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Title page

Who decides the position for birth? A follow-up study of a randomized controlled trial

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ABSTRACT

Background

Research suggest physical benefits when women adopt an upright position of their choice at birth. Available care options during labour influence women's impressions of what intrapartum care is. This indicates that choice of birth positions may be determined more by midwives' than by women's preferences.

Question

The aims of this study were to investigate factors associated with adherence to allocated birth position in an RCT and also to investigate factors associated with decision-making for birth position.

Method

A questionnaire was mailed 1-4 years postpartum to women who had participated in an RCT of birth on a seat birth. Included in the present study were responses from 289 women allocated to the birth seat group; 177 adhered to allocation and 112 did not. Risk ratios with a 95% CI were calculated for comparison of variables.

Findings

Despite being randomised, women who gave birth on the seat were statistically significantly more likely to report that they participated in decision-making and that they took the opportunity to choose their preferred birth position. They also reported statistically significantly more often than those who did not adhere to randomisation, that they felt powerful, protected and self-confident.

Conclusions

Midwives should be conscious of the potential impact birth positions have on women's birth experiences and on maternal outcomes. Midwives should encourage women's autonomy by giving unbiased information about the birth seat. An upright birth position may lead to greater childbirth satisfaction. Women's experiences of and preferences for birth positions are consistent with current evidence for best practice.

Keywords.

Birth position, decision-making, second stage of labour, RCT, on-line questionnaire

Who decides the position for birth: a follow-up study of a randomised controlled trial

Introduction

A growing body of evidence reports physical benefits for birthing women and their babies when women adopt an upright position of their choice at birth.^{1,2} Upright positions are associated with shorter second stage of labour, less medical interventions, no increased risk for anal sphincter rupture, but increased blood loss, though without any clinical significance for healthy women.^{2,3} Despite the evidence, semi-recumbent or lithotomy positions at birth are currently still the norm in high-income countries and in some low-income countries.² A Swedish cohort study including 12 782 women, reported that 16.1 % gave birth in some upright position leaving 83.9 % in a non-upright position at birth.⁴

It has been suggested that the care options available to women influence their preferences for intrapartum care, indicating that the choice of birthing positions in the second stage of labour may be determined more by midwives' advice than by women's personal preferences.^{5,6,7} In a recent Cochrane review it was suggested that the influence of midwives on the positions adopted by women during labour and birth, can be regarded as inconsiderate of women's

comfort and disempowering.² It is well documented that women who have choices and are involved in decision making during labour and birth have an increased sense of control, which optimizes their birth experiences.^{8, 9, 10} Two factors shown to provide increased control for birthing women are assuming an upright position and being able to get into the position that was most comfortable.^{9, 11} In a study to assess women's preferences in intrapartum care Hundley et al.⁶ concluded that for 40 % of the women the most important attribute was involvement in decision-making. Very little scientific investigation has considered women's decision-making and preferences for birth positions in the second stage of labour.⁷

Two older randomised controlled trials (RCT) reported that participants allocated to an upright birthing group experienced significantly less pain and that women who gave birth on a birth seat more often expressed a positive birth experience compared to women in horizontal positions at birth.^{12, 13} An American national survey found that maternal preference was associated with the use of the non-lithotomy positions.¹⁴ However a recent survey from the Netherlands answered by 1154 women reported that 58.9 % preferred supine positions, 19.6 % preferred non-supine positions and 21.5 % had no distinct preference.¹⁵ Midwives' personal attitudes and own physical capacity were shown, to some extent, to have an impact

on the adherence-rate in an RCT by Thies-Lagergren et al.¹⁶ and other researchers have also

suggested that midwives have an impact on women's birth position.^{1, 7} Non-adherence in

intrapartum studies is a problem that has been discussed in a study by Hundley and Cheyne.

¹⁷ Since little is known about the complex process of negotiation between the midwife and the

birthing woman¹² it was considered important to investigate who made the decision about

adherence to allocated birth position. The aims of this study were to investigate factors

associated with adherence to allocated birth position in an RCT and also to investigate factors

associated with decision-making for birth position.

Methods and material

Design

A follow up questionnaire exploring women's experiences with allocated birth positions was

undertaken between 2010-2011 and included women who had previously participated in an RCT.

The RCT was initially carried out to compare levels of instrumental vaginal birth in healthy

nulliparous women who gave birth on a birth seat or in any other position for vaginal birth.

Women allocated to the control group were free to choose whatever preferred position except for

using the birth seat. Eligible women were randomised when assessed as being in active labour.

