

# Fathers' Immediate Experiences of Early Skin-to-Skin Contact with Their Newborns Following Caesarean Section: A Qualitative Descriptive Study

**Qiuwu Zheng**

Hainan Modern Women's and Children's Hospital

**Ailing Cheng**

Hainan Modern Women's and Children's H

**Xiaoyun Xu**

Hainan Modern Women's and Children's H

**Mengmeng Liu**

Hainan Modern Women's and Children's H

**Hui Xing**

Hainan Modern Women's and Children's H

**Jing Li**

Hainan Modern Women's and Children's H

**Ming Fu**

**fming0809@163.com**

Hainan Modern Women's and Children's

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## Research Article

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# Abstract

## Problem:

What are the genuine emotional experiences of fathers during early skin-to-skin contact with their babies following a caesarean section? How does this influence the development of the father's role, and what practical obstacles are currently encountered in promoting this practice?

## Background

During a caesarean section, fathers typically play the role of passive observers, resulting in parents missing the crucial 'golden hour' for establishing an early emotional bond with their newborn. Based on interviews exploring fathers' emotional experiences of participating in skin-to-skin contact within the first hour following a caesarean section, this study provides recommendations and a reference framework to support the development of newborns.

## Purpose

This describes early skin-to-skin contact between father and baby following a caesarean section, taking place within one hour of delivery, and the father's experiences and feelings regarding this early bonding with his newborn.

## Methods

This study utilised brief immediate-experience semi-structured interviews and was conducted at Hainan Modern Women's and Children's Hospital between April and August 2026. Participants were selected using a purposive sampling strategy, and a total of 30 participants ( $n = 30$ ) were included in the study.

## Results

The data revealed three key themes: the multiple benefits of early father-infant skin-to-skin contact, the emergence of the father's role, and the lack of support for clinical implementation. Early skin-to-skin contact helps to rapidly establish the parent-child bond, soothe the newborn's emotions, and alleviate the concerns of mothers and family members. This contact catalyses the emergence of the father's role, including the establishment of parent-child attachment, the transition to fatherhood, the activation of protective instincts, and an increase in confidence in parenting. Furthermore, a range of obstacles—including environmental constraints, staff shortages and inadequate standardised procedures—result in insufficient support for the implementation of father-led early skin-to-skin contact.

# Conclusion

This study sheds light on fathers' emotional experiences during early skin-to-skin contact between father and infant following a caesarean section. It provides an empirical basis for developing a family-centred model of perinatal care for caesarean sections, helping to foster father-infant attachment, promote fathers' involvement in their parenting roles, and address the challenges associated with the promotion of early skin-to-skin contact.

## Introduction

Caesarean section, as a method of delivery used in obstetric emergencies and critical conditions, has seen a significant rise in its global rate. Global estimates indicate a marked increase from 7 per cent in the 1990s (Boerma et al., 2018), to over 21 per cent (projected) in 2021 (Ap et al., 2021), with rates exceeding 50 per cent in some regions. During caesarean section procedures, fathers are typically excluded or reduced to the role of passive observers, resulting in both parents missing the crucial 'golden hour' for establishing an early emotional bond with their newborn (Bystrova et al., 2009). This deprives fathers of the opportunity to participate in and witness the birth process, as well as to assume an early caregiving role. Research indicates that early skin-to-skin contact within the first hour after birth enhances parents' sensitivity to their baby's cues (Arnott and Meins, 2008; Leavitt, 1998; Negayama et al., 2015), whilst promoting emotional bonding and increasing parental satisfaction. It also directly influences the formation of paternal identity, the establishment of parent-child attachment (Olsavsky et al., 2020), and the functioning of the family as a whole. Furthermore, early skin-to-skin contact helps stabilise the newborn's blood glucose levels (Moore et al., 2025), heart rate (Ayala et al., 2021), emotional state (Erlandsson et al., 2007; Yurdal and Özsoy, 2025) and body temperature (Ayala et al., 2021; Gouchon et al., 2010; Shorey et al., 2016; Stephan et al., 2024). Skin-to-skin contact with the father is more conducive to reducing the need for an incubator (Bystrova et al., 2003; Christensson, 1996) and enables the newborn to adapt more quickly to environmental changes. Fathers' involvement plays a significant role in promoting milk production in the mother and increasing the rate of exclusive breastfeeding (Ayala et al., 2025). Currently, existing studies (Holm et al., 2022; Widström et al., 2019) have predominantly been mother-centred, focusing on perceptions of early contact following vaginal delivery and the effects of mother-infant skin-to-skin contact on neonatal behaviour, breastfeeding and maternal psychological changes. However, the role of the father in caesarean section scenarios, as well as his emotional needs and shifts in identity during the first contact, have not yet been systematically explored through qualitative research. This gap prevents clinicians from providing targeted guidance on early contact practices for families undergoing caesarean section. In view of this research gap, this study implemented a novel nursing model of 'paternal presence during caesarean section and immediate post-operative father-infant skin-to-skin contact'. Following the delivery of the newborn and completion of initial assessments, the father was encouraged to engage in immediate skin-to-skin contact with the newborn in the operating theatre or recovery room, fulfilling a role temporarily unavailable to the mother. This ensured the newborn received early tactile stimulation and thermal protection, whilst

simultaneously promoting the father's early role engagement and the establishment of an emotional bond. Based on a qualitative descriptive approach, this study conducted brief one-on-one interviews to explore fathers' emotional experiences of participating in skin-to-skin contact within one hour after a caesarean section. The aim was to understand fathers' needs regarding early skin-to-skin contact, to provide recommendations and a reference framework for promoting maternal recovery and neonatal development, and to offer relevant guidance to clinical healthcare professionals. This study aimed to explore fathers' immediate experiences of early skin-to-skin contact with their newborns following cesarean section, with a focus on their emotional responses, cognitive transformation, behavioral experiences, and perceived barriers.

