

Factors Associated with Parents' Postnatal Sense of Security in China: A Cross-sectional Study

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Research Article

Keywords: Parents, Postnatal, Sense of security, China, Status quo, Influencing factors, Mental health

Posted Date: May 21st, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-523065/v1>

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Factors associated with parents' postnatal sense of security in China: A cross-sectional study

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Abstract

Background: Parents' postnatal sense of security is very important to the postnatal experience, and has a positive effect on parental role adaptation, the mental health of parents, marital relationship, and the parent-child relationship. This cross-sectional study was conducted to describe the status quo of Chinese parents' postnatal sense of security within one week after delivery, and identify their related factors.

Methods: Participants were recruited through the convenience samples methods in three grade-A tertiary hospitals in China. The Parents' Postnatal Sense of Security (PPSS), the Readiness for Hospital Discharge Study-New Mother Form (RHDS-NMF) (for mothers), Edinburgh Postnatal Depression Scale (EPDS) and Zung's Self-Rating Anxiety (SAS) were administered between October 2020 and January 2021. Descriptive analysis was used to understand the status quo of parents' postnatal sense of security, one-way ANOVA or independent sample t-tests and enter-method multiple linear regression analysis were used to identify the influence factors, Pearson correlation were used to examine the correlation between the total scores of parents' postnatal sense of security.

Results: A total of 204 pairs of parents were recruited into this study. The mean total score on the mothers' version of PPSS was 59.67 (SD = 7.95) and fathers' version of PPSS was 42.91 (SD = 5.18). Multiple linear regression analysis showed that factors of mothers' postnatal sense of security included the relations with husband's parents, length of stay in hospital after delivery, knowledge from health care workers and the Internet, depression, discharge readiness, fathers' postnatal sense of security, explained 73.3% of the variance ($R^2 = 0.733$, $F = 17.125$, $p < 0.001$). Fathers' postnatal sense of security was significantly associated with parenting confidence, knowledge from health care workers, depression, anxiety, and mothers' postnatal sense of security, explained 62.7% of the variance ($R^2 = 0.627$, $F = 21.092$, $p < 0.001$).

Conclusion: The level of parents' postnatal sense of security was upper-middle among Chinese parents. The study identified factors associated with parents' postnatal sense of security that could be targeted for intervention to facilitate parents' postnatal sense of security.

Keywords: Parents, Postnatal, Sense of security, China, Status quo, Influencing factors, Mental health

Background

The birth of a child will lead to the readjustment of the family system. In this process, parents-to-be may face a series of pressures and challenges, and they may feel anxiety and fearful due to role adaptation, parenting ability, postpartum recovery and so on [1]. Studies have shown that postnatal sense of security plays an important role in the transition to parenthood, postnatal sense of security has also been described as one of the fundamental aspects of the mother's overall postpartum experience, such as facilitating the maintenance of breastfeeding in the early postpartum period [2,3]. A low level of sense of security may have serious consequences for postnatal parents' delivery experience, parental role adaptation, husband-wife relationship, parent-child relationship, etc. [4],

so it is necessary to pay attention to postpartum parents' sense of security.

A sense of security is a kind of human need that needs to be met. It is a state in which a person feels safe, free from anxiety, carefree, and free from doubts [4,5]. It can be divided into basic sense of security and situation-related sense of security, depending on a variety of internal and external factors [6]. Parents' postnatal sense of security is closely related to the situation of pregnancy and childbirth and is described as a part of the overall experience of childbirth [7,8]. Recently, a number of studies on parents' postnatal sense of security have been carried out around the world, and researchers have found that certain intervention measures could improve the level of parents' postnatal sense of security, for example, participating in pre-delivery physical and mental education can improve parents' postpartum sense of security [9].

