The paradox of classification of prolonged labour

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Abstract

Background: Prolonged labour very often causes suffering from difficulties that may have lifelong implications. This study aimed to explore the prevalence of prolonged labour and to compare birth outcome and women’s experiences of prolonged and normal labour

Method: A cross-sectional study of women with spontaneous onset of labour, living in a Swedish county, and mother to a two-month-old child, were recruited for the study. Women (n=839) completed a questionnaire that investigated socio-demographic and obstetric background, attitudes toward childbirth-related issues, preferred mode of birth, and personal and professional support. The prevalence of prolonged labour was also calculated

Results: Both women with prolonged labour (92%) and normal labour (28%) $(P <0.00)$ were treated with oxytocin augmentation. The length of labour differed significantly between women following a prolonged compared with women following a normal labour, 19 versus 8 hours $(P <0.00)$. Women with a prolonged labour had a negative birth experience more often (13%) than did women who had a normal labour (3%) $(P <0.00)$. There were no differences between women with prolonged and normal labour regarding socio-demographic background, age, education or marital status.

Conclusions: Caregivers need to better understand women’s different childbirth experiences in order to offer good treatment and care for every woman, aiming to improve women’s maternal health and wellbeing after birth.

Keywords: Birthexperience, Dystocia, Prolonged Labour
Background

Prolonged labour or dystocia is a common birth complication and constitutes the major indication of instrumental deliveries and delivery by emergency Caesarean section (CS) [1, 2]. Dystocia is a major clinical problem in modern obstetric practice and intrapartum care, causing substantial difficulties to the mother and her child. The negativity experienced from a complicated labour may even have lifelong implications [3, 4].

Approximately 8% of all women giving birth are affected by a prolonged labour [5], and the complication occurs three times more often among primiparae than among multiparae in Western countries [6, 7]. National statistics show that during the years 1988 to 1998 six percent of Swedish primiparae experienced a prolonged labour. Statistics furthermore show that the prevalence of prolonged labour among all Swedish women giving birth during the years 2001 – 2003 was 14%, with regional variations between 5-36% [8].

Maternal risk factors that increase the risk for prolonged labour include primiparity [9] and total maternal weight gain or high body mass index [10, 11]. Foetal risk factors include a heavy birth weight, large head circumference and occiput posterior presentation [12, 13]. A prolonged labour is also associated with worse labour pain than expected, leading to greater use of epidural analgesia and risk of operative interventions [14, 15].

The progress of labour is documented using partogram aiming for early detection of slow progress and preventing change from a normal labour to a prolonged labour [16]. Diagnosing prolonged labour is inherently difficult and it is a controversial issue that has been discussed ever since Friedman introduced the graphic analysis of labour, a study based on 100 women [17]. The most common definition of or diagnostic criteria for dystocia/prolonged labour is protraction disorders (slower than normal) or arrest disorders (complete cessation of progress) [18]. The use of oxytocin to treat prolonged labour depends on which diagnostic criteria are used to define a slow progress of labour or a prolonged labour or dystocia [19].
Early use of oxytocin augmentation and early amniotomy are very common interventions used to speed up slow progress and encourage dilation. The existing strategies of oxytocin augmentation can be used to prevent slow progress from occurring, or to accelerate labour if the dilation rates become slower than the accepted minimum rate as defined by the diagnostic criteria. Risk factors that can be associated with the use of oxytocin augmentation are emergency Cesarean section [20], hyperstimulation [21] and for the newborn, a low Apgar score [22].

Bugg (2013) showed that the advantages of the use of oxytocin could be a reduction of length of labour, but its use does not increase the rate of normal births among women with slow progress [23]. Still, a slow progress of labour is one of the leading causes of increasing Cesarean sections. The CS rate in the Western world and in Sweden specifically is steadily increasing despite the increased use of oxytocin for augmentation of labour. Both interventions, an unplanned Cesarean section and the use of oxytocin for augmentation, affect women’s and infants’ health [24, 25].

