PERINATAL ACTIVITIES AND SYMPTOMS
FREQUENCY AND SEVERITY

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ABSTRACT

Objective:
The first aim is to present descriptive non-medical data on perinatal variables. The second is to investigate the frequency and severity of symptoms during and after pregnancy.

Methods:
This retrospective cohort study used a self-designed questionnaire consisting of 52 items among 489 puerperae.

Main outcome measures:
Perinatal data and symptoms during pregnancy at 6 months postpartum.

Results:
In preparation for their pregnancy, 52% were referred to a physiotherapist. Before pregnancy, 18% smoked, 61% of whom quit smoking during pregnancy. In relation to the place of birth, 88% stayed 5 to 7 days in hospital. During the first stage of labour, 59% used tools like bath or ball. The supine position was the most popular posture during labour. The prevalence of breast-feeding was 80%. Urgency, mood disorders and backache were the most frequent symptoms during pregnancy. Painful breasts, mood disorders, backache and urinary incontinence were the most frequent symptoms after pregnancy. Pelvic girdle pain was the most distressing symptom before and after birth. Urinary incontinence, backache and mood disorders still showed high frequencies at 4 to 6 months postpartum (13%, 22% and 19% respectively).

Conclusion:
This study draws attention to non-medical perinatal data like pregnancy preparation, smoking habits, place of birth, time spent in the maternity hospital, posture and tools used during labour and breast-feeding. Urgency, mood disorders and backache were the most frequent symptoms during pregnancy. Painful breasts, mood disorders and backache were the most frequent symptoms after pregnancy.

Key words: symptoms, postpartum, pregnancy
Introduction

In the last 3 decades, there has been an increase in the development of antenatal, obstetrical and postnatal care. The prevalence of descriptive non-medical data like pregnancy preparation, smoking habits, place of birth, time spent in maternity hospital, tools like bath and ball used during labour, posture during labour and breast-feeding has been reported minimally. Information about these data reflect important changes in a society which values health and well-being. Prevalence of pregnancy preparation by physiotherapists or midwives has been rarely described although a lot of studies reflect on the importance of preparation (Chalmers et al. 2008; Whitfield et al. 2007).

Many studies have presented the disadvantages of smoking during pregnancy. Pregnancy seems to represent a period when smoking cessation activities are effective, and physicians, midwives and physiotherapists are encouraged to advise pregnant women, leading to a reduction in the number of pregnant women smoking (Colman & Joyce, 2003; Odilind et al. 2003; Kvalvik et al. 2008). Regarding the place of birth, Wiegars et al reported a home birth rate of approximately 30% in the Netherlands (Wiegars et al. 1996).

A lot of help is available to decrease the pain and discomfort women experience during the first stage of labour. The most described tool was the use of a bath to reduce maternal pain but no prevalence rates have been described (Cluett, Nikodem & McCandish, 2004). Odilind et al reported that the time spent in maternity wards at the hospital decreased from three days in 1973 to two days in 2000 (Odilind et al. 2004). In a review concerning the body position during the first and second stage of labour, Gupta et al concluded that the upright or lateral position in the second stage of labour reduced the duration of labour but increased the risk of blood loss. Women adopting the upright posture for delivery experienced less pain, perineal trauma and fewer episiotomies than those who delivered in the supine position (Gupta & Nikodem, 2000; Gupta & Hofmeyer, 2004). Concerning breastfeeding, prevalence rates were reported around 70% in the early postpartum and 21% to 33% six months after birth (Jacknowitz et al. 2007; Roske et al. 2008).

Prevalence and severity of symptoms during pregnancy and postpartum

Normal pregnancy is accompanied by a range of physical and psychological symptoms. There is an apparent lack of information on the wide range of symptoms during pregnancy and also postpartum. Two studies reported on the prevalence of a wide range of health problems during pregnancy (Koh et al. 1973; Zib et al. 1999). Three articles were found on the prevalence of symptoms after childbirth (Brown & Lumley, 1998; Zib et al. 1999; Thompson et al. 2002). None of them reported the severity of symptoms. However, several studies exist on the prevalence of one or two conditions during pregnancy and the puerperium.

