Title:

The effects of accompaniment on maternal anxiety during elective cesarean delivery: A quasi-experimental study.

Running head:
Partners during elective cesarean delivery

AUTHOR NAMES AND AFFILIATIONS:

Noemí Obregón Gutiérrez (a, b), Jesus Cobo* (c, d), Salut Puig Calsina (a), Yolanda Canet Esteve (a), Juan Carles Oliva (e), Josefina Goberna Tricas (b)

(a) Parc Taulí University Hospital, Consorci Corporació Sanitària Parc Taulí (Sabadell, Spain).
(b) Departament of Public Health, Mental Health and Child and Maternal Nursing, University of Barcelona (Barcelona, Spain).
(c) Mental Health, Consorci Corporació Sanitària Parc Taulí - I3PT - CIBERSAM (Sabadell, Spain).
(d) Department of Psychiatry and Forensic Medicine, Universitat Autònoma de Barcelona (Belaterra, Spain).
(e) Statistic Unit, Fundació Parc Taulí, I3PT (Sabadell, Spain).
* Corresponding Author.

Word count abstract: 250
Word count text (without references or tables): 3494

CORRESPONDING AUTHOR:
Dr. Jesus Cobo
Mental Health Department, Consorci Corporació Sanitària Parc Taulí.
Adress: Parc del Taulí, 1 - 08208 Sabadell (Barcelona) Spain

Word count abstract: 250
Word count text (without references or tables): 3494

DECLARATIONS:

The authors declare that they have no conflict of interest.

Funding:
Not applicable.

Ethics approval:
The institutional ethics board of the Parc Taulí Hospital approved the study.

Consent to participate:

Participation in the study was voluntary and the information provided was anonymous and confidential. Written informed consent was obtained from all participants prior to participation in the study.

Consent for publication

Not applicable.

Availability of data and material:

Not applicable.

Code availability:

Not applicable.

Authors' contributions:

Noemí Obregón Gutiérrez: Conceptualization, Methodology, Investigation, Data curation, Project administration, Resources, Software, Supervision, Validation, Visualization, Formal analysis, Writing - original draft; Writing - review & editing.

Jesus Cobo: Conceptualization, Data curation, Resources, Writing - original draft; Writing - review & editing.

Salut Puig Calsina: Investigation, Data curation, Writing - original draft; Writing - review & editing.

Joan-Carles Oliva: Methodology, Investigation, Data curation, Software, Supervision, Validation, Visualization, Formal analysis, Writing - original draft; Writing - review & editing.

Yolanda Canet Esteve: Writing - original draft; Writing - review & editing.

Josefina Goberna Tricas: Writing - original draft; Writing - review & editing.

Acknowledgements:

To all volunteers, mothers and partners, included in the Study, as well as to all the staff involved in the treatment of our patients.

ABSTRACT:

Background: In Spain, allowing women to be accompanied by their partners during cesarean deliveries is a poorly consolidated practice. Going through this experience alone, not only deprives women from the opportunity of sharing the birth with their partners, but also, forces them to face, on their own, one of the most stressful experiences during pregnancy.

Objective: To analyze whether significant differences exist in levels of anxiety of women who receive an elective cesarean delivery, according to whether they are allowed to be accompanied by their partners.

Design: Quasi-experimental, longitudinal, prospective study, comparing a group of 31 women receiving elective cesarean deliveries, without the presence of their partners, with a group of 33 women with elective cesarean deliveries who were accompanied by their partners. Anxiety levels were assessed using the STAI-State/Trait scale. Participants were given a questionnaire to assess their level of satisfaction with the care received.

Results: Anxiety measured via total scores on the STAI-S scale was significantly lower ($p<0.004$) among the women who were accompanied by their partners during the elective cesarean delivery (median=25), compared to the group who were not (median=50). The differences were also significant ($p<0.003$) considering the impact of accompaniment upon the group with high scores in the STAI-S (>31) and continue to be significant when using the cut-off point of very high scores on the STAI-S (>45).

Conclusions: Presence of partners during elective cesareans is a key factor for decreasing the anxiety caused by the surgery and for improving the overall experience of cesarean deliveries.

Keywords

cesarean section/psychology; cesarean section/anxiety; STAI questionnaire; birth experiences; fathers; patient satisfaction; female.

SIGNIFICANCE

“What is already known on this subject?

Cesarean deliveries are one of the most stressful life experiences. Allowing women to be accompanied by their partners during cesarean deliveries

is a poorly consolidated practice in some countries. Otherwise relevant international institutions recommend allowing an accompanying adult, present with the mother in the operating room during the entire process.

What this study adds?

Presence of partners during elective cesareans is a key factor for decreasing deliveries' anxiety, improving the overall experience, but it needs a mentality change in the obstetric and surgical team. These results could change the services organization in a more humane delivery, with overall positive impact in the patients' care.

The effects of accompaniment on maternal anxiety during elective cesarean delivery: A quasi-experimental study.

ABSTRACT:

Background: In Spain, allowing women to be accompanied by their partners during cesarean deliveries is uncommon. Prohibiting accompaniment during cesarean section alone deprives women of support during a stressful process and deprives their partners of the opportunity of attending the birth of their child.

Objective: To compare levels of anxiety and satisfaction in women undergoing elective cesarean delivery without accompaniment versus in those undergoing the procedure accompanied by their partners.

