Factors predicting self-efficacy during birth in Chinese women: a cross-sectional study

Abstract

Background/Aims Self-efficacy can promote optimism during childbirth and a better transition from pregnancy to motherhood. This study's aim was to examine maternal childbirth self-efficacy during the latent phase of labour, and identify related predictors, among low-risk Chinese pregnant women.
Methods A predictive correlational study was conducted among 122 low-risk pregnant women. Questionnaires were used to collect data on self-efficacy, with standard multiple linear regression analysis applied to determine its predictors.
Results The mean score for childbirth self-efficacy was 225 (standard deviation=47.86), which indicated moderate self-efficacy during labour. Professional support (*P*<0.001), childbirth knowledge (*P*<0.01) and parity (*P*<0.05) were significant predictors.
Conclusions This study highlighted that professional support, childbirth knowledge and parity can affect childbirth self-efficacy, which could enhance women's coping ability and promote a successful birth. Healthcare professionals could increase maternal self-efficacy through providing enhanced emotional and information support, ensuring that women are given adequate information about the birth process and by providing support for primiparous women during the latent phase of labour.

Keywords

Childbirth | Knowledge | Latent phase of labour | Parity | Professional support | Self-efficacy

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Childbirth can be a stressful event, with potentially dramatic biological and psychological challenges (Kohlhepp et al, 2018). Childbirth may involve uncertain progress with gradually intense pain, physical discomfort or negative emotions. A woman's ability to manage childbirth is a significant element of the experience, which can positively or negatively affect childbirth expectations and future pregnancy choices (Rahmawati et al, 2019).

In May 2021, China passed the three-child policy and supporting measures, which highlighted the country's emphasis on promoting maternal fertility intentions (Tatum, 2021). The striking declines in fertility intention (Wang and Wang, 2022) and vaginal birth rate (95% in the 1950s–1970s to 60% in 2015–2016) have become a serious phenomenon (Zhang et al, 2022). It has been found that lower self-efficacy to cope with birth was a significant psychological driver of the increasing maternal preference for caesarean section, especially in late pregnancy (Zhang et al, 2018) and intrapartum (Hou et al, 2017a).

Self-efficacy refers to one's belief in their agentive capability in a specific domain that affects outcomes (Bandura, 1977). Childbirth self-efficacy is the degree of confidence a woman has in her own capability to cope with labour and birth effectively, which may involve strategies such as relaxation, breathing or distractions (Lowe, 1991). Self-efficacy has been identified as a significant indicator of a positive childbirth experience for women, with higher self-efficacy driving women to view complex tasks as challenges rather than threats (Sánchez-Cunqueiro et al, 2018).

Labour commonly begins with regular uterine contractions and slow dilated cervix progression during the first stage, with the latent phase lasting considerably longer and being less predictable than the active phase. Adverse emotions are more likely to peak in this preparatory latent phase (Miller et al, 2019). Lower childbirth self-efficacy can increase anxiety, depression or post-traumatic stress symptoms (Salomonsson et al, 2013a; Duncan et al, 2017; Mudra et al, 2020), while

women with higher self-efficacy feel more control during labour and tend to use coping strategies, resulting in lower subjective pain and fewer requests for pain medication or a caesarean section (Carlsson et al, 2015; Duncan et al, 2017). Childbirth self-efficacy also promotes cooperation with guidance from healthcare professionals and appropriate behaviour, leading to a better labour experience, higher childbirth satisfaction and better parental outcomes (Tilden et al, 2016; Sánchez-Cunqueiro et al, 2018).

Predictors of childbirth self-efficacy

Childbirth self-efficacy has been found to be influenced by several factors, including maternal age (Yüksel and Bayrakci, 2019; Zhao et al, 2021), body mass index (Zhao et al, 2021), religion (Mohamadirizi et al, 2018), education (Yüksel and Bayrakci, 2019), health status (Ghasemi et al, 2019), previous caesarean section (Soh et al, 2020), fear of childbirth (Soh et al, 2020) and support (Schwartz et al, 2015). Understanding these predictors is paramount to facilitating a successful childbirth.

Various factors have been found to promote self-efficacy in childbirth. Multiparous women with a history of successful vaginal childbirth have higher childbirth self-efficacy (Hou et al, 2017b; Neerland et al, 2019; Soh et al, 2020), as do women with childbirth knowledge (Schwartz et al, 2015; Hou et al, 2017b; Howarth and Swain, 2019). Several experimental studies indicate that providing childbirth information through antenatal classes, booklets and e-learning enhances self-efficacy during late pregnancy and labour (Abbasi et al, 2018; Howarth and Swain, 2019).

