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ORIGINAL RESEARCH – QUANTITATIVE

Prenatal attachment and its association with foetal movement during pregnancy – A population based survey

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ABSTRACT

Objective: To investigate the association between the magnitude of foetal movements and level of prenatal attachment within a 24 h period among women in the third trimester of pregnancy.

Design: a prospective population-based survey.

Setting: A county in central Sweden.

Participants: Low risk pregnant women from 34 to 42 weeks gestation, N = 456, 299 multiparous and 157 primiparous women.

Measurements: The revised version of the Prenatal Attachment Inventory (PAI-R) and assessment of the perception of foetal movements per 24 h in the current gestational week.

Findings: A total of 81 per cent of the eligible women completed the questionnaire. The overall sample of women found that the majority (96%) felt their baby move mostly in the evening. More than half of the respondents (55%) stated that they perceived frequent foetal movement on two occasions during a 24 h period, while almost a fifth (18%) never or only once reported frequent foetal movement in a 24 h period. Just over a quarter (26%) of respondents perceived frequent movement at least three times during a 24 h period. Perceiving frequent foetal movements on three or more occasions during a 24 h period, was associated with higher scores of prenatal attachment in all the three subscales. Key conclusion: Perceiving frequent foetal movements at least during three occasions per 24 h periods in late pregnancy was associated with prenatal attachment. Implications for practice: encouraging women to focus on foetal movements may positively affect prenatal attachment, especially among multiparous women >35 years.

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Summary of Relevance

Problem

Studies focusing on the relationship between foetal movements and prenatal attachment have shown contradictory results.

What is Already Known?

Prenatal attachment can be influenced by a variety of factors. In order to measure the unique affectionate relationship that develops between a woman and her unborn baby, several instruments have been developed.

What this Paper Adds?

The magnitude of foetal movements was strongly associated with prenatal attachment. Perceiving frequent foetal movements on several occasions within a 24 h period in late pregnancy was associated with higher scores of prenatal attachment.

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1. Introduction

A pregnant woman's relationship with her baby and the nature of prenatal attachment can be influenced by a variety of factors, and psychological theories in which it is claimed the process of adjustment to motherhood begins during pregnancy.¹ Muller (1990) defined prenatal attachment as "the unique, affectionate relationship that develops between a woman and her fetus".² Maternal foetal attachment is a term used to describe the relationship between a pregnant women and her unborn baby. Maternal foetal attachment is manifested in behaviors, that demonstrate care and commitment to the unborn baby and include nurturance, comforting and physical preparation.³ These maternal behaviors have been identified to indicate maternal foetal interaction and the woman's ability to communicate with the baby that is, familiarity and awareness of the characteristics of the unborn baby's movements as well as sleeps and wake cycles.⁴ Further, maternal awareness of the baby is desirable and seems to positively influence maternal-foetal interaction.⁵

In order to measure the unique affectionate relationship that develops between a woman and her unborn baby, several instruments have been developed.⁶ One such instrument is the *Prenatal Attachment Inventory* (PAI) developed by Muller in 1993. The instrument is based on principles of attachment theory, and was designed to measure, from the woman's perspective, the affectionate relationship that develops between a woman and her unborn baby. Originally the instrument consisted of 21 items.² The instrument has been further developed by Pallant et al.⁷ and the revised-PAI (PAI-R) describes an alternative three-factor structure. The terms "Anticipation" (fantasy and imagination regarding the baby), "Differentiation" (a mother's sense of differentiation from the unborn baby) and "Interaction" (a mother's sense of interaction with the unborn baby) refers to the three subscales. Six of the items in the 18-item scale are clearly connected to thoughts, feelings and situations women may experience which are connected to foetal movements during pregnancy.⁷

Studies focusing on the relationship between foetal movements and prenatal attachment have shown contradictory results. According to data reported by 213 women, a woman's awareness of foetal movements hastened the process of developing a woman's psychological attachment to the baby.⁸ However in a multicenter, randomised trial from 2011, observations of third trimester foetal movement counting did not stimulate prenatal attachment.⁹ There is limited knowledge of the interaction between a woman's perception of foetal movements and prenatal attachment. The aim of this study was to investigate women's perception of the magnitude of foetal movements during day and night and level of prenatal attachment in late pregnancy.

2. Participants, ethics and methods

A prospective population-based survey with pregnant women living in a county in central Sweden was conducted.

2.1. Recruitment and participants

Inclusion criteria were women in gestational week 34–42, mastering the Swedish language, a singleton pregnancy, and considered to be following the standard visiting schedule for antenatal care. Antenatal care is provided by midwives in Sweden and the recommended number of visits is six to eight during an uncomplicated pregnancy.¹⁰

Midwives from all 21 antenatal clinics in the county invited eligible women and provided written information to all women who met the inclusion criteria during the study period March 1, 2011 until October 31, 2011.

Women who consented to participate received a reply form, a questionnaire, and two pre-paid return envelopes. The reply forms with their personal information, and the completed questionnaires were returned to the research group in separate envelopes. The questionnaire was completed anonymously. The study was approved by the Regional Research Ethic Review Board in Uppsala, Sweden. (D. No. 2013/338).

2.2. Data collection

Data were collected using a study-specific questionnaire based on results from a previous study.¹¹ Background data (age, parity and gestational week) were collected. One question about the magnitude of foetal movements was worded: "Which of the following statements refers to your baby in the current gestational week"? The following statements were provided as options: "My baby is moving a lot in the morning", "My baby is moving a lot during the daytime", "My baby is moving a lot in the evening", and "My baby is moving a lot in the night". The following statements were provided as options: 'Yes', 'No' or 'Don't know' for each question. A positive answer was allocated a score of one, a negative answer was given the score of zero.

Each of the statements about the magnitude of foetal movements was thereafter summed and divided into three groups; "few occasions of foetal movements" (0–1 on the summed score), "average occasions of foetal movements" (2 on the summed score) and "several occasions of foetal movements" (3–4 on the summed score).

The PAI-R scale was used to assess prenatal attachment (14). The three subscales; *Anticipation*, *Differentiation* and *Interaction* consist of eighteen Likert-type items. A four point response scale was used as a guide for the identification of a woman's prenatal attachment. Examples of items included in the subscales are presented in Table 1. In the present study the Cronbach alpha values were all above 0.70 for each subscale, which is considered acceptable.¹²

2.3. Data analysis

Descriptive statistics were used to present background data. Independent-samples t-tests and a one-way between-group ANOVA were used to compare background characteristics and the magnitude of foetal movements with the PAI-R subscales. Finally, to explore the impact of parity and the magnitude of foetal movements on the PAI-R subscales a two-way between groups ANOVA was performed. All analyses were performed using the Statistical Software package for the Social Sciences (SPSS) version IBM 22.0.

Table 1
Examples of items in the subscales.

| | Item no in PAI-R |
|---|---------------------|
| Anticipation | |
| I wonder what the baby looks like now | 1 |
| I imagine what part of the bay I'm touching | 9 |
| I get very excited when I think about the baby | 18 |
| Differentiation | |
| I know when the baby is asleep | 10 |
| I can make my baby move | 11 |
| I know the baby hears me | 17 |
| Interaction | |
| I enjoy feeling the baby move | 3 |
| I let other people put their hands on my tummy to feel the baby move | 5 |
| I tell others what the baby does inside me | 8 |

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