Design: Quasi-experimental, prospective study, comparing anxiety and satisfaction in women receiving elective cesarean deliveries in two periods (two months immediately before and two months immediately after the implementation of protocol allowing accompaniment by partners). We used the STAI-State/Trait scale to assess anxiety and a questionnaire to assess the level of satisfaction with the care received.

Results: We included 64 women [31 in the pre-implementation (unaccompanied) group and 33 in the post-implementation (accompanied) group]. Groups did not differ in age [33.0±3.7 years in unaccompanied women vs. 32.0±4.7 years in accompanied women] or primiparity [29.0% in unaccompanied women vs. 33.0% in accompanied women group]. Accompanied women had lower median STAI-State scale scores (25 vs. 50 in unaccompanied women; z=-2.894, p<0.004). Greater proportions of unaccompanied women had high levels of anxiety (STAI-State >31) (X^2=9.065, p<0.003) and very high levels of anxiety (STAI-State >45) (X^2=7.516, p<0.006). Overall satisfaction was high (9.65/10), and differences between groups did not reach significance (9.55 in unaccompanied women vs. 9.74 in accompanied women, p=0.227).

Conclusions: Accompaniment by partners during elective cesareans can decrease anxiety and is a step toward improving the experience of cesarean deliveries.

Keywords
Cesarean section/psychology; Cesarean section/anxiety; STAI questionnaire; Birth experiences; Fathers; Patient satisfaction; Female.

The effects of accompaniment on maternal anxiety during elective cesarean delivery: A quasi-experimental study.

INTRODUCTION

Accompaniment by partners during vaginal births is well established. This practice is socially accepted and considered desirable because it has strong positive effects on maternal wellbeing, satisfaction, and anxiety (Ramírez & Rodríguez, 2014). In contrast, accompaniment during cesarean deliveries is poorly established (Nedergaard et al., 2022), probably because relatively few studies have sought to demonstrate the advantages of accompaniment during cesarean deliveries. Many hospitals are unprepared or unwilling to allow partners to accompany women giving birth in operating rooms, and although cultural traditions regarding work environments and cesarean practices vary in different countries, historically patriarchal cultural, social, and political norms continue to predominate.

From an international perspective, the presence of partners during elective cesarean deliveries is a relatively recent progressive innovation that has garnered strong social and scientific support. Although a certain level of professional and organizational debate about the practice remains (Sakala, 1985; Suresh & Ravalia, 1989; Taylor, Bullough, Van Hamel & Campbell, 2002; Smiley, 2004; Hugill, Kemp & Kindon, 2005; Gutman & Tabak, 2011; Nedergaard et al., 2022), various institutions in different countries recommend allowing an accompanying adult to be present with the mother in the operating room during the entire process of a cesarean delivery (NICE - National Institute of Health and Care Experience, 2011; MSPSI - Ministerio de Sanidad, Política Social e Igualdad, 2011a).

Among other aspects related to patients' preferences, the Spanish Ministry of Health Birth and Childbirth Plan (MSPSI, 2011b) includes the possibility of a person of the mother's choice accompanying her in the circumstances of instrumental delivery or cesarean section; however, information about how this measure is being applied in all hospitals in Spain is incomplete (MSPSI, 2015). A 2009 study of Spanish hospitals found that protocols in 84.5% of the hospitals evaluated included the recommendation to allow the presence of an accompanying person throughout the process, and 87.4% allowed for the free choice of the accompanying person (MSPSI, 2015). Despite the appearance of relatively high adherence to the recommendations suggested by the inclusion of these points in hospital protocols, in practice accompaniment in the operating room is far less common. Our experience, viewpoints expressed in professional forums, and feedback from women who have undergone cesarian sections indicate that most Spanish maternity wards do not allow the presence of the woman's partner in the operating room during elective cesarean deliveries.

Elective cesarean deliveries are performed in pregnant women with maternal or fetal pathologies that contraindicate a vaginal birth or make it inadvisable (Cunningham, 2015). Elective cesarean section can be done for absolute or relative indications, which aim to minimize risks for the mother and/or fetus, or "on maternal request". Cesarean delivery on maternal request (CDMR) is done in the absence of medical indications; maternal requests are based on psychological reasons, such as the mother's previous experience (Matinnia et al., 2018).

Elective cesarean deliveries are scheduled surgical interventions that yield excellent maternal and fetal outcomes. However, many professionals consider

elective cesarean deliveries a predominantly surgical act, so they are less accommodating than in vaginal deliveries, denying access to companions and thus depriving these women of their partners' support and depriving their partners of the opportunity of being present (Napoles & Piloto, 2012; Smith, Plaat & Fisk, 2008). This lack of support means that women experience delivery by elective cesarean as an intrusive surgical intervention (Clement, 2001; Smith et al., 2008; Blüml et al., 2012; Gungor & Kizilkaya, 2012; Tessier España et al., 2013).

Studies analyzing anxiety during pregnancy identify cesarean deliveries as one of the most prevailing stress factors (Ryding, Wijma & Wijma, 1998). Up to 22% of women who undergo a cesarean have very high levels of anxiety (Gorkem, Togrul, Sahiner & Gungor, 2016). Furthermore, high levels of anxiety during childbirth are associated with various negative outcomes in the postpartum period, including greater pain and need for analgesics, difficulties in reconciling sleep, and elevated stress levels, resulting in poorer adaptation (Clout & Brown, 2015). Moreover, most women perceive cesarean deliveries as a major cause of stress, and this stress affects the experience of giving birth (Badajoz et al., 2014). Allowing a partner to accompany the mother during cesareans may reduce the anxiety and stress related to the surgical process (Johansson, Hildingsson & Fenwick, 2013; Tessier España et al., 2014).