## **Methods**

### **Study design**

This study employed purposive sampling, a method used in qualitative research, to select fathers of newborns who participated in early skin-to-skin contact with their infants following caesarean section at a Grade III Level A hospital in Hainan Province, China, as the research subjects. It directly describes the fathers' subjective experiences of early skin-to-skin contact with their newborns following caesarean section. The study adhered to the COREQ (Consolidated Criteria for Reporting Qualitative Research) reporting guidelines to ensure the rigour and transparency of the research process. This study adopted a qualitative descriptive design to explore fathers' immediate subjective experiences. Due to clinical environmental constraints, interviews were brief and focused on situational firsthand accounts immediately after skin-to-skin contact, rather than pursuing in-depth phenomenological interpretation of long-term psychological meaning-making. Data collection took place from April 2026 to August 2026.

This study was conducted by three registered female nurses who acted as interviewers; all had received formal training in qualitative research methods prior to data collection. All one-to-one semi-structured interviews were conducted in the absence of any unrelated third parties to protect the privacy of the interviewees. Prior to the formal data collection, a pilot study of the semi-structured interview guide was conducted with five eligible fathers; based on the feedback from this pilot, the follow-up questions and interview procedure were adjusted before the formal study commenced.

### **participants and sample size**

This study employed a purposive sampling method, selecting 30 fathers who met the inclusion criteria from a Grade III Level A hospital in Hainan Province, China, as study participants. The researchers recruited 38 eligible fathers, of whom eight declined to participate. The main reasons for refusal included pre-operative fatigue, reluctance to be recorded, and personal discomfort arising from participating in early father-infant skin-to-skin contact.

## Inclusion criteria:

### (1) Inclusion criteria for fathers

aged between 18 and 40 years; alert and oriented, with no cognitive impairment, mental illness or language communication difficulties; no history of serious cardiovascular disease, epilepsy or other major medical conditions; no acute upper respiratory tract or gastrointestinal infections; no history of haemophobia or fear of needles; willing to participate in this study and to cooperate fully with the process of accompanying the mother in the operating theatre and early skin-to-skin contact between father and infant.

### (2) Inclusion criteria for mothers

The mother is scheduled for an elective caesarean section and her vital signs are stable.

## Exclusion criteria:

(1) **Exclusion criteria for the father:** Impaired consciousness, cognitive function or verbal communication; severe physical illness or frailty preventing participation in interviews; a history of mental illness or emotional disturbances preventing cooperation with the researchers.

(2) **Exclusion criteria for mothers:** Mothers who underwent emergency caesarean section or had severe physical or psychiatric disorders.

## Data collection

This study employed a qualitative descriptive research design, aiming to systematically and directly describe the subjective experiences of fathers during early skin-to-skin contact with their newborns following a caesarean section. Sample size was justified using the information-power framework for qualitative studies. Five dimensions were considered: study aim (explore situational immediate experiences), sample specificity (elective caesarean fathers with varied parity, education and occupation), brief situational interview quality, limited narrative breadth due to acute clinical setting, and thematic analysis approach. A total sample of 30 participants was targeted to achieve sufficient information power to capture diverse perspectives and support thick description (K et al., 2016). Prior to the formal interviews, members of the research team underwent standardised training to ensure consistency in both the data collection process and the data itself; following the interviews, the researchers promptly organised and transcribed the interview recordings, whilst continuously cycling through the 'data collection–data analysis' process, conducting analysis immediately as data was collected. We monitored thematic saturation as a secondary quality indicator: no new core themes were observed after the 17th participant, confirming that sufficient information had been gathered. Throughout the study, the experiences of these fathers were described faithfully, striving to remain as

close as possible to the raw data. All audio recordings, transcripts and coded analysis files have been duly documented and securely archived to ensure the rigour and traceability of the study. The demographic data for these 30 fathers are presented in Table 1.

Table 1  
Demographic characteristics of the 30 fathers

| <b>Participant ID</b> | <b>Age (years)</b> | <b>Parity</b>      | <b>Educational attainment</b>            | <b>Occupation</b>                    |
|-----------------------|--------------------|--------------------|------------------------------------------|--------------------------------------|
| F1                    | 32                 | first-time father  | Bachelor's degree                        | Enterprise employee                  |
| F2                    | 26                 | First-time father  | Junior college (associate)               | Self-employed / business owner       |
| F3                    | 28                 | First-time father  | Bachelor's degree                        | Enterprise employee                  |
| F4                    | 26                 | First-time father  | Senior high school / technical secondary | Worker                               |
| F5                    | 33                 | First-time father  | Junior college (associate)               | Freelancer                           |
| F6                    | 29                 | First-time father  | Bachelor's degree                        | Enterprise employee                  |
| F7                    | 20                 | First-time father  | Senior high school / technical secondary | Worker                               |
| F8                    | 36                 | Second-time father | Junior college (associate)               | Self-employed / business owner       |
| F9                    | 24                 | First-time father  | Junior high school or below              | Farmer                               |
| F10                   | 29                 | Second-time father | Bachelor's degree                        | Government or institutional employee |
| F11                   | 30                 | Second-time father | Junior college (associate)               | Enterprise employee                  |
| F12                   | 34                 | Second-time father | Bachelor's degree                        | Government or institutional employee |
| F13                   | 36                 | First-time father  | Master's degree or above                 | Government or institutional employee |
| F14                   | 31                 | Second-time father | Junior college (associate)               | Self-employed / business owner       |
| F15                   | 25                 | Second-time father | Senior high school / technical secondary | Worker                               |
| F16                   | 25                 | First-time father  | Junior college (associate)               | Enterprise employee                  |
| F17                   | 27                 | Second-timefather  | Bachelor's degree                        | Self-employed / business owner       |

