Original Research Article

Mothers' Social Perceived Support, Anxiety and Prenatal Attachment to Child: Which Direct and Indirect Influences on Delivery Clinical Indices?

Franca Tani[1], Valeria Castagna[2], Lucia Ponti[1]

[1]Department of Health Sciences, University of Florence, Via San Salvi, 12, Pad. 26 – 50135, Florence, Italy.
[2]Maternal and Child Health, Obstetrics and Gynecology Unit, Local Health Unit 4 (USL 4) Prato, Piazza dell'Ospedale 5 - 59100 Prato;

Corresponding Author: Franca Tani

ABSTRACT

This study investigates the reciprocal, direct and indirect influences that the social support mothers perceive during pregnancy, their states of anxiety, and prenatal attachment to the child have on the quality of the mother's delivery experience. In particular, we tested a complex theoretical model hypothesizing that maternal social perceived support could influence clinical delivery indices, both directly and indirectly, through the mediate effects of a mother's anxiety state and her prenatal attachment to her child.

A longitudinal design at two different times was carried out on 167 nulliparous no risk pregnant women. The women completed the Maternal Social Support Questionnaire, Prenatal Attachment Inventory, and State-Trait Anxiety Inventory- Y during the third trimester of pregnancy. Then, the first day after childbirth, clinical data on delivery (duration of labor, administration of oxytocin and epidural analgesia) were collected. Structural Equation Modeling (SEM) was employed to investigate the theoretical hypothesized model, using robust procedures.

SEM analyses showed that the tested model has a good fit to the data. Social support perceived by mothers during pregnancy plays an important role as a significant protection factor to reduce the negative clinical aspects of their childbirth experience, both directly and indirectly, through the promotion of maternal prenatal attachment to child, mediated by a reduction of the mother's anxiety states connected to pregnancy and delivery experiences.

Keywords: birth, social support, anxiety, prenatal attachment.

INTRODUCTION

The network of social relationships plays a significant role in shaping the quality of people's lives, and numerous studies have shown that being loved and emotionally supported protects against physical illness and premature death. [1,2] In addition, good social relationships are found to improve mental health through their influence on reducing individual stress levels, depression, anxiety, and promoting psychological wellbeing. [3]

In recent decades, the influence of social relationships on health status has become increasingly recognized within assistance procedures and epidemiological research in obstetric, nursing, and neonatal medicine. In particular, studies on pregnancy and neonatal health have verified that having supportive relationships may significantly enhance feelings of well-being and personal control, and have a positive effect on mothers: pregnant women who perceive high levels of social support feel

the deep biological, emotional, and existential pregnancy-related changes less stressfully. [4] In fact, the maternity experience is deeply embodied in the quality of family bonds and romantic relationships. Consequently, the quality of these relationships constitutes a strong protection factor that improves the health of the mother and the fetus, as well as the birth experience. In contrast, several longitudinal studies have provided clear evidence that poor social support during pregnancy increases the risk of a long, difficult, and painful childbirth experience, clinical birth complications, and poor neonatal health status. [5] A recent study verified that social support constitutes a significant protection factor against post-partum depression, through the mediate effect of good clinical delivery characteristics. [6] Moreover, the social support mothers perceive during pregnancy is strongly connected with their prenatal attachment to the child and their care behaviors towards him/her after childbirth. [7] In particular, research showed that maternal prenatal attachment during the third trimester of pregnancy is significantly associated with postnatal maternal involvement in the child's care, serving as an important diagnostic aid to identify the cases in which mother-child interaction is likely to be sub-optimal. [8, 9]

In addition, excessive anxiety states of pregnant women could significantly influence the clinical aspects of delivery. Despite the fact that all mothers are somewhat anxious about their first birth experience, and anxiety could represent a very common and somewhat adaptive response to the new situation of pregnancy, some new mothers present excessive and invalidating levels of anxiety in the perinatal period. [10]

The specific pregnancy anxiety, consisting in worries, concerns and fears about pregnancy, childbirth, and baby's health, and future parenting, results more closely associated with perinatal negative outcomes in comparison with more generalized trait anxiety. [11] A variety of

poor outcomes are associated with excessive pregnancy anxiety, such as pre-eclampsia, increased nausea and vomiting, longer sick leave during pregnancy, increased number of visits to the obstetrician, spontaneous preterm labor, preterm delivery, low birth weight, low Apgar scores, breastfeeding difficulties, and a more difficult labor and delivery. [12-14]

