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Title: Psychological factors and maternal-fetal attachment in relation to epidural choice

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Keywords: anxiety; childbirth expectations; epidural; maternal-fetal attachment; nullipara.

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Abstract: A woman's first childbirth is an event of great importance to her life, involving her transition to parenthood. Many studies have analyzed the roles of depression, anxiety and fear of childbirth linked to childbirth expectations and the consequent choice of an epidural to avoid pain. Few studies have investigated the predictor role of maternal-fetal attachment on the choice of epidural.
Objective: Explore, in a sample of low-risk pregnant nulliparous women, differences regarding the preference, or not, of epidural for vaginal childbirth.
Design and Setting: 87 nulliparous women, aged 24 to 44 years of age, were recruited in the maternity ward of a public hospital of the metropolitan area of Tuscany (Italy) during the 3rd trimester of gestation. Participants were asked to complete the Pregnancy Related Anxiety Questionnaire-R, Wijma Delivery Expectancy Questionnaire, Centrality of Events Scale, and Prenatal Attachment Inventory.
Findings: Multivariate analyses of variance showed that women who chose delivery without epidural reported lower levels of fear of childbirth and anxiety, and higher levels of centrality of pregnancy and prenatal attachment to unborn child, than women who chose epidural.
Key conclusions: Our data highlight the importance that medical staff focus on the maternal bond, to help future mothers have the best possible childbirth experience.

Research Data Related to this Submission

There are no linked research data sets for this submission. The following reason is given:
Data will be made available on request

Detailed Response to Reviewers

Dear Editor,
we would thank the referee for their work. We revised the manuscript accordingly (revision in yellow) and we hope that in this version it is suitable for the publication in Midwifery
Above our response to referee
Kind regards
Martina Smorti

Referee

Introduction:
- The authors provide good rationale for this small cross-sectional study.
Thank you. We have discussed this aspect in the limitation section.

- It would be useful here to include some more details about the Mendelson (2009) and the Tani et al (2017) studies - what did they do? how did they measure 'childbirth experience' and 'perceived pain'?
Thank you.
We better described these studies in introduction section

Method:
- More detail is required about the 'informative meeting about labour analgesia'. What is this meeting? Are women encouraged to go? Who runs this meeting (a midwife, an obstetrician)? Women's understanding and knowledge of EDA is a very important aspect of this study and the authors need to make sure that they are very clear about what sort of understanding/knowledge of EDA the participants had prior to deciding whether to have/not have a EDA.
Thank you. We better detailed this aspect

- More detail about the attachment questionnaire is required. Does this measure ask about positive feelings or negative feelings or indifference towards the unborn baby? Attachment measures can vary in how positive/negative/neutral the items are so more description about how attachment was measured is required. Some rationale for choosing this measure over other measures would also be useful to the reader.
Thank you. We inserted a better descripion of PAI and discuss this aspect in discussion section

- You need to include an Analysis section as part of your Methods to outline the statistical analyses you carried out, rather than explain which analyses you did in the Results.
Thank you. We have inserted a data analyses section.

Discussion:
- I feel the authors need to give more consideration to fear of childbirth. Could the authors provide more in the discussion about where fear of childbirth comes from (my understanding is this fear is learnt from somewhere)?
And then some more consideration of what can affect antenatal attachment and why level of attachment differs between women?
Ok. We revised this aspect

- I also feel understanding and knowledge of EDA and other types of pain relief for childbirth is an important aspect of this research. We know that EDAs have consequences on women's health (e.g. can affect blood pressure, women require a catheter etc), so I'm interested to know whether this information was provided to women in the 'meeting on labour analgesia' and if there is other research out there that has looked at antenatal knowledge of epidurals and subsequent use of them in childbirth.
Yes, women were informed about that during the informative meeting with anesthetist. We have better specified this aspect.

- The implications could be clearer - i.e. how could health professionals use these findings to adapt their practices?

Ok, we have better explain the clinical implication. Thank you

*Cover Letter

Pisa, 4th November 2019

Dear Editor,

please finds enclosed the manuscript “Psychological factors and maternal-fetal attachment in relation to epidural choice” written by Martina Smorti, Lucia Ponti, Tommaso Simoncini, Federica Pancetti, Giulia Mauri, and Angelo Gemignani.

