to the relatively scarce literature investigating the association between preterm birth and prenatal maternal mental health and social support characteristics. Our findings align with prior studies that indicated that poor social support enhanced expectant mothers' stress levels,⁷ which is a significant predictive factor for preterm birth.⁸ Furthermore, recent evidence suggests that support from friends attenuates pregnant women's psychological stress across the transition to parenthood.⁹

Healthcare professionals engaged in providing care to pregnant women, such as medical general practitioners, gynecologists, and mental health specialists need to assess the quantity and quality of future mothers' social support (which is a factor that can affect stress levels in pregnant women), even if the pregnant woman does not have anxiety or depressive symptoms. This is necessary in order to help expectant mothers and to prevent possible adverse effects on the fetus and the neonate. In this sense, our findings can provide useful information to Italian health policy planners to consider developing cost-effective programs for the prevention of premature birth, focused on enhancing the levels of social support for pregnant women. In addition, this study may represent the first step to a more in-depth analysis investigating the perception of support from friends and relatives for mothers of preterm children.

However, findings from the current study must be interpreted in light of three main limitations: 1) a limited sample size; 2) lack of assessment of the level of prenatal psychological stress as a variable; and 3) lack of a structured diagnostic interview to diagnose anxiety and depressive symptoms according to DSM-5 criteria. However, it should be noted that the third limitation was attenuated by the fact that all participants were assessed by licensed clinical psychologists trained in perinatal mental health assessment.

Poor social support appears to be a greater risk factor than maternal prenatal anxiety and depressive symptoms, for preterm birth. Thus, it is important for mental health specialists to consider the health and well-being of pregnant women and their future children beyond mental health symptomatology and diagnosis.¹⁰

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Authors' contributions.—Loredana Cena and Gabriella Palumbo contributed equally to the general study design; Loredana Cena and Alice Trainini from the Observatory of Perinatal Clinical Psychology coordinate and manage the implementation of the study in each healthcare center; Fiorino Mirabella and Alberto Stefana designed the plan of statistical analysis of the study; Antonella Gigantesco and Laura Camoni were involved in the revision and critical reading of the manuscript; Alberto Stefana,

Loredana Cena and Fiorino Mirabella participated in the writing of the manuscript. All authors read and approved the final version of the manuscript.

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Effect of nursing intervention on therapeutic effect and jaundice index of neonatal jaundice

The neonatal stage is the baby after the fetus gives birth to the mother, from the umbilical cord ligation to 28 days. The neonatal stage is the stage that requires intensive care for the fetus. Newborns at this stage are prone to a variety of diseases, such as diarrhea, anorexia, and other digestive system diseases.¹ Furthermore, they are also prone to diseases caused by the central nervous system, fever, convulsions and so on. Jaundice is the most common complication in newborns. In medicine, jaundice before full moon is called neonatal jaundice, and the serious complication of neonatal jaundice is bilirubin encephalopathy. When serum bilirubin is severely elevated or high-risk factors exist at the same time, unconjugated bilirubin can enter the brain through the blood-brain barrier and lead to bilirubin encephalopathy. It can be seen that the effective treatment and nursing plan for this disease is an important content to reduce the threat of the disease and improve the health of newborns.² Therefore, in order to explore the effect of nursing intervention on the therapeutic effect and jaundice index of neonatal jaundice, this study selected the patients from August 2017 to December 2019 and selected the patients from August 2017 to December 2019; 108 cases were selected as the experimental subjects to explore the nursing effect of comprehensive nursing model, and the corresponding groups of pa-

tients were determined by drawing lots to carry out this group of research. According to our results, among the patients with neonatal jaundice who were normally treated in our hospital, the patients from August 2017 to December 2019 were randomly selected by computer. One hundred eight cases were selected as the experimental subjects in this experiment to explore the nursing effect of comprehensive nursing mode, and the corresponding different groups of patients were determined by drawing lots. A routine control group with routine treatment and nursing program and an experimental control group with comprehensive nursing model were formed. There were 54 patients in the experimental control group, with an average age of (4.34 ± 0.51) years. There were 25 male patients and 29 female patients. There were 54 patients in the routine control group, with an average age of (4.48 ± 0.14) years. There were 26 males and 28 females. This clinical study was approved by the Ethics Committee of the Institute. The patients of the two groups participated in the study together on the basis that they already knew that they had participated in the study, and the family members of the patients held the same opinion. After comparing the use of the basic personal information of the patients who participated in the study, the results of the two groups of patients that participated in the study showed that the patients of the two groups participated in the study together, and their families held the same research opinions. There was no significant difference and no objective statistics and factual significance ($P > 0.05$). The routine control group was treated with routine treatment and nursing intervention. The corresponding nursing measures were given according to the patient's condition. The experimental control group adopts routine treatment and nursing measures, combined with corresponding comprehensive treatment and nursing intervention. The first basic content of routine treatment and nursing measures is to form a comprehensive nursing treatment group: first, a comprehensive nursing treatment group is formed with doctors, head nurses and relevant nursing staff who have rich clinical experience in the department, combined with their own actual working situation and the actual situation of the hospital, to further clarify the purpose of the project in this experimental activity. The main goal is to improve the quality of nursing treatment. Then, the factors affecting the quality of nursing treatment were summarized and analyzed. Then effectively improve the professional knowledge and professional skills of all members of the group. Finally, according to the corresponding induction and analysis of the nursing treatment quality factors, the corresponding nursing treatment plan is set, and the corresponding responsible personnel are set up according to the various links in the plan. And then carry out the implementation for the first time. During the process of implementation, the implementation situation is regularly summarized, and the nursing treatment plan is adjusted and improved in time. The second basic content of routine treatment and nursing measures is to carry out comprehensive psy-