



# Paternal Role Adaptation in Premature Infants in NICU: A Descriptive Qualitative Study

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**Abstract:** Aims and objectives: This study aimed to explore the adaptation experiences of first-time fathers of preterm infants after experiencing the trauma of preterm birth. Background: Becoming a father is a significant life event that can bring about profound changes in a man's identity and lifestyle. However, there is currently a lack of research on the adaptation experiences of fathers of preterm infants. Design: A descriptive qualitative study was conducted. Methods: Thirteen fathers of preterm infants were recruited from June 2022 to April 2023 at Chongqing Children's Hospital in China. Participants were all first-time parents, and their infants had received treatment in neonatal intensive care units. Deep semi-structured interviews, guided by a questionnaire, were conducted to collect data. Inductive content analysis was used to analyze the data. Reporting followed COREQ guidelines. Results: The data analysis generated 28 themes, including 9 subordinate themes and 3 super-ordinate themes. The superordinate themes were "Role preparation", "Post-traumatic adjustment", and "Growth adaptation". Conclusion: Fathers of premature infants in the Neonatal Intensive Care Unit (NICU) face unique challenges during their child's hospitalization and in the initial three months following discharge. The father's ability to navigate these challenges and embrace the complex aspects of fatherhood signifies his adaptation to the role. Relevance to clinical practice: Healthcare providers should assess the role adaptability of fathers of preterm infants and provide timely and effective interventions to support parental emotional well-being and parenting behavior. **Keywords:** paternal adaptation, premature infant, neonatal intensive care unit (NICU), qualitative research; fatherhood

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## 1. Introduction

In recent years, there has been a growing number of studies focusing on the role of fathers and addressing various aspects such as their needs (Merritt, 2021), psychological conditions (Cajiao-Nieto et al., 2021), and parenting experience (Stefana et al., 2018). The importance of fathers' status has always been recognized, as it can impact the postpartum depression of mothers and the establishment of the parent-child relationship (Fitzgerald et al., 2015; Winter et al., 2018; Alnuaimi & Tluczek, 2022). While Eskandari et al. (2017) have described the adjustment process for fathers of newborns, it is important to note that preterm birth presents additional challenges for parenthood, and fathers may face even more hurdles in this context (Logan & Dormire, 2018). However, to the best of our knowledge, no studies have yet explored the experiences of fathers of preterm infants in terms of paternal adjustment, the process of becoming a father, and the specific needs and challenges associated with fatherhood.

## 2. Background

Approximately 15 million infants are born prematurely worldwide each year (World Health Organization [WHO], 2018). Premature infants are those born before completing 37 weeks of gestation. The advancement of medical technology has led to an increased survival rate among premature babies. However, this also highlights the need for improved medical services to minimize complications and adverse outcomes in these infants (Amorim et al., 2018). Compared to full-term infants, preterm infants face a significantly higher risk of respiratory diseases, mechanical ventilation, jaundice, hypoglycemia, and sepsis. Consequently, they often require specialized care in neonatal intensive care units (Kim, 2018).

Research has demonstrated that early contact is the most crucial factor in establishing the relationship between fathers and premature babies (Provenzi et al., 2016; Alnuaimi & Tluczek, 2022). Premature birth and hospitalization disrupt normal parent-infant interactions and jeopardize the bonding process. It has been found that fathers may experience lower levels of bonding compared to mothers after premature birth (Alnuaimi & Tluczek, 2022). In the cultural context of China, parents are typically not allowed to enter the intensive care unit to care for their children. While parents of at-risk babies in the neonatal intensive care unit (NICU) require support, the focus of healthcare providers is often on the survival of these extremely

vulnerable infants, which can overshadow the needs of parents (Zhang & Wu, 2022; Zhou et al., 2021). Consequently, prolonged parent-child separation poses a threat to the establishment of the parent-child relationship.