In fact, there are many factors that affect the parents' postnatal sense of security. Emotionally, self-confidence, a sense of autonomy, a sense of control, and self-efficacy in dealing with fertility can enhance the sense of security, the sense of control of women and their partners after delivery is reflected in the communication with medical staff, such as jointly determining the mode and plan of delivery, choosing discharge time, and the frequency of home visits after discharge [5,8,10]. The support of medical staff was also significantly related to parents' sense of security in the first week after parturition, and the personality and behavior of the midwife during delivery had an impact on the mothers' experience of childbirth [10,11]. Postpartum information, support and encouragement from the medical staff and the trust relationship between the medical staff and the puerpera could relieve their anxiety and fear, and had a positive impact on parents' postnatal sense of security [12]. Regardless of the level of support provided by health care providers, the importance of family members' companionship and support to the mothers' postnatal sense of security is undeniable, and almost all studies on the father's experience of childbirth have mentioned the importance of the presence of a partner to the postnatal sense of security. For fathers, the fathers' sense of security mainly comes from the sense of participation during pregnancy, delivery, and the whole postpartum period, but it also depended on the mother's overall well-being, the mothers' sense of security is directly related to the fathers' sense of security [12,13]. In addition, factors related to parents' postnatal sense of security include delivery experience, type of delivery, preparation for delivery, complications experienced by mothers and newborns during delivery, preparation for discharge, knowledge level of midwives and health care workers, actual services provided by hospitals, time of discharge, etc. [14,15].

However, the results from different countries and regions are not consistent [6,8]. For example, Pearson and Kruse's research showed that the time of discharge did not affect the sense of security [6,16], but Askelsdottir and Nilsson's study showed that the time of discharge could affect parents' postnatal sense of security [15,17]. Considering that the factors related to parents' postnatal sense of security may vary due to socio-cultural factors and regional differences, further research is needed to explore the related factors of parents' postnatal sense of security. Therefore, the purpose of this study is to understand the status quo and influencing factors of parents' postnatal sense of security in China.

Methods

Design

The cross-sectional study was conducted on convenience samples from one tertiary grade A hospital and two maternal and child healthcare hospitals in Hubei Province from October 2020 to January 2021. One grade-A tertiary hospital is the national level, two maternal and child healthcare hospitals

included a provincial-level hospital and a municipal-level hospital, which are the main providers of women's healthcare services in Wuhan.

Participants

The women who delivered babies and their partners at these hospitals were recruited from the postnatal wards on the day of discharge after childbirth or the day before. The woman and her partner's inclusion criteria were: (a) aged 18 years and older; (b) within a week after delivery; (c) conscious; (d) able to read and write the Chinese language; and (e) willingness to participate in the study. Patients with severe organic diseases and one of the women or their partners who were unable to complete the study were excluded.

Sample Size Calculation

According to the sample size calculation method, the sample size should be 5~10 times the number of items in the scale [18], we calculated the maximum sample size required of the study. Considering a 20% non-response rate, an ideal sample size of 225 was needed in this study.

Data Collection

Questionnaires were distributed through a combination of online questionnaires and offline face-to-face questionnaires by trained researchers. questionnaires are mainly collected face to face, only when one of the couples was not convenient for the moment, they can scan the two-dimensional code and filled in the online questionnaire when they were free. The questionnaire took approximately ten minutes to complete.

Measurements

Demographic characters

Sociodemographic and obstetric data of the mothers' version included age, residence, educational status, employment status, monthly household income, marital status, number of children, participating in childbirth decisions, type of delivery, gestational age when delivery, histories of abnormal pregnancy, pregnancy complications, partner accompanied postnatal examinations, pregnancy and parenting knowledge, a major source of pregnancy and parenting knowledge, prenatal education, feeding way, the newborn transferred to the NICU, parenting confidence, hospitalization days after delivery, conjugal relation, relations with husband's parent. The fathers' version included age, residence, educational status, employment status, monthly household income, number of children, paternity leave, pregnancy and parenting knowledge, a major source of pregnancy and parenting knowledge, prenatal education, feeding way, the newborn transferred to the NICU, parenting confidence, conjugal relation, hospitalization days after delivery.