We would submit it to Midwifery for evaluation process and publication. Aim of the manuscript was to investigate in a sample of low-risk pregnant nulliparous women, differences regarding the preference, or not, of epidural for vaginal childbirth.The manuscript is not under consideration elsewhere.

All authors approve the content of the manuscript and have contributed significantly to research involved and the writing of the manuscript.

The authors have no conflicts of interest to declare.

All participants gave informed consent and their anonymity was preserved.

We are looking forward to your kind reply.

Thank you for your attention and collaboration.

Yours faithfully,

Martina Smorti

Psychological factors and maternal-fetal attachment in relation to epidural choice

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Short title: Epidural choice and psycho-relational aspects

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Ethical Approval: The study was conducted in accordance with the guidelines for the ethical treatment of human participants of the Italian Psychological Association and after the Local Health Ethical Committee (CEAVNO) had approved the study (n. 12749/2018).

Funding Sources: No specific funding was obtained.

Highlight

- Pregnant nulliparous' expectations on birth pain are linked to epidural preference;
- The epidural preference is linked to higher levels of pregnancy anxiety and fear;
- The preference for epidural is linked to lower maternal prenatal attachment;
- The preference for epidural is linked to a lower centrality of pregnancy;
- Medical staff should investigate childbirth expectations in pregnant nulliparous.

Psychological factors and maternal-fetal attachment in relation to epidural choice

Abstract

A woman's first childbirth is an event of great importance to her life, involving her transition to parenthood. Many studies have analyzed the roles of depression, anxiety and fear of childbirth linked to childbirth expectations and the consequent choice of an epidural to avoid pain. Few studies have investigated the predictor role of maternal-fetal attachment on the choice of epidural.
Objective: Explore, in a sample of low-risk pregnant nulliparous women, differences regarding the preference, or not, of epidural for vaginal childbirth.
Design and Setting: 87 nulliparous women, aged 24 to 44 years of age, were recruited in the maternity ward of a public hospital of the metropolitan area of Tuscany (Italy) during the 3rd trimester of gestation. Participants were asked to complete the Pregnancy Related Anxiety Questionnaire-R, Wijma Delivery Expectancy Questionnaire, Centrality of Events Scale, and Prenatal Attachment Inventory.
Findings: Multivariate analyses of variance showed that women who chose delivery without epidural reported lower levels of fear of childbirth and anxiety, and higher levels of centrality of pregnancy and prenatal attachment to unborn child, than women who chose epidural.
Key conclusions: Our data highlight the importance that medical staff focus on the maternal bond, to help future mothers have the best possible childbirth experience.

Keywords: Anxiety, childbirth expectations, epidural, maternal-fetal attachment, nullipara.

Psychological factors and maternal-fetal attachment in relation to epidural choice

Introduction

A woman's first childbirth is an important event in her life, given that it marks her transition to parenthood. It has been revealed that, along with being an enjoyable experience, this event may be considered highly stressful, being associated with severe fear, pain, and ambivalent emotions (Junge et al. 2018). The anticipated pain of childbirth is often a major concern for women, and it can lead mothers to request pharmacological methods, such as an epidural, to relieve pain. Epidural, although an effective and low risk method of pain relief during labor (Anim-Somuah et al. 2018), due to the fact that it causes loss of *feeling* in the lower parts of body, at the same time leads to loss of sensation and less contact with personal feelings.

Several studies focusing on delivery expectancies showed that anxiety, depression, and fear of childbirth (FOC) reduce a woman's ability to manage pain (Aral et al. 2014; Sitras et al. 2017), increasing the desire to avoid pain (Hildingsson, 2014) and the use of epidural analgesia (EDA) (Adams et al. 2012). However, little research has analyzed how affective states influence the preference for EDA in nulliparas. Comparing nulliparas and primiparas, one study highlighted that women with FOC presented concerns about pregnancy and their health that led them to ask for medical consultation preferring EDA. On the other hand, the EDA preference was lesser in women who participated in labor preparation courses (Sitras et al. 2017).