Having a birth companion similarly has a positive correlation with self-efficacy (Salomonsson et al, 2013b; Attanasio et al, 2014; Schwartz et al, 2015). Lunda et al (2018) indicated that physical and psychological support can create a sense of security, establish communication channels with healthcare professionals and prevent women from feeling lonely in what may be an unfamiliar environment. Professional support can promote confidence in having a vaginal birth (Bohren et al, 2017; Neerland et al, 2019), and the provision of continuous supportive care during labour, through encouragement, coaching and empathy, promotes a feeling of control and confidence in the ability to overcome labour pain (Salomonsson et al, 2013b; Bohren et al, 2017).

Fear of childbirth can be an intense negative feeling and is reported to be the strongest predictor of childbirth self-efficacy (Salomonsson et al, 2013a; Carlsson et al, 2015; Gao et al, 2015). However, most existing studies explored the relationship between fear and childbirth self-efficacy using bivariate analysis, indicating that multivariate analysis is needed.

Rationale for the study

There is increasing evidence of the positive effects of childbirth self-efficacy during labour (Tilden et al, 2016). However, less attention has been given to predictors of self-efficacy during the latent phase, in which women can experience more severe pain or loneliness. This is likely to alter a woman's childbirth self-efficacy during labour.

Previous studies of childbirth self-efficacy in China have largely involved nulliparous women (Carlsson et al, 2015), with few studies examining multiparous women even after the announcement of Chinese three-child policy. Furthermore, no study has explored all predictive factors simultaneously. Therefore, the authors considered it crucial to study predictors of childbirth self-efficacy in Chinese low-risk women during latent phase labour. An understanding of self-efficacy and its predictive factors can be used to develop relative intervention programmes before labour, in order to promote a positive maternal childbirth experience.

The present study examined factors that are highly correlated with childbirth self-efficacy, based on Lowe's (1991) childbirth self-efficacy theory and research evidence of the effect of parity, childbirth knowledge, birth companion, professional support and fear of childbirth. Childbirth self-efficacy was conceptualised as the dynamic cognitive process of an individual's confidence in their ability to cope with a childbirth event (Soh et al, 2020). It was divided into two sub-concepts, outcome expectancy and efficacy expectancy. Outcome expectancy refers to one's belief that a certain behaviour will lead to a certain outcome (for example, that relaxation could be helpful during labour), and efficacy expectancy is an individual appraisal of an individual's ability to conduct the behaviour (eg 'I am sure I could relax during labour'). A lack of confidence in one's ability to cope with labour pain and not understanding or believing in the outcome of conducting specific behaviours may hinder women during labour.

In Lowe's conceptual model, four sources of information form and affect maternal childbirth self-efficacy. The first, and most influential, source is performance accomplishment, which refers to past mastery experience; the second is vicarious experience from a witness or others; the third is verbal persuasion; and the last is the maternal somatic and emotional reaction. The present study associated various factors with these four sources, with parity relating to performance accomplishment, childbirth knowledge to vicarious experience, a birth companion and professional support to verbal persuasion, and fear of childbirth to an emotional reaction. The authors hypothesised that these factors, when combined, may explain childbirth self-efficacy among Chinese low-risk women during the latent phase of labour (Tanglakmankhong et al, 2011).

Methods

A predictive correlational design was used. The study was conducted in a tertiary teaching hospital in China from August to September 2021. The hospital provides comprehensive obstetric care for women and has an annual birth rate of 5000 babies, with a vaginal birth rate of 64% in 2019 (Hospital Statistical Department, 2020). The labour room provides services for all pregnant women with labour symptoms, as well as those needing obstetrical interventions or patient-controlled epidural analgesia. Family members or a doula can accompany a woman at any time, according to her preference, usually when cervical dilatation is more than 2cm.

The participants were low-risk women in latent phase labour. The inclusion criteria for participants were:

- Aged >18 years old
- Between 37 and <42 weeks' gestation
- Primiparous or multiparous
- In latent phase labour, with regular uterine contractions
- 2–5cm dilated
- Pain score <4 on a numeric rating scale
- Not a high-risk vaginal birth (such as placenta previa, pre-eclampsia, contraindication for vaginal birth)
- No history of mental health disorders
- Able to read, speak and write Mandarin fluently.