| <b>Participant ID</b> | <b>Age (years)</b> | <b>Parity</b>      | <b>Educational attainment</b>            | <b>Occupation</b>                    |
|-----------------------|--------------------|--------------------|------------------------------------------|--------------------------------------|
| F18                   | 24                 | First-time father  | Junior college (associate)               | Freelancer                           |
| F19                   | 23                 | First-time father  | Senior high school / technical secondary | Worker                               |
| F20                   | 26                 | First-time father  | Bachelor's degree                        | Enterprise employee                  |
| F21                   | 33                 | Second-time father | Junior college (associate)               | Self-employed / business owner       |
| F22                   | 24                 | Second-time father | Junior high school or below              | Worker                               |
| F23                   | 29                 | Second-time father | Senior high school / technical secondary | Driver / transport worker            |
| F24                   | 39                 | Second-time father | Junior college (associate)               | Freelancer                           |
| F25                   | 33                 | Second-time father | Bachelor's degree                        | Enterprise employee                  |
| F26                   | 20                 | First-time father  | Senior high school / technical secondary | Worker                               |
| F27                   | 20                 | First-time father  | Junior college (associate)               | Self-employed / business owner       |
| F28                   | 31                 | Second-time father | Bachelor's degree                        | Government or institutional employee |
| F29                   | 30                 | Second-time father | Junior college (associate)               | Self-employed / business owner       |
| F30                   | 24                 | First-time father  | Senior high school / technical secondary | Enterprise employee                  |

## Determining the Timing and Outline of Interviews

Some of the interviews in this study were relatively brief, as they were conducted in an operating theatre setting, where they were prone to disruption from clinical workflows, neonatal care and family visits. Furthermore, some fathers had relatively limited subjective experiences and insights regarding early father–infant skin-to-skin contact. Despite these time constraints, this study prioritised conducting interviews immediately after the skin-to-skin contact had concluded. Conducting interviews within one hour of the contact minimised recall bias and captured spontaneous, context-driven emotional responses. Given the practical constraints of clinical settings such as operating theatres and anaesthesia recovery rooms, this study designed the interviews to be brief (10–15 minutes). Whilst this acute-phase interview strategy reduced recall bias and captured immediate situational experiences,

clinical disruptions and the interviewees’ stress levels at the time inevitably limited the depth of narrative reflection.

Table 2  
Outline items

| No. | Interview Transcript                                                                                                                                                                                          |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Have you heard of father-infant bonding before? What sort of interactions can you have with your baby before the birth, and why are they important?                                                           |
| 2   | After having skin-to-skin contact or interacting with your baby, have you gained a new understanding of what it means to be a father? What other kinds of interactions would you like to have with your baby? |
| 3   | When you have close contact with your baby, do you think it helps to build a sense of security between you and your baby? Will they still cry and fuss?                                                       |
| 4   | When you first heard your baby cry or held (or saw) your baby for the first time, what were your feelings or concerns?                                                                                        |
| 5   | After skin-to-skin contact between father and baby, what subtle reactions do you look out for in your baby, such as their facial expressions, movements or cries?                                             |
| 6   | Do you need more comprehensive guidance and information on father-infant skin-to-skin contact? In what specific areas?                                                                                        |
| 7   | How do you feel when your baby lies quietly on your chest, listening to your heartbeat as they slowly drift off to sleep?                                                                                     |
| 8   | Would you be willing to share your experience of this early contact with other expectant fathers? If so, what would you share?                                                                                |

## Data analysis

Following the interviews, the interviewers transcribed the audio recordings into text within 24 hours and organised their notes into written records, reflecting upon and analysing the interviewees’ emotional expressions repeatedly throughout this process. Two researchers independently carried out open-coding of all interview transcripts; discrepancies in coding were resolved through team discussions to enhance the reliability of the coding. The data were analysed using thematic analysis, and NVivo 12.0 software was utilised for the analysis, coding and extraction of themes from the material.

## Rigour and reflexivity

To ensure the rigour of the research, the researchers recorded their emotional responses and preliminary interpretations of the data by writing reflexive memos during the interviews; during the analysis phase, team discussions were held regularly, with members who had not participated in the interviews invited to raise questions regarding the identification of themes.