The aim of this study was to present descriptive non-medical data on maternal, obstetric and postnatal variables or activities. The second aim was to investigate the prevalence and severity of symptoms of a large number of women during pregnancy and the puerperium.

Participants and Methods

Four hundred and eighty-nine Belgian women were included in the study and completed a self-administered questionnaire on descriptive perinatal data. All the women were contacted by physiotherapy students of the University of Leuven who were instructed to contact one or two women in their neighbourhood. Inclusion criteria for all women were those giving birth to their last child between 6 and 12 months before the time of inclusion into the study and those speaking the Dutch language.
During a home visit, the student explained each question in a 52-item questionnaire to the woman. After the explanation, each woman filled in the questionnaire independently. All women gave their informed consent and agreed to re-answer the questions again on the telephone to ensure the reliability of the questionnaire. Twenty women were telephoned one month later and were asked the same questions again by one interviewer (KG). The 52 items of the questionnaire were related to health outcomes of antenatal, obstetrical and postnatal data. To check a fair representation of the study group for all women in Flanders, women in the study group were asked 6 questions about parity, epidural analgesia, age at the first birth, the type of birth, foetal position and the use of episiotomies. Each year, the Study Centre for Perinatal Epidemiology collects these data from all maternity hospitals in the Flemish region and Brussels-capital region of Belgium (16).

In the next 9 questions, more specific information was collected about pregnancy preparation, smoking habits, place of birth, tools used during labour, posture during the two stages of labour, breast-feeding and its duration.

In the last part, 37 questions were asked about frequency and severity of symptoms for each trimester of pregnancy and during the postpartum period 6 months after delivery. Severity of symptoms was scored on a visual analogue scale (VAS) ranging 0 to 10 (0 = no symptom; 10 = severe symptoms). Symptoms were morning-sickness, leg cramps, oedema, heavy legs, urgency, stress-incontinence, urge-incontinence, constipation, diarrhoea, incontinence of flatus, faecal incontinence (fluid), faecal incontinence (solid), skin rashes, mood disorders, fear during pregnancy, backache, pelvic girdle pain, painful breasts, postpartum, painful contractions postpartum, postnatal depression and "other symptoms".

Statistical Analyses
To establish the reliability of scoring the questionnaire by the students, kappa, weighted kappa and ICC for respectively nominal, ordinal and ratio/interval variables were used. Weighted kappa and ICC values higher than 0.80 were termed very high and values between 0.80 and 0.50 were termed moderate (17-18). Descriptive statistics were used to document obstetric characteristics and symptoms. All statistical procedures were performed with the SAS system.

Ethics
The procedures of the study received ethical approval from the Commission Medical Ethics of the University Hospitals KULeuven responsible for human/animal experimentation.
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Results
The mean age of the 489 participants was 30.5 ± 3.8 years.

Reliability of the Perinatal Data
Most of the obstetrical data and symptoms showed reliability values between 0.80 and 1.0. Smoking habits, place of birth, type of birth, foetal position, posture at second stage of labour, use of episiotomy and breast-feeding showed perfect reliability (kappa = 1.0). The same reliability rate was seen for the age at the first birth and parity (ICC = 1.0). Pregnancy preparation, posture and use of tools during the first stage of labour and the use of instruments at delivery had kappa values higher than 0.80. The same reliability was seen for duration of breast-feeding (ICC > 0.80). However, some symptoms like pelvic instability at 1st trimester, urge and morning-sickness at second
trimester, leg cramps and constipation at third trimester, urge and mood disorders at first month postpartum, urinary incontinence and pelvic instability at two to three months postpartum, backache at four to six month postpartum showed ICC values lower than 0.80 but higher than 0.50. Faecal incontinence (solid) at first trimester, faecal incontinence (fluid) at second trimester, painful contractions and postnatal depression at two to three months postpartum and constipation at four to six months postpartum had low ICC but high percentage agreement.