Sampling

The sample was recruited using simple random sampling. Sample size was calculated using G★Power (version 3.1). As the researcher aimed to examine the five predictors of childbirth self-efficacy, linear multiple regression analysis was used with an alpha of 0.05, a power of 0.90 and a medium effect size of 0.15 (Tabachnick and Fidell, 2007). A minimum of 116 participants was calculated, and with a 5% attrition rate, the required sample size was 122 participants.

Recruitment

Researchers approached women prior to attendance in labour, to ask if they were willing to participate in the study. As women were admitted to the hospital (for example, while waiting for labour onset or because they were having signs of threatened labour), the researchers established a trusting relationship with them through the provision of nursing care prior to study commencement. Since the women were expected to undergo labour, the study was introduced when women were relaxed, comfortable and were not experiencing fatigue. If women agreed to participate in the study, they were pre-registered before going into labour.

Data collection

When the participants attended the hospital while in labour, they were assessed according to the eligibility criteria (including cervical dilatation and pain score), and asked to sign an informed consent form. Participants then completed a self-administered structured questionnaire during intervals of uterine contractions. Data collection lasted for approximately 20–30 minutes. Researchers simultaneously assessed the participants' pain level, and if their score was more than 4 or they were unable to continue, they were asked to withdraw from the study. Approximately 3–5 participants per day were recruited until the desired sample size was reached.

Four distinct tools were combined for use in data collection, forming the overall questionnaire. These tools were the childbirth knowledge questionnaire, the support subscale of the support and control in birth scale, the childbirth attitude questionnaire and the Chinese childbirth self-efficacy inventory.

Childbirth knowledge questionnaire

The childbirth knowledge questionnaire was developed by the authors based on a literature review and used to measure maternal childbirth knowledge. It consisted of 16 items, with three dimensions: delivery mode conception (items 1–6), labour progress (items 7–11) and coping strategies (items 12–16). The sum scores ranged from 0 to 16, with a higher score indicating higher childbirth knowledge.

Validity was examined by three Chinese experts in midwifery. The content validity index for the questionnaire was calculated, including item- and scale-level indices. The item indices were calculated by taking ratings of each item on a 4-point scale (1-totally irrelevant, 2=a little relevant, 3=mostly relevant, 4=totally relevant) from the experts and dividing by the number of experts. If the index was >0.75, the item was deemed relevant, 0.70–0.79 meant the item needed to be revised, and <0.70 meant it was eliminated (Rodrigues et al, 2017).

To calculate the scale index, universal agreement among experts was computed by adding all items with an item content validity rating of 3 or 4 divided by the total number of items. Universal agreement ≥0.8 meant the scale had excellent content validity (Rodrigues et al, 2017).

Following feedback and revision from the experts, the final item index values were 1, while the scale was valued at 0.94. The Cronbach's alpha of the childbirth knowledge questionnaire in the current study was 0.73, indicating good reliability.

Support subscale (support and control in birth scale)

The support subscale of the support and control in birth scale (Ford et al, 2009) was used to measure professional support. The scale involves three dimensions, internal control, external control and acquiring support from medical staff in labour, the latter of which was used in

this study. It consisted of 12 items rated with a 5-point Likert scale. The sum of scores ranged from 12–60, with higher scores indicating higher support.

Liu et al (2020) translated the subscale into a Chinese version that showed good reliability, stability and validity. Its Cronbach's alpha and Pearson's correlation coefficient values were 0.88 and 0.97 respectively, and the test–retest reliability was 0.99. The item (0.99) and scale (0.99) content validity indices were above 0.78 and 0.80 respectively, indicating good content validity. The current study had a Cronbach's alpha of 0.84.

Childbirth attitude questionnaire

The childbirth attitude questionnaire was developed by Areskog et al (1982) and used in the present study to measure maternal fear of childbirth. This instrument was translated into Mandarin by Wei et al (2016) and is a 16-item scale with a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). It comprised four dimensions (fear for mother and infant's health, fear of losing self-control, fear of pain, and fear of unknown environments and interventions). The 16th item ('overall, I would rate my anxiety about childbirth as 1-no anxiety, 2-low anxiety), 3-moderate anxiety), 4–high anxiety)'), was not used in the present study as it was found to have distinct meanings and patterns when compared with the other 15 items.