## Ethical considerations

## Ethical approval

obtained prior to the study: The study protocol—including the specific procedures for conducting brief interviews within one hour following caesarean section in the operating theatre or anaesthesia recovery room—was submitted to the Ethics Committee of Hainan Modern Women's and Children's Hospital for formal ethical review and received explicit approval from the committee on 24 March 2026 (approval number XD2026036). During their hospital stay, participants signed a written informed consent form one hour prior to elective caesarean section surgery. Participants were free to refuse to answer questions or withdraw from the interview at any time, without this affecting their clinical care. All interviewers received training in audio recording within a clinical setting. Prior to the commencement of each interview, a separate consultation room was arranged; unauthorised persons were not permitted to enter during this time, and a 'In Use' sign was displayed on the door. Upon completion of data collection, all audio recordings were manually reviewed: prior to transcription, any segments containing the voices of healthcare staff or other third parties, or any identifiable dialogue, were edited and redacted to protect the privacy of unrelated individuals. Informed consent forms, encrypted audio files, transcripts and coded analysis documents were stored centrally and kept in the custody of the researchers. Throughout the study, all participants were anonymised; during the data analysis and manuscript preparation stages, participant identifiers were replaced with research codes to maximise the protection of participants' privacy.

The decision to conduct interviews within one hour of a caesarean section was based primarily on the following considerations, which were approved by the Ethics Committee: (1) this timeframe coincides with the moment when the father is engaging in skin-to-skin contact with the newborn, thereby minimising recall bias; (2) when obtaining the father's informed consent, the researcher explicitly informed him that he could terminate the interview at any time and that participation in the study would not affect any medical care; (3) Interviews were scheduled during breaks in the care of the newborn, when the father's emotional state was relatively stable; (4) The Ethics Committee specifically assessed the risk-benefit balance of this 'acute time window' design and concluded that, provided the aforementioned safeguards were in place, the scientific value of collecting real-time experiential data was acceptable.

## Results

Figure 1. Thematic framework diagram showing main themes and corresponding sub-themes derived from thematic analysis of interview data.

# The Many Benefits of Early Skin-to-Skin Contact Between Father and Baby

## Rapid Establishment of Parent-Child Bonding

This topic describes the observable behavioural outcomes resulting from skin-to-skin contact between a father and his infant. Physical closeness, the sensation of a heartbeat and tactile stimulation can provide newborns with a sense of situational security and elicit behavioural attachment responses. Father 2, aged 26, first-time father: The baby lay quietly on my chest, fast asleep. I wondered to myself why the baby wasn't crying (staring at the baby). Was it because the baby felt so safe? Father 5, aged 33, first-time father: The moment the baby was placed in my arms, I even held my breath (inhaling). Father 10, aged 29, second-time father: I bent down and gently nuzzled his forehead with the tip of my nose. Father 6, aged 29, first-time father: I watched as he opened his eyes; an invisible bond was formed between us (closing my eyes). Father 3, aged 28, first-time father: I held the baby close to my chest so he could feel my heartbeat; perhaps he recognised the 'home' melody. Father 29, aged 30, second-time father: Placing the baby face-down on my chest made me feel particularly secure, and I believe he feels very secure too. Father 30, aged 24, first-time father: During early skin-to-skin contact, I speak softly, hum little tunes and gently stroke the baby.

## **Soothing a Newborn's Emotions**

Father 1, aged 32, first-time father: When the baby is crying, I gently stroke him (on the head), gaze tenderly at his face, and feel his breathing and his emotions (smiling). Father 6, aged 29, first-time father: When the baby suddenly started crying, the nurse instructed me to hold him in a 'side-hug and rock' position, gently patting his back in a rhythmic manner whilst speaking in a low, soft voice. Father 11, aged 30, second-time father: With my palm flat, I stroke him slowly and gently from his neck to his bottom, keeping my eyes fixed on him and holding my breath to observe his state. I can feel his back gradually relaxing. Father 17, aged 27, second-time father: When the baby was crying so hard his face turned bright red, (he chuckled softly) I realised that my voice and the rhythm of my movements could act as a 'pause button' for his emotions. Father 26, aged 20, first-time father: I adjust my position so the baby is lying face down, press the baby's ear close to my chest, and sit quietly with him, letting him listen to my heartbeat. Father 29, aged 30, second-time father: When the baby is crying or restless, I soothe him by speaking softly, humming gently, and patting his back and bottom rhythmically.

## **Alleviating the concerns of mothers and families**

This theme captures how father-infant skin-to-skin contact eased worries of mothers and other family members regarding the newborn's condition. Father 1, aged 32, first-time father: The medical staff explained the early skin-to-skin contact procedure, key points and precautions to me, thereby alleviating my psychological concerns about not knowing how to hold the baby and my fear of accidentally harming the infant. Father 7, aged 20, first-time father: I took the initiative to fulfil my duties as a father, caring for the newborn with great attention, thereby easing my partner's worries about the baby, and working together wholeheartedly to build our little family. Father 8, aged 36, second-time father: My family were always worried when the baby cried shortly after birth, so I gently soothed the baby, interacted with him patiently, and (gently) provided him with warmth, whilst proactively communicating the baby's condition to my family. Father 15, aged 25, second-time father: When I return home, I can tell my family and my

partner about every change in the baby during this process; I take great care to record every stage of my baby's growth and surround him with love.