Less is known about the role of maternal fetal attachment (MFA), defined as "the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child" (Cranley, 1981; p282), on a woman's expectation about delivery, and the preference of epidural use expressed during pregnancy. This aspect may be important because it has been recognized that, on one hand, the onset of labor is regulated by a complex interplay of physical and hormonal signals between fetus and mother (Mendelson, 2009) and, on the other hand, a warm prenatal attachment is associated with a more positive childbirth experience as assessed by clinical aspects (Tani et al., 2017). Specifically, Tani and colleagues (2017) showed that an affectionate maternal prenatal attachment predicted a less operative labor (in terms of quantity of analgesia and oxytocin administration), and a lesser duration of delivery (in hours) (Tani et al. 2017), both of which have been associated with a more positive experience of birth (Fenaroli et al., 2019). Given that a maternal attitude towards birth for the safest and least stressful option for the baby affects the preference for a more natural and less operative delivery (Hildingsson, 2014), it is reasonable to suppose that prenatal attachment reduces the preference for EDA, especially in nulliparous women. In fact, because the woman's childbirth expectations match with ambivalent emotions, an affection

attachment may lead the mother to focus on aspects of delivery related to the baby and to the first encounter with the newborn, interpreting the pain as purposeful (Whitburn et al. 2019).

The aim of the present study was to explore the factors related to the preference of EDA in a sample of nulliparous women with low risk pregnancies who did not undergo a planned caesarean. This purpose seems particularly relevant in a preventive perspective, given that it allows for the identification of factors for delivery preparation.

In the present study, we assessed the difference in levels of anxiety, FOC, centrality of pregnancy, and prenatal maternal attachment on a sample of women expressing their preference for vaginal childbirth with or without EDA.

Method

Participants and procedures

A sample of 87 consecutive nulliparous pregnant women, aged from 24 to 44 years (M = 33.3; SD = 4.5), was recruited during third trimester routine medical visits in the maternity ward of a public hospital of the metropolitan area of Tuscany (Italy). Inclusion criteria: a) nulliparous women b) age > 18 years old; c) able to speak and read Italian; d) currently pregnant, at > 32 weeks gestation. Exclusion criteria: a) previous abortion; b) previous miscarriage; c) twin pregnancy; d) fetal pathologies; e) previous maternal physical and psychiatric diagnosis; f) planned elective caesarean. Women were recruited after an informative meeting about labor analgesia at the hospital. The informative meeting, mandatory for women who planned a childbirth in the hospital, was conducted by an anesthetist who gave information about labor analgesia and the main consequences on women's health of these pain relief procedures. At the end of the meeting, the women were asked to decide whether or not to have an EDA, signing the informed consent form. After signing the informed consent form about their EDA preference, women were informed by the psychologist responsible for the study about its purpose, and were asked if they were available to collaborate by completing a questionnaire about their expectations regarding labor and EDA preference. The preference for EDA was recorded on the basis of preference declared by women in the informed consent form. Women were informed that they could withdraw from participation at any time, that participation was voluntary, and no monetary reward was given. Finally, written formal consent was obtained from all participants. Data collection was conducted between 32 and 37 weeks of gestation (M = 34.23; SD = 1.67).

The study was conducted in accordance with the guidelines for the ethical treatment of human participants of the Italian Psychological Association and after the Local Health Ethical Committee (CEAVNO) had approved the study (n. 12749/2018).

Measure

Personal information. Data on socio-demographic characteristics of nationality, education, work, and marital status were collected.

Participation in labor preparation courses: participants answered the item, "I have attended a labor preparation course" (1= no; 2= yes).

Pregnancy Related Anxiety Questionnaire-R (PRAQ-R) (Huizink et al. 2012; Dellabartola, 2013): this assesses the anxiety specifically related to pregnancy and consists of 10 items on a 5-point Likert scale (from 1=definitely not true to 5=definitely true) concerning three dimensions: fear of labor (3 items); fear of bearing a physically or mentally handicapped child (hereafter 'fear of child') (4 items); and concern about one's appearance after childbirth (3 items). For each subscale the total score is the sum of the items, with higher scores indicating greater pregnancy related anxiety.

Wijma Delivery Expectancy/Experience Questionnaire – version A (W-DEQ) (Wijma et al. 1998; Fenaroli and Saita, 2013): a 14-item self-report questionnaire on a 6-point Likert scale (0 = do not agree; 5 = totally agree) that measures the expectations of labor and delivery and the associated feelings through three dimensions: fear of childbirth (8 items), negative feelings on childbirth (3 items), and lack of confidence about the delivery experience (3 items). For each subscale, the total score is the sum of the items, with higher scores indicating a greater fear of labor and delivery.