Active labour was defined as painful, regular contractions (3-4/10 min), cervix dilated 3-4 cm, and/or rupture of the membranes. Further details of the recruitment have been reported previously.

^{3, 16} The committee for research ethics in Lund, Sweden gave approval for the study (protocol 2009/739). A completed questionnaire was interpreted as informed consent.

Subjects in the present study

Altogether 527 (52.6 %) women responded to a questionnaire; 289 (54.8 %) of responders had been allocated to the experimental group and 238 (45.2 %) to the control group. For the purpose of the present study we have included only the 289 women who had been allocated to the experimental group and had answered the follow-up questionnaire. These comprised 177 (62 %) women who gave birth on the birth seat (adherence group) and 112 (38 %) women who did not give birth on the birth seat (non-adherence group). Answers from the 238 respondents who were allocated to the control group will be analysed and reported later.

Procedure and data collection

All women who had participated in the RCT received a letter by post, which included information about the follow-up study and an invitation to answer an on-line questionnaire.

Included in the invitation letter was also comprehensive information about how collected materials would be processed under current confidentiality regulations. Participation in the study was voluntary and the prospective participant was informed that she at any time, without any particular explanation, could terminate participation. Two reminders were sent and altogether 527 (52.5 % of the total RCT population) women answered the on-line questionnaire.

The on-line questionnaire

The on-line questionnaire was constructed for the purposes of the follow-up study. Before invitation for participation in the present study was distributed, seven first time mothers, not participants in the RCT, pre-tested the questionnaire to ensure that the questions were comprehensible. This resulted in some linguistic corrections.

The questionnaire contained socio-demographic variables, items regarding expectations and experiences of birth and birth position. Questions regarding pain intensity, pain experience and experience of labour duration have been used earlier in a Swedish national survey relating to women's experiences of childbirth.¹⁸ Questions about expectations of birth position, the

midwife's encouragement to take a certain position, the mother's opportunity to take her own preferred position, experiences of safety and trust in the midwife, and the occurrence of birth complications could be answered "yes", "no" or "do not know". A question regarding decision making about birth position could be answered either; by herself, by the midwife or tried different positions. A question about the overall experience of the birth could be answered positive, both positive and negative or negative. Five questions regarding maternal experience of birth position, labour pain and length of labour were measured on scales ranging from 0-10. Respondents were asked to check boxes next to expressions of emotions (seven positive and six negative expressions) that they may have felt in relation to their birth position. They were free to check any number of emotions that were relevant to their experience.

Outcome measurements

Outcome measurements were possible explanatory factors for adherence to allocation to the birth seat and decision-making for birth position. These were; preference for birth position, women's expectations and experiences of birth and the attending midwife, experience of birth position, labour pain, length of labour, self-reported complications and emotions aroused in

relation to birth positions.

Statistical analyses

Descriptive statistics and t-tests were used. Crude and adjusted odds ratios with a 95% confidence interval ¹⁹ were calculated for the different explanatory variables between women who complied and women who did not comply with allocation. All analyses were performed using PASW version 20.0.²⁰

Findings

Findings reported here are derived from responses from women who were allocated to give birth on a birth seat. A total of 177 gave birth as allocated (adherence group) and 112 did not give birth as allocated (non-adherence group). Reasons reported in the questionnaire for non-adherence were medical (54 %) maternal (28 %) and midwife (18 %).

Birth positions

Women in the adherence group all gave birth sitting on a birth seat without instrumental assistance. Birth positions used in the non-adherence group were semi-recumbent (30 %),

lithotomy (60 %) lateral (8 %) and kneeling (2 %).

Table 1 shows a comparison of socio-demographic variables for the participants. There were no differences in maternal age, civil status, educational level or tobacco use between the groups. There were statistically significantly more women in the adherence group who reported that their pregnancy was unplanned.

Table 2 shows comparisons between the groups for expectations and experiences of birth and the attending midwife. Approximately 14 % of participants in both groups reported that they had received information about the pros and cons of different birth positions. Almost one-third of the women in both groups were encouraged by the midwife to adopt a suggested position in the second stage of labour, despite randomisation and these women were given an explanation for the midwife's choice. More than 50 % of the women reported that the midwife did not encourage any particular position. Statistically significant differences were shown between the two groups. Women in the adherence group reported more often that they were given the opportunity to be in their preferred birth position. The adherence group reported less often that they had tried different positions in the second stage of labour but

nonetheless reported more often that they themselves made the decision about birth position.

