



# Exploring the effect of hospital admission on contraction patterns and labour outcomes using women's perceptions of events

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## Abstract

**Objective:** this study investigated the phenomenon of spontaneous labour contractions becoming less frequent on admission to hospital, which is observed anecdotally but is not evident in the literature. Anxiety in response to hospitalisation has been proposed to be responsible by initiating the biochemical response termed 'fight or flight'.

**Design:** A non-experimental prospective design and a combination of quantitative and qualitative analysis. Data were collected using self-report labour diaries, postnatal questionnaires and hospital records of labour. Univariate analysis using *t*-test and  $\chi^2$ -test was performed to examine relationships between variables, and content analysis was undertaken on qualitative data regarding reactions to hospitalisation.

**Setting:** hospital and community maternity services provided by a National Health Service hospital in Southern England in 1997.

**Participants:** about 87 women at least 37-week gestation, uncomplicated singleton pregnancy anticipating spontaneous labour with a live fetus.

**Measurements and findings:** labour diaries were analysed from 26 births. In three home births and 11 hospital births, labour contractions became more frequent, but in the remaining 12 labours, contractions decreased after admission to hospital. Women whose contractions slowed were not more anxious, but they rarely had cervical dilatation over 5 cm and usually assumed a recumbent position in hospital. Artificial rupture of membranes was performed more frequently in these women, they used more pain relief and had a higher incidence of complicated childbirth; however, these differences were not statistically significant.

**Key conclusions:** labour contractions can increase or decrease in frequency following admission to hospital, and the change of frequency may be associated with stage of cervical dilatation and posture rather than anxiety.

**Implications for practice:** routine intervention to speed up labour on the basis of admission observations is called into question, and women should be made aware that slowing of contractions can occur as a normal part of changing the labour environment. Further research is needed to determine the physiological parameters of spontaneous labour and the role of posture in labour progress is needed.

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## Introduction

Does moving from home to hospital during labour affect the course of labour? In many Western countries, the majority of babies are born in hospital but spontaneous labour usually begins at home, making an uncomfortable journey to hospital inevitable. Sometimes women report that contractions become less frequent or stop temporarily when they arrive, and midwives acknowledge that this is a common occurrence. However, this phenomenon is not generally recognised as a feature of normal labour and has not been described in any human research.

If a delaying effect is occurring in a proportion of women in labour and is unrecognized, what are the possible consequences? The professional's assessment may be that labour is not as advanced as the woman believes. Women are sometimes sent home if not demonstrating established labour patterns, or a variety of obstetric interventions may be used in hospitals to speed up labour; these carry risks for mother and baby. Women are increasingly discontent with routine medical interventions employed in hospitals, and the accuracy of scientific principles upon which policies about care are based has been questioned (Tew, 1990; Gee and Sharif, 1994; Buckley, 2004).

The mode of initiation of labour is still not known and the precise mechanism of spontaneous labour in humans is not fully understood (Honnebier and Nathanielsz, 1994; Olah and Gee, 1996) although methods have been devised to control its progress. Friedman's curves of labour progress, depicting cervical dilatation and descent of the fetal presenting part, are still widely used as the basis for identifying abnormal labour progress (Friedman, 1954, 1973). However, the labours observed occurred in hospital and both augmenting and analgesic drugs were administered, so the representativeness of these patterns on spontaneous labour, which usually begins unobserved in the home, is questionable. Investigations into the process of spontaneous labour have been carried out in the last four decades in a disjointed manner, focusing on selected physical parts of labour and using many different designs. As such, correlation is virtually impossible, and little clinically useful evidence is available (Moore, 1995; Vanner and Gardosi, 1996). It remains widely accepted that the contractions of spontaneous labour develop with greater intensity, length and frequency, and that this pattern continues until birth in the absence of complications (Oats and Abraham, 2005).

The idea that the way women feel may influence labour has generally been rejected because child-

birth is marginalised to a purely mechanical process, and 'feelings cannot affect machines' (Goer, 1995, p. 358). Dick-Read (1968) first published 'Childbirth without fear' in 1942 outlining his theory that fear contributed to difficulties in labour. Gaskin (1977) referred to both negative and positive effects of emotions on the progress of natural childbirth. Incoordinate uterine contractions have been linked to fear and anxiety in small studies (Kapp et al., 1963; Haddad et al., 1985) and Caldeyro-Barcia and Poseiro reported observing that 'pain, anxiety and other emotions... may disturb uterine contractility' (1960, p. 401). The physiological effect of fear is explained theoretically by a rise in the level of catecholamines (adrenaline, noradrenaline and cortisol) inhibiting uterine muscle efficiency by initiating the 'fight or flight' reaction in response to stress (Lederman et al., 1978; Simkin, 1986; Odent, 1987; Jowitt, 1993; Buckley, 2004). Lederman et al. (1978, 1985) explored this theory by measuring the levels of catecholamines, uterine activity and anxiety concurrently at different stages during labour, and reported that higher anxiety levels were positively correlated with reduced uterine activity. However, the methodology was problematic and drugs may have influenced the results.

What could explain contractions decreasing in frequency on admission to hospital? Studies of responses to environmental disturbance in labouring animals have reported disruptive effects (Newton et al., 1968; Leng et al., 1988). Suppressing labour or delaying birth in response to a perceived threat is important for the survival of mother and baby (Naaktgeboren, 1989). If thought of in terms of instinctive behaviour, it makes sense for the pattern of human labour to alter similarly as a means of protection from unsafe birth. To explain the effects of psychological influences on the physiological process of parturition, Newton et al. hypothesised the existence of a 'fetus-ejection reflex' (1966, p. 375). The release of oxytocin could be inhibited or conditioned by cortical influences, directly affecting the process of birth in the same way as the milk-ejection reflex is inhibited by environmental disturbance.

One dilemma facing women is deciding when to make the journey to hospital. Labour sensations are often very unlike what they had expected (Simkin, 1991; Green, 1993; Halldorsdottir and Karlsdottir, 1996; Gross et al., 2003). Arriving too early might waste people's time with a 'false alarm', but if they leave too late, the birth might happen on the way. Hence, admission to hospital has the potential to arouse an array of emotional responses. Recent innovations to make birth suites appear less clinical

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