## **Fostering the Awakening of the Fatherly Role**

### **Fostering Parent-Child Attachment and Awakening the Instinct for Fatherly Love**

Distinct from the infant-focused behavioural bonding described in 4.1.1, this theme reflects fathers' internal subjective psychological shifts triggered by physical skin-to-skin contact: surges of paternal affection, deep emotional attachment toward the newborn, and inner emotional fulfilment. Father 4, aged 26, first-time father: 'The moment I held the baby against my chest for skin-to-skin contact, (his gaze gentle and downcast) his little hand instinctively clasped my finger, and a tender fatherly love I'd never experienced before welled up inside me all at once.' Father 9, aged 24, first-time father: I reached out, wanting to touch him but afraid to, (body tense) worried my fingernails might scratch him. After skin-to-skin contact, that void I'd always felt inside was suddenly filled. Father 16, aged 25, first-time father: The moment the child lay on top of me crying, (eyes reddening) tears welled up instantly; it was as if I'd finally connected with this little life. Father 21, aged 33, second-time father: The baby lay quietly asleep on top of me, his little nose brushing against my skin; I didn't dare turn over, and a deep-seated sense of attachment welled up from within—I simply couldn't bear to be apart from him. Father 24, aged 39, second-time father: After skin-to-skin contact, as soon as he came near my chest, he would stop crying, which truly awakened in me that instinctive paternal love. Father 27, aged 20, first-time father: The moment the nurse placed the baby on my chest, (my pupils widened slightly) I was completely dazed... It wasn't fear, but that feeling of my heart skipping a beat.

### **Completing the Identity Transition and Establishing Role Awareness**

Father 8, aged 36, father for the second time: 'Before, I was just someone's son and husband,' (speaking calmly and matter-of-factly) 'but the moment the baby lay on my chest, I began to gradually accept this entirely new role as a father.' Father 10, aged 29, father for the second time: The operating theatre nurse patiently guided me through skin-to-skin contact with my newborn; at that moment, I was no longer merely a family member looking on, but a father taking on the responsibility of care. Father 13, aged 36, first-time father: It was only after holding the baby in my arms and feeling our skin pressed closely together (gazing quietly) that I truly understood that a father is also a vital source of support on the child's journey through life. Father 14, aged 31, second-time father: The moment my child lay peacefully on my chest, a thought flashed clearly through my mind: I am this child's one and only father. Father 26, aged 20, first-time father: After leaving the operating theatre, I realised clearly that this wasn't just a spectacle to watch; it was the most important event of my life – I was one of the protagonists, no longer a detached spectator.

# Awakening the instinct to protect and reinforcing a sense of responsibility

Father 5, aged 33, first-time father: 'The baby lay soft and tiny on my chest; I instinctively tensed my body to shield him, afraid that turning over might disturb him' (gazing tenderly), 'a strong urge to protect him welled up inside me.' Father 18, aged 24, first-time father: When the baby was crying and clinging to my chest, gradually calming down, looking at his fragile little face (fingers hovering beside the baby), I silently resolved to do my utmost to provide him with a stable life. Father 19, aged 23, first-time father: Seeing first-hand how the baby clung tightly to me seeking security, I realised that I was the first person he relied on in this world. Father 25, aged 33, second-time father: When my child cries in my arms, my first reaction isn't joy, but heartache (frowning); if anyone ever dares to bully him in future, I will absolutely not let them get away with it.

## Alleviating anxiety and building confidence in parenting

Father 5, aged 33, first-time father: After skin-to-skin contact, I realised that as soon as I held him, the baby would calm down. Father 18, aged 24, first-time father: Skin-to-skin contact allows me to soothe a crying baby effectively; I genuinely feel that I can empathise with my baby, and I'm gradually building my confidence in parenting. Father 22, aged 24, second-time father: 'After chest-to-chest contact, I can quickly sense my baby's emotional changes and no longer worry that I'm a failure as a father (sighs with relief).' Father 27, aged 20, first-time father: I feel that the excellent medical team's hands-on practical training, technical support throughout the process, patient guidance and constant encouragement have greatly boosted my confidence in caring for a newborn. Father 28, aged 31, second-time father: 'Before, when I watched others looking after their children, I thought it looked far too difficult; but after skin-to-skin contact, I actually feel much less daunted.'

**Support for the promotion of early skin-to-skin contact between father and baby; insufficient conditions at present**

## Limitations in environmental and physical facilities

Father 7, aged 20, first-time father: The recovery room has a dedicated entrance and exit for the operating theatre; whilst in the operating theatre, fathers are only permitted to remain in the area next to the mother's head. Father 2, aged 26, first-time father: The recovery room has a separate changing room and washbasin, with dedicated surgical gowns, face masks and disposable caps provided; fathers must put on the full set of protective clothing and sanitise their hands before entering the operating theatre. Father 13, aged 36, first-time father: The observation area in the recovery room is relatively small and cannot be further adapted, resulting in limited space for movement. Father 19, aged 23, first-time father: There are no integrated family-centred labour and delivery rooms; the lack of comfortable spaces and the overly 'clinical' atmosphere are not conducive to creating a relaxed environment. Father 24, aged 39, second-time father: There are too few dedicated adjustable reclining chairs, which causes inconvenience when multiple family members accompanying the mother are taking part in father-infant bonding.

## Shortage of Staff and Service Capacity

Father 2, aged 26, first-time father: There are currently few nurses in the operating theatre, so they have limited time to specifically oversee fathers' presence and skin-to-skin contact during the birth, and their workload is quite heavy. Father 12, aged 34, second-time father: I think during the pre-operative consultation, I could be given guidance on relevant childcare knowledge and shown videos explaining what I need to do when entering the operating theatre, how to correctly practise skin-to-skin contact with the baby, and how to monitor the baby's condition; only by learning these things can I participate in early skin-to-skin contact. (Leans forward). Father 22, aged 24, second-time father: There is a lack of specialised training and standardised service procedures for early father-infant skin-to-skin contact: healthcare staff have not received specific training on fathers' participation in skin-to-skin contact (nods).