The Chinese version has a good Cronbach's alpha coefficient and test–retest reliability of 0.91 and 0.80 respectively. The possible sum of scores of the 15 items ranged from 15–60. Higher scores indicated greater fear of childbirth. This study yielded a Cronbach's alpha of 0.87.

The Chinese childbirth self-efficacy inventory

The short form of the 32-item Chinese childbirth self-efficacy inventory was used for this study (Ip et al, 2008). It has two parallel subscales, outcome expectancy and efficacy expectancy, with 16 items in each subscale. For both subscales, a 10-point Likert scale was used, ranging from 1 (not at all helpful) to 10 (very helpful), and 1 (not at all sure) to 10 (very sure), respectively. The inventory has possible scores ranging from 32–320, with a higher score reflecting higher self-efficacy. Gao et al (2011) validated the short version of the inventory in mainland China, which had a Cronbach's alpha of >0.90. The present study had a Cronbach's alpha value of 0.93.

Data analysis

Data were analysed using the Statistical Package for Social Sciences (version 25). Descriptive statistics were used to analyse demographic and obstetrical data and study variables. To identify potentially significant predictive variables, different analyses were applied according to the characteristics of the independent variable. Pearson's product-moment correlation was used to test normally distributed and continuous variables, while Spearman's Rho correlation tested skewed distribution and categorical variables. $P<0.05$ was used to determine significant variables that were retained in standard multiple linear regression analysis to predict childbirth self-efficacy scores, and $P<0.05$ was considered statistically significant.

Ethical considerations

Before data collection, institutional review board approval was obtained from the Burapha University (protocol code: G-HS050/2564) and the First Affiliated Hospital of Wenzhou Medical University (protocol code: 2021-zz-065). The participants were informed about their right to withdraw from the study at any time, and signed informed consent forms before participation. Permission from respective copyright holders were obtained for all developed existing instruments used in the study.

Results

A total of 132 eligible women were recruited. Six (4.5%) declined to participate, and four (3.0%) did not complete the questionnaires. The mean age of the remaining 122 participants was 29.55 years, with a mean gestational age of 39.66 weeks. The majority were primiparas (66.4%), while less than half had a birth companion (45.1%). *Tables 1* and *2* present the participants' sociodemographic and obstetric characteristics.

The average childbirth self-efficacy score was 225.89, of which the outcome expectancy had a mean score of 122.97 and efficacy expectancy of 102.92. For both outcome and efficacy expectancy, participants reported the most helpful coping behaviour as 'listen to encouragement from the person helping me'. For the outcome expectancy subscale, the least helpful behaviour was 'think about others in my family'; for efficacy, the lowest rated item was 'concentrate on an object in the room to distract myself'. The item scores are presented in *Table 3*.

Correlates of childbirth self-efficacy

Table 4 shows the average childbirth knowledge score, which was 10.02/16. The highest score was in labour progress (mean=3.97), followed by dimensions of delivery mode (mean=3.75) and coping with labour (mean=2.31). The mean score for professional support was 53.12/60. The mean score for childbirth fear was 38.90, with fear for mother and infant's health during labour having the highest score (mean=14.34). The lowest score was fear of the unknown, including the hospital environment and medical interventions (mean=5.48).

Table 1. Sociodemographic characteristics

Characteristic	Category	Frequency, n=122 (%)
Age (years)	Range, mean (standard deviation)	18–54, 29.55 (5.07)
	18–24	11 (9.0)
	25–34	100 (82.0)
	≥35	11 (9.0)
Pre-pregnancy body mass index (kg/m²)	Range, mean (standard deviation)	15.42–30.48, 20.31 (2.93)
	<18.5	35 (28.7)
	18.5–24.9	80 (65.6)
	>24.9	7 (5.7)
Appropriate weight gain related to criteria	Yes	47 (38.5)
	No	75 (61.5)
Marital status	Married	115 (94.3)
	Single	7 (5.7)
Residence	City	33 (27.0)
	Town	61 (50.0)
	Countryside	28 (23.0)
Education	Primary school	1 (0.8)
	Junior school	15 (12.3)
	Senior school	15 (12.3)
	Junior college	52 (42.6)
	Undergraduate degree	37 (30.3)
	Graduate degree	2 (1.6)
Occupation	Employed	92 (75.4)
	Unemployed	30 (24.5)
Religious	Yes	45 (36.9)
	No	77 (63.1)
Annual household income (thousand Yuan)	Range, mean (standard deviation)	5–500, 201.6 (120.6)
	<80	13 (10.5)
	80–150	28 (23.0)
	151–300	49 (40.2)
	>300	32 (26.3)
Payment of medical expenses	Self paid	27 (22.1)
	Medical insurance	95 (77.9)