In addition to these biomedical arguments for accompaniment during cesarean sections, social trends driven by both patients and health professionals advocating patient- and family-centered healthcare models have encouraged women to stand up for their right to be accompanied and the right of both parents to be present at the birth of their children (Clement, 2001).

Badajoz et al. (2014) found that the arguments against accompaniment in operating rooms are similar to those employed in other closed environments such as intensive care units. Because these arguments focus on professionals' perceptions of impediments to doing their work, such as a greater difficulty teaching and training students and residents, crowding in the operating room, or the fear of the companion's unexpected reactions to potential complications or extraordinary measures, they are often considered to benefit only professionals to the detriment of patients.

In a comprehensive review of 24 studies about the presence of the partner in the operating room during emergency cesarean sections published between 1984 and 2020, Nedergaard et al. (2022) concluded that most parents prefer to have their partner in the operating room, but healthcare staff are reluctant to allow partners to be present when general anesthesia is used. They observed that most published arguments against having a partner present in the operating room are personal opinions, whereas most arguments in favor of having the partner present in the operating room are based on clinical findings.

In September 2015, our hospital implemented an institutional protocol that allowed partners to be present during elective cesarean deliveries. Taking advantage of this change in protocol, we devised a study to obtain scientific evidence to inform the debate regarding the advantages and disadvantages of accompaniment during elective cesarean deliveries in our social, cultural, and economic context. We aimed to assess mothers' anxiety during elective cesarean births and satisfaction with the process according to whether their partners were present in the operating room. To this end, we used a quasi-experimental design spanning the periods both before and after the implementation of the new

protocol. We hypothesized that the accompaniment of women during elective cesarean deliveries would reduce the anxiety they experience during the process and improve patients' satisfaction without modifying the technical conditions for the procedure.

METHODS

Design

We designed a quasi-experimental prospective study to compare mothers' anxiety and satisfaction regarding elective cesarean deliveries between the women who underwent the procedure in the period immediately preceding and immediately following the implementation of a new protocol that enabled mothers to be accompanied throughout the process.

The study was performed at a public hospital that serves a reference population of about 480,000 inhabitants from a mainly urban area where most people work in services and industry. The gynecology and obstetrics department delivers a mean of 2,239 births per year (a mean of 18,6% were cesarean deliveries). In 2015, 207 elective cesareans were performed.

Calculation of the sample size

To determine the sample size required to detect significant differences between groups at a 5% level of precision and 95% asymptotic normal confidence interval for our finite population with an expected rate of loss of 15%, we established a cutoff score of ≥31 points in the state anxiety subscore of the State-*Trait Anxiety* Inventory (STAI-S) for high levels of anxiety (75^{th} percentile of adult Spanish women) (Seisdedos, 1982). We estimated that we would observe high levels of anxiety in 50% of the women in the post-implementation group (who

were accompanied during cesarean section) versus in 75% of those in the pre-implementation group (who were unaccompanied).

These calculations estimated that it would be necessary to recruit a total of at least 53 patients. To homogenize the number of patients in each group, we sought to include 66 women: 33 in the pre-implementation group and 33 in the post-implementation group.

Population

Eligible for inclusion were women aged ≥ 18 years without severe medical or gynecological conditions undergoing elective cesarean section requiring only local/regional anesthesia. We excluded women who declined to participate, those who could not understand the informed consent form, and those who developed complications during the intervention. Antepartum complications were not considered a reason for exclusion. Patients in the two groups were not matched, and the number of previous births was not taken into consideration in assigning patients to groups.

Patients were non-randomly assigned to groups. The pre-implementation group comprised consecutively recruited women whose underwent elective cesareans in September or October 2015 before the implementation of the new protocol enabling partners to enter the operating room. The post-implementation group comprised consecutively recruited women who underwent elective cesarean deliveries with their partners accompanying them in the operating room in November or December 2015.

Measures

Mothers completed a brief questionnaire about the care process, providing information about their age, number of prior births, reasons for elective cesarean section, and obstetric risks.

To assess anxiety, we employed the Spanish version of the State-*Trait Anxiety* Inventory (STAI) (Spielberg, Gorsuch & Lushene, 1970; Seisdedos, 1982). The STAI is a self-administered instrument comprising two scores that measure two dimensions of anxiety: trait anxiety (STAIT-T) and state anxiety (STAI-S). Trait anxiety reflects how subjects feel generally, and state anxiety reflects how they feel at a given time. Subjects are asked to classify 40 statements (20 corresponding to each dimension) on a Likert scale ranging from 0 to 3; higher scores represent higher levels of anxiety. The internal consistency coefficients for the STAIT-T and STAIT-S are 0.91 and 0.94, respectively, with a test-retest of 0.81 for the STAI-T and 0.40 for the STAI-S. We considered STAI-S>31 (75^{th} percentile) a high level of anxiety and STAI-S> 45 (95^{th} percentile) a very high level of anxiety (Seisdedos, 1982).

