

# The Effect of a Birth Plan on Anxiety Levels in Chinese Pregnant Women: a Randomised Controlled Trial

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## **Objective:**

To investigate the effect of a birth plan on the anxiety levels of low-risk pregnant women.

## **Methods:**

This was a prospective, randomised controlled trial, which targeted at low-risk Chinese pregnant women. Using a standardised randomisation table, subjects were allocated to active intervention and control groups. Active intervention entailed formulation of a birth plan with the assistance of staff. The anxiety levels were measured by the validated self-administered Chinese version of the Spielberger State-Trait Anxiety Inventory and the Edinburgh Postnatal Depression Scale (EPDS) to observe any relationship between anxiety and the postnatal depression. Participants who attended the antenatal health talks held in Tsan Yuk Hospital at or beyond the 20th week of their pregnancy were invited to join the study.

## **Results:**

Of the 86 women recruited into the study, 45 (52%) and 41 (48%) were randomised to the active intervention and control groups, respectively. There were no significant differences between the groups for personality trait and anxiety-state scores determined on five occasions, namely: during recruitment, on admission, at delivery, as well as 5 days and 6 weeks later. There was also no significant difference in the EPDS score between the subjects in the two groups, determined on three occasions, namely on day 3, day 5, and week 6 after delivery.

## **Conclusion:**

Our findings suggested that the birth plan had no influence on maternal anxiety levels. However, this may be due to our small sample size, which was a limitation of this study. The role and merits of birth plans deserve to be explored further.

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## **Introduction**

Childbirth is perceived as a natural process in a woman's life. However, there are fears and anxiety in those who face the process of labour. Fear of the unknown and loss of control are the common factors that contribute to such anxiety. According to Gibbins and Thomson<sup>1</sup>, confidence in one's ability to cope with labour is an important predictor of a positive experience. Besides, discrepancies between women's expectations

and the actual experiences of childbirth can also affect perceptions and feelings. These may give rise to adverse emotional outcomes, such as disappointment, guilt, and failure. Since women remember their childbirth experiences for the rest of their lives<sup>2</sup>, enabling them to make informed choices and decisions and to feel in control during labour are important confidence- and

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satisfaction-building measures<sup>1</sup>. According to Raphael-Leff<sup>3</sup>, birth plans give the woman such peace of mind.

Birth plan is a plan made by the woman to select certain aspects of care during labour and their selections / wishes are documented in a structured manner<sup>4,5</sup>. For instance, the women (or couples) can list out special practices they wish to select under normal conditions, such as episiotomy, fetal monitoring, or methods of pain relief<sup>3</sup>. A birth plan not only empowers the woman to participate in making decision about her own care, it also makes her feel she can articulate her desires early, without having to expend precious energy during labour reiterating her views, and arguing with midwives or doctors. In addition, the plan can improve communication between the woman and the health care providers<sup>1</sup>.

The birth plan notion has been introduced in the UK for more than a decade. It is well accepted by the women, helps to enhance the concept of individual patient responsibilities, and enhances the notion of individualised care by providers<sup>4</sup>. The birth plan empowers women to take an active part in their labour and feel “in control”<sup>1</sup>. However, any discussion between the women and the health care professionals should be initiated early, to allow time for informed decision-making during the prenatal period rather than at the onset of labour, or during the admission for labour and delivery<sup>6</sup>. In order to prepare the women for childbirth, formulating a customised birth plan is recommended. The midwife, who facilitates continuity of care and develops a trusting relation with the expectant mother, has the responsibility to assist in the decisions that individuals need to make<sup>7,8</sup>.

Birth plans have been used for more than a decade in foreign countries, but not by Chinese women in Hong Kong. This study was therefore planned to assess whether Hong Kong Chinese women accept the birth plan concept and explore its possible effects of the birth plan. The related information obtained could help midwives to consider if they should promote the use of birth plan among pregnant women in Hong Kong. The birth plan message was introduced in a standardised form by which women allocated to active treatment could formulate their requests and requirements regarding labour and birth.

## Methods

This was a prospective, randomised controlled

trial. Low-risk Chinese pregnant women were recruited and randomised to active intervention and control groups by using the standardised randomisation table. Subjects were recruited from women attending the Tsan Yuk Hospital for antenatal care and subsequent delivery in Queen Mary Hospital, who attended the antenatal health talks held in Tsan Yuk Hospital at or beyond their 20th week of pregnancy. The purpose and details of this study were explained to the women during the first talk. After an interval of 2 weeks' time (between the first and last of the antenatal health talks), they were invited to participate in the study, and those agreeing to do so gave their written informed consent. Both the intervention and control groups received their usual antenatal health talk. However, the intervention group was given an extra counselling session, in which a midwife briefed the women and their partners to formulate their own birth plans.