Correlation analysis, as shown in *Table 5*, produced four selected variables that had a significant correlation with childbirth self-efficacy: childbirth knowledge ($P<0.001$), professional support ($P<0.001$), parity ($P=0.014$) and fear of childbirth ($P=0.039$). Birth companion showed no significant correlation with self-efficacy.

For the self-efficacy subscales, childbirth knowledge and professional support showed a significant relationship with outcome expectancy. Childbirth knowledge, professional support and parity had a weak correlation with efficacy expectancy.

As shown in *Table 6*, the best-fit regression model found three variables that explained 30.3% of the variance in childbirth self-efficacy. Professional support, childbirth knowledge and parity were significantly associated with childbirth self-efficacy scores. These results were interpreted to mean that multiparous women with greater childbirth knowledge and better professional support tended to have higher childbirth self-efficacy.

Discussion

This study aimed to investigate self-efficacy in childbirth among Chinese low-risk women in labour, and the factors that affect it. Overall, professional support, childbirth knowledge and parity were shown to significantly impact childbirth self-efficacy in this population.

Childbirth self-efficacy

The total childbirth self-efficacy score during latent phase labour for the present study was 225.89 (standard deviation=47.86), which is a relatively moderate level, higher than found in previous Chinese studies (Liu et al, 2014; Ding and Wu, 2020). The difference in mean score may be related to the age of participants, the provision of antenatal classes and changes in child policy in China.

Ding and Wu (2020) reported lower childbirth self-efficacy (201.91±54.32) than the present study, but focused on women who were >35 years old; the mean age (37 years) was much higher than the present study (29.55 years). Being older exposes women to greater risks in childbirth and higher stress levels (Zhao et al, 2021), which may decrease childbirth self-efficacy.

Gao et al (2011) demonstrated greater levels of both outcome (mean=127.56) and efficacy expectancy (mean=124.56) than the present study, but 100% of their participants joined antenatal classes, while only 53% of the present study's participants did so. Antenatal classes help women to develop labour coping strategies and skills, which is likely to positively influence childbirth self-efficacy. Additionally, antenatal classes were held online for the present study, because of the COVID-19 pandemic in 2019. The lack of a significant relationship between attendance at antenatal classes and childbirth self-efficacy in the present study may be the result of the uncertain effectiveness of the virtual class.

The one-child policy in China ended in 2015, and was followed by the three-child policy announced in 2021 (Wu, 2022). This may have had a positive influence on childbirth self-efficacy domains. Previous studies have shown that primiparas with the intention to have a second child in the future appeared to have higher childbirth self-efficacy and were more concerned about the potential dangers of caesarean section in a future birth (Hou et al, 2017a). Thus the alteration in policy could increase maternal childbirth self-efficacy, and account for the difference in findings between previous assessments of self-efficacy in China.

The mean score of outcome expectancy (122.97±25.58) was higher than efficacy expectancy (102.92±28.71) in the present study, which is consistent with previous research (Gourounti et al, 2015; Schwartz et al, 2015; Hou et al, 2017b). This indicates that women believed more in coping strategy outcomes than their ability to use them successfully. This may be attributable to antenatal class attendance but a lack of sufficient birth preparation prior to labour (Gao et al, 2011).

Further examination of outcome and efficacy expectation items found that the participants felt that the most helpful behaviour was to 'listen to encouragement from the person who was helping me'. This is consistent with Campbell and Nolan (2019), who indicated that positive statements and affirmations, spoken as 'verbal persuasion' in Lowe's theory (Lowe, 1991; Tanglakmankhong et al, 2011), effectively strengthened childbirth self-efficacy. The present study's participants believed that 'thinking of families' and 'concentrating on an object in the room to distract myself' were least helpful. Continuous family support during labour has not been routine for maternal care in most Chinese hospitals because of a lack of resources (Wang et al, 2018), which has likely influenced the perceived importance of a family's role. Similarly, distraction techniques are less practiced before birth and this may indicate that women need more guidance during labour. These areas require more attention in clinical practice in order for Chinese hospitals to provide individualised care to women who experience low childbirth self-efficacy.