To measure patients' overall satisfaction with the care they received, we used a simple visual analogue scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied). To assess the women's perception of accompaniment in the operating room, women in the post-implementation group also completed a brief self-administered questionnaire consisting of indicating a point on a visual analogue scales ranging from (totally disagree) to 5 (totally agree) to respond to the following statements regarding accompaniment during cesarean delivery: "I consider that being accompanied during the cesarean is important", "Being accompanied helped me to remain calmer during the intervention", and "Cesarean delivery is an experience that I prefer to undergo on my own".

Data collection

Data were collected between September and December 2015. We identified candidates in the pre-partum period, explaining the study to them and inviting them to participate. Candidates who provided written informed consent to participate were assessed in three phases. In the first phase, medical and sociodemographic data about the participant's hospital admission were collected, and the participant completed the STAI-T questionnaire during the pre-surgical visit. In the second phase, the participant completed the STAI-S questionnaire in the pre-surgical area before undergoing elective cesarean. In the third phase, after recovery from anesthesia, participants completed the satisfaction questionnaire, and those who had been accompanied completed the questionnaire to assess their perceptions of accompaniment.

Ethical considerations

Researchers followed all relevant national and international ethical guidelines throughout the study. The hospital's ethics committee approved the study, and all participants provided written informed consent before enrollment. Participants were assured that they were free to drop out of the study at any time without the need to justify their choice. Patients' information was anonymous and confidential. Both groups were treated by the same team and under equal conditions.

Statistical Analysis

We report qualitative variables as absolute and relative frequencies. We report quantitative variables as means and standard deviations or medians and interquartile ranges (25^{th}–75^{th} percentiles), as appropriate. To compare groups,

we used the chi-square test for qualitative variables and Student's t-test or the Mann-Whitney U, as appropriate, for quantitative variables. Statistical significance was set at $p<0.05$. All calculations were performed using IBM SPSS®, version 22.0 (IBM Corporation, Armonk NY; USA).

RESULTS

Characteristics of the sample

A total of 66 women scheduled to undergo elective cesareans were invited to participate; of these, 64 (96%) agreed to participate (31 in the pre-implementation group and 33 in the post-implementation group). The most common indication for the procedure was having undergone a previous cesarean section (32.8%).

There were no significant differences between groups in age, previous births, history of prior cesarean sections, or pre-surgical STAI-T scores (Table 1).

Furthermore, there were no significant differences between groups in the levels of overall anxiety ($p=0.459$), parity ($p=0.567$), or satisfaction with care ($p=0.568$).

Impact of accompaniment on perceived anxiety during elective cesarean section

The mean STAI-S score for the entire population was 39.04. The median STAI-S score was lower in the post-implementation group (25 vs. 50 in the pre-implementation group, $p<0.004$) (Table 2). Levels of perceived stress were high (STAIS-S>31) in 33 (51.56%) participants and very high (STAI-S>45) in 28 (43.8%)(Table 2). A greater proportion of women in the pre-implementation group had high levels of perceived anxiety (71% vs. 33% in the post-implementation

group, p<0.003) (Table 2). Likewise, a greater proportion of women in the pre-implementation group had very high levels of perceived anxiety (61.3% vs. 27% in the post-implementation group, p<0.006)(Table 2).

Impact of accompaniment on satisfaction with the care received

Overall, women were satisfied with the care they received; the mean score on the satisfaction survey was 9.65 out of 10. There was a trend toward greater satisfaction in the post-implementation group (9.74 vs. 9.55 in the pre-implementation group, p=0.227), but these differences did not reach statistical significance (Table 2).

Perception of accompaniment in the operating room

In their responses to the statements about being accompanied by their partners in the operating room, participants in the post-implementation group indicated that they considered accompaniment important. On the five-point scale, the mean response was 4.34 to the statement *"I consider that being accompanied during the cesarean is important",* 4.41 to the statement "*Being accompanied helped me to remain calmer during the intervention",* and 1.76 to the negatively phrased statement *"It is an experience that I prefer to undergo on my own*" (Table 3).

DISCUSSION

To our knowledge, this is the first study in a Spanish population to analyze the impact of partner accompaniment during elective cesarean deliveries on maternal anxiety and satisfaction with patient care. We hypothesized that accompaniment would reduce anxiety during elective cesareans and improve patients' satisfaction. We found clear differences between unaccompanied and

accompanied women in perceived anxiety. Both the overall level of anxiety and the proportion of women with high and very high levels of anxiety levels were greater in the pre-implementation group of women who were not accompanied by their partners in the operating room. Differences between groups in the satisfaction with the care received, however, did not reach statistical significance, probably because the level of satisfaction was already very high before the implementation of the protocol that allowed women to be accompanied and because women in both groups were treated by the same team and under the same conditions. In a study of factors that influence satisfaction with cesarean sections, Hobson et al. (2006) found that 52% of maternal post-surgical satisfaction is explained by the information provided by the anesthetist and the emotional support provided by the partner.

Our study corroborates evidence from other studies that cesarean deliveries are stressful (Hobson, Slade, Wrench & Power, 2006; Hepp et al., 2016). The mean STAI-S score in our participants (39.04) was similar to that reported in a study in England (36.6) (Hobson, Slade, Wrench & Power, 2006) but lower than that reported in a study in Germany (47.35) (Hepp et al., 2016). The mean STAI-S score in our participants (39.04) was much higher than in the general population of Spanish women (23.30) (Seisdedos, 1982). Moreover, the levels of state anxiety found in our study are higher than those reported for different procedures and consultations during pregnancy. A study in Spanish women reported that mean STAI-S scores were 20.10 in pregnant women who visited the emergency department and 18.05 in pregnant women attending routine obstetrics consultations (Gómez Sánchez, Criado Enciso & Castro Vilar, 2011).