Parents' Postnatal Sense of Security (PPSS)

The original English version of PPSS was developed by Persson, to measure parents' feelings of security in the first week postpartum (irrespective of whether at home or the hospital) [7]. The questionnaire could be divided into two versions, one version with 18 items filled in by the father and the other version with 14 items filled in by the mother, both versions included 4 dimensions, only the last dimension was different: a sense of medical staffs' empowering behavior, a sense of the physical and psychological conditions, a sense of affinity within the family and a sense of control over breastfeeding (the mothers' version)/ a sense of the mothers' general conditions (the fathers' version). Two versions of this scale were scored from "Strongly disagree=1" to "strongly agree=4" on a 4-point Likert scale, the higher the total score indicates the higher level of parents' sense of postnatal security. The Cronbach's α coefficient of the original scale was 0.88 for the mothers' version and 0.77 for the fathers' version. In this study, both versions showed a high degree of internal

consistency, with the Cronbach's α coefficient 0.91 for the mothers' version and 0.89 for the fathers' version.

The Readiness for Hospital Discharge Study-New Mother Form (RHDS-NMF)

The RHDS-NMF was adapted from the Readiness for Hospital Discharge Scale (RHDS) by Weiss, (2009) [19]. There are four dimensions: personal status (8 items), knowledge (7 items), coping ability (3 items), and expected support (4 items). The RHDS-NMF is a self-reported rating scale with items scored on an 11-point scale (0-10) with words (e.g., not at all, totally), the higher the total score, the better the readiness for postpartum discharge. The Cronbach's α coefficient was 0.84 for the original English version of RHDS-NMF, Cronbach's α coefficient for the Chinese version was 0.90.

Edinburgh Postnatal Depression Scale (EPDS)

EPDS is a ten-item scale developed by Cox in 1987 to assess postpartum depression [20], which included mood, pleasure, self-blame, anxiety, fear, insomnia, coping ability, sadness, crying and self-injury. EPDS has four scores: 0 (never), 1 (occasionally), 2 (often), and 3 (always), the score range is 0-30. In this study, the critical value was set at 10 points based on previous studies. The sensitivity of EPDS was 86%, the specificity was 78%, the positive predictive value was 73% and the split-half reliability was 0.88. The Cronbach's α coefficient of EPDS in the Chinese version was 0.76.

Zung's Self-Rating Anxiety (SAS)

SAS was compiled by Zung in 1971, with a total of 20 items, for the subjects to self-evaluate their anxiety in the last week [21]. SAS is assessed according to the frequency of symptoms and quantified by 4-point Likert scoring method. The total score is calculated by summing scores of each item, and then converted by $Y = \text{int}(1.25X)$, the integer part of the calculation result is taken to get the final score. The higher the score is, the more obvious the anxiety tendency is. The scoring standard was ≤ 50 as no anxiety, 50 to 59 as mild anxiety, 60 to 69 as moderate anxiety, and ≥ 70 as severe anxiety. The Cronbach's α reliability estimate of SAS was 0.88.

Statistical analysis

Data entry was performed with EpiData (version 3.1), statistical analysis procedures were performed with SPSS (version 26.0). Normal distribution was evaluated with the Q-Q Plot. In this study, descriptive analyses included means for continuous variables and percentages for categorical data, one-way ANOVA or independent sample t-tests and enter-method multiple linear regression analysis were used to identify the influence factors, paired-samples t-test and Pearson correlation were used to examine the association of the total scores of mothers' postnatal sense of security and total score of fathers' postnatal sense of security. In all analysis, the significance threshold was $p < 0.05$.

Ethical Considerations

This study was approved by the Ethics Committee of Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Hubei, China, which was conducted in accordance with the Declaration of Helsinki. Before data collection commenced, administrators of the three hospitals had approved the recruitment of participants, and all participants signed the informed consent for the study before the survey.