Centrality of Events Scale (CES) (Berntsen and Rubin, 2006; Ionio et al. 2018): this 20-item questionnaire on a 5-point Likert scale (from 1 = totally disagree to 5 =totally agree) assesses the extent to which pregnancy is a central event. It is composed of 3 subscales related to pregnancy: (a) as a turning point in life (6 items), (b) a component of personal identity (6 items), (c) an attribution of meaning to other personal life events (8 items). For each subscale, the total score is the sum of the items, with higher scores indicating more centrality on the experience of pregnancy.

Prenatal Attachment Inventory (PAI)(Muller, 1993; Busonera et al. 2017): this 21-item questionnaire on a 4-point Likert scale (from 1= almost never to 4=almost always) measures the mother's emotional attachment bond to her fetus during pregnancy. The PAI is a reliable and valid measure of prenatal attachment in Italian women that can be used for research purposes as well as in clinical settings. PAI total score, a total of the sum of the items, ranges from 21 to 84 with higher scores corresponding to a greater affection attachment to newborn.

Data analyses

Three multivariate analysis of variance (MANOVAs) were carried out to explore differences between women who chose delivery with or without EDA in terms of level of anxiety, delivery

expectancy, fear, and centrality of pregnancy. In particular, the first MANOVA was performed using the three dimensions of the PRAQ-R (fear of labor; fear of child, and concern about one's appearance after childbirth). The second MANOVA was performed with the three dimensions of the W-DEQ (fear of childbirth, negative feelings on childbirth, and lack of confidence in the delivery experience). The third MANOVA was performed using the three dimensions of the CES (a turning point in life, a component of personal identity, an attribution of meaning to other personal life events) as dependent variables. For all three MANOVAs, the independent variable was the two groups (women who chose delivery with and women who chose delivery without EDA). Finally, in order to explore differences between the two groups on the level of prenatal attachment, a univariate analysis of variance (ANOVA) was carried out with the score obtained on the PAI.

Results

Women had a middle-high education level, with 83.9% having a high school diploma or university degree. 89.7% had jobs, 3.4% were housewives, 2.3% students, and 4.6% unemployed. Regarding marital status, 100% were married or cohabitant. Fifty-eight women (66.7%) expressed their preference for vaginal childbirth without EDA; age range was 24 to 44 years (M =32.41; SD =4.40). The remaining 29 women (33.3%) expressed their preference for EDA. They were aged 25 to 44 years (M =34.07; SD =4.87). All participants (100%) declared that they had attended a labor preparation course. No significant differences emerged between nulliparas of the two groups with respect to mean age (t(85) =-1.60; p =.114), educational level ($\chi^2(2) = 2.40$, $p = .292$), nationality($\chi^2(1) = 2.65$, p =.103), and work status ($\chi^2(3) = 2.31$, $p = .511$). The socio-demographic characteristics, separating women who preferred childbirth without EDA from women who preferred childbirth with EDA, are reported in table 1.

INSERT TABLE 1 ABOUT HERE

The first MANOVA revealed a significant difference by group [Wilks' Lambda: F(3, 83) =3.87, p =.012, $\eta^2 = .12$]. Subsequent univariate analyses of variance (ANOVAs) for each dependent variable revealed that women who chose delivery without EDA reported lower levels of fear of labor and child, and lower levels of concern about appearance after childbirth than women who chose EDA. The second MANOVA revealed a significant difference between women who chose delivery without vs with EDA [Wilks' Lambda: F(3, 83) =3.65, p =.016, $\eta^2 = .12$]. In particular, subsequent univariate analysis of variance (ANOVAs) showed that women who chose delivery without EDA

reported lower levels of feelings related to fear of childbirth than women who chose delivery with EDA.

The third MANOVA revealed significant differences by group [Wilks' Lambda: $F(3, 83)=2.76$, $p =.047$, $\eta^2 =.09$]. Subsequent analysis of variance (ANOVAs) revealed that women who chose delivery without EDA reported higher levels of turning point, personal identity, and meaning to other personal life events, compared to their counterparts.