Research on the experiences of women who had high levels of obstetric interventions in general indicates a tie to negative birth experiences. Feelings of a stress and psychological trauma following an emergency Caesarean delivery accompany descriptions of anxiety about future motherhood [26, 27]. If the experience of giving birth is one of unexpectedly slow or poor progress of labour and, eventually, obstetric interventions, then it will most likely be negatively described [15]. In a case-referent study of prolonged labour Nystedt and co-workers (2005) found that one-third of women with slow progress had a negative birth experience, and two-thirds stated that the experience had marked them for life [28]. A common finding reported is that women with more obstetric interventions and a negative birth experience express greater dissatisfaction both in the short and in the long term [24, 29]. For women in the aftermath of a prolonged labour it is of great importance that treatment and care are based on correct classifications and diagnoses of prolonged labour. In clinical practice when diverse opinions exist among midwives and obstetricians about the definition of prolonged labour, and guidelines differ between hospitals, then the clinical decisions about interventions may differ. The consequences for every woman exposed to prolonged labour is that the intrapartum care provided by midwives and obstetricians could
vary. The disadvantage of such varied treatment and care is that certain treatments may influence women’s birth experiences and birth outcomes negatively. In this study, we aimed to explore the prevalence of prolonged labour and to compare birth outcome and women’s experiences of prolonged and normal labour.

Methods

Design

This study is part of a prospective longitudinal survey conducted at three hospitals in the northern part of Sweden during one year 2007-2008. Women were recruited in mid-pregnancy and followed up with two months after birth.

Recruitment

Women who were listed for a routine ultrasound were, two weeks prior to the ultrasound examination, sent a letter of invitation with information about the study. Ultrasound examinations were routinely performed during gestational weeks 17 to 19 and attended by the majority of women. Swedish-speaking women with a normal ultrasound examination were approached by the midwife in charge of the examination, who asked the women if they were willing to participate in the study. A consent form was signed and women who agreed to participate were given the first questionnaire at the ultrasound ward, where they were asked to complete the form and leave it in a sealed envelope. They also had the opportunity to take the questionnaires home and return them in a stamped envelope. Two reminder letters were sent to non-responders after two and four weeks respectively. Two months after birth a new questionnaire was sent to the women’s home address, with two similar reminders for non-responders.

For the purpose of this study, women with induction of labour and planned Caesarean section were excluded.
Data collection
Data was collected by two questionnaires and from electronic birth records. From the first questionnaire, background data (age, civil status, education, country of birth, smoking preference, and parity) was collected. Two months after birth, women were asked to provide details about self-rated length of labour and birth (in hours), their perceived length of labour (0-7, prolonged to rapid), pain intensity (0-7, no pain to worst pain imaginable) and pain experience (0-7, very negative to very positive). Mode of birth, labour augmentation, use of epidural, self-reported complications during birth, baby’s weight and transfer to NICU were also assessed, together with a question about the overall experience of birth. The question about the birth experience was responded to on a 5-point Likert scale ranging from ‘Very positive’ to ‘Very negative’. In the analysis, the variable was dichotomised into ‘Positive’ (Very positive, Positive) and ‘Less than positive’ (Mixed feelings, Negative and Very negative). The reason for this dichotomization was based on the skewed nature of the variable. The majority of these questions were used previously in a national Swedish survey (KUB) [30].

Prolonged labour was defined in two ways. First, all birth records were scrutinized manually for medical diagnosis according to the international classification for disease (ICD10) [18], which defines prolonged active phase of labour as a progress of slower than one cm per hour with the following codes (O62, O62.0, O62.1), as irregular or poor uterine contractions with the following codes (O62.4, O62.8, O62.9), as a labour with regular uterine contractions for more than 12 hours (O63, O63.0 O63.9), and/or as a cervical dilation of ten cm for more than three hours (O63.1). Secondly, all partograms were checked for the progress of labour and birth when the woman was in active labour. If the action line exceeded two hours according to the local hospital guidelines the birth was coded as prolonged.