Results

A total of 240 paired questionnaires were sent out and 226 were recovered, of which 204 paired questionnaires were effective, the effective response rate was 90.3%. All of them were married,

mothers aged between 21 and 43 years ($M = 30.68$, $SD = 4.05$), and fathers aged between 23 and 44 years ($M = 32.00$, $SD = 4.18$). 59.8% of parents live in cities, the majority of participants had a high education (78.4%), 55.9% of parents reported an average income of 5000~10000 RMB per month, 54% of parents have only one child.

The mean total score for the mothers' version of PPSS was 59.67 ($SD = 7.95$) and fathers' version of PPSS was 42.91 ($SD = 5.18$). Table 1 shows the postnatal security status of respondents.

Univariate Analysis

A significant difference was found between the total score of the mothers' version of PPSS and residence, monthly household income, number of children, participating in childbirth decisions, type of delivery, gestational age when delivery, histories of abnormal pregnancy, partner accompanied postnatal examinations, pregnancy and parenting knowledge, a major source of pregnancy and parenting knowledge, prenatal education, feeding way, the newborn transferred to the NICU ($p < 0.05$) (Table 2). A significant difference was found between the total score of the fathers' version of PPSS and residence, education status, employment status, monthly household income, paternity leave, pregnancy and parenting knowledge, a major source of pregnancy and parenting knowledge, prenatal education, feeding way, the newborn transferred to the NICU ($p < 0.05$) (Table 3).

The total PPSS score of the mother version and the father version were linearly converted to 100 points respectively, and the paired T-test was conducted, the difference was not statistically significant ($t = 0.470$, $P = 0.639$).

Correlational Analysis

In the correlational analysis, fathers' postnatal sense of security ($r = 0.548$, $p < 0.01$), conjugal relation ($r = 0.544$, $p < 0.01$), relations with husband's parents ($r = 0.516$, $p < 0.01$), parenting confidence ($r = 0.535$, $p < 0.01$), anxiety ($r = -0.633$, $p < 0.01$), depression ($r = -0.705$, $p < 0.01$), hospitalization days after delivery ($r = -0.244$, $p < 0.01$), delivery preparation ($r = 0.422$, $p < 0.01$), discharge readiness ($r = 0.582$, $p < 0.01$) were associated with mothers' postnatal sense of security. Mothers' postnatal sense of security ($r = 0.548$, $p < 0.01$), parenting confidence ($r = 0.509$, $p < 0.01$), conjugal relation ($r = 0.487$, $p < 0.01$), anxiety ($r = -0.636$, $p < 0.01$), depression ($r = -0.651$, $p < 0.01$), mothers' hospitalization days after delivery ($r = -0.061$, $p < 0.01$) were associated with fathers' postnatal sense of security (Table 4).

Multiple Regression

Multiple regression analysis was performed on statistically significant variables in univariate analysis and correlational analysis. Multiple regression analysis for the mothers' version of PPSS can explain 73.3% of the variance ($R^2 = 0.733$, $F = 17.125$, $p < 0.001$), relations with husband's parents, hospitalization days after delivery, knowledge from health care workers, knowledge from the Internet, depression, discharge readiness, and fathers' postnatal sense of security were significant factors associated with mothers' postnatal sense of security. Multiple regression analysis for the fathers' version of PPSS can explain 62.7% of the variance ($R^2 = 0.627$, $F = 21.092$, $p < 0.001$), parenting confidence, knowledge from health care workers, depression, anxiety, and mothers' postnatal sense of security were significant factors associated with fathers' postnatal sense of security (Table 5).