Prevalence of Common Perinatal Data
The prevalence rates of common perinatal data in this study were compared with prevalence rates reported by the Study Centre for Perinatal Epidemiology in Flanders 2006(SPE) (Table1).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Present Study</th>
<th>SPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Primiparas</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Epidural analgesia</td>
<td>61%</td>
<td>67%</td>
</tr>
<tr>
<td>The age at first birth</td>
<td>27.7 years</td>
<td>28 years</td>
</tr>
<tr>
<td>Type of birth:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>71%</td>
<td>70%</td>
</tr>
<tr>
<td>Caesarian section</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>Vacuum delivery</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Forceps</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Foetal Positions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head Position</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Breech positioning</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Episiotomy</td>
<td>55%</td>
<td>59%</td>
</tr>
</tbody>
</table>

Prevalence of more specific non-medical perinatal data
Table 2 gives specific antenatal, obstetrical and neonatal characteristics. Two hundred and fifty-five women (52.1%) consulted a physiotherapist to guide them during their pregnancy. Only 35 women (7.2%) chose to get information from a midwife and 43 (8.8%) chose both options. Eighty-seven women (17.8%) smoked before their pregnancy of whom 53 (60.9%) quit smoking once they were pregnant. Four hundred and thirty-three women (88.5%) had a normal hospital stay (five to seven days) and 38 women (7.8%) had chosen a short stay in hospital (24 hours). Two hundred women (40.9%) did not use any tool during the first stage of labour. The prevalence of women using a ball or bath was 16.2% and 8.8% respectively. Supine position was the most used maternal position during the first stage of labour (49.1%) as well as during the second stage of labour (84.4%). Three hundred and ninety-four women (80.6%) breast-fed for an average duration of 122.9 ± 74.9 days.

Prevalence and severity of symptoms during pregnancy and postpartum
The percentages and the severity of symptoms during the prenatal and postpartum period are shown in table 3 and 4. In the first trimester, morning sickness was the most frequent symptom (61.3%), followed by mood disorders (49.9) and urgency (36.4). Urgency (53%), mood disorders (46.2) and backache (44.2) became the most
frequent symptoms in the second trimester. In the third trimester urgency, backache and edema had a prevalence rate of respectively 76.1%, 69.1 and 55%. In addition to the specific symptoms mentioned in the questionnaire, 10.4% of the women reported “other symptoms” in the first trimester, 15.7% in the second and 19.6% in the third trimester. These problems included: tiredness, reflux and painful breasts.

On a scale from 0 to 10, morning sickness was the most inconvenient symptom in the first trimester with a score of 5.6. Although not frequent, pelvic girdle pain was the most serious symptom in the second and third trimester (5.4 and 6.0). Urgency was a frequent and serious complaint during pregnancy with a score of 5.8 just before birth. In addition to the specific symptoms mentioned in the questionnaire, the highest score on the visual analogue scale was given for tiredness in each trimester in the category “other symptoms”.

Whereas painful breasts were most frequent in the first month postpartum (59.9%), with a relatively high prevalence rate until four to six months postpartum (14.9%). Backache was the most frequent symptom at four to six months postpartum, with a percentage of 21.9%. Urinary incontinence was always classified in the top five most frequent symptoms postpartum. On a scale from 0 to 10, pelvic girdle pain remained high during the postpartum period as compared to the prenatal period. Postnatal depression was the most serious complaint 4 to 6 months postpartum with a score of 5.0. Nine percent reported “other symptoms” in the first month postpartum, 7.8% in the second to third month and 6.3% in the fourth to sixth month postpartum. These problems included: tiredness, discomfort from the episiotomy and hair loss.