Adaptation refers to the coordination between individual needs and external demands, and paternal adaptation specifically focuses on how men adjust to the responsibilities and challenges of fatherhood (Eskandari et al., 2017). The birth of a premature baby can be a highly stressful or traumatic event for a family, and parents often face additional challenges and put in extra effort to care for their child (Amorim et al., 2018; Aydon et al., 2018). Previous research has primarily focused on the postpartum adaptation of mothers, with the father's role being described in relation to the mother (Alnuaimi & Tluczek, 2022; Stefana & Lavelli, 2017). However, fathers play multiple roles during their child's hospital stay, including delivering updates to family members, supporting their partner, managing their own work, and dealing with financial stress. Unfortunately, their experiences are often overlooked (Cajiao-Nieto, 2021; Værland et al., 2017). Studies have shown that postpartum maternal depression is linked to the role of fathers, and the well-being of children in the future can also be influenced by fathers (Erika, 2016; Filippa et al., 2021). Therefore, it is crucial to pay attention to the role adaptation process of premature fathers. This study aims to explore the experiences of first-time premature fathers in their role adaptation process. The findings of this research can serve as a foundation for developing effective health education programs.

### 3. Methods

Descriptive qualitative design was employed to explore the process of role adjustment among fathers of preterm infants as they transition into the role of new fathers. The study adhered to the Comprehensive Criteria for reporting qualitative research (COREQ) (Tong et al., 2007) throughout its duration.

#### 3.1 Study setting and Participants

The study was conducted in Chongqing, a city located in the southwest region of China, from June 2022 to April 2023. Participants were recruited from the neonatology department of a children's hospital in Chongqing, which has a capacity of 310 open beds and provides treatment to over 10,000 patients annually.

The inclusion criteria for fathers of preterm infants in this study were as follows: (1) infants with a gestational age <37 weeks and >28 weeks; (2) infants admitted to the NICU immediately after birth; (3) fathers who were becoming a parent for the first time and served as the primary contact person during their child's hospitalization; (4) voluntary participation. The exclusion criteria were as follows: (1) infants with serious congenital diseases or critical conditions; (2) fathers with cognitive dysfunction or mental illness.

#### 3.2 Data collection

Data were collected through single semi-structured interviews with fathers, which were audio-recorded. The initial interview outline was developed through literature review and research group discussion, followed by pre-interviews with two fathers. Based on the pre-interview results, the interview outline was adjusted and finalized (Table 1).

The data collection spanned 10 months (June 2022-April 2023), with interviews conducted on the second day after hospitalization, the day of discharge, and six months after discharge. Thirteen fathers participated in the study, representing three provinces in China (Table 2). The sample size was determined by data saturation, which is reached when no additional codes or information emerge (Elo et al., 2014). The interviews were transcribed verbatim, and transcripts were cross-checked with the recorded interviews.

The interviews took place in the neonatology department's propaganda classroom (for the first and second interviews) and the neonatology department's outpatient department (for the third interview). Each interview lasted between 20 and 40 minutes, and non-verbal expressions of the participants were noted during the interview.

Table 1. The interview outline

The first interview(The second day after the child was hospitalized)	The second interview(The day of the child's discharge)
1. What have you done to prepare for your baby's birth?	1. What confusion did you encounter during your baby's hospitalization? How are these difficulties solved?
2. What impact has your baby's early birth brought to you and your family?	2. What support would you most like to receive while your baby is in hospital?
3. Do you think you're ready to be a father?	3. How has your life changed since your baby was born?
The third interview(Six months after the child was discharged)	
1. Can you talk about how you feel about taking part in baby care?	
2. What difficulties did you face in taking care of your baby? How was it solved?	
3. Can you talk about your understanding of the role of "father"?	

### 3.3 Data analysis

The data were analyzed using inductive content analysis, following the guidelines of Elo and Kyngäs (2008). This process involved open coding, categorization, and abstraction. Initially, one researcher (RS) thoroughly reviewed the interview transcripts to become familiar with the data. Relevant phrases, sentences, and condensed meaning units related to the study objective were identified and coded into a matrix. These codes were then synthesized into subcategories through an inductive process. The research team (XPJ, RS, and DZ) critically evaluated the analysis and reached a consensus on the refinement of subcategories, constantly referring back to the original data.