Table 1 Total score and scores of dimensions of parents' postnatal sense of security (N = 204)

Mark ranges	Score ranges	Total points	Item points
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				M	SD	M	SD
Mother	total scale	18~72	39~72	59.67	7.95	3.32	0.68
	Dimension1	6~24	12~24	21.22	2.94	3.54	0.57
	Dimension2	5~20	5~20	14.80	3.22	2.96	0.80
	Dimension3	4~16	8~16	14.18	2.05	3.55	0.58
	Dimension4	3~12	4~12	9.47	1.91	3.16	0.81
Father	total scale	13~52	27~52	42.91	5.18	3.30	0.67
	Dimension1	5~20	10~20	17.14	2.70	3.43	0.62
	Dimension2	3~12	3~12	9.07	2.01	3.02	0.78
	Dimension3	2~8	4~8	6.94	1.02	3.47	0.56
	Dimension4	3~12	3~12	9.76	1.91	3.25	0.70

Note: Dimension1: a sense of medical staffs' empowering behavior; Dimension2: a sense of the physical and psychological conditions; Dimension3: a sense of affinity within the family; Dimension4: a sense of control over breastfeeding (the mothers' version)/ a sense of the mothers' general conditions (the fathers' version).

Table 2 Comparison of Sense of Postnatal Security According to Mothers' Characteristics (N = 204)

Table 3 Comparison of Sense of Postnatal Security According to Fathers' Characteristics (N = 204)
(Tables 2 and 3 were upload the files individually)

Table 4 The Correlation Matrix of Parents' Postnatal Sense of Security (N = 204)

Variable1	Variable2			r	p
		M	SD		
Mothers' postnatal sense of security	Age	30.68	4.05	-0.093	0.184
	Fathers' postnatal sense of security	42.91	5.81	0.548	0.000
	Conjugal relation	8.75	1.20	0.544	0.000
	Relations with husband's parents	8.44	1.33	0.516	0.000
	Parenting confidence	7.78	1.71	0.535	0.000
	Anxiety	38.73	7.83	-0.633	0.000
	Depression	7.07	4.32	-0.705	0.000
	Hospitalization days after delivery	3.73	1.26	-0.244	0.000
	Delivery preparation	7.77	1.74	0.422	0.000
	Discharge readiness	138.73	20.88	0.582	0.000
Fathers' postnatal sense of security	Age	32.00	4.18	0.031	0.657
	Mothers' postnatal sense of security	59.67	7.95	0.548	0.000
	Parenting confidence	8.27	1.50	0.509	0.000
	Conjugal relation	9.33	1.01	0.487	0.000
	Anxiety	37.92	7.54	-0.636	0.000
	Depression	6.26	3.60	-0.651	0.000

	Hospitalization days after delivery	3.73	1.26	-0.061	0.384
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Table 5 The Results of Multiple Linear Regression Analysis (N = 204)

	Variable	Estimate	SE	t	p	VIF
Mother	Relations with husband's parents	0.80	0.36	2.221	0.028	2.35
	Hospitalization days after delivery	-0.91	0.31	-2.913	0.004	1.581
	Knowledge from health care workers	5.07	1.36	3.722	0.000	2.863
	Knowledge from the Internet	4.07	1.19	3.420	0.001	2.966
	Depression	-0.52	0.12	-4.400	0.000	2.714
	Discharge readiness	0.06	0.02	2.398	0.018	2.538
	Fathers' postnatal sense of security	0.21	0.07	3.068	0.002	1.702
Father	Parenting confidence	0.69	0.22	3.165	0.002	1.613
	Knowledge from health care workers	1.83	0.68	2.701	0.008	1.518
	Depression	-0.30	0.11	-2.745	0.007	2.375
	Anxiety	-0.19	0.05	-3.815	0.000	2.06
	Mothers' postnatal sense of security	0.09	0.05	1.983	0.049	1.958

Discussion

This study aimed to describe the status quo of Chinese parents' postnatal sense of security and identify its influencing factors. After the score was linearly converted to 100 points, the average score of the mothers' version was 82.87, and 82.52 for the fathers' version, indicating that the parents' postnatal sense of security is at upper-middle level, consistent with the results in Sweden [3] and Spain [22,23]. Among the four dimensions of PPSS, mothers and fathers both had the lowest scores on the dimensions of the sense of the physical and psychological conditions, while the scores of a sense of affinity within the family were the highest, which reflects that the main source of parents' postnatal sense of security is the support and help from family members, especially from their partners.