## Refining procedures and systems to achieve standardised implementation

This subsection describes objective procedural and institutional barriers existing in current clinical practice. Father 1, aged 32, first-time father: There should be a standard procedure for partner attendance in the operating theatre; in the event of an emergency caesarean section, partner attendance should not be arranged; assessment forms should be printed in advance, and each item should be checked to ensure the partner meets the eligibility criteria. Father 23, aged 29, second-time father: A standardised set of procedures for skin-to-skin contact with the baby in the operating theatre should be established; all nurses should follow this procedure consistently, and a video should be produced to document it. Father 9, aged 24, first-time father: Contingency plans for various unexpected situations should be prepared, and emergency measures should be devised in advance. Father 12, aged 34, second-time father: Collect feedback from all three parties to continuously optimise the service; conduct simple satisfaction surveys and continually refine the entire range of support services for fathers during childbirth. Father 20, aged 26, first-time father: During antenatal check-ups, I would suggest that doctors and nurses explain the process of emotional support for fathers during caesarean sections to me. If a leaflet could be provided so I could study it at home and be mentally prepared, it might make me feel more at ease (spoken in a gentle tone). Father 30, aged 24, first-time father: Provide more information on the benefits of early father-child bonding during the antenatal period; explain this in more detail during antenatal check-ups and classes, and distribute information leaflets or show short educational videos.

## Traditional and Family Values

Despite the numerous positive experiences reported by participants, a proportion of fathers in this sample—influenced by traditional notions of family care—expressed psychological reservations, discomfort or even passive resistance towards early father-infant skin-to-skin contact. Father 12, aged 34, second-time father: I'm just there to earn a living and support the family; looking after the baby and bonding with them straight after birth is the mother's job. Father 18, aged 24, first-time father: I think

‘holding the baby and skin-to-skin contact are the mother’s responsibilities’—it doesn’t really concern me. Father 21, aged 33, second-time father: I’m worried about hurting the baby or have reservations about exposing my own body; I don’t like to take the initiative and am reluctant to have early contact (shakes his head). Father 23, aged 29, second-time father: I’m worried the baby is ‘sensitive to the cold and susceptible to draughts’; skin-to-skin contact might cause them to catch a chill and fall ill; Father 25, aged 33, second-time father: I sweat a lot and have a lot of body hair, so I’m afraid I’m not suited to direct contact with a newborn. Father 29, aged 30, second-time father: In all the caesarean sections I’ve seen around me, it was the mothers who went in on their own; no one else wanted to go in. But I was forced to go in by my wife, and deep down I’m actually resistant to it.

## Discussion

### **Early skin-to-skin contact between father and infant following caesarean section is an alternative mechanism for establishing parent-child attachment**

Research indicates that both emergency and elective caesarean sections are associated with a reduced likelihood of early mother-infant skin-to-skin contact; due to incision pain, restricted mobility and the sterile environment requirements of the operating theatre, it is difficult for mothers to engage in skin-to-skin contact with their newborns immediately after birth (Ünal and Şentürk, 2021). However, there is a psychophysiological ‘sensitive period’ immediately after birth, during which close contact between mother and infant is crucial for long-term interaction. The first hour of life is referred to as the “golden hour”; separation lasting as little as two hours after birth may produce adverse impacts on maternal sensitivity and mother-infant dyadic reciprocity that are not fully offset by subsequent mother-infant rooming-in (Bystrova et al., 2009), which cannot be compensated for by subsequent mother-infant rooming-in. Early skin-to-skin contact between father and infant can effectively compensate for the early tactile bonding missed following a caesarean section due to the mother’s surgery. Fathers have described the emotional bond formed instantly upon skin-to-skin contact with their newborns, which enhances their sense of security (Karaman et al., 2025; Yurdal and Özsoy, 2025). Newborns require care for both their physiological and psychological needs after leaving the maternal environment; early skin-to-skin contact between father and infant helps stabilise the newborn’s vital signs, alleviates stress responses, reduces crying time, and facilitates early breastfeeding (Moore et al., 2016). Interactions such as the baby lying quietly on the father’s chest—a connection established through the transmission of heartbeats, shared body temperature and rhythmic touch—provide the newborn with continuous signals facilitating the transition between the internal and external environments (Toprak and Erenel, 2022; Wells et al., 2024). Early father-infant skin-to-skin contact serves as an effective alternative mechanism for initiating parent-child attachment following a caesarean section, offering families where immediate mother-infant contact is not possible an alternative pathway to early attachment. Positive outcomes from father-infant skin-to-skin contact do not occur automatically. Some existing literature documents negative psychological reactions experienced by fathers when performing skin-to-skin contact, including performance anxiety, fear of handling a vulnerable newborn, and a sense of inadequacy when the infant remains restless despite the contact. Consistent with this literature, participants in this study also

expressed concerns about harming the infant prior to receiving practical guidance. This suggests that the benefits of father-infant skin-to-skin contact are highly dependent on structured professional support, rather than merely providing an opportunity for contact. For midwives, simply providing an opportunity for skin-to-skin contact is far from sufficient; midwives need to continuously observe the father's behavioural cues, identify early signs of anxiety and insecurity, and provide real-time verbal guidance and emotional reassurance throughout the contact process (Ayala et al., 2016; Holm et al., 2022). Benefits cannot be assumed for every father, given pre-existing reservations and potential resistance among some expectant fathers