These differences remained statistically significant after adjustments for age, education, planned or unplanned pregnancy and self reported birth complications. After adjustment, there was no difference between the groups for experiencing the midwife as being safe and secure with the birth position and a majority of participants in both groups felt trust in the midwife. Fewer women in the adherence group reported birth complications and fewer of the women in this group reported their overall birth experience as less than positive. These differences remained statistically significant after adjustment.

Table 3 shows self-reported experiences of the birth. Women in the adherence group reported a more positive experience of the birth position. The adherence group also experienced the length of the second stage of labour and the total length of labour as shorter than the non-adherence group. These differences were statistically significant. There were no differences between the groups for experience of labour pain or experiences of pain intensity.

Table 4 shows the participants' self-reported emotions related to their birth position. There were no differences between the groups for feeling relaxed, feeling unsafe or feeling

uncomfortable. The women in the adherence group expressed feeling powerful and strong more often than the non-adherence group. They also reported feeling safe and secure, comfortable, protected and self-confident, to a higher degree than women in the non-adherence group. Fewer women in the adherence group reported feeling tense, weak or exposed. All these findings remained statistically significant after adjustment. A difference in feelings of powerlessness did not remain statistically significant after adjustment.

Discussion

The main finding of this study was that women who gave birth on the birth seat more often reported that they themselves made the decision about birth position and felt that they had been given the opportunity to take their preferred position. These women more often reported emotions such as feeling powerful, protected and self-confident compared to women who did not adhere and more women who gave birth on the birth seat reported their overall birth experience as positive.

Despite all the women in this study being randomised to give birth on a birth seat, those who in fact gave birth on the birth seat were more likely to report that they participated in decision

making and that they took the opportunity to choose their preferred birth position than those who did not give birth on the birth. These results are in line with an American study which showed that birthing women want to be active participants in their care, however they do not desire to make all of the decisions, feelings of a partnership between themselves and the midwives and other birth attendants gave the most positive experience of childbirth.²¹

Previous studies have suggested that randomisation to a certain position restricts women in choice and control during birth.^{1,5, 22} However, our results show that women randomised to the birth seat did not experience themselves as restricted but rather felt empowered by their birth position. It could be argued that participants' decision-making and preferences for birth position are not relevant measurements in an RCT where they are allocated to a specific position. One reason why women who gave birth on the birth seat expressed feelings of participation in decision-making may be that they experienced a more straightforward birth with fewer self-reported complications. Another explanation may be that midwives who in general were more positive to the idea of upright birthing positions attended them. In the present study, midwives individual motives including physical limitations, such as back pain or stiff knees or disapproval, caused non-adherence to birth seat birth in almost every fifth woman. Physical limitations are difficult to oppose, but disapproval of best evidence can be

interpreted as a need for midwives to become more familiar with upright birth positions in the second stage of labour and thereby increase women's possibility for real choice in childbirth.⁷

To our knowledge no earlier studies have investigated if women's preferences and decision-making have an impact on birth positions. Nor has it been investigated how women's preferences and specific emotions concerning birth positions relate to current evidence concerning birth positions. In this study significantly more women who adhered to randomisation reported that the birth position aroused a number of positive emotions. They expressed emotions such as feeling powerful, strong and self-confident. Also, the overall experience of labour was more positive for the birth seat group than for women who did not adhere, despite the fact that they rated their labour pain as equal to the non-adherent group. Even though labour pain appears to be one of the most significant and defined reasons for fear of future childbirth²³, labour pain and pain relief seems to not play a major role in satisfaction with the childbirth experience.⁸ Women who are supported to feel powerful, protected and self-confident are unlikely to develop fear of childbirth, which is a substantial problem in Sweden.²⁴

It may be argued that an upright position helps women to feel more in control and that therefore women who used the birth seat had positive memories of how they felt during labour and birth. Empowering women to be part of decision-making may help reduce the occurrence of childbirth fear. Our findings suggest that if women feel themselves to be participants in decision-making during birth, pain may play a lesser role in their overall birth experience. The statistically significant differences in the birth experiences between the two groups cannot easily be attributed to the fact of adherence with randomization.

Midwives have great power to shape upright birth positions by the way they use the environment or rearrange the environment to take the focus off the bed. When midwives offer choices to birthing women they enable them to feel empowered and in this way, birthing women's autonomy is strengthened. Feelings of empowerment and autonomy may lead to greater childbirth satisfaction.^{25, 26} Our findings are in line with findings reported by Vandevusse²² who showed that active participation in the birth process affects women's long-term positive memories and experiences of birth.