Through multiple linear regression, relations with husband's parents, hospitalization days after delivery, knowledge from health care workers and the Internet, depression, discharge readiness, and fathers' postnatal sense of security were identified as influencing factors of mothers' postnatal sense of security. Parenting confidence, knowledge from health care workers, depression, anxiety, and mothers' postnatal sense of security were identified as influencing factors of fathers' postnatal sense of security in this study.

The main source of knowledge related to pregnancy and parenting is the common influence factor of parents' postnatal sense of security. Mothers whose knowledge mainly comes from health care workers and the Internet have a higher sense of security than from other channels, such as parents, maternity matrons, etc. Fathers whose knowledge related to pregnancy and newborn care came primarily from health care workers also showed higher levels of security. In the early postnatal period, parents need information and knowledge about maternal and newborn care, breastfeeding,

and postnatal health care. Health education during pregnancy and postnatal for women and their partners can enhance their knowledge and skills. According to the research, seeking information from the Internet, books and people with relevant knowledge or experience and consulting with health care workers for postpartum care-related issues can contribute to the improvement of the postnatal sense of security [24,25,26]. However, some studies have shown that [27], newborn parents receive inconsistent or contradictory advice from different health care workers after delivery, especially in the aspect of breastfeeding, and the lack of consistent information causes their sense of insecurity and reduces the satisfaction of postpartum nursing. Therefore, medical staff should inform pregnant women about pregnancy, delivery, breastfeeding and parenting, and all kinds of emergencies that may occur comprehensively and accurately, and provide correct knowledge and behavior guidance to improve the pregnant, childbirth and parenting knowledge of pregnant women and their partners, and the ways to regulate fear and anxiety. It can even enable parents of newborns to consult on postnatal health care and parenting-related issues after discharge or at night, which will have a positive impact on the promotion of parents' postnatal sense of security.

Negative emotional experiences can have an impact on parents' postnatal sense of security. Depression is closely related to parents' postnatal sense of security, and experiencing depression will negatively affect parents' postnatal sense of security. Anxiety is a constructive indicator of insecurity, especially in the fathers' postnatal sense of security. And the reason might be, as a major participant in the special period of transition to parenthood, fathers do not personally experience pregnancy and childbirth, and lack of knowledge and skills in newborn and maternal care, making them more likely to feel anxious, thereby reducing their postpartum sense of security.

Postpartum information, support and encouragement from medical staff, and the establishment of the trust relationship between medical staff and newborn parents can alleviate their anxiety and fear, and have a positive impact on parents' postnatal sense of security. Midwives and obstetrical health care workers need to be aware of the importance of the role of fathers, understand the fathers' unique situation during the postpartum period, listen carefully and treat the demand of the father, and give them the opportunity to spend the night in the hospital after childbirth and to take care of the mother and newborn in person, which can effectively increase the sense of participation of fathers, alleviate their anxiety, and thereby improve their postnatal sense of security.

The postpartum discharge readiness and the relationship with the husband's parents are also the influencing factors of the mothers' postnatal sense of security. Pearson and Kruse's [6,16] study reported that postpartum hospital stay had no effect on mothers' postnatal sense of security. However, our study showed that the number of days of postpartum hospitalization is the influencing factor of mother's postnatal sense of security, studies by Askelsdottir [15] and Nilsson [17] have produced a similar conclusion. The length of hospital stay is inversely proportional to the sense of security level of postpartum mothers. Prolonged hospitalization of postpartum women will make them doubt their health status, and a more comfortable environment at home is conducive to postpartum recovery and childcare. Meanwhile, postpartum women also want to go home as soon as possible to be reunited with their families. Discharge readiness is also an influencing factor of mothers' postnatal sense of security. Sufficient physical and mental preparation and mastering the knowledge and skills of self-care and parenting will lead to a stronger sense of security after delivery, some studies [12,13] had a similar finding.