### 3.4 Ethical considerations

The study received ethical approval from the hospital ethics committee (Approval number: (2022) LUN Review (Research) No. (115)). It adhered to the good scientific principles outlined by the World Medical Association (2018). Participants provided voluntary informed consent and were informed of their right to withdraw from the study at any time. Confidentiality of their information was ensured.

### 3.5 Rigour and reflexivity

The research team involved in this study consisted of a professor, a Master of Science in Nursing, and a neonatal nurse. It is important to transparently clarify the relationships between the researchers and the participants, as well as the conduct of the study, to minimize subjective biases that might influence the interpretation of results (Olmos-Vega et al., 2023). The interviews were conducted by RS, one of the authors, who is a female researcher experienced in qualitative methodology and has 8 years of experience working in the neonatology department. The other researchers also possessed strong methodological skills.

## 4. Findings

Thirteen fathers of premature babies, whose children had been in the neonatal intensive care unit at Chongqing Children's Hospital, participated in this study. The average age of these fathers was 32 years (ranging from 27 to 39 years), and they came from three different provinces in China with varying levels of education. The gestational age of the infants at birth ranged from 29 to 34 weeks, and the average duration of their stay in the NICU was 6 weeks. The interview focused on the fathers' experiences and roles with their preterm infants, starting from before birth and up to 6 months after discharge. The findings can be summarized into three main themes: role preparation, post-traumatic adjustment, and growth adaptation.

**Table 2. Participants' demographic characteristics (n=13)**

No	Age	Job	Education	Residence	Child Sex	Child birth weight(g)	Gestational age of child (weeks)	Time in NICU(days)
1	33	Freelance work	Bachelor	Rural	Boy	1580	30+2	56
2	39	Civil servant	Master	Urban	Girl	1250	30	68
3	33	Professional technical personnel	Master	Urban	Boy	2225	34	17
4	31	Employee	Bachelor	Urban	Boy	1400	29+6	56
5	29	Salesman	Primary school	Urban	Boy	1185	31	58
6	32	Peasant	Middle school	Rural	Boy	1840	32+5	15
7	29	Engineer	Bachelor	Urban	Girl	1750	34+2	21
8	28	Unemployed	Primary school	Rural	Girl	1350	31+2	44
9	32	Salesman	High school	Urban	Girl	1400	32+2	41
10	32	Employee	Bachelor	Urban	Boy	950	28+4	96
11	34	Construction worker	High school	Urban	Boy	1710	32+3	37
12	27	Soldier	Bachelor	Urban	Girl	2230	33+4	16
13	34	Worker	Diploma	Urban	Girl	1300	29+3	52

### 4.1 Role preparation

The fathers' experiences related to role preparation can be described through three subcategories: having a positive attitude toward fatherhood, gaining knowledge and skills to play the father's role, and changing their habits (Figure 1).