Furthermore, the prevalence of high scores reflecting high levels of anxiety (STAI-S>31) was higher in our participants (51.6%) than in the general population of Spanish women (25%) (Seisdedos, 1982). Additionally, 43.8% of all the women in our study had very high levels of state anxiety (Table 2); this percentage is somewhat higher than that reported by Gorkem et al. (2016) in a study of 80 women who underwent elective cesarean deliveries, where only 22.5% experienced very high levels of state anxiety (STAI-S>45).

Environmental factors can have important effects on the anxiety perceived in the operating room. Noises, unfamiliar atmosphere, and technical equipment can be very stressful for women undergoing cesarean section. Factors that protect against operating-room anxiety include receiving continuous information and being able to ask the team questions and receive appropriate responses (Haugen et al., 2009). Apart from environmental factors, factors related to patients' personality, especially neuroticism and introversion, are also associated with higher anxiety during cesarean delivery(Thorp, Kennedy, Millar & Fitch, 1993).

In a study focused on the role of the partner's accompaniment during neuraxial anesthesia prior to a cesarean section, Prabhu et al. (2009) found that the presence of the partner significantly reduced the mother's anxiety ($p=0.032$) and that partners experienced significantly greater anxiety when they were not allowed in the delivery room ($p<0.001$). Keogh et al. (2005) also found that support from a partner mediated the onset of fear and anxiety during cesarean sections.

Our qualitative analysis of the responses to the questionnaire gauging the importance of having the possibility of being accompanied during elective

cesarean delivery showed that the women in our study believed being accompanied would help them remain calmer. This finding supports recommendations for accompaniment by the Spanish Ministry of Health (MSPSI, 2011) and by Hugill et al. (2015) to decrease the level of anxiety during cesareans and to improve parents' experience.

However, allowing partners access to operating rooms for cesarean sections requires not only a change in the organization of services, but also a change in the mentality of the entire obstetric and surgical team. Faas-Fehervary et al. (2005) found that the backgrounds, personal birth experiences, and work environments of gynecologists and obstetricians can significantly modulate their attitudes toward CDMR. We speculate that these factors might also affect professionals' attitudes toward accompaniment during cesarean sections.

The nature of the relationship between woman giving birth and the person accompanying her during labor is associated with different birth outcomes. A retrospective Israeli study that included 3029 patients found a longer second stage of labor, a lower rate of vaginal delivery, and a higher risk of cesarean delivery in women accompanied by their mothers than in those accompanied by their husbands (Kadour-Peero et al., 2019). The authors emphasize that large-scale prospective studies are needed to confirm this observation and determine its causes. Cultural aspects could also be relevant, and studies carried out in different cultures and work environments have pointed to relevant aspects to be evaluated in future studies (Kondou and Haku, 2018; Adeniran et al., 2017; Maziero et al., 2020; Wielganczuk et al., 2022).

Several studies have explored psychological factors involved in CDMR. It seems that such requests are increasing worldwide (Karlström ret al., 2010;

Matinnia et al., 2018). Psychological factors such as low self-esteem, stress, and health beliefs have been proposed as mediators, but scant data have been collected. In a study in Iran of 342 primiparas (mean age, 25 years), 62.6% chose to undergo elective cesarean section rather than vaginal delivery. This choice was associated with lower self-esteem, higher perceived stress, belief in greater personal susceptibility to problematic birth, and barriers to easy birth, as well as with lower perceived severity of elective cesarean section and fewer perceived benefits of vaginal birth (Matinnia et al., 2018).

In our study, both groups of women undergoing elective cesarian sections rated the care they received highly, reaffirming the appropriateness of our hospital's model of care. These data contrast with findings in other studies. A study in Scotland found lower satisfaction in women undergoing artificially induced labor and especially cesarian sections than those with spontaneous onset of labor (Shetty, Burt, Rice & Templeton, 2005). However, various factors, such as the presence of partners, may improve the overall satisfaction with care. Qualitative studies in Spain have found that the involvement of the partner throughout pregnancy-childbirth-puerperium improves the experience of delivery (Pereda-Goikoetxea et al., 2019; Pereda-Goikoetxea det al., 2021). Although the effects of organizational measures such as allowing partners to be present in elective cesarians on overall satisfaction with care may be relatively small, allowing partners to be present in elective cesarians is good from both the scientific and humanistic viewpoints.

Intimate and helpful contact with their partners and infants during labor is important for mothers' future well-being (Bielinski-Blattmann et al., 2016). In general, women's satisfaction with cesarean deliveries is good (Porter, Van

Teijlingen, Yip & Bhattachaya, 2007). Moreover, a previous elective cesarean section is associated with a preference for a new cesarean section (Hildingsson, 2008). Although it is important to consider the impact of cesarean deliveries on subsequent maternal wellbeing (Molgora, Fenaroli, Cracolici & Saita, 2020; Xu, Ding, Ma, Xin & Zhang, 2017; Zanardo et al., 2018), we did not collect data about the impact of accompaniment during cesarean section on mothers' and partners' mental health in periods after giving birth.