Parity

Parity was a significant predictor of childbirth self-efficacy, implying that multiparous women with successful birth experiences had more confidence in their ability to cope with labour. This is consistent with Soh et al (2020) and Neerland et al (2019). Parity was correlated with efficacy expectancy, but not outcome expectancy, reflecting that Lowe's childbirth self-efficacy theory shows that performance accomplishment strongly affects efficacy beliefs (Tanglakmankhong et al, 2011).

Table 2. Obstetric characteristics		
Characteristic	**Category**	**Frequency, n=122 (%)**
Gestational age (weeks)	Range, mean (standard deviation)	37–42, 39.66 (1.02)
	<38	7 (5.7)
	38–40	67 (54.9)
	>40	48 (39.3)
Gravida	Range, mean (standard deviation)	1–6, 1.75 (1.00)
	1	66 (54.1)
	2	29 (23.8)
	≥3	27 (22.1)
Parity	Range, mean (standard deviation)	0–3, 0.40 (0.63)
	0	81 (66.4)
	1	34 (27.9)
	≥2	7 (5.7)
Miscarriages	Range, mean (standard deviation)	0–3, 0.37 (0.61)
	0	84 (68.9)
	1	32 (26.2)
	≥2	6 (4.9)
Dysmenorrhea	Never	37 (30.3)
	Sometimes	66 (54.1)
	Often	13 (10.7)
	Always	6 (4.9)
Unplanned pregnancy	Yes	48 (39.3)
	No	74 (60.7)
Attending birth classes/midwife clinics	Range, mean (standard deviation)	0–20, 2.28 (3.71)
	Yes	64 (52.5)
	No	58 (47.5)
Birth companion	Husband	50 (41.0)
	Mother	1 (0.8)
	Mother in law	4 (3.3)
	Other	0 (0.0)
	None	67 (54.9)
Medical intervention	Cervical balloon dilator	27 (22.1)
	Oxytocin	60 (49.2)
	Amniotomy	44 (36.1)
	Patient-controlled epidural analgesia	72 (59.0)
	None	25 (20.5)

Table 3. Childbirth self efficacy items		
Item	**Mean (standard deviation)**	
	Outcome expectancy	**Efficacy expectancy**
Relax my body	8.24 (1.96)	6.10 (2.16)
Get ready for each contraction	7.70 (2.43)	6.61 (2.19)
Use breathing during labour contractions	8.43 (2.16)	7.52 (2.20)
Keep myself in control	7.95 (2.17)	6.25 (2.41)
Think about relaxing	7.80 (2.15)	6.39 (2.49)
Concentrate on an object in the room to distract myself	7.11 (2.60)	5.41 (2.90)
Keep myself calm	7.80 (2.11)	5.86 (2.44)
Concentrate on thinking about the baby	7.11 (2.73)	6.19 (2.69)
Stay on top of each contraction	7.11 (2.48)	5.71 (2.58)
Think positively	7.82 (2.15)	6.43 (2.50)
Not think about the pain	7.05 (2.71)	5.69 (2.67)
Tell myself that I can do it	8.12 (2.07)	7.14 (2.42)
Think about others in my family	6.69 (2.85)	5.57 (3.10)
Concentrate on getting through one contraction at a time	7.80 (2.49)	7.03 (2.46)
Focus on the person helping me in labour	7.43 (2.63)	6.91 (2.73)
Listen to encouragement from the person helping me	8.80 (1.76)	8.11 (2.24)
Total average score	122.97 (25.58)	102.92 (28.71)
Total score	225.89 (47.86)	

Women may acquire intuitive performance achievement from previous birth experiences that can be recalled in future pregnancies (Tilden et al, 2016). However, nulliparous women lack direct mental–physical experiences and may therefore be uncertain about what to expect in labour, resulting in decreased self-efficacy. Fraser-Mackenzie (2019) highlighted that women without previous birth experience or who had negative experiences need support from healthcare professionals.. This was particularly true for those who felt that their body had failed them in their previous birth and they now doubted their ability to have a vaginal birth (Fraser-Mackenzie, 2019).