Finally, the univariate analysis of variance (ANOVA) highlighted significant effects by group. In particular, women who chose delivery without EDA reported higher levels of prenatal attachment to the unborn child than women who preferred EDA. All descriptive statistics and ANOVA results are presented in table 2.

INSERT TABLE 2 ABOUT HERE

Discussion

A woman's first childbirth is a unique life event characterized by high expectations and enormous stress for many women. Specifically, the anticipated pain of childbirth, which can be influenced by a woman's emotions and cognitions, can lead the mother-to-be to prefer the avoidance of pain by choosing a pharmacological method, such as epidural analgesia. The aim of the present study was to explore the preference for an epidural, expressed during pregnancy in a sample of nulliparous women, evaluating the roles of anxiety, FOC, personal meaning of pregnancy, and prenatal attachment with fetus. It is interesting that no previous study analyzed the role of maternal-fetal attachment on expectations of personal abilities related to labor pain management. Although some studies considered the attachment role in managing labor pain, they focused on dyadic and adult attachment (Costa-Martins et al. 2014).

Regarding our aim, we expected that nulliparous women with affectionate bonds with fetus, and those who considered pregnancy a central event for their personal identities, would express more positive expectations about childbirth, reducing their EDA preferences.

Our assumption came from the consideration that women who prefer epidural for their first childbirth experience want to reduce labor pain, and accept that they will have less (pain) sensation in the lower parts of their bodies but, at the same time, will also have less feelings related to childbirth. A previous study showed that maternal attitude toward childbirth that prioritized the safest and least stressful option for the baby affects the preference for a more natural and less operative delivery (Hildingsson, 2014). It has also been shown that "if a woman can sustain the belief that her pain is purposeful (i.e. her body working to birth her baby), if she interprets her pain

as productive (i.e. taking her through a process to a desired goal) […] it would be expected that she would experience the pain as a non-threatening, transformative life event" (Whitburn et al. 2019, p.34). Thus, we believed that a more affectionate bond with the unborn child led nulliparous women with low-risk pregnancies to be fully sensitive to their first encounter with the baby, thus reducing their preference for EDA. It must be noted that the instrument we chose to investigate prenatal attachment assesses maternal "behaviors that represent an affiliation and interaction with their unborn child" (Cranley, 1981; p 282). Several items of the PAI refer to the mother's interaction with fetus and knowledge about the fetal movements (i.e. 'I know when the baby is asleep'; 'I know why the baby is moving'). The maternal ability to recognize fetal movement and interact with the unborn child could assume a great relevance during labor and delivery. Thus, we assumed that a woman with higher prenatal attachment, who reported more frequent positive interactions with the fetus, would be more prone to perceive labor as a condition in which her own body is working to birth her baby, and would be less afraid of labor pain, thus preferring not to have an epidural. At the same time, we expected that women with higher anxiety and fear of childbirth would have negative expectations towards labor that would lead them to prefer analgesic methods for pain relief. Our results confirm this hypothesis, showing that women who prefer EDA report higher levels of fear of labor, FOC, fear of bearing a handicapped child, and higher levels of concern about personal appearance after childbirth than women who do not prefer EDA. These findings seem to confirm the role that anxiety and fear of delivery have on favoring avoidance of pain sensation as a way to cope with distress in pregnancy (Yali and Lobel, 1999). In fact, women who catastrophize pain (Flink et al. 2009), and express the wish to avoid pain (Hildingsson, 2014) , tend to prefer EDA (Smorti et al. 2019; Stoll et al. 2014). Moreover, fear of childbirth during pregnancy seems to be predictive for the fear experienced during birth and for negative birth experience in terms of labor duration (Adams, Eberhard-Gran, Eskild, 2012). On the contrary, no differences emerged in the level of negative feelings about childbirth and lack of confidence regarding the delivery experience. These results are in contrast with our hypothesis given that, in accordance with previous studies, women who prefer EDA tend to have lower self-efficacy for labor (Whitburn et al. 2019, Berentson- Shaw et al. 2009).

At the same time, the results of the present study showed that women who request EDA present lower levels of prenatal attachment to the unborn child and a perception of pregnancy as less central to their personal lives. On the other hand, women preferring delivery without EDA reported lower levels of anxiety and FOC and higher levels of centrality of pregnancy and prenatal attachment to unborn child. These data suggest that an affectionate prenatal attachment and higher relevance of pregnancy in women's lives, as well as a small amount of pregnancy anxiety and fear of childbirth,

constitute protective factors that help women anticipate a more productive labor experience, as revealed by Whitburn's review (Whitburn et al. 2019).