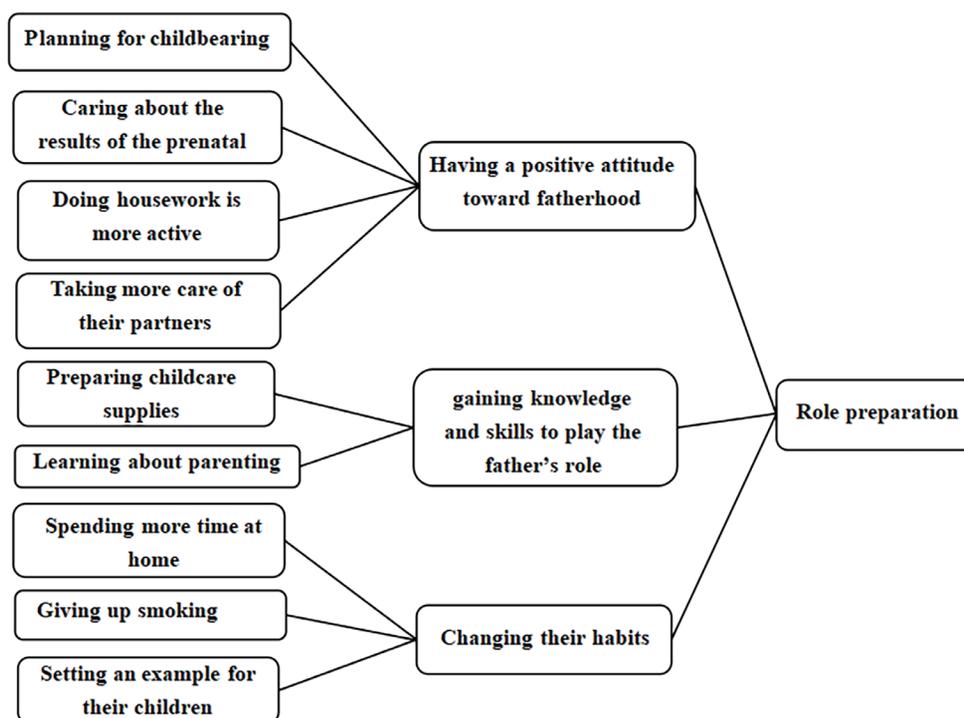


Figure 1. The fathers' experiences of role preparation

#### 4.1.1 Having a positive attitude toward fatherhood

This category encompasses subcategories such as planning for childbearing, caring about the results of prenatal tests, being more active in household work, and providing increased care for their partners.

Almost all of the fathers reported that they had planned for childbearing, and six of the families had undergone assisted reproduction. The fathers described the physical changes their wives experienced during pregnancy. Witnessing their wives' painful experiences made them reflect on the hardships of life and they actively monitored the results of every prenatal test to ensure the well-being of their wives and babies.

*We were married for 7 years to have this baby, and at that time, the mood is completely indescribable, very excited... [Interview 13]*

*Our children are twins, and my wife experienced severe vomiting and could not eat any food. Her feet were swollen later in pregnancy, making it difficult for her to walk. I feel very sorry for her... [Interview 2]*

Fathers assume more 'partner' responsibilities prior to the birth of children. They invest more energy in caring for their partner and take the initiative to engage in household chores. In summary, they strive to create better conditions for their partner and children.

*Before the baby was born, I took care of my wife more, such as cooking and doing the laundry, to ensure she could rest more. [Interview 11]*

#### 4.1.2 Gaining knowledge and skills to play the father's role

This category includes subcategories such as preparing childcare supplies and learning about parenting.

Fathers often perceive 'fetal education' as a regular practice and may not express much emotional attachment to the baby in the womb. However, they actively contribute to preparing for the arrival of the new baby by assisting their wives in gathering necessary items. Fathers acquire knowledge about parenting through various means, including watching short videos, searching on Baidu (a Chinese search engine), reading parenting books, and seeking advice from experienced friends.

*My wife interacts with the children more, telling them stories, singing songs, and chatting with them. I just say to my wife's belly every day, 'I'm daddy, I'm daddy... Hahaha' [Interview 4]*

*I worked with my wife to prepare everything we needed for the birth. Although I am not very knowledgeable, I have been learning. I have two parenting books at home, and I also seek advice from experienced friends. [Interview 3]*

#### 4.1.3 Changing their habits

This main category consisted of three subcategories: (1) spending more time at home; (2) giving up smoking, and (3) setting an example for their children.

Fathers often prioritize their 'home' as their central focus. Prior to their wife's pregnancy, they engage in various social activities, such as playing video games, meeting friends, or going out. However, once their wife becomes pregnant, they dedicate a majority of their time to staying at home with their wife. This transition prompts them to modify their unfavorable habits, aiming to establish positive role models for their children. Notably, two fathers completely quit smoking, while three others reported a notable decrease in their smoking and alcohol consumption.

*The meaning of 'education' is not what you say, but what you do. We have to use our own practical actions to set an example for children... [Interview 10]*

*I used to go out with my friends and come home late every night. Now I leave the company every day and go home on time to spend more time with my wife.[Interview 9]*

## **4.2 Post-traumatic adjustment**

The fathers' experiences of post-traumatic adjustment included descriptions of (1) being shocked and uncertainty; (2) meeting many challenges; and (3) being afraid of the child's health (Figure 2).