Yu et al (2018) reported that prenatal simulated delivery in pregnancy classes can enrich 'second performance achievement', which may help to address self-efficacy in primiparous women. However, Liu et al (2014) found that first-hand information was more useful than indirect experience. Providing women with information about their labour progress in a timely manner may also provide a sense of mastery over the process, assisting with self-efficacy. Additionally, birth reflection appointments could help women to re-evaluate previous experiences of birth more positively (Fraser-Mackenzie, 2019).

Childbirth knowledge
Childbirth knowledge was positively correlated with self-efficacy, which is consistent with previous studies (Schwartz et al, 2015; El-Kurdy et al, 2017; Howarth and Swain, 2019). It was a significant predictor of self-efficacy with greater weight on outcome expectancy than efficacy expectancy. This is similar to El-Kurdy et al's (2017) findings, and may indicate that women know more about the benefits and process of natural childbirth (adequate incentives), as well as pain coping strategies that are greatly required for belief in behavioural outcomes.

The worst domain reported in the present study was 'coping with labour'. Howarth and Swain (2019) emphasised that the relative skills that develop as a result of increased knowledge could help women to develop self-reliance during labour. Avery et al (2014) also found that gaining information during pregnancy and using that to participate in care decisions with a trusted healthcare provider enhanced confidence. 'Vicarious information' is recommended to increase childbirth knowledge, which may come from birth stories from sisters (Carlsson et al, 2015), group sessions, the internet (Abbasi, 2018) or antenatal birth rehearsal (Zhang et al, 2016). This vicarious knowledge may complement a woman's experience and lead to better preparation for birth, decreased anxiety and increased maternal self-efficacy.

Professional support
Professional support was a predictor of self-efficacy, implying that women who had more support from medical staff showed a higher level of childbirth self-efficacy, which is consistent with Avery et al (2014). Professional support mostly influenced outcome expectancy, which may illustrate that professional instructions with scientific medical information are perceived to be credible and persuasive in terms of promoting women's belief in behaviour outcomes during labour. Salomonsson et al (2013b) showed that women recognised skilled midwives as the best person to whom they were willing to hand over control rights and listen to their instructions.

Similar to Avery et al (2014), 'respect and collaborative relationship' from a known midwife can build a relationship of trust between women and midwives. The present study found that the lowest ranked item in professional support was 'the staff stopped doing something if I asked them to stop'. This may indicate that the participants felt isolated or helpless when they

Table 4. Summmary of tested predictive variables

Independent variable		Frequency (%)	Range		Mean (standard deviation)
			Possible	Actual	
Parity	0	81 (66.4)		0–3	0.40 (0.63)
	1	34 (27.9)			
	2	6 (4.9)			
	3	1 (0.8)			
Birth companion	Overall		0–1	0–1	0.52 (0.50)
	Yes	55 (45.1)			
	No	67 (54.9)			
Childbirth knowledge	Overall		0–16	3–16	10.02 (3.13)
	Delivery mode		0–6	0–6	3.75 (1.52)
	Labour progress		0–6	0–6	3.97 (1.43)
	Coping with labour		0–4	0–4	2.31 (1.13)
Professional support	Overall		12–60	34–60	53.12 (5.98)
Fear of childbirth	Overall		15–60	15–60	38.90 (9.25)
	Mother and infant's health		5–20	5–20	14.34 (3.80)
	Losing self-control		4–16	4—16	8.67 (2.47)
	Pain		4–16	4–16	10.42 (2.91)
	Unknown intervention and environment		3–12	3–12	5.48 (2.12)

needed support and assurance during labour. Continuous professional reassurance may help women to feel at ease, promoting maternal confidence even when labour presents challenges (Avery et al, 2014; Campbell and Nolan, 2019). Effective professional support involves multiple domains, including welcome care, physical and emotional support, the provision of information and being an advocate. Tangible support and high-touch care practice are also necessary in clinical practice (Fleming et al, 2011), which relates to 'verbal persuasion' used to increase childbirth self-efficacy.

Fear of childbirth
Fear of childbirth was negatively associated with childbirth self-efficacy, but could not predict it, contrary to Qiu et al's (2020) study. However, there is limited evidence of a cause-and-effect relationship between fear of birth and self-efficacy, as it is difficult to define if fear leads to reduced confidence or low confidence promotes fear (Schwartz et al, 2015). Women with severe fear of childbirth may also be influenced by their social environment or be prompted by the other three sources in self-efficacy theory (Tanglakmankhong et al, 2011). The present study had more multiparous women (33.6%) with previous childbirth experience (performance achievement), higher professional support (vicarious experience and verbal persuasion) and more than half of women receive epidural analgesia (59%) (physical status), which may have reduced the major fear of losing self-control. In addition, in the context of the COVID-19 pandemic in China, the risk of viral infection, the inconvenience of the medical treatment process and restrictions to outdoor activities and visitors in the hospital may have led to negative emotions, such as the fear of infection during childbirth (Mayopoulos et al, 2021). This is likely to influence maternal confidence in a natural birth.