The anxiety level of both the intervention and control groups was measured using the validated self-administered Chinese version of the Spielberger State-Trait Anxiety Inventory (STAI). The STAI is a reliable and sensitive tool to measure a person's anxiety level. It consists of a 20-item state-anxiety scale (designed to assess the level of relatively transient situation-related [state] stress perceived in a particular situation), and a 20-item trait-anxiety scale (designed to measure relatively stable long-term resting levels [traits] of anxiety). The Chinese version of the STAI was translated<sup>9</sup> and has been validated<sup>10</sup>. Responses to each item were graded from 1 to 4. The scores obtained in the state-anxiety and trait-anxiety scales therefore ranged from 20 to 80; higher scores indicated higher anxiety levels. The anxiety levels were measured on five occasions, as follows: (1) at the end of the last antenatal talk after the women consented to the study, (2) after admission to the labour ward before delivery, (3) at delivery, (4) on day 5 post-delivery, and (5) 6 weeks post-delivery. The trait-anxiety scale was used on occasion (1), while the state-anxiety scale was used on occasions (2) to (5).

Before delivery, women in the active intervention group were invited to complete a questionnaire on the level of satisfaction towards the birth plan they had constructed. After delivery, they answered the questionnaire again. In addition, women in both groups completed the Edinburgh Postnatal Depression Scale

(EPDS) questionnaire on occasions (3) to (5). This was a screening programme for postnatal depression started in the hospital in the year 2000. Thus, the association of a birth plan with the subject's emotional condition during the postnatal period was also studied. Basic demographic data and the past and present obstetric history of the subjects were retrieved from their hospital records.

The data were analysed using the SPSS software. The trait- and state-anxiety scores in the two groups were compared using the Mann-Whitney *U* test, and the demographic data of the two groups were compared using Student's *t* test and the Chi-square test as appropriate; a *p* value of less than 0.05 was considered statistically significant.

**Recruitment of Subjects**

According to Leung et al<sup>11</sup>, the standard deviation of state-anxiety score of Chinese pregnant women was estimated to be 6. To detect a clinically significant difference of 5 for state-anxiety scores between the active treatment and control groups with a power of 95% and a 2-tailed alpha of 0.01, 50 women were required in each group (Instat software package). Thus, 100 subjects were needed to be recruited for this study, started in October 2004 with a planned completion by June 2005. However, there were recruitment difficulties as well as a dropout rate of about 12 to 15% due to women finally being delivered in other hospitals. As such, the period of recruitment was extended by about 6 months, and finally 86 women were recruited; 45 (52%) being allocated to the active intervention group and 41 (48%) to the controls.

**Results**

Among those who completed the questionnaire, there was no significant difference between the two groups in terms of maternal age, gestational age, parity, marital status, and education level (Table 1). All respective mean scores were similar in the two groups, there being no significant differences in either trait- or state-anxiety scores on the five occasions (Figure). Nor was there any significant difference between the groups with respect to EPDS scores (Table 2). However, participants in the intervention group were quite satisfied with their birth plans (Table 3). Over 96% of the women indicated that the plan helped increase their knowledge related to childbirth, 84% claimed it enhanced involvement in

**Table 1. Demographic data of the active intervention (with a birth plan) and control (without a birth plan) groups**

Demographics	Active intervention group (n=45)	Control group (n=41)	p Value
Mean (standard deviation) age (years)	31 (3)	32 (4)	0.115*
Mean (standard deviation) gestational age (weeks)	39 (1)	39 (1)	0.917*
Parity (primiparous)	93%	98%	0.344
Marital status (married)	100%	98%	0.476
Education level			
Secondary	51%	34%	0.08
Tertiary	49%	66%	

\* Chi-square test

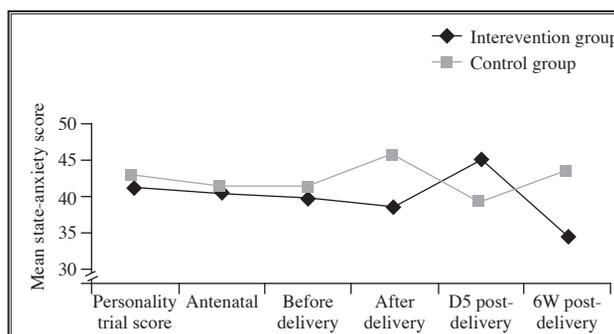


Figure. Mean state-anxiety scores in the intervention and control groups

decision-making related to their labour, and over 82% indicated that the birth plan helped reduce their levels of anxiety and worry.