## **Early skin-to-skin contact plays a significant catalytic role in the awakening of the paternal role**

This study indicates that the very first moment of early skin-to-skin contact between father and infant following a caesarean section enables fathers to share responsibility for the newborn in a way that benefits future family life (Ayala et al., 2016; Olsson et al., 2017). The results show that fathers who participated in skin-to-skin contact generally underwent a shift in their self-perception from “bystander” to “caregiver.” This shift in role perception was accelerated through physical experience, and fathers' self-efficacy was enhanced through a positive behavioral cycle (Leahy-Warren et al., 2023; Merritt, 2021; W and K, 2025). Early skin-to-skin contact on the day of a caesarean section, through the first-hand experience of ‘being relied upon by the baby’, directly catalyses the father's psychological transition from husband to father. It breaks the shackles of traditional gender roles—such as the notion that ‘holding the baby is the mother's job’—and encourages fathers to participate in early skin-to-skin contact, thereby effectively promoting the formation of paternal identity and the development of confidence in parenting (Hrybanova et al., 2019; Yildirim et al., 2023).

## **Systemic Barriers to the Clinical Promotion of Early Father-Infant Contact**

This study found that the barriers to promoting early skin-to-skin contact between fathers and infants following caesarean section do not stem from a lack of acceptance of the concept, but rather from the combined effect of multiple structural constraints relating to the physical environment, staffing, the service system and traditional attitudes. The root causes can be traced back to institutional levels such as hospital management, the allocation of healthcare resources and the public health education system. In terms of physical infrastructure, hospital spaces are predominantly laid out according to the logic of diagnosis, treatment and care, creating an atmosphere that is overly ‘medicalised’. There is a lack of family-oriented, humanised settings for father-infant contact, and the family-centred approach to obstetric care has not yet been fully implemented; this reflects a situation where improvements to physical infrastructure have lagged behind the emerging needs for new types of maternal and infant care services. With regard to staffing and service capacity, the nurse-to-patient ratio in father-infant contact rooms is low, nurses face high workloads, and there is an insufficient supply of specialised services; furthermore, there is a lack of dedicated training and standardised service procedures for early skin-to-

skin contact between fathers and infants. In terms of traditional attitudes, prevailing views lead most fathers to assume that newborn care is the mother's responsibility; there are also cognitive biases, such as the belief that infants are sensitive to the cold, susceptible to draughts, or that a father's physical condition makes contact unsuitable. This further highlights the inadequacies of the paternal parenting support system and the public maternal and child health education system, as antenatal education has long focused on maternal health whilst neglecting the empowerment of fathers.

## Practice and policy implications

The findings of this study provide practical recommendations for frontline midwives, obstetric clinical teams and health service policymakers regarding family-centred perinatal care following elective caesarean sections.

Antepartum education should place greater emphasis on raising awareness of early skin-to-skin contact between fathers and their babies. During antenatal clinics and classes, midwives can challenge traditional gender role stereotypes surrounding newborn care, explain the physiological and psychological benefits of skin-to-skin contact for fathers to expectant fathers, and dispel common misconceptions. Educational materials, such as illustrated leaflets and short instructional videos, can help fathers who plan to participate in skin-to-skin contact during surgery or in the post-operative recovery room to prepare in advance. In settings such as operating theatres and post-anaesthesia care units, hospitals should optimise the physical environment and equipment configuration to provide private spaces for father-infant contact. Standardised clinical protocols should be established for early father-led skin-to-skin contact following caesarean section. Obstetricians and midwives require specialised in-service training, which should cover the real-time identification of signs of anxiety in fathers, on-the-spot guidance, emotional support and contingency plans for risk management. In high-workload situations, simplified checklists can support safe and consistent implementation.

From a health system perspective, this study highlights the need to move beyond a mother-centred model of perinatal education. Service planning should recognise fathers as key participants in early infant care. To translate the evidence on father-led skin-to-skin contact into routine clinical practice, further investment is required in staffing and family-oriented maternity facilities.

## Limitations

This study has certain methodological and contextual limitations. As a single-centre study, the sample comprised only fathers of low-risk newborns following elective caesarean sections; the sample was highly homogeneous and did not include special populations such as those involving emergency caesarean sections or high-risk newborns. Consequently, the generalisability and clinical applicability of the conclusions are limited. Furthermore, all data were derived from single, brief interviews (10–15 minutes, averaging 12 minutes) conducted within one hour of surgery in the operating theatre or recovery room. Although standardised probing techniques were employed, environmental distractions and time constraints limited the depth of reflection in the respondents' narratives. Such single-point

acute-phase interviews may overlook the gradual unfolding of emotional processing and delayed reflections on role transitions, which may have some impact on the richness of the subject matter; consequently, some of the deeper implications of fathers' role transitions may not have been fully captured by this study. Furthermore, the interviews were conducted within one hour of the operation and could therefore only reflect the fathers' immediate emotional experiences. Influenced by the postnatal stress response, they were unable to capture the long-term dynamic changes in role adaptation and father-infant attachment. At the same time, face-to-face interviews are prone to social desirability bias, with respondents tending to emphasise positive experiences whilst downplaying genuine negative feelings. This study collected data solely from fathers, lacking triangulation from the perspectives of mothers and healthcare professionals; furthermore, insufficient reflexive analysis by the researchers was conducted, raising the possibility of subjective interpretative bias.