Despite the relevance of these results, there are some limitations to the present study. First, we considered only psychological aspects of women, beyond their prenatal attachment bond. Despite the fact that we considered these aspects as relevant, there could be other aspects to explore, such as the quality of the couple relationship, the quality of attachment bond the women have with their own mothers, or social support perceived by the women (Tani et al., 2017; Tani et al. 2018). Second, we explored these aspects only during pregnancy through a cross-sectional study. Although it would be interesting to carry out a longitudinal study to explore the difference between childbirth expectations and actual experience, the main aim of our study was to explore the psychological and relational aspects linked to EDA preference. Third, we revealed the EDA preference without assessing the reasons for wanting (or not wanting) the epidural. It could be, for instance, that a woman considers her pain threshold high enough not to require an EDA. Furthermore, we selected as inclusion criteria women without physical or psychopathological diagnoses. Despite this aspect, increasing the homogeneity of our sample, it is possible that our women could present different levels of general depressive and anxious symptoms. This aspect should be assessed in further studies, because it could affect the relationship between maternal fetal attachment and the preference of epidural. Finally, the sample was very small. Further studies are necessary to confirm our results on a larger sample.

We do not know the meaning women attribute to pain relating to the way they cope with it. We chose to analyze a sample of nulliparae, excluding women with previous pregnancy experiences who could have a learned fear from a past traumatic experience (abortion, miscarriage, or previous childbirth). What we could ask was where the fear of childbirth came from in nulliparae. It is possible that cultural values or social representation of delivery promote fear of childbirth. At the same time, it is possible that catastrophic narrations about delivery from other women (mothers and sisters), as well as films about frightening childbirth, have influenced fear of delivery in women who themselves have no experience of giving birth (Wigert et al. 2020). For example, if mothers of pregnant women who have had a trauma during childbirth "pass on" their trauma symptoms to their expectant daughters, this may negatively affect prenatal attachment development toward fetus (Schwerdtfeger, Nelson Goff, 2007). Despite these limitations, the present study provides additional understanding of the way women prepare themselves for labor and delivery. It seems important that nulliparae women be informed about EDA, and that they be given the opportunity to discuss their expectations about delivery, in order to express their concerns, fears, anxieties, and perceived abilities of pain management. On the other hand, given that affection attachment influences a

woman's delivery expectations and the preference for EDA, it seems important that the medical staff focus on the maternal bond, to help patients prepare for labor. The possibility of favoring a good maternal fetal attachment, identifying women who have greater emotional difficulty towards their unborn children, and guiding them towards information and psychological support, could lead to a lesser tendency to choose EDA.

References

Adams, S. S., Eberhard-Gran, M., & Eskild, A., 2012. Fear of childbirth and duration of labour: a study of 2206 women with intended vaginal delivery. BJOG: An International Journal of Obstetrics & Gynaecology, 119(10), 1238-1246. https://doi.org/10.1111/j.1471-0528.2012.03433.x.

Anim-Somuah, M., Smyth, R. M., Cyna, A. M., Cuthbert, A., 2018. Epidural versus non-epidural or no analgesia for pain management in labour. Cochrane database of systematic reviews, (5). https://doi.org/10.1002/14651858.CD000331.

Aral, I., Köken, G., Bozkurt, M., Sahin, F. K., Demirel, R., 2014. Evaluation of the effects of maternal anxiety on the duration of vaginal labour delivery. Clinical and experimental obstetrics & gynecology, 41(1), 32-36.

Berentson-Shaw, J., Scott, K. M., Jose, P. E., 2009. Do self-efficacy beliefs predict the primiparous labour and birth experience? A longitudinal study. Journal of Reproductive and Infant Psychology, 27(4), 357-373. https://doi.org/10.1080/02646830903190888.

Berntsen, D., Rubin, D. C., 2006. The centrality of event scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. Behaviour research and therapy, 44(2), 219-231. https://doi.org/10.1016/j.brat.2005.01.009.