Empirical studies found that a significant portion of pregnant women (21%) present clinically significant anxiety symptoms and, of these, 64% continue to have anxiety during the postpartum period. [11] Moreover, several longitudinal studies have shown that prenatal anxiety disorder is one of the strongest risk factors for postnatal depression onset. [12]

On the basis of consistent evidence, modern literature has criticized highly medicalized models of birth, demonstrating the utility of new procedures that insure women a safe and less stressful pregnancy experience, and promoting important changes to birth policies. Currently, medical policies and international guidelines promote natural birth. A spontaneous and natural delivery represents a good birth experience and occurs if are present specific clinical conditions, such as a not excessive length and no recourse of epidural analgesia or of stimulant medications for contractile activity, as oxytocin. Moreover, a positive delivery experience occurs if the woman is able to manage the pain with their instruments (motivation, endurance of pain), with the support of professional operators, the partner, family or friends, and with the aid of natural methods for pain relief (water, massage, breathing, relaxation practices). [15]

Taken together, however, research till now carried out deepened only the direct influence that each of variables above discussed has on women delivery experience, without examine the reciprocal and indirect influences they have on each other.

Aim and hypothesis

Starting with these considerations, the main purpose of this study was to investigate the complex, direct and indirect influences that a mother's perceived social support, her state of anxiety, and prenatal attachment to her child have on clinical aspects of delivery, assessed through the aspects highlighted as important in the literature, that is the delivery length in hours, the amount of oxytocin and the epidural analgesia administration. In particular, our aim was to test the theoretical model reported in figure 1. In this model we hypothesized that the social support mothers perceive during pregnancy could promote a more positive experience of delivery, both directly and indirectly, by reducing the mother's state of anxiety connected to pregnancy and delivery experience. In particular, we expected that reducing the mother's state of anxiety could promote her prenatal attachment to her child, and that a more secure attachment to the child could have a protective influence on the negative aspects of delivery, reducing the length of labor and amount of medication required during delivery.

METHODS
Participants

167 pregnant Italian women responding inclusion criteria (see procedure section) were recruited for this study. All participants are Caucasian women and come from the Center of Italy. The age of the women ranged between 20 and 42 years (M=31.84 DS= 4.92). The socio-economic level of the sample is middle or high, with 72% of the women having a high school diploma or university degree. 83.6% of them have a job. The average duration of their couple relationships was 6.55 years (SD = 4.0). Ninety-three percent of the women live with their partners, and pregnancy was planned in 86.2%.

Instruments

Two forms were created for this study to record the women's socio-demographic and educational status, and clinical data of delivery.

The validated Italian version of the Maternal Social Support Scale (MSS), [16] devised by Webster and colleagues, [17] was used to measure the maternal perceived social support. The MSS is a self-report questionnaire, consisting of 6 items, which assesses the amount of care and love women perceive from their family, partner and friends. Participants were asked to report how often they felt significant support on a 5-point frequency scale, from 1 (never) to 5 (often). Scores are obtained by summing the response categories selected by the participants. Scores range from 6 to 30. For the current sample, Cronbach's alpha was 78.

The Italian version of the State Anxiety Inventory (STAI_Y2), [18] devised by Spielberger and colleagues [19] was used to measure the state of anxiety of the women. STAI_Y2 consists of 20 items. Participants were asked to report how often they experienced the anxiety state described in each item on a 4-point frequency scale, from 1 (never) to 4 (very often). The total score, ranging from 20 to 80 (clinical cut-off 40), is obtained by summing the response categories selected by participants, after some items have been overturned**.** For the current study Cronbach's alpha was.83.

The validated Italian version [20] of Prenatal Attachment Inventory (PAI) devised by Muller [21] was employed to assess the mother's attachment bond to child during pregnancy. PAI is a self-report questionnaire consisting or 21 items. Participants rated each item on a 4-point frequency scale, ranging from 1 (almost never) to 4 (almost always). The total score was obtained by summing the selected response categories of each item. For the present sample Cronbach's alpha was .93.

Procedure

A cohort longitudinal study was carried out. Data were collected at two different times: 1. 31-32 week of pregnancy; 2. the first day after childbirth.