Ethics approval was obtained from the regional ethic committee in northern Sweden and from the Mid Sweden University.
Analysis

Statistical analyses were conducted using the Statistical Package for Social Sciences, SPSS, version 20.0 (SPSS, Inc., Chicago, USA). Descriptive and inferential statistics were used in the analysis. Mean values and standard deviations were calculated for the continuous variables and comparisons were made between women who experienced prolonged labour and those who did not, using independent t-tests. Crude and adjusted odds ratios with a 95% confidence interval were calculated between the two groups for categorical variables [31].

Results

In total, 936 women responded to the questionnaire two months after birth. Birth records were missing in 13 cases, 28 women were delivered by planned Caesarean section and 66 women were induced, leaving 829 women in the study.

Of the 829 remaining women, 649 (Group A) were not diagnosed with prolonged labour, 113 (Group B) had an ICD diagnostic code of prolonged labour also confirmed in the partogram, and 67 (Group C) did not have an ICD code, but it was obvious in the inspection of the partogram that labour was prolonged. Figure 1 shows a map of the three groups and subsequent treatment. In group A, 27% received augmentation with synthetic oxytocin despite the lack of prolonged labour. In Group B, 7% did not receive treatment and a similar percentage (7.5%) was found in Group C. As the proportion of treatment for prolonged labour was similar in the two latter groups, these were combined in the following analyses. The prevalence of prolonged labour in this study was 21.7% for the whole sample. In primiparous women the prevalence was 35.6% and in multiparous women 10.2%.

Table 1 shows the background characteristics of the participating women. The majority were aged 25-35 years, living with their partner and born in Sweden. Rather few women used tobacco and the majority had some university education. The only difference between women with and without prolonged labour was parity, with more primiparas belonging in the prolonged labour group.
Length of labour and experiences of pain are shown in Table 2. Women with prolonged labour reported longer births (measured in hours), and they themselves also viewed the length as prolonged compared to women with normal labour. Labour pain was more intense and experienced more negatively among women with prolonged labour.

Table 3 shows labour outcome for the two groups of women. Prolonged labour was associated with more augmentation and epidurals, instrumental vaginal births and caesarean sections. In addition, self reported birth complications were higher in women with prolonged labour. A birth weight of 2500-3500 gram was associated with less prolonged labour when adjusted for parity, and there was no difference in transfer rates to neonatal intensive care.

In Table 4, women’s feelings and experiences during the birth are shown. Women with prolonged labour more often reported that they almost went into a panic during birth, that pain relief saved them, that the difficulties marked them for life, and that it was painful to give birth. In addition, they also strongly agreed with the statement that the worst thing was that they were not able to decide mode of birth and fear that the baby would be damaged during birth. In addition, they agreed that the birth experience made them not want any more children in the future. They less often agreed with the statement that it was exciting to give birth and a prolonged labour was significantly associated with a less positive birth experience. No differences were found in the statements that giving birth was a peak experience and that having children is the meaning of life. When adjusted for parity, the same variables remained statistically significant.

Discussion

The major findings of this study were that more than every fifth woman was diagnosed with prolonged labour, but all women were not correctly diagnosed according to ICD 10 [18]. Women with prolonged labour consisted of more primiparae and had a worse labour outcome and less positive experiences of birth.
In this study more than 20% of women were defined as experiencing prolonged labour based on either the partogram or the ICD10 classification. When divided by parity, 35.6% of primiparous women and 10.2% of multiparaous women had a prolonged labour, which is fairly similar to findings from a Danish prospective study of nulliparas, where 37% were diagnosed with prolonged labour [14] and from a Swedish study by Selin (2009) which found a prevalence of 33% in first-time mothers and 7% of women with previous children [32]. In this study, based on data from hospital births, the condition of prolonged labour, although not well diagnosed, is seldom life-threatening. However, it must be noted that worldwide obstructed labour is the cause for maternal mortality in 8% of cases [33].