Like Blüml et al. (2012), we urge hospitals to incorporate measures to "humanize" cesarean deliveries; enabling accompaniment during elective cesarean deliveries is a step in this direction. Studies like ours serve to highlight the positive effects of accompaniment during cesarean sections.

Limitations

Although randomized experimental studies are the "gold standard" for the assessment of interventions, we used a quasi-experimental design because we considered that, once the new protocol was implemented, it would have been unethical to deprive women who requested accompaniment of the opportunity to have a companion present (Eccles, Grimshaw, Campbell & Ramsay, 2003).

CONCLUSION

Levels of maternal anxiety during cesarean delivery were significantly lower in women whose companions were present than those whose companions were not allowed to be present. Enabling accompaniment during cesarean delivery is an effective strategy for decreasing maternal anxiety and is a step toward a greater humanization of births by cesarean section.

DECLARATION OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

REFERENCES

Adeniran, A., Adesina, K., Aboyeji, A., Balogun, O., Adeniran, P., Fawole, A., 2017. Attitude and Practice of Birth Attendants Regarding the Presence of Male Partner at Delivery in Nigeria. *Ethiopean Journal of Health Sciences, 27,* 107-114.

Badajoz Valer, M. V., Pellicer Algora, M. R., Llorente López, S., Ballesteros Soria, M., Cabrejas De Francisco, J., Rubio Blasco, E., & Aparicio Borjabad, M. (2014). [Pre-surgical anxiety level of the patient undergoing programmed surgery] [In Spanish]. *Revista de la Asociación Española de Enfermería Quirúrgica, 36*, 10-13.

Bielinski-Blattmann, D., Gürber, S., Lavallee, K., Grob, A., Surbek, D., & Stadlmayr, W. (2016). Labour experience and postpartum stress and depression: a quantitative and qualitative examination. *Journal of Reproductive and Infant Psychology, 34*, 162-174.

Blüml, V., Stammler-Safar, M., Reitinger, A. K., Resch, I., Naderer, A., & Leithner K. (2012). A qualitative approach to examine women's experience of planned cesarean. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 41*, E82-90.

Clement, S. (2001). Psychological aspects of caesarean section. *Best Practice & Research: Clinical Obstetrics & Gynaecology, 15*,109-126.

Clout, D., & Brown, R. (2015). Sociodemographic, pregnancy, obstetric, and postnatal predictors of postpartum stress, anxiety and depression in new mothers. *Journal of Affective Disorders, 188*, 60-67.

Cunningham, G. F. (2015). *Williams Obstetricia*. Madrid: McGraw-Hill.

Eccles, M., Grimshaw, J., Campbell, M., & Ramsay, C. (2003). Research designs for studies evaluating the effectiveness of change and improvement strategies. *Quality and Safety in Health Care, 12*, 47-52.

Faas-Fehervary, P., Schwarz, K., Bauer, L., & Melchert, F. (2005). Caesarian section on demand: Influence of personal birth experience and working environment on attitude of German gynecologist. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 122*, 162-166.

Gómez Sánchez, F., Criado Enciso, I., & Castro Vilar, S. (2011). Niveles de depresión y ansiedad en las gestantes que acuden a urgencias [Levels of depression and anxiety in pregnant women who attend the emergency room] [In

Spanish]. In: *Comunicaciones al Congreso Nacional de Obstetricia y Ginecología, Sevilla 2011*. Sevilla (Spain): SEGO.

Gorkem, U., Togrul, C., Sahiner, Y., Yazla, E., & Gungor, T. (2016). Preoperative anxiety may increase post-cesarean delivery pain and analgesic consumption. *Minerva Anestesiologica, 82*, 974-980.

Gungor, I., & Kizilkaya, N. (2012). Development and psychometric testing of the scales for measuring maternal satisfaction in normal and caesarean birth. *Midwifery, 28*, 348-357.

Gutman, Y., & Tabak, T. (2011). The Intention of Delivery Room Staff to Encourage the Presence of Husbands/Partners at Cesarean Sections. *Nursing Research and Practice, 2011*, 192649.

Haugen, A. S., Eide, G. E., Olsen, M. V., Haukeland, B., Remme, A. R., & Wahl, A. K. (2009). Anxiety in the operating theatre: a study of frequency and environmental impact in patients having local, plexus or regional anaesthesia. *Journal of Clinical Nursing, 18*, 2301-2310.

Hepp, P., Hagenbeck, C., Burghardt, B., Jaeger, B., Wolf, O. T., Fehm, T., & Schaal, N. (2016). Measuring the course of anxiety in women giving birth by caesarean section: a prospective study. *BMC Pregnancy & Childbirth, 16*, 113.

Hildingsson, I. (2008). How much influence do women in Sweden have on caesarean section? A follow-up study of women's preferences in early pregnancy. *Midwifery, 24*, 46-54.

Hobson, J. A., Slade, P., Wrench, I., & Power. L. (2006). Preoperative anxiety and postoperative satisfaction in women undergoing elective caesarean section. *International Journal of Obstetric Anesthesia, 15*,18-23.

Hugill, K., Kemp, I., & Kindon, C. (2015). Fathers' presence at caesarean section with general anaesthetic: evidence and debate. *The Practising Midwife, 18*, 19-22.

Johansson, M., Hildingsson, I., & Fenwick, J. (2013). Important factors working to mediate Swedish fathers' experiences of a caesarean section. *Midwifery, 29*, 1041-1049.