At time 1, all participants were requested to fill out a card with their own social data: age, educational level, work

status, information about the length of their couple relationships, and previous pregnancies. Then they were asked to complete MSS, STAY_Y2 and PAI questionnaires.

At time 2, clinical data on childbirth (duration of labor, duration of administration of oxytocin and epidural analgesia) were registered.

The research was conducted in accordance with the guidelines for the ethical treatment of human participants of the Italian Psychological Association. The Ethical Committee of the Azienda Sanitaria Prato had previously approved the study. Data were collected in the Maternity ward of the Misericordia e Dolce Hospital in Prato, Italy, a second-level unit. Participants were recruited when they attended the delivery preparation courses. Inclusion criteria were to be nulliparous native Italian women, no risk pregnancy or previous spontaneous interruption of pregnancy, and single fetus. All women attending the delivery preparation course during the period from October to December 2014 were informed of the aims of the study. Only those responding to the above inclusion criteria were invited to participate (N=176). Ninety-five percent of these women accepted to take part in the study, only 5% refused without giving any specific reason for their choice. A written informed consent was obtained to include the participants in the study. They could withdraw from participation at any time. All women completed questionnaires individually. Hospital healthcare staff registered the clinical data upon delivery. All participants completed the entire follow-up.

Statistical Analysis

Structural Equation Modeling (SEM) using MPLUS [22] was used to investigate the hypothesized model. In addition, robust procedures with maximum likelihood parameter estimators (MLR) were used to account for the multivariate non-normality of variables. The model fit was evaluated using the χ^2, the Comparative Fit Index –CFI, [23] the Tucker & Lewis Index, [24] the Root Mean Square Error of Approximation –RMSEA, [25] and the Standardized Root Mean Square Residual – SRMR. [26]

RESULTS

Within the sample there were no premature delivery (date of birth at less than 37 weeks) or infants with low birth weight or who need intensive care. 158 women had fixed-term delivery (95%), in 9 cases the birth was induced by prostaglandins for prolonged pregnancy (more that 41 weeks). 140 women had spontaneous delivery (84%), 15 women needed operative delivery with suction cup (9 %), and 12 gave birth by caesarean section (7%).

Descriptive statistics of psychological and clinical data of the sample are reported in Table 1.

Table 1. Descriptive statistics of psychological and clinical characteristics of sample

	Range	M	SD	Skewnes	Kurtosis
Maternal Support	11-25	19.90	2.92	-.37	-.00
Anxiety	42-61	49.00	3.46	.77	.59
Prenatal Attachment	39-79	60.27	10.64	-.23	-1.22
Delivery length (hours)	2-18	7.63	2.50	.74	1.41
Oxytocin (hours)	0-18	1.44	2.02	1.45	1.43
Epidural analgesia (hours)	0-12	2.36	3.18	.84	-.77

As the table shows, the women of our sample perceived a good level of social support during pregnancy, and they presented a good range of prenatal attachment and a moderate level of anxiety, as is justifiable for women at their first birth experience.

Results of SEM analyses showed that the model tested had a good fit to the data (χ^2 =440.71, *df* =15, *p*< .001, robust CFI = .97, TLI = .93, RMSEA = .10, SRMR = .04).

The maternal social support perceived during pregnancy results a significant predictor of prenatal attachment, mothers' anxiety, and clinical aspects of the delivery. In particular, maternal social support positively influences the prenatal attachment and negatively the clinical aspects of the delivery and the level of anxiety. Moreover, the maternal social support significantly influences the prenatal attachment both directly and indirectly through the anxiety. Finally, the clinical aspects of the delivery are predicted by maternal perceived social support, both directly and indirectly through prenatal attachment. In figure 1, all statistical coefficients of direct effects are reported, whereas in table 2 are presented all statistical coefficients of indirect effects.
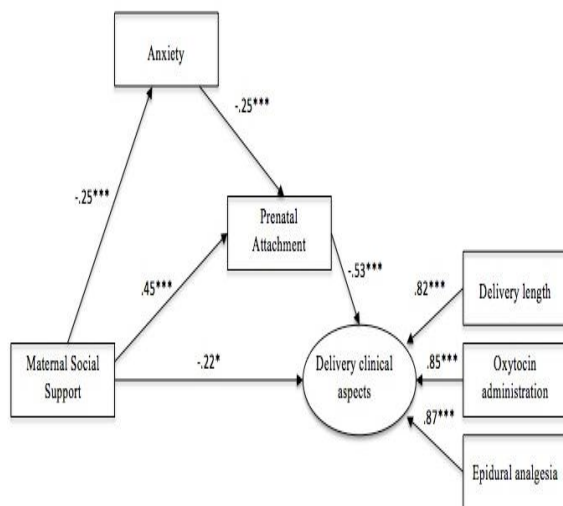