### **4.2.1 Being shocked and uncertain**

This main category consisted of three subcategories: (1) not ready for a new baby, (2) blaming himself for the baby being born early; and (3) not sure if the baby will survive.

All of the fathers expressed that the premature birth of their children caught them off guard and they were ill-prepared for the situation. When their children were admitted to the neonatal intensive care unit, they experienced a sense of confusion and helplessness, as they lacked knowledge about their children's health and were unsure about the appropriate course of action.

*The biggest concern at that time was whether the child was okay. Would they survive? They were only 28 weeks. If they survive, it will be worth every penny...[Interview 10]*

*Our children are twins, the older one needs ventilator support, the younger one needs oxygen. They are both in the incubator, and they are too small. When I look at them, tears come down. They are too small and fragile... (sobbing) [Interview 8]*

### **4.2.2 Meeting many challenges**

This main category consisted of the following subcategories: (1) relieving their partner's anxiety; (2) creating comfort and peace in the family; (3) managing their own emotions; (4) resolving financial difficulties; and (5) coordinating work responsibilities with new paternal duties.

During their children's hospitalization, fathers play a crucial role in bridging the gap between the hospital and the family. When doctors deliver positive news about the child's illness, fathers promptly communicate it to their wife and other family members. Conversely, if the child's condition worsens, fathers prioritize managing their own emotions, selectively withholding certain aspects of the situation, and providing emotional support to their wife.

*The news I bring to the families is always good news; I do not bring any bad news. I cannot tell them everything because they may not fully understand, and it would cause them a lot of worry. Even though my wife is also studying medicine, she still worries...[Interview 3]*

*Although my home is very close to the children's hospital, I always choose to go home by bus. Even when I arrive at my stop, I stay on the bus to calm myself down before going home to tell her...[Interview 4]*

Fathers often face the challenge of juggling multiple roles when their children are hospitalized, as they need to work to cover the medical expenses. A considerable number of fathers express the financial pressure they experience. It is essential for premature babies to receive breast milk, and fathers are responsible for providing fresh breast milk to the hospital daily. As a result, they find themselves constantly busy, trying to balance their time between the hospital, their workplace, and their home. Despite feeling stressed, fathers often struggle to open up about their emotions to their families.

*For instance, last week, my wife was hospitalized, and I had to work during the day while taking care of her at night. I could only manage to sleep for 3.4 hours a day, but I had no choice but to persevere...[Interview 11]*

### **4.2.3 Being afraid of the child's health**

This main category consisted of the following subcategories: (1) eager to obtain information from doctors, (2) upset about the child's abnormal test results, and (3) acquiring knowledge about diseases in multiple ways.

The treatment of premature babies in hospitals often carries a significant amount of uncertainty. Fathers frequently describe their emotions during this period as similar to 'riding a roller coaster'. While they have a strong desire to comprehend their child's illness, they also harbor a fear of receiving distressing news. Fathers express the need for regular face-to-face communication with doctors to discuss their child's condition on a daily basis. Additionally, they hope for doctors to provide a more comprehensive explanation regarding any abnormal test results concerning their child.

Throughout the initial week of my child's hospitalization, I regularly received calls from the hospital, updating me on my child's condition. During this period, I had apprehensions about receiving calls from the doctors. Once my child's condition stabilized, I began to feel more at ease....[Interview 4]

The doctor informed me that there was an issue with my child's heart ultrasound, specifically a gap in her heart. However, the doctor was too occupied to provide me with a more comprehensive explanation. My wife and I were extremely concerned, prompting us to search online to determine the severity of the problem....[Interview 7]

Fathers frequently turn to the internet to gather information about diseases affecting premature babies or seek advice from friends who have gone through a premature birth. Consequently, they tend to adopt two different attitudes towards their child's premature birth. One perspective is that premature birth is not a grave matter; the child is simply smaller in size and requires additional time to develop. The other viewpoint is that there is considerable uncertainty surrounding the child's health, and it is not possible to guarantee their well-being as they grow up.

