Letter to the Editor

Ellen Blix*, Anne Kaasen and Tine Schauer Eri

Labor pain, birth experience and postpartum depression

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Dear Editor,

Rosseland et al. recently published a cohort study investigating the impact of labor pain and birth experience on persistent pain and depression eight weeks after the birth [1]. The topic is important, and it is known that a negative birth experience has impact on future reproduction [2, 3]. Therefore, such studies should maintain a high quality and be critically interpreted.

It is difficult to track the study population, as the authors operate with three overlapping study samples. Of 4,662 women included in the cohort, 645 answered all three questionnaires. This group is described as "the study population" and characteristics are presented in Table 1. A total of 1,221 women completed two questions 48 h after the birth, and 2,217 returned questionnaire 3 eight weeks after the delivery. The authors do not provide characteristics on these two study samples. Figures 2 and 3 contain data from the sample of 1,221 women, while it is unclear which sample(s) that Tables 2–5 contain. We guess that it is the 2,217 women, including imputed data. The proportion of missing data is unclear. Was data on birth experience and labor pain intensity imputed in 996 women (45% of the sample of 2,217)? If so, this would merit discussion as a possible limitation of the study.

Median score for pain intensity was nine on a scale from 0 to 10 (where 0 was no pain and 10 the strongest pain you can imagine). Median score for birth experience was two on a scale from 0 to 10 (where 0 was very good and 10 extremely bad). It is unclear if it is in the sample of 645 or 1,121 women. Anyway, as a group, the women experienced very intense labor pain and a good birth experience. This is an interesting finding, and we wonder why the authors did not discuss this finding. In Figure 3, a binned scatterplot of pain intensity against birth experience in the sample of 1,221 women shows that most women had intense pain and poor birth experience, opposite of what is described in the text. Did the sample of 1,221 women have very different scores on birth experience than the sample of 645 women? Or did the authors order the values on the *y*-axis in the wrong direction?

The authors found a statistically significant association between epidural analgesia and persistent pain eight weeks postpartum. It is a weakness that they did not differ between spontaneous vaginal births and instrumental vaginal births. There is an association between epidurals and more instrumental vaginal births [4], which again are associated with more episiotomies and tears that may cause persistent pain.

The authors report high pain intensity, despite that 23% of the women received epidural, and discuss if the reason can be that the epidural was given too late during labor course. Even if epidural is proven to be the most effective method for pain relief during labor, it is not proven to improve birth experience or satisfaction with care at a population level [4]. One Norwegian study found that use of epidural influenced the level of satisfaction in a negative direction [5]. One reason is probably that epidural reduces the maternal oxytocin, because the lack of sensations and lack of feedback that releases oxytocin from the brain. Endogenous oxytocin production during labor reduces pain and stress, and probably also influence the memory. Epidural-related oxytocin disruptions may contribute to a stronger memory of labor pain [6]. Women with an epidural often receive infusion of synthetic oxytocin [4]. Synthetic oxytocin does not cross through the blood brain barrier and does not influence the mother's brain function in the same way as endogenous oxytocin [7].

Labor pain has a complex nature and must be understood different than pain after cesarean sections and other surgical interventions. The hormonal physiology of birth is not fully understood. During labor and birth, there is an increase in the release of oxytocin to the maternal bloodstream, causing uterine contractions and pushing and it has calming and analgesic effects in both mothers and babies. Immediately after the birth, there is a boost of

***Corresponding author: Prof. Ellen Blix**, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway,
E-mail: ellblx@oslomet.no
Anne Kaasen and Tine Schauer Eri: Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway

oxytocin release, influencing on maternal-infant bonding, promoting breastfeeding and preventing postpartum hemorrhage [6].

We are concerned about the increasing use of interventions like epidural, oxytocin augmentation and labor induction causing reduced production of oxytocin and other disruptions of physiological labor. Epidurals, oxytocin augmentations and labor inductions may affect behavior and short- and long-term health and thriving in the baby. [8–10]. A population-based study from USA, including 47,000 women, found that peripartum use of synthetic oxytocin increased the risk of postpartum depressive or anxiety disorders by more than 30%. The increase was found both in mothers with and without a history of pre-pregnancy depressive or anxiety disorders [11].

All providers of maternity care must be aware that knowledge of the interactions between labor pain, different pain relief techniques and subsequent maternal perception of the birth experience still is incomplete, as Rosseland et al.'s study underlines [1]. The worst-case scenario of extensive use of epidurals would be to cause more harm than good. We need to understand that labor pain is complex and cannot be removed without influencing physiological labor. We should turn our thinking from removing the labor pain to helping women manage the hard work of childbirth. For many women this will imply continuous support, comfort, massage or being immersed in water. Other women will need an epidural or other pharmacological analgesia.

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