**Evolution of symptoms before and after pregnancy**

The evolution of symptoms before and after birth is shown in Figure 1. Only symptoms, mentioned in the questionnaire before and after birth, were considered. The percentages can be compared over time to understand symptom changes. The majority of symptoms increased during pregnancy and reached their highest prevalence rate at the third trimester. The highest occurrence of prevalence during pregnancy was seen with urgency. Its prevalence was almost doubled in the third trimester compared to the first trimester.

Moreover most of the symptoms showed a decline in the postpartum period. Diarrhoea and faecal incontinence did not show a change over the time period. Despite an improvement, backache, mood disorders and urinary incontinence still showed a high prevalence rate at 4 to 6 months postpartum.

**Discussion**

All of the perinatal data and most of the symptoms showed high reliable values. No differences were found between the characteristics of the women of the present study and the young mothers in Flanders.

**Prevalence of specific non-medical perinatal data**

Two hundred and fifty-five (52%) women consulted a physiotherapist when preparing for their pregnancy in this study while only 7% contacted a midwife, although 9% contacted both. This was a high percentage for those having physiotherapy although no comparison could be made with the literature.

Only 17.8% of all women in this study smoked before pregnancy. Of these 60.9% quit smoking during pregnancy. Colman et al reported a higher
percentage of smokers (23%) and a lower percentage of 43% women who quit smoking during pregnancy (3). Odlind et al presented descriptive data from the Swedish Medical Birth Register as they developed between 1973 and 2000 and reported that smoking habits decreased from 30% to 12% (4). In Norway, daily smoking prevalence of pregnant women was reduced from 17% in 1999-2001 to 13% in 2002-2004 (5). A number of studies have presented the disadvantages of smoking during pregnancy. Regarding the place of birth, the present study found a home birth rate of 3.5%. This is low and differs from Wiegers et al who reported a home birth rate of approximately 30% in the Netherlands (6). In recent times, most Belgian women prefer to deliver their babies in the hospital where there is better health care.

The improved medical service has resulted in a shorter duration spent in the hospital leading to a decrease in home delivery. Although in the present study, five to seven days was longer than in Sweden where women stayed in hospital an average of two days (4). A lot of aids are available to help to decrease the pain and discomfort that women experience during the first stage of labour (7).

A gym ball and bath have become popular tools over the years. Immersion in warm water may help with relaxation, pain relief and increasing elasticity of the birth canal (7). In the present study, 41% did not use any of these tools, or other rather simple tools, like massage or breathing exercises which were used more frequently. In the literature the prevalence rates of tools used during the first stage of labour were not found.

An important finding in this study was the high percentage of women using the supine position during the first and second stage of labour. Similar to this finding, Gupta et al concluded that most of the women in Western society deliver in a supine, semi-recumbent or lithotomy position and have difficulties in retaining the ‘squat’ position for prolonged periods of time (8). They compared different positions during the second stage of labour and the supine position was not recommended in most cases (9).

The percentage of women breast-feeding percentage in the postpartum period was found to be 80.6%, which is high with a mean duration of approximately four months. The need to return to work, doubt about the sufficiency of breast-milk, mothers’ perception of hunger and crying with colic were the main reasons for cessation of breast-feeding. Information regarding non-medical obstetrical data from the current study is of clinical importance for practitioners, physiotherapists and midwives providing counselling and care. It is also helpful for future parents.

**Prevalence and severity of symptoms during pregnancy and postpartum**

The results of this study found that morning sickness and urgency were the most frequent symptoms during the first and second trimester. The prevalence rate of morning sickness in the first trimester was 61.3%, and urgency had a prevalence of 53% in the second trimester. This finding is in agreement with prevalence rates found in previous studies (12-13). Both morning sickness and urgency were in the top five of most serious problems in the first and second trimester. Women from the current sample considered them to be a major discomfort.

Despite its relative lower frequency in the present study, pelvic girdle pain has been found a serious
problem in the second and third trimester as well as in the postpartum period. Indeed, such a disability interfered with running the household, nurturing the baby, performing a job and participating in sports. Prevalence rates of pelvic girdle pain vary widely. Robinson et al found a prevalence of 46% in pregnancy (19). Van De Pol et al found a lower prevalence (7%) but their percentages increased after birth with almost half the women suffering from pelvic girdle pain 3 months after delivery (20).