Busonera, A., Cataudella, S., Lampis, J., Tommasi, M., Zavattini, G. C., 2017. Prenatal Attachment Inventory: expanding the reliability and validity evidence using a sample of Italian women. Journal of reproductive and infant psychology, 35(5), 462-479. https://doi.org/10.1080/02646838.2017.1349896.Costa-Martins, J. M., Pereira, M., Martins, H., Moura-Ramos, M., Coelho, R., Tavares, J., 2014. The role of maternal attachment in the experience of labor pain: a prospective study. Psychosomatic medicine, 76(3), 221-228. https://doi.org/10.1097/PSY.0000000000000040.

Cranley, M. S., 1981. Development of a tool for the measurement of maternal attachment during pregnancy. Nursing Research, 30(5):281–4. https://doi.org/10.1097/00006199-198109000-00008

Dellabartola, S., 2013. Il contributo della psicopatologia ansiosa materna prenatale sul temperamento infantile e la relazione precoce madre-bambino (Doctoral dissertation, alma) Bologna (IT): University of Bologna. doi: 0.6092/unibo/amsdottorato/5899.Fenaroli, V., Saita, E., 2013. Fear of childbirth: a contribution to the validation of the Italian version of the Wijma Delivery Expectancy/Experience Questionnaire (WDEQ). TPM Test Psychom Methodol Appl Psychol, 20(2), 131-54. doi:10.4473/TPM20.2.3.

Fenaroli V., Molgora, S., Dodaro, S., Svelato, A., Gesi, L., Molidoro, G., Saita, E., Ragusa, A., 2019. The childbirth experience: obstetric and psychological predictors in Italian primiparous women, BMC Pregnancy and Childbirth, 19, 419. https://doi.org/10.1186/s12884-019-2561-7

Flink, I. K., Mroczek, M. Z., Sullivan, M. J., Linton, S. J., 2009. Pain in childbirth and postpartum recovery–The role of catastrophizing. European Journal of Pain, 13(3), 312-316. https://doi.org/10.1016/j.ejpain.2008.04.010.

Hildingsson, I., 2014. Swedish couples' attitudes towards birth, childbirth fear and birth preferences and relation to mode of birth–a longitudinal cohort study. Sexual & Reproductive Healthcare, 5(2), 75-80. https://doi.org/10.1016/j.srhc.2014.02.002.

Huizink, A. C., Mulder, E. J., de Medina, P. G. R., Visser, G. H., Buitelaar, J. K., 2004. Is pregnancy anxiety a distinctive syndrome?. Early human development, 79(2), 81-91. https://doi.org/10.1016/j.earlhumdev.2004.04.014.

Ionio, C., Mascheroni, E., Di Blasio, P., 2018. Psychometric properties of the Centrality of Event Scale in Italian adolescents. Maltrattamento e Abuso all'Infanzia. https://doi.org/ 10.3280/MAL2018-001005.

Junge, C., von Soest, T., Weidner, K., Seidler, A., Eberhard-Gran, M., Garthus-Niegel, S., 2018. Labor pain in women with and without severe fear of childbirth: a population-based, longitudinal study. Birth, 45(4), 469-477. https://doi.org/10.1111/birt.12349.Mendelson, C. R., 2009. Minireview: fetal-maternal hormonal signaling in pregnancy and labor. Molecular Endocrinology, 23(7), 947-954. https://doi.org/10.1210/me.2009-0016.

Muller, M. E., 1993. Development of the prenatal attachment inventory. Western Journal of Nursing Research, 15(2), 199-215. https://doi.org/10.1177/019394599301500205.

Schwerdtfeger, K. L. & Nelson Goff, B. S. 2007. Intergenerational Transmission of Trauma: Exploring Mother–Infant Prenatal Attachment, Journal of Traumatic Stress, 20 (1), 39–51. https://doi.org/10.1002/jts.20179

Sitras, V., Benth, J. Š., Eberhard-Gran, M., 2017. Obstetric and psychological characteristics of women choosing epidural analgesia during labour: A cohort study. PloS one, 12(10), e0186564. https://doi.org/10.1371/journal.pone.0186564.

Smorti, M., Ponti, L., Tani, F., 2019. The effect of maternal depression and anxiety on labour and the well-being of the newborn. Journal of Obstetrics and Gynaecology, 39(4), 492-497. https://doi.org/10.1080/01443615.2018.1536697.