Kadour-Peero, E., Miller, N., Vitner, D., Bleicher, I., Said, S., Dashkovsky, M., Levy, E., Sagi, S, Gonen, R. (2019). Who may accompany the parturient to the delivery room? *Archives of Gynecology and Obstretics* 300, 293-297.

Karlström, A., Rådestad, I., Eriksson, C., Rubertsson, C., Nystedt, A., Hildingsson, I., 2010. Cesarean section without medical reason, 1997 to 2006: a Swedish register study. *Birth*, 37, 11-20.

Keogh, E., Hughes, S., Ellery, D., Daniel, C., & Holdcroft, A. (2005). Psychosocial Influences on Women's Experience of Planned Cesarean Section. *Psychosomatic Medicine, 68*, 167-174.

Kondou, A., Haku, M., 2018. The experiences of husbands present at their wives' emergency cesarean sections. *Journal of Medical Investigation, 65,* 268-273.

Matinnia, N., Haghighi, M., Jahangard, L., Ibrahim, F.B., Rahman, H.A., Ghaleiha, A., Holsboer-Trachsler, E., Brand, S. (2018). Further evidence of psychological factors underlying choice of elective cesarean delivery (ECD) by primigravidae. *Revista Brasileira de Psiquiatria, 40*, 83-88.

Maziero, C.P., Zani, A.V., Bernardy, C.C.F., Pontes, G.M., Lago, M.T.G., Pinto, K.R.T.F., 2020. A não presença do acompanhante no parto: visão dos profissionais da saúde. [The non-presence of the parent assistant: vision of health professionals] [In Portuguese]. *Revista Fundamental Care Online*, 12, 531-536.

MSPS - Ministerio de Sanidad y Política Social (2009). Maternidad hospitalaria. Estándares y recomendaciones [Hospital maternity. Standards and Recommendations] [In Spanish]. Madrid: Ministerio de Sanidad y Política Social. Retrieved from: https://www.sanidad.gob.es/organizacion/sns/planCalidadSNS/docs/AHP.pdf

MSPSI - Ministerio de Sanidad, Política Social e Igualdad (2011a). Estrategia Nacional de Salud Sexual y Reproductiva [National Strategy for Sexual and Reproductive Health] [In Spanish]. Madrid: Ministerio de Sanidad, Política Social e Igualdad. Retrieved from: https://www.sanidad.gob.es/organizacion/sns/planCalidadSNS/pdf/equidad/ENSSR.pdf

MSPSI - Ministerio de Sanidad, Política Social e Igualdad (2011b). Plan de Parto y Nacimiento [Labour and Birth Plan] [In Spanish]. Madrid: Ministerio de Sanidad, Política Social e Igualdad. Retrieved from: https://www.sanidad.gob.es/organizacion/sns/planCalidadSNS/pdf/equidad/planPartoNacimiento.pdf

MSPSI - Ministerio de Sanidad, Política Social e Igualdad (2015). Informe sobre la atención al parto y nacimiento en el Sistema Nacional de Salud [Report on childbirth and childbirth care in the National Health System] [In Spanish]. Madrid: Ministerio de Sanidad, Política Social e Igualdad. Retrieved from: https://www.sanidad.gob.es/organizacion/sns/planCalidadSNS/pdf/InformeFinal EAPN_revision8marzo2015.pdf

Molgora, S., Fenaroli, V., Cracolici, E., & Saita, E. (2020). Antenatal fear of childbirth and emergency cesarean section delivery: a systematic narrative review. *Journal of Reproductive and Infant Psychology, 38*, 436-454.

Napoles, C., & Piloto, M. (2012). Consideraciones actuales sobre la operación cesárea [Current Considerations About Cesarean Section] [In Spanish]. *MEDISAN, 16*, 1579-1595.

Nedergaard, H.K., Balaganeshan, T., Weitling, E.E., Petersen, H.S., Brøchner, A.C. (2022). Presence of the partner in the operating room during emergency caesarean section: A scoping review. *Europan Journal of Anaesthesiology, 39*, 939-952.

NICE - National Institute of Health and Care Experience. (2011). *Caesarian section. NICE Clinical guideline 13*. London: NICE.

Pereda-Goikoetxea, B., Marín-Fernández, B., Liceaga-Otazu, N.E., Elorza-Puyadena, M.I., 2019. A qualitative study of hospital birth perceptions: The helix of priority needs. *Midwifery, 74*, 91-98.

Pereda-Goikoetxea, B, Huitzi-Egilegor, J.X., Zubeldia-Etxeberria, J., Uranga-Iturrioz, M.J., Elorza-Puyadena, M.I., 2021. Hospital Childbirth: Perspectives of Women and Professionals for a Positive Experience-A Qualitative Study. *International Journal of Environmental Research and Public Health, 18*, 10238.

Porter, M., Van Teijlingen, E., Yip, L. C. Y., & Bhattachaya, S. (2007). Satisfaction with Cesarean Section: Qualitative Analysis of Open-Ended Questions in a Large Postal Survey. *Birth, 32*, 148-154.

Prabhu, M., Wang, L. F., Tait, A. R., & Bullough, A. S. (2009). A randomized controlled study of whether the partner's presence in the operating room during neuraxial anesthesia for cesarean delivery reduces patient anxiety. *International Journal of Obstetric Anesthesia, 18*, 362-367.