Given the time constraints of the interviews, this study presents descriptions of the fathers' situational experiences in the immediate aftermath of skin-to-skin contact, rather than an in-depth narrative analysis of their long-term psychological processes. Future research could adopt phenomenological design with longer, multiple-round interviews to obtain richer narrative data on fathers' lived-experience meaning-making. Future research should consider adding second-round follow-up interviews at 24-48 h post-caesarean section. Combining acute immediate interviews and short-term follow-up interviews can better capture both spontaneous in-situ feelings and delayed reflective perspectives on paternal role transition.

## Conclusion

Through key concepts such as the development of father-infant attachment, the emergence of the father's role, and barriers to implementation, this study systematically addresses the research question: 'What emotional experiences do fathers undergo during early contact following a caesarean section?' It provides empirical support and clinical guidance for the development of a family-centred model of perinatal care following caesarean section.

## Declarations

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### Author contributions

**Qiuwu Zheng:** Supervision, Project Administration, Resources, Writing – Original Draft

**Ailing Chen:** Formal Analysis , Validation.

**Xiaoyun Xu:** Investigation

**Mengmeng Liu:** Software, Data Curation

**Hui Xing:** Investigation

**Jing Li:** Conceptualization, Writing – Review & Editing

**Ming Fu:** Data Curation, Formal Analysis, Methodology.

### **Informed consent**

Informed consent was obtained from all individuals included in this study.

### **Ethical approval**

This study was approved by the Ethics Committee of Hainan Modern Women's and Children's Hospital, with ethics approval number XD2026036.

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  33. Attachment

# Figures

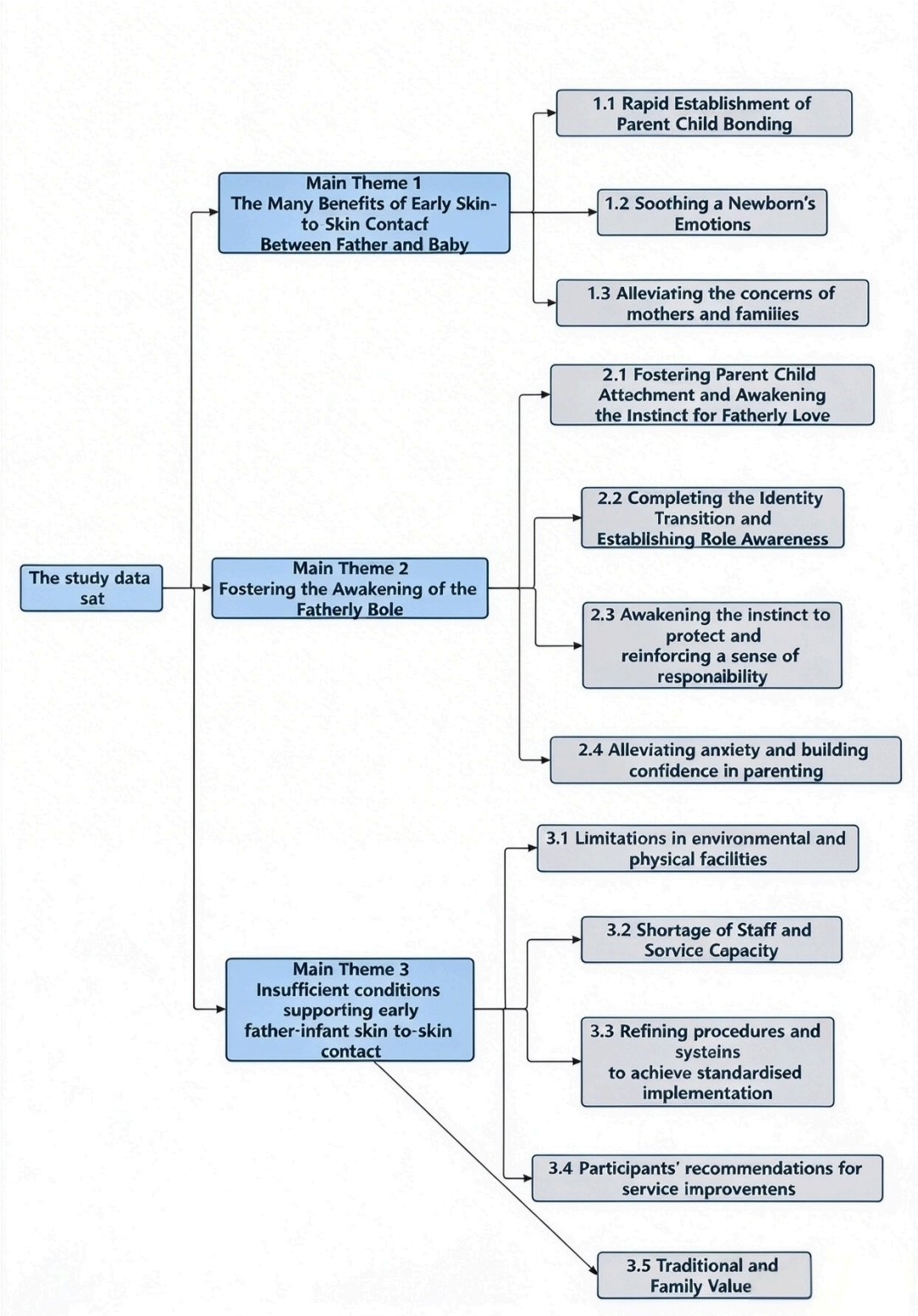


Figure 1

Thematic framework diagram showing main themes and corresponding sub-themes derived from thematic analysis of interview data.

## Supplementary Files

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