The influence factor of the relationship with the husband's parents has Chinese cultural characteristics. Under the Chinese cultural background, most women have to live with their

husband's parents after they get married. Usually, after the child is born, the husband's parents will also take on the responsibility of caring for the newborn. Therefore, the better the relationship between a woman and her husband's parents, the higher level of sense of security after giving birth. Parenting confidence is an important influencing factor of fathers' postnatal sense of security. For fathers, the sense of participation is very important to sense of the security [3,22]. Fathers assume their responsibilities by showing their interest and participating in the whole process of pregnancy, childbirth, and postpartum. They not only want to participate in maternal care, but also newborn care, such as assisting breastfeeding or formula feeding, etc., to master more parenting knowledge and have stronger parenting confidence, which will show a higher level of postnatal sense of security. Finally, parents' postnatal sense of security interacts with each other. Medical staff should not only pay attention to the psychological state of postpartum mothers, but also the fathers. Parents support and encourage each other, which has a positive impact on the improvement of parents' postnatal sense of security.

This study has several advantages. We selected paired samples to investigate the correlation and differences in the parents' postnatal sense of security. Considering the diversity of samples and the generalization of the study, we selected three hospitals at the national, provincial and municipal levels. In addition, on-site data collection by trained investigators has improved the effectiveness and reliability of the results. Our research also has some limitations. First, our study was a cross-sectional survey, so we were cannot explore the changes of parents' postnatal sense of security over time. Second, the small sample size and convenient sampling method may reduce the representativeness of the samples and limit the generality of the research results.

We have some suggestions for future research. On one hand, we need to conduct a longitudinal study to explore the changes in the postpartum sense of security over time. On the other hand, it is necessary to use the method of random sampling, increase the sample size and conduct multicenter research in the future.

Conclusion

According to our study, Chinese parents have upper-middle level of postnatal sense of security. Findings showed that mothers with a better relationship between parents-in-law, shorter postpartum hospital stay, knowledge about pregnancy, delivery and parenting come from medical staff and network, less depression, more adequate preparation for discharge had a higher level of postnatal sense of security. In the same, those fathers were with higher parenting confidence, knowledge about pregnancy, delivery, and parenting comes from health care workers, less anxiety and depression were found to have a higher level of postnatal sense of security. Therefore, we suggest that health care workers pay more attention to providing psychological health guidance to improves parents' psychologic status, develop prenatal and postnatal education more actively, improve the knowledge of pregnancy, delivery and parenting, shorten postpartum hospital stay if conditions permit and encouraging parents to support each other, thereby promoting their postnatal sense of security.

Abbreviations

PPSS: the Parents' Postnatal Sense of Security; RHDS-NMF: the Readiness for Hospital Discharge Study-New Mother Form; EPDS: Edinburgh Postnatal Depression Scale; SAS: Zung's Self-Rating Anxiety

Acknowledgements

We would like to thank women and their partners who participated in this study. We also acknowledge the management of Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Women and Children's Hospital of Hubei Province, and Wuhan Women and Children Medical Care Center for granting us permission to conduct our research in their area. We express our gratitude to Prof. Tiejing Zeng for her guidance, encouragement and support.

Authors' contributions

All authors contributed to the study design. AT, TZ and XW conceived the study idea. AT, MY and KZ performed the data collection. AT and YC performed the statistical analyses. AT drafted and wrote the first draft of the manuscript. TZ provided supervision and guidance throughout the process of the research project and completion and revision of the manuscript. MY, YC, KZ, XW, DH provided guidance throughout the process of the study and completion and revision of the manuscript. All authors read and approved the final manuscript.

Funding

The research was funded by the National Science Foundation of China (Grant Number:71974061), and Hubei Province health and family planning scientific research project (Grant Number: WJ2019M144). The funding agencies was not involved in the design, data analysis, results, discussion and writing of this study.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

The Ethics Committee of Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology has approved this study (Number: TJ-IRB20190614). Women and their partners who consented to participate in the study signed an informed consent form.

Consent for publication

Not applicable.

Competing interests

We declare that there is no conflict of interest in publishing this manuscript.

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