Stoll, K., Hall, W., Janssen, P., Carty, E., 2014. Why are young Canadians afraid of birth? A survey study of childbirth fear and birth preferences among Canadian University students. Midwifery, 30(2), 220-226. https://doi.org/10.1016/j.midw.2013.07.017.Tani, F., Castagna, V., Ponti, L., 2017. Mothers' social perceived support, anxiety and prenatal attachment to child: Which direct and indirect influences on delivery clinical indices. International Journal of Health Sciences and Research, 7(4), 346-352. ISSN: 2249-9571.

Tani, F., Castagna, V., & Ponti, L. (2018). Women who had positive relationships with their own mothers reported good attachments to their first child before and after birth. Acta Paediatrica, 107(4), 633-637. https://doi.org/ 10.1111/apa.14162

Whitburn, L. Y., Jones, L. E., Davey, M. A., McDonald, S., 2019. The nature of labour pain: An updated review of the literature. Women and Birth, 32(1), 28-38. https://doi.org/10.1016/j.wombi.2018.03.004.

Wigert, H., Nilsson, C., Dencker, A., Begley, C., Jangsten, E., Sparud-Lundin, C., Mollberg, M., Patela, H., 2020. Women's experiences of fear of childbirth: a metasynthesis of qualitative studies Int J Qual Stud Health Well-being, 15(1): 1704484. https://doi.org/: 10.1080/17482631.2019.1704484.

Wijma, K., Wijma, B., Zar, M., 1998. Psychometric aspects of the W-DEQ; a new questionnaire for the measurement of fear of childbirth. Journal of Psychosomatic Obstetrics & Gynecology, 19(2), 84-97. https://doi.org/10.3109/01674829809048501.

Yali, A. M., Lobel, M., 1999. Coping and distress in pregnancy: an investigation of medically high risk women. Journal of Psychosomatic Obstetrics & Gynecology, 20(1), 39-52. https://doi.org/10.3109/01674829909075575.

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Table 1. Socio-demographical characteristics of women who prefer childbirth without EDA and women who prefer childbirth with EDA

	Preference for childbirth without EDA		Preference for childbirth with EDA	
	N	%	N	%
Educational level				
University degree	21	36.2	8	27.6
High school diploma	26	44.8	18	62.1
Middle school	11	19	3	10.3
Nationality				
Italy	53	91.4	29	100
Others countries	5	8.6	-	-
Socio-economic status				
Housewife	2	3.4	1	3.4
Employee	51	87.9	27	93.1
Unemployed	4	6.9	-	-
Student	1	1.7	1	3.4

Table 2. Means and standard deviations of dimensions of the PRAQ-R, the W-DEQ, the CES and the PAI, and ANOVAs results.

	Preference for childbirth without EDA		Preference for childbirth with EDA					
	M	*SD*	*M*	*SD*	*DF*	*F*	*p*	η^2
PRAQ-R fear of labor	8.22	2.73	9.55	2.92	1,85	4.35	.040	.05
PRAQ-R fear of child	9.07	3.15	10.66	3.05	1,85	5.00	.028	.06
PRAQ-R concern about one's appearance after the child birth	5.47	2.44	7.21	2.99	1,85	8.46	.005	.09
W-DEQ fear of childbirth	25.88	5.28	29.21	7.30	1,85	5.79	.018	.07
W-DEQ negative feelings on childbirth	7.19	3.72	8.14	3.10	1,85	1.40	.241	.02
W-DEQ lack of confidence to the delivery experience	8.94	2.63	8.27	1.79	1,85	1.53	.219	.02
CES –meaning to other personal life events	31.47	4.81	28.83	5.60	1,85	5.21	.025	.06
CES – component of personal identity	21.12	4.26	18.28	4.42	1,85	8.41	.005	.09
CES – turning point in life story	20.16	3.72	18.45	3.54	1,85	4.20	.04	.05
PAI	64.90	8.57	60.00	9.69	1,85	5.79	.018	.06

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☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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***Credit Author Statement**

MS mainly wrote the introduction of the article.

LP performed data analysis mainly wrote the data analysis and results of the article

TS gave substantial contribution to acquisition of data

FP collaborated in acquisition of data

GM mainly wrote the discussion of the manuscript

AG revised critically the manuscript for important intellectual content