Birth companion
A birth companion was not significantly related to, nor did it predict, childbirth self-efficacy, which is inconsistent with other study results (Sánchez–Cunqueiro et al, 2018). This may be because in the study setting, there was only the option to indicate 'have or not' for a birth companion; this may not represent the perceived effectiveness of companionship and thus could not predict childbirth self-efficacy.

In the present study, husbands were the most common birth companion, while some women elected to be accompanied by other women with birth experience.

Table 5. Correlation coefficients of selected factors and self-efficacy

Variable		Correlation coefficient	P value
Childbirth knowledge	Overall (Pearson's)	0.41	<0.001
	Outcome expectancy	0.50	0.010
	Efficacy expectancy	0.23	<0.001
Professional support	Overall (Spearman's)	0.40	<0.001
	Outcome expectancy	0.44	<0.001
	Efficacy expectancy	0.29	0.001
Parity	Overall (Spearman's)	0.23	0.014
	Outcome expectancy	0.09	0.296
	Efficacy expectancy	0.27	0.003
Fear of childbirth	Overall (Pearson's)	-0.19	0.039
	Outcome expectancy	-0.17	0.060
	Efficacy expectancy	-0.16	0.078
Birth companion	Overall (Spearman's)	0.12	0.185
	Outcome expectancy	0.06	0.501
	Efficacy expectancy	0.14	0.134

Table 6. Multiple linear regression analysis

Factors	B	Standard error	Beta	t	P value	VIF	Durbin-Watson
Constant	46.28	37.85		1.22	0.224		2.113
Professional support	2.93	0.67	0.366	4.40	0.000	1.204	
Childbirth knowledge	3.61	1.30	0.236	2.77	0.006	1.257	
Parity	12.69	6.07	0.166	2.09	0.039	1.090	
$R^2=0.332$, $R^2(adj)=0.303$, $F_{(5,116)}=11.531$, $P=0.000$							

Al-Mandeel et al (2013) reported that husbands tend to provide inadequate support and easily felt overwhelmed during labour, owing to a lack of care skills for labour pain (Hasman et al, 2014). Vaginal examination, blood and a long labour could cause husbands to experience negative emotions, including embarrassment, anxiety or helplessness, which can indirectly affect maternal emotions and confidence in a natural birth (Bohren et al, 2019). Alternatively, mothers as birth companions during labour have birth experience and are reported to resonate with women on a personal level, and are a successful model of the 'vicarious experience' element of self-efficacy (Al-Mandeel et al, 2013). Yüksel and Bayrakci (2019) suggested that exploring the adequacy of social support is critical in meeting women's expectations

and helping build birth companions' skills for support during labour.

Limitations
This was a predictive correlational study. Given that childbirth self-efficacy may change over the perinatal period, a longitudinal study is needed to explore causal relationships in the future. Sampling from one tertiary hospital may limit the generalisability of the results; a further study in multiple settings is needed, with samples of women from lower educational backgrounds and income, and with greater ethnic diversity. Additionally, the childbirth knowledge questionnaire was self-reported, which may mean the results were affected by social desirability bias.

Conclusions
The present study demonstrated a significant relationship between parity, childbirth knowledge and professional support with maternal childbirth self-efficacy during labour through a standard multiple regression model. It provides accurate orientation for healthcare professionals to design comprehensive interventions by targeting women without childbirth experience, low childbirth knowledge and insufficient professional support. Given the multifaceted nature of childbirth self-efficacy, dynamic evaluations and individualised interventions are essential for clinical practice. **BJM**

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Key points

- Low-risk women in the latent phase of labour in China showed moderate childbirth self-efficacy.
- Professional support, childbirth knowledge and parity were significant predictors, which explain 30.3% of the variance in self-efficacy.
- Healthcare professionals should design comprehensive interventions by targeting women without childbirth experience or who have low childbirth knowledge or lack sufficient professional support.

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