In general, painful breasts, urinary incontinence, backache and mood disorders were the most frequent symptoms in the postpartum. The high percentage of painful breasts, found in this study, can be associated with the high percentage of those breast-feeding.

Of the current sample, 40% reported urinary incontinence in the last trimester of pregnancy. In contrast, Chiarelli et al found a prevalence rate of 64% (21). Although, they also found that urinary incontinence was most common during the third trimester which was similar with the current study. Urinary incontinence was a common problem after pregnancy, affecting just over 18% of the women sampled at three months postpartum. In a review, Morkved has reported prevalence rates of urinary incontinence between 6% and 67% during pregnancy and between 3 and 38% postpartum. The variation may be explained by the different populations investigated, the different definitions of incontinence and the registration of incontinence at different stages of pregnancy or postpartum. (22).

An important finding in this study was that backache started early in pregnancy (22.5% in the first trimester), became more frequent as pregnancy progressed and was still a relative frequent symptom (26.4%) in the third month postpartum. The same trend during pregnancy was reported by Kristiansson et al but they found a lower prevalence rate (9.4%) at three months after delivery (23). Østgaard et al reported a prevalence of 25% throughout pregnancy (24). However, low back pain exists in the non-pregnant population. Psychological symptoms like mood disorders seemed to be frequently present in the pre- and postnatal period (25). Wu et al and Josefsson et al reported a prevalence rate of about 16% of psychological symptoms in the third trimester of pregnancy (26-27). This was much lower compared to the present study (54%) because the previous studies considered mood disorders to be depressive symptoms. Postnatal depression was experienced in 13% the first month postpartum, 10% the second and third month and 8% four to six months after birth in the present study. Josefsson et al reported a prevalence rate of 13% from six weeks to six months after birth. It may have a deleterious effect on woman’s social and personal adjustments, the marital relationship and the mother-infant interaction.

Symptoms like leg cramps, edema and heavy legs increased from the first to the third trimester. In the present study, half of the pregnant women had these complaints in the last trimester. In the study of Davison, a higher percentages of women had leg edema (80%) in pregnancy (28).

**Evolution of symptoms before and after birth**

This is the first study to collect a wide range of symptoms on three occasions before and three occasions after pregnancy. The study enabled an identification of the symptoms which increased or improved over time. It was found that most of the symptoms occurred with greatest frequency in the third trimester with the exception of backache. Zib et al also found that the highest prevalence for most
symptoms was mentioned in the third trimester (12). The frequency of symptoms decreased markedly after delivery. Overall, in the current study the decline in specific symptoms postpartum was similar to those reported by Thompson et al (14). Although backache, urinary incontinence and mood disorders declined significantly over the first postpartum months, their prevalence still remained high at four to six months postpartum. In addition, realistic expectations can be given to women about the expected time taken to recover from childbirth, and the physical as well as emotional demands of early motherhood.

This study has some limitations. After analyses, it seemed that not all symptoms were reported in the questionnaire. Tiredness or fatigue was not included in the list of symptoms although less than 10% of women volunteered such information under the category of “other symptoms”. In the other studies, tiredness was always in the top five pre- and postnatal symptoms (12-14). Also, other common medical conditions like headache, varicose veins, dyspnoea and heartburn were not included. A second limitation in this study was that there was no control group even though it would be better to compare the prevalence of symptoms with an age matched non-pregnant group.

Conclusion
In conclusion, the present study draws attention to more widespread but under-recognised non-medical perinatal data like pregnancy preparation, smoking habits, place of birth, time spent on the maternity ward, posture and tools used during labour and breast-feeding. Urgency, mood disorders and backache were the most frequent symptoms during pregnancy. Painful breasts, mood disorders and backache were the most frequent symptoms after pregnancy.

References


