Labour pain: The hidden influences of anxiety and social deprivation

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The relationship between pain and anxiety is complex. Apprehension and fear enhance pain perception and pain behaviour (1). Psychological factors such as stress and anxiety are known to exacerbate the response to painful stimuli. While anxiety may increase pain sensitivity, higher levels of pain may also increase anxiety. Indeed, anxiety is the most important psychological measure affecting postoperative pain scores (2). Measures to reduce anxiety often result in an improvement in pain control. Such relief from anxiety and acute pain may also minimise the potential risk of unwanted physical and psychological sequelae including depression and psychoses.
It is known that psychiatric and emotional disorders including anxiety and depression are strongly linked to social deprivation (3). Social deprivation takes many forms in every society and there is no one definition the ability to cope with labour pain. In the aforementioned prospective study, the degree of anxiety in parturients about to undergo induction of labour was assessed using the Beck Anxiety Inventory (BAI), a 21 item Likert scale validated questionnaire describing the subjective feelings and symptoms of anxiety (4).
Of the 350 parturients studied, 20% were regarded as extremely anxious with a BAI score in excess of 26. In this study there was also a significant positive correlation between anticipated pain and BAI score ($p = 0.001$) thus confirming the views of others of the close interaction between pain and psychological status.
Severe labour pain may produce long-term emotional disturbances in the mother, impairing the parturient's health and instilling a fear of future pregnancies. Higher levels of reported pain and distress during labour have also been reported to correlate with prenatal anxiety (5). However; we have not been able to confirm these findings in primiparous women undergoing the induction of labour. Of the 148 patients who did not have an operative delivery the median perceived VAS labour pain score measured within 24 hours of the birth was 87 [range 25 - 100]. There was no significant correlation between perceived labour pain and BAI score ($p = 0.715$). There was a significant correlation between anticipated and perceived pain ($p = 0.041$). These data suggest that patients' experience of pain during labour may therefore be influenced by their expectations of pain irrespective of their anxiety score.
Concerns of fetal well-being have also previously been assumed to increase maternal anxiety and therefore anticipated labour pain. However, we have not been able to confirm these findings in primiparous women admitted for induction of labour. In this prospective study there was no significant difference in BAI scores between women who underwent induction for postdates, maternal concerns or fetal concerns ($p = 0.135$). Emotional upset in the mother during labour may also have an adverse effect on the foetus while anxiety in the last 3 months of pregnancy is predictive

of obstetric abnormalities. It has been postulated that elevated levels of maternal anxiety and a subsequent increase in circulating catecholamines may lead to a reduction in uterine blood flow and fetal asphyxia while escalating analgesic administration during labour can also impact negatively on fetal well-being (6). In our prospective study we have not been able to confirm that maternal anxiety influenced fetal birthweight. There was no significant difference in the mean fetal weight in women who were anxious [3568 grams, SD 653] and not anxious [3783 grams, SD 463], p = 0.119 respectively. Furthermore, the incidence of operative delivery for fetal distress was not influenced by maternal anxiety state. These data suggest that the link between maternal anxiety and fetal development is at best a tenuous one.

Managing anxiety and thus pain during labour is an important part of coping with childbirth while confidence in the ability to cope with labour is the most significant predictor of labour pain. Helping women to prepare for managing pain and potential negative emotions, including anxiety, during labour are important aspects of antenatal education. Modern childbirth preparation was initiated in the first half of the twentieth century when Dick-Read hypothesised that increased anxiety and fear may increase muscular tension which in turn may prolong labour and increase pain. Therefore, a reduction in fear and muscular tension was promoted using patient education, relaxation training, breathing exercises and paternal participation (7).

These antenatal classes were initially established in North America for the ‘elderly primiparous patient’ on the basis that they were the most anxious because their labour may be more difficult. However, we have found that the most anxious women undergoing induction of labour are often the youngest with a mean age of 23 years [SD = 5.5]. Indeed, over the age of 29.8 years [SD = 5.8] primiparous women undergoing induction of labour are likely to be less anxious.

Many similarities continue to exist between the original antenatal preparation designed by Dick-Read and present day antenatal education classes organised by the National Health Service [NHS]. However, despite the laudable aims of antenatal preparation there is mixed evidence about its efficacy. A number of diverse findings concerning the benefit of childbirth preparation techniques on maternal analgesic use and fetal outcome have been reported. In our study we have compared timing of analgesia and requests for analgesics between women who attended none or all of their antenatal classes. In our population we have observed that 34% of women did not attend any antenatal classes while 46% attended them all. However, attendance or nonattendance at antenatal classes did not influence the requests for analgesia. Women who did not attend any antenatal classes were just as likely to request an epidural for pain relief during labour compared to women who attended all their classes. We have also observed that the timing of analgesia whether for opiate or analgesia or epidural analgesia was not influenced by the number of antenatal classes attended. However, we have noted that in primiparous women undergoing induction of labour antenatal class attendance is associated with a reduction in anxiety (p = 0.001). Attendance at antenatal classes should therefore be encouraged, particularly in those parturients aged less than 25 years who are more likely to be anxious.

Measurement of social deprivation can be undertaken in a number of ways. The Scottish Index Of Multiple Deprivation[SIMD] has recently been introduced by the Scottish Executive (8). The SIMD is updated every three years and is applied to small area data zones

which contain an average of 750 people. This deprivation index is a weighted combination of these 6 domains which together comprise 31 different indicators of deprivation, measuring both area and individual characteristics. Data for SIMD has been sourced from Census data and other administrative systems including Ordnance Survey, Department Of Work and Pensions and the Universities and Colleges Admissions Service. Each of the 6505 data zones in Scotland is given an overall multiple deprivation score plus a score for each of the 6 individual domains. Based on the final summated deprivation score the data zones are ranked from 1 [most deprived] to 6505 [least deprived] and are also reported as deciles ranging from 1 [most deprived] to 10 [least deprived].

In our study 42% of women were considered to be socially deprived. We have found there was a significant positive correlation between maternal age and SIMD score ($p = 0.001$). Although socially deprived women were more likely to be younger there was no significant difference in their anticipated ($p = 0.064$) or perceived ($p = 0.848$) pain score during labour when compared to women who were not socially deprived. Socially deprived women were however more likely to be anxious with a median BAI score of 16 [range 2 - 45], $p = 0.015$ {Figure 2}. As discussed above antenatal class attendance is associated with reduced BAI scores. However, antenatal class attendance amongst socially deprived women is often reduced compared to women who are not socially deprived and this has been confirmed in this study. The reasons for this may bemultifactorial and include fear of hospitals and lack of social support. This lack of antenatal education may in part explain the heightened anxiety perceived by some socially deprived primiparous women undergoing induction of labour.

In conclusion therefore, the interaction between maternal anxiety, labour pain and social deprivation is a complex one. By investigating this relationship amongst primiparous women and understanding the reason for their anxieties it may be possible to improve their attendance at antenatal classes, reduce the level of maternal anxiety and anticipated labour pain with the ultimate aim of improving their first experience of childbirth.

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