Ramírez, H., & Rodríguez, I. (2014). Beneficios del acompañamiento a la mujer por parte de su pareja durante el embarazo, el parto y el puerperio en relación

con el vínculo paternofilial. Revisión bibliográfica [Benefits of accompanying the woman by her partner during pregnancy, childbirth and the puerperium in relation to the father-child bond. Bibliographic review] [In Spanish]. *Matronas Profesión, 15*, e1-e6.

Ryding, E. L., Wijma, K., & Wijma, B. (1998). Experiences of emergency cesarean section: A phenomenological study of 53 women. *Birth, 25*, 246-251.

Sakala, E. (1985). Perinatal professionals' view of fathers in the cesarean room. *Journal of Psychosomatic Obstetrics and Gynecology, 4*, 285–293.

Seisdedos, N. (1982). *STAI: Cuestionario de Ansiedad Estado Rasgo [STAI: State-Trait Anxiety Inventory].* Madrid: TEA.

Shetty, A., Burt, R., Rice, P., & Templeton, A (2005). Women's perceptions, expectations and satisfaction with induced labour - a questionnaire-based study. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 123*, 56-61.

Smiley, R. (2004). Opposer: Partners should be allowed to stay in the operating theatre during caesarean section under general anaesthesia. *International Journal of Obstetric Anesthesia, 13*, 253-256.

Smith, J., Plaat, F., & Fisk, N. (2008). The natural cesarean: a woman-centred technique. *International Journal of Obstetrics and Gynaecology, 115*, 1037-1042.

Spielberg, C. D., Gorsuch, R .L., & Lushene, R.E. (1970). *STAI, Manual for the State-Trait Anxiety Inventory*. California: Consulting Psychologist Press.

Suresh, D., & Ravalia, A. (1989). Analgesia for manipulation under anaesthesia after total knee replacement. *Anaesthesia, 44*, 933-934.

Taylor, I. R., Bullough, A. S., Van Hamel, J. C., Campbell, D. N., 2002. Partner anxiety prior to elective Caesarean section under regional anaesthesia. *Anaesthesia, 7*, 600-605.

Tessier España, E., Camaño Gutiérrez, I., García Burguillo, A., Hernández García, J. M., Vellido Cotelo, R., De la Hera, C., & Oliver Pérez, M. R. (2013). Cesárea humanizada [Humanized caesarean section] [In Spanish]. *Progresos de Obstetrícia y Ginecología, 56*, 73-78.

Thorp, J. M., Kennedy, B. W., Millar, K., & Fitch, W. (1993). Personality traits as predictors of anxiety prior to Caesarian section under regional anaesthesia. *Anaesthesia, 48*, 946-950.

Wielganczuk, R.P., Zani, A.V., Maziero, C.P., Bernardy, C.C.F., Rodrigues, M.H., Pinto, K.R.T.F., 2022. Perceptions of health professionals about the presence of the accompanying party at birth. *Revista de Pesquisa Cuidado é Fundamental* [Internet], 14, e10830.

Xu, H., Ding, Y., Ma, Y., Xin, X., & Zhang, D. (2017). Cesarean section and risk of postpartum depression: A meta-analysis. *Journal of Psychosomatic Research, 97*, 118-126.

Zanardo, V., Giliberti, L., Giliberti, E., Volpe, F., Straface, G., & Greco, P. (2018). The role of elective and emergency cesarean delivery in maternal postpartum anhedonia, anxiety, and depression. *International Journal of Gynecology & Obstetrics, 143*, 374-378.

Table 1. Baseline (pre-surgical) participant details (n=64).

	Unaccompanied women *n=31*	Accompanied women *n=33*	t/z/x^2	P-value
Age Mean (SD)	33.00 (3.70)	32.00 (4.68)	t=1.786	0.079
STAI-Trait Median (p25/p75)	25.00 (5.00 / 35.00)	10.00 (1.00 / 35.00)	z=-1.406	0.160
Primiparous n (%)	9 (29.0 %)	11 (33.0 %)	X^2=0.834	0.834
Prior cesarean n (%)	12 (38.0 %)	9 (27.3 %)	X^2=0.977	0.614

t = Student's t-test. z = Z score. X^2 = chi-square test.

Table 2: Levels of state-anxiety in the pre-surgical area, before the performance of the elective cesarean, and post-cesarean satisfaction with the care (n=64).

	Unaccompanied women n=31	Accompanied women n=33	z/x^2	p Value
STAI-State Median (n p25/p75)	50 (5/95)	25 (5/50)	z=-2.894	0.004
STAI-State scores > 31 n (%)	22 (71.0%)	11 (33.3%)	x^2=9.065	0.003
STAI-State scores > 45 n (%)	19 (61.3%)	9 (27.3%)	x^2=7.516	0.006
Satisfaction Mean (SD)	9.55 (0.62)	9.74 (0.45)	z=-1,209	0.227

z = Z score. x^2 = Chi square. n p25/p75 = number of mothers in the 25 or 75 percentiles of STAI-State scores following the Spanish validation (Seisdedos, 1982).

Table 3. Qualitative assessment of the accompaniment (n=31).

	Mean (SD)
I consider that being accompanied during the cesarean is important	4.34 (1.1)
Being accompanied helped me to remain calmer during the intervention	4.41 (1.6)
It is an experience that I prefer to undergo on my own	1.76 (1.5)

Scale interpretation (1= maximum disagreement / 5= maximum agreement).