The study has several limitations. The low response rate must be taken into consideration

when interpreting the findings and generalizability of our study may be limited. However, a low response rate may not necessarily represent bias if the respondent population is representative of the population being studied.²⁷ In this study, non-responders were not systematically different from the overall RCT population. The low response rate may to some extent be offset by the fact that several of the results are consistent with earlier studies. When analysis of the RCT was complete, it became apparent to the authors that it was necessary to carry out this follow-up study. As a consequence, collection of data was, for some respondents, delayed for as long as four years. This relatively long time-span between birth and receiving the questionnaire may also have caused the low response rate. However it has been suggested that women's memories of childbirth are generally accurate, even years later.²⁸

Fulfilled expectations are an important factor for positive perception of birth.²⁹ The questionnaire did not include a question about feeling disappointed when expectations of birth or birth positions were not fulfilled. It may be speculated that women in the non-adherence group to a greater extent felt disappointed in not fulfilling their expectations to give birth on the birth seat, which may have affected their overall birth experience negatively.

Future research

In order to enhance women's decision-making about birth position in the second stage of labour, more knowledge is needed about what information is given to pregnant women antenatally regarding birth positions and how this information is presented. Midwives' understanding of the concept of autonomy would also be an interesting subject for further investigation and this could include investigation of midwives understanding and confidence around promoting and offering the use of upright birth positions in the second stage of Labour.

Conclusions

Midwives and other birth-attendants should be conscious of the potential impact birth positions have on women's birth experiences and on obstetric outcomes. This study has shown that an upright birth position, when chosen by the woman, gives her a feeling of empowerment, and leads to greater childbirth satisfaction. Our results show that women's preferences for birth positions are consistent with current evidence for best practice.

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Table 1. Socio-demographic background variables

	Randomized to Birth seat and gave birth as randomized n= 177 n (%)	Randomized to Birth seat but did not give birth as randomized n= 112 n (%)	Chi2 p-value
Age groups			
<25 years	21 (11.9)	16 (14.3)	0.080
25-35 years	145 (81.9)	181 (72.3)	
> 35 years	11 (6.2)	15 (13.4)	
Civil status			
Married/cohabiting	164 (92.7)	106 (94.6)	0.629
Other family situation	13 (7.3)	6 (5.4)	
Country of birth			
Sweden	167 (94.4)	107 (95.5)	0.789
Other country	10 (5.6)	5 (4.5)	
Level of education			
Elementary school/high school	54 (30.5)	47 (42.0)	0.057
College/University education	123 (69.5)	65 (58.0)	
Tobacco habits			
Smoking in early pregnancy	11 (7.7)	12 (15.6)	0.104
Not smoking	131 (92.3)	65 (84.4)	
Pregnancy planned and welcome	154 (87.0)	106 (94.6)	0.044
Unplanned pregnancy	23 (13.0)	6 (5.4)	

Table 2. Expectations and experiences of birth and the midwife

	Randomized to Birth seat and gave birth as randomized n= 177 n (%)	Randomized to Birth seat but did not give birth as randomized n= 112 n (%)	Crude OR 95% CI	Adjusted OR 95% CI#
antenatal expectations about birth position				
Wanted to give birth in a preferred position	118 (66.7)	84 (75.0)	0.6 (0.4-1.1)	0.7 (0.4-1.3)
experience of birth position				
Received information about pros and cons of different birth positions	23 (14.4)	14 (14.0)	1.0 (0.5-2.0)	1.0 (0.4-2.1)
Midwife's explanations about birth positions				
No encouragement	96 (54.2)	57(50.9)	1.0 (Ref)	1.0 (Ref)
Midwife encouraged a certain position and explained why	57 (32.2)	39 (34.8)	1.1 (0.7-1.4)	1.1 (0.7-2.0)
Midwife encouraged a certain position without explanation	24 (13.6)	16 (14.3)	1.0 (0.5-2.1)	1.0 (0.5-2.2)
Had the opportunity to be in a preferred birth position	139 (78.5)	78 (69.6)	4.8 (1.9-12.0)**	5.5 (2.0-14.9)***
Decision making about birth position				
Decision made by the birthing woman	118 (66.7)	35 (31.3)	1.0 (Ref)	1.0 (Ref)
Decision made by the midwife	53 (29.9)	51 (45.5)	0.3 (0.2-0.5)***	0.3 (0.2-0.6)***
Tried different positions	6 (3.4)	26 (23.2)	0.1 (0.0-0.2)***	0.1 (0.1-0.2)***
Experienced the midwife safe and secure with the birth position	174 (98.3)	104 (92.9)	4.5 (1.2-17.2)*	4.0 (0.9-16.8)
Trusted in the midwife	162 (91.5)	96 (85.7)	3.7 (1.1-12.6)*	3.3 (0.9-11.7)
Self-reported birth complications	31 (17.5)	38 (33.9)	0.4 (0.2-0.7)**	0.4 (0.2-0.7)**
Overall birth experience				
Positive	146 (82.5)	68 (60.7)	1.0 (Ref)	1.0 (Ref)
Both positive and negative	26 (14.7)	34 (30.4)	0.4 (0.2-0.6)**	0.4 (0.2-0.7)**
Negative	5 (2.8)	10 (8.9)	0.2 (0.1-0.7)*	0.3 (0.1-0.9)*