Figure 1. Theoretical tested model

Table 2. Statistical coefficients of indirect effects of the tested model

	β	p
MSS → PA		
Total effect	.51	*
Total indirect	.06	*
MSS → DCA		
Total effect	.49	***
Total indirect	-.27	***
Specific indirect		
MSS → PA → DCA	-.24	*
MSS → ANX → PA → DCA	-.03	*

Note. MSS = Maternal Social Support; ANX =Anxiety; PA = Prenatal Attachment; DCA= Delivery Delivery Clinical Aspects
* p<.01; *** p<.001

DISCUSSIONS

The main focus of this study was to investigate the influence that maternal social support has on clinical aspects of delivery, both directly and indirectly, through the mediate effect of maternal anxiety state, and prenatal attachment to the child on a sample of primiparous women. We hypothesized that social support mothers perceive during pregnancy could promote a more positive experience of delivery, both directly and indirectly, by reducing maternal anxiety states connected to pregnancy. Moreover, we expected that maternal social support and a low anxiety level could promote the mother's prenatal attachment to the child, and, finally, that a more secure attachment to the child could have a protective influence on clinical aspects of delivery. All these hypotheses are confirmed by data analyses.

Our data showed that social support has a significant direct influence on the quality of the birth experience, protecting women from clinical difficulties in terms of length of labor, and use of oxytocin and epidural analgesia. This result is a significant confirmation of a large amount of previous experimentation and clinical literature. [5,6] Moreover, our results show that the social support mothers perceive during pregnancy plays a significant indirect influence on the clinical aspects of delivery, through reducing the occurrence of maternal anxiety states and symptoms, and promoting a more secure prenatal attachment to child. These results significantly confirm previous research. In fact, a large amount of literature has verified that maternal perceived social support during pregnancy reduces the mother's anxiety levels, preventing difficulties in labor and delivery, and a large number of negative perinatal outcomes. [12-14] Moreover, maternal perceived social support has found to be strongly connected to a mother's prenatal attachment to her child, [6] which is significantly associated with postnatal maternal behavior and emotional involvement in the child's care. [7,8] Therefore, a poor social support can indirectly limit the woman's capacity for adequately performing her role as mother.

CONCLUSION

Overall, our data significantly confirm the importance of putting a new light on maternity and birth experiences, considering them as complex human processes in which social, psychological and physical aspects are highly inter-connected, influencing family, and maternal, fetal and newborn health.

Despite the undeniable interest of the results, this study presents a number of limitations.

First, only nulliparous women with no complications and a single fetus are included in the sample. Future research could explore samples of women with more complex psychological and physical conditions, such as women with a complicated or medically assisted pregnancy, or who have already had a birth experience, or twin births. The study of these examples could put a new light on the interpretation of the theoretical model we tested, or provide higher theoretical and clinical validity to our results.

Moreover, we investigated only the social support of close relationships with social partners, such as family, partners or friends. It would be very interesting to evaluate the role of social support given by obstetricians, midwives, and medical staff on clinical aspects of delivery, and psychological and physical outcomes for the mothers and their newborns.

Finally, we considered only new mothers. A new frontier of research could be to investigate the role of fathers and evaluate the direct and indirect influences that paternal anxiety and attachment to child could play on maternal anxiety states, prenatal attachment to child, and delivery experience.

However, despite these limitations, the present study adds important understanding of the links between the quality of maternal social support perceived and the quality of delivery experiences. It is very important given better knowledge about how and which variables can facilitate the first attachment relationship between mother and her child and the delivery process. Indeed, such knowledge will provide useful information for clinicians, in order to understand when interventions are needed to improve the social support perceived of pregnancy women or decrease their levels of anxiety.

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