I saw an example on the Internet with the same situation as my child, there is no problem when he grows up, I think my child is just smaller and lighter; we give him more time to grow up, I have confidence in him (his child).[Interview 8]

My child was found to have intracranial hemorrhage and congenital heart disease. We are very worried about whether it will affect his brain development or intelligence in the future, and it will affect his future health..... (worried)[Interview 12]



Figure 2. The fathers' experiences of Post-traumatic adjustment

#### 4.3 Growth adaptation

Fathers' experiences of growth adaptation consisted of (1) trying to solve problems; (2) establishing parent-child connection; and (3) gratitude and growth (Figure 3).

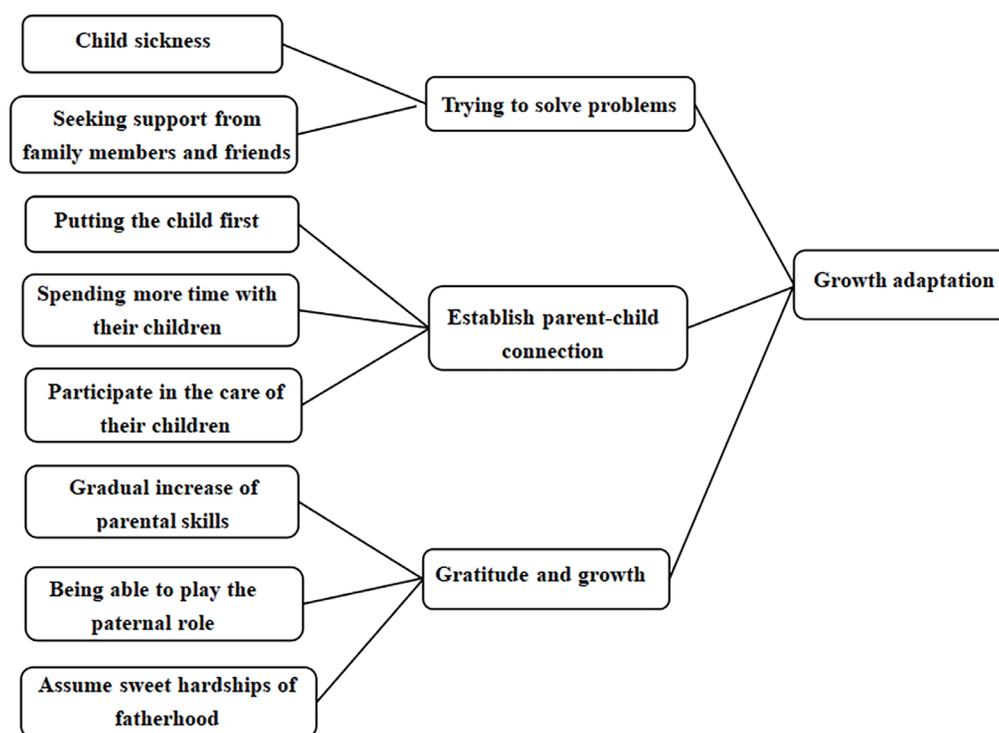


Figure 3. The fathers' experiences of Growth adaptation

#### 4.3.1 Trying to solve problems

This main category comprises the subcategories of child sickness and seeking support from family members and friends.

All parents hope for their children to be discharged from the hospital as soon as possible and return to their families. This allows for a faster establishment of the parent-child relationship. However, fathers often find it challenging to raise a premature baby. Premature babies appear smaller in size compared to full-term babies, requiring extra care. One of the biggest challenges fathers face after their child is discharged from the hospital is dealing with their child's illnesses, such as pneumonia, bloating, vomiting milk, or bloody stool. Fathers often struggle to identify these abnormal symptoms on their own and have to seek help from friends or medical staff.