= p<0.05, ** = p<0.01, *** = p<0.001

Adjusted for age, level of education, birth complications and pregnancy planned or not

able 3. Experience of position, pain and
ngth of labour

	Randomized to Birth seat and gave birth as randomized n= 177	Randomized to Birth seat but did not give birth as randomized n= 112	<i>t</i> -test Mean difference (95% CI)	p-value
xperience of birth position (Mean, sd) 0=Very egative, 10= Very positive	8.65 (2.17)	7.15 (2.38)	-1.50 (-2.0 to -1.0)	0.000
xperience of length of labour and birth Mean, sd) 0=Prolonged, 10=Rapid	5.59 (3.11)	4.11 (3.25)	-1.48 (-2.3 to -0.7)	0.000
xperience of length of second stage of labour Mean, sd) 0=Prolonged, 10=Rapid	6.38 (3.06)	4.24 (3.45)	-2.20 (-2.9 to -1.4)	0.000
ain intensity (Mean, sd) 0=No pain at all, 0=Worst imaginable pain	6.63 (2.56)	7.10 (2.75)	0.47 (-0.2 to 1.1)	0.139
ain experience (Mean, sd) 0=Very negative, 0=Very positive	5.73 (2.81)	5.42 (2.96)	-0.31 (-1.0 to 0.4)	0.373

Table 4. Emotions expressed in relation to birth position

	Randomized to Birth seat and gave birth as randomized n= 177 n (%)	Randomized to Birth seat but did not give birth as randomized n= 112 n (%)	Crude OR (95% CI)	Adjusted OR (95% CI)#
Safe and secure§	129 (72.9)	63 (56.3)	2.1 (1.3-3.5)**	2.0 (1.2-3.4)**
Comfortable§	95 (53.7)	44 (39.3)	1.8 (1.1-2.9)*	1.9 (1.2-3.2)**
Relaxed§	42 (23.7)	19 (17.0)	1.5 (0.8-2.8)	1.5 (0.8-2.8)
Strong§	122 (68.9)	40 (35.7)	4.0 (2.4-6.6)***	3.8 (2.3-6.5)***
Powerful§	100 (56.5)	28 (25.0)	3.9 (2.4-6.6)***	4.0 (2.3-6.9)***
Protected§	55 (31.1)	18 (16.1)	2.3 (1.3-4.0)**	2.2 (1.2-4.1)**
Self-confidence§	62 (35.0)	23 (20.0)	2.1 (1.2-3.7)**	2.1 (1.2-3.8)**
Unsafe§	2 (1.1)	6 (5.4)	0.2 (0.1-1.0)	0.2 (0.1-1.0)
Uncomfortable§	13 (7.3)	15 (13.4)	0.5 (0.2-1.1)	0.5 (0.2-1.2)
Tense§	6 (3.4)	10 (14.3)	0.2 (0.1-0.5)**	0.2 (0.1-0.5)**
Weak§	4 (2.3)	11 (9.8)	0.2 (0.1-0.7)**	0.2 (0.1-0.8)*
Powerless§	5 (2.8)	11 (9.8)	0.3 (0.1-0.8)*	0.3 (0.1-1.1)
Exposed§	6 (3.4)	14 (12.5)	0.2 (0.1-0.7)**	0.2 (0.1-0.6)**

Adjusted for age, level of education, birth complications and pregnancy planned or not

§Reference = Women not exposed to the studied variable

* = p<0.05, ** = p<0.01, *** = p <0.001