**Discussion**

A birth plan is an important step in preparing for childbirth<sup>12</sup>. However, it has not been introduced to Hong Kong Chinese pregnant women. As good planning and preparation should help to reduce fear and anxiety, such plans could help reduce anxiety levels in women facing labour. According to this study however, there was no significant difference in anxiety levels between the women who did and did not have birth plans to prepare for delivery. This observation was consistent with a previous report based on state- and trait-anxiety scores on prenatal depression, prenatal anxiety, and

**Table 2. Difference between active intervention (with a birth plan) and control (without a birth plan) groups**

Score*	Mean ± standard deviation		p Value
	Active intervention group (n=45)	Control group (n=41)	
Personality trait score	40 ± 10	41 ± 9	0.529
Anxiety score at different stages			
Recruitment in OPD	41 ± 9	41 ± 7	0.381
Admission room	46 ± 9	46 ± 10	0.126
In labour suit (at delivery)	34 ± 8	37 ± 10	0.359
Day 5 after delivery	41 ± 11	39 ± 9	0.395
6 Weeks after delivery	37 ± 10	41 ± 10	0.431
EPDS score at different stages after delivery			
Day 3	5 ± 4	5 ± 4	0.054
Day 5	6 ± 5	6 ± 3	0.067
6 Weeks	3 ± 3	2 ± 2	0.792

\* OPD denotes outpatient department, and EPDS Edinburgh Postnatal Depression Scale

spontaneous preterm births<sup>13</sup>.

This unexpected finding may be related to local Chinese culture. In a study from Scotland on the perception of choice and control by Chinese and Scottish childbearing women, Cheung<sup>14</sup> found that Chinese women preferred a ‘normal’ birth; the safety of the mother and baby was the main focus. Thus Chinese women wanted a trouble-free delivery, to fit into the prevailing current medical model and accepted what appeared to be the most accepted safe means of delivery. Whereas, Scottish women wanted a ‘natural’ birth, which would convey a sense of assertion, and being in control and free from medical interventions<sup>14</sup>.

Evidently, Chinese people are reluctant to express their feelings in front of others<sup>15</sup>. Chinese women expect nurses to be caring, express compassion for the suffering patients, willingly take on extra responsibility on behalf

**Table 3. Levels of satisfaction among women making birth plans**

Statements	Strongly agree / Agree (%) (n=44)
Do you think that your partner’s support was sufficient?	89
Are you satisfied with the content of your birth plan?	86
Usefulness of the birth plan	
Increased the knowledge on the delivery process	96
Increased participation in decisions during labour	84
Reduced anxiety and worry during labour	82
Improved relationship and understanding with the partner	91
Improved understanding with obstetricians and midwives	91
The plan met expectations	80
Will you use the birth plan during next pregnancy?	96
Will you introduce the birth plan to your friends or relatives?	96

of patients, and exercise expert clinical judgement<sup>16</sup>. Thus, during labour and delivery, local pregnant women have higher expectations for support from their partners and midwives, whereas expectations regarding their own ability to cope with pain and medical interventions appear lower<sup>17</sup>.

Thus, during childbirth Chinese women rely on support by the spouse, and advice and directions by care providers, such that a birth plan dependent on the subject’s own will and self-control appears less important. Understanding women’s satisfaction with their childbirth experience is relevant to health care providers, administrators, and policymakers as an indicator of the quality of maternity care.

In caring for Chinese women during pregnancy, obstetric and midwifery staff should be sensitive to the women’s needs in order to provide an adequate degree of appropriate support. Thus, feeling ‘in control’ or the use of a birth plan may not be an important issue among Chinese women, when it comes to relieving maternal

anxiety during childbirth. Midwives are generally the immediate care provider for women in labour, and are always held in high regard by labouring women in Hong Kong<sup>18</sup>. Therefore, the attitudes and the care provided by midwives play an important role in allaying such anxieties and fears in pregnant Chinese women.

Nevertheless, in reference to the feedback from the questionnaires in the intervention group, preparing their own birth plan could help to reduce anxiety and worry. We found a similar trend for both groups in that in each group the state-anxiety score after admission was significantly higher, while that after delivery it was significantly lower. This suggested that in Chinese women, the concern about the outcome of childbirth rather than the birth process is the primary factor driving anxiety, and is not mitigated by adopting a birth plan.

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## Limitations

Difficulties in recruiting subjects and other aspects interfered with completion of this study. First, many Chinese women were not willing to participate, because the birth plan concept was 'new' to them. Second, approximately 12% of those recruited eventually delivered elsewhere. Lastly, some of the women in the control group withdrew after recruitment or did not complete the questionnaires. Hence, a larger sample size should be planned for in the future studies in this area.

## Conclusion

Our findings suggest that the birth plan has no influence on maternal anxiety levels. However, this may be due to the small sample size. Thus, the role of a birth plan still requires further exploration.