*My child was hospitalized again a week after discharge, because of improper feeding, we do not know how to judge whether he is full, a few days later found that his belly is getting bigger and bigger, and the symptoms of vomiting milk, we do not know how to deal with, only go to the hospital, the doctor said fortunately deal with timely, otherwise the small intestine may necrosis. [Interview 1]*

*Due to my children's poor intestinal function, they now require a special type of milk powder known as deep hydrolyzed protein milk powder. Each can of this milk powder costs 300 yuan and contains only 400g. In order to afford it, I have to work harder. Even during my rest periods, I have to take care of my children as they need to be fed every 2 hours. This means I have to start preparing half an hour in advance, which includes cleaning and disinfecting the bottle and adjusting the water temperature to the right level. Although it is a challenging task, I believe it is worth it for the well-being of my children. [Interview 11]*

#### 4.3.2 Establish parent-child connection

This main category consisted of three subcategories: (1) putting the child first; (2) spending more time with their children; and (3) participate in the care of their children.

As children grow older, fathers tend to become more involved in their care. It was found that almost all fathers expressed feeling very nervous when they held their children for the first time. Interestingly, fathers who engaged in kangaroo care during their children's hospital stay gained more experience in caring for their children, which proved beneficial when they returned home. Increased interaction between fathers and their children not only fosters closer bonding but also leads to a willingness to spend more time with them.

*I didn't dare to do anything at first, she was too small, I was afraid of hurting her, I could only watch the baby-nursing woman and my wife take care of her, now I can skillfully feed my child, change the diaper, dress and so on, I think these things*

are the father should do.[Interview 7]

*The first 2 months he did not show any expression, will not give me any response, later grew up, I teased him, he would smile at me, looking at his smiling face, the feeling is indescribable, I think it is worth doing anything for him, even if the work only half an hour rest time every day, I will open the video to see him, hahaha....[Interview 5]*

#### 4.3.3 Gratitude and growth

This main category consisted of the following subcategories: (1) gradual increase of parental skills; (2) being able to play the paternal role; and (3) assume sweet hardships of fatherhood.

Gradually, fathers have acquired an increasing number of parenting skills, demonstrating their growing proficiency in tasks such as changing diapers, feeding with a bottle, babysitting alone, and putting children to bed. They have successfully managed their work, family responsibilities, and the challenges of new fatherhood. Despite occasional fatigue, they find happiness in this experience and appreciate how it has contributed to their personal growth and stability.

*I think the biggest change in myself is that I have more consideration when solving problems, I am not so impulsive as before, and I become more mature....[Interview 12]*

*When it was just me and my wife, we were both working. Now have a child, the focus of attention is him (the child), feel more complete home, he (the child) can always bring us surprises (mouth turn up)[Interview 1]*

## 5. Discussion

This study aimed to explain paternal adjustment in terms of men's paternal life experiences, and was conducted in China for the first time. According to the findings of this study, adaptation to the role of father in preterm infants can be explained by three themes: "Role preparation," "Post-traumatic adjustment," and "Growth adaptation."

## 6. Conclusions

This study is the first to explore the adaptation process of premature fathers in the context of Chinese traditional culture. Fathers describe their experience of fatherhood as a roller coaster ride, but ultimately, they grew from it. Our findings indicate that fathers face the most challenges during their child's hospitalization and the first 3 months after discharge. During this time, they are still unfamiliar with their children, experience a sense of loss of control, and are more prone to anxiety. However, after three months, fathers become more familiar with their children, gain the ability to handle new situations, and enjoy their time together. Consequently, future research should focus on addressing the needs and psychological well-being of fathers during the hospitalization of preterm infants and the first 3 months after discharge.

### 6.1 Relevance to clinical practice

Fathers encounter significant challenges during their children's hospital stay and in the initial 3 months after discharge. Therefore, it is crucial for healthcare professionals to offer increased support during this period. Furthermore, neonatal intensive care units in China should contemplate modifying their management approach to cater to the individualized visitation requirements of fathers and facilitate early parent-child contact.

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## **Ethics statement**

This study has been reviewed by the hospital Ethics Committee (Approval number: (2022) LUN Review (Research) No. (115)).