We also found that 27% of women belonging to the group ‘normal birth’ were exposed to oxytocin augmentation, which should be the treatment for prolonged labour [32, 34] The finding of this high use could be viewed as a misuse of augmentation, a condition previously described by Bernitz et al. (2013), where 42% of women exposed to oxytocin augmentation did not fulfill the criteria for prolonged labour [35]. Another explanation could be that women used an epidural to a high extent. A post hoc analysis, however, showed that in the ‘normal group’ 11.7% used an epidural without receiving any augmentation, 16.9% received augmentation without an epidural, and 10% in this group both had an epidural and received augmentation. These findings suggest that women with normal births are exposed to unnecessary interventions and treatments. The paradox that healthy women received treatment for prolonged labour and women with prolonged labour sometimes (14.5%) were not treated could be viewed as maltreatment (affecting 40%) that should be noticed and dealt with regarding identification, classification and treatment of prolonged labour. Maltreatment in obstetric care is sparsely studied, but it should be noted that Jonsson (2007) in her study found remarkable mistakes according misuse of oxytocin during labour [36]. Most labour wards have written guidelines about oxytocin augmentation [37], but fewer guidelines for identifying prolonged labour.

Labour outcome in this study was similar to other studies regarding longer labours [35], more instrumental vaginal births and emergency Caesarean sections [14, 20, 38]. The birth weight, however, showed only a moderate association with prolonged labour, which is contrary to previous findings from Sweden [39, 40]. When dealing with issues related to
obstetric care, e.g. prolonged labour, which is a common obstetric problem, women’s feelings and experiences must be taken into account, as it was shown that these more ‘soft variables’ had a strong impact on women’s experiences as well as their future reproduction. Women with prolonged labour were, in addition, more likely to have a negative birth experience. It is known that a negative birth experience is associated with a delay in subsequent births [41], fear of birth [42], a preference for Caesarean section in future births (Sandstrom et al. 2012) and maternal ill-health [43].

The only background variable that differed between women diagnosed with prolonged labour or not was parity, with more primiparas subjected to prolonged labour, a finding similar to other studies [32, 44]. Other well-known characteristics of women with prolonged labour, such as high body mass index [45] or high maternal age [46], were not confirmed in the present study.

This study is compromised by its observational design, the regional context and the exclusion of non-Swedish speaking women, which makes it difficult to generalize the findings to all women. The strength of the study is the fairly large sample and the ability to combine results from birth records and questionnaires, which makes it possible to present obstetric outcome together with women’s experiences. Using the social security numbers given to all Swedish citizens at birth affords the opportunity to obtain obstetric data from medical records. The identification and classification of prolonged labour was based on birth records and checked manually.

Another strength is that the sample characteristics did not deviate from the pregnant population in the region.

**Conclusion**

Prolonged labour is a complicated condition negatively affecting obstetric outcome and women’s experiences. There is a need for consensus in classification and treatment of prolonged labour. Careful management of interventions is crucial in order to keep normal
births normal and avoid mistreatment. Increased clinical skill in identification and classification of prolonged labour is important in order to improve care for all women regardless of whether they experience prolonged labour or not.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions
AN, IH designed the study and undertook data collection. AN participated in the study design, performed data edits and statistical analyses, wrote the draft, and reviewed and finalized the manuscript. IH participated in the study design, performed data edits, statistical analyses and edited and reviewed the final manuscript. All authors read and approved the final manuscript.

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References
Legend

Figure 1. Flowchart of selection procedure
Total number of participants
936

Records not found =13
Induction= 66
Planned caesarean section=28

Birth records examined
829

Group A
No Prolonged labour due to partogram or ICD-code

Received oxytocin 177 (27.2%)
Did not receive oxytocin 472 (72.7%)

Group B
Prolonged labour due to partogram and ICD-code

Received oxytocin 105 (92.9%)
Did not receive oxytocin 8 (7.1%)

Group C
Prolonged labour due to partogram but no ICD-code

Received oxytocin 62 (92.5%)
Did not receive oxytocin 5 (7.5%)
Additional files provided with this submission:

Additional file 1: 130923 Table 1-4 .docx, 34K
http://www.biomedcentral.com/imedia/1562660182109813/supp1.docx