BRITISH JOURNAL OF HOSPITAL MEDICINE

ARTICLE

Prevalence and Contributors of Postpartum Fatigue in Chinese Primiparous Women: A Cross-Sectional Study

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Abstract

Aims/Background The prevalence of postpartum fatigue among primipara is high in China, which seriously affects women's subsequent physical and mental recovery. In order to deeply understand this phenomenon, domestic scholars began to conduct research on postpartum fatigue from the aspects of assessment tools and intervention measures. This study aims to investigate postpartum fatigue in primiparous women and its association with family functioning and social support, providing valuable insights for improving the condition in this population.

Methods Primiparous women from February 2023 to March 2024 were selected as participants. Baseline demographic information was collected, and postpartum fatigue levels were assessed using Postpartum Fatigue Scale (PFS) at 7 days postpartum. Social support was evaluated with Postpartum Social Support Scale, and maternal role adaptation was assessed using Maternal Role Adaptation Questionnaire (MRAQ). Pearson correlation analysis was conducted to examine the relationship between postpartum fatigue levels, role adaptation, and social support.

Results A total of 210 survey questionnaires were distributed; following which, 201 valid questionnaires were received. The total PFS score was 13.93 $\pm$ 4.53 points. Among the participants, 50 cases (24.87%) experienced no fatigue, 58 cases (28.86%) with mild fatigue, 78 cases (38.81%) with moderate fatigue, and 15 cases (7.46%) with severe fatigue. There were statistically significant differences in all dimensions and total scores of the Postpartum Social Support Level Scale for primiparas with different levels of postpartum fatigue ($p < 0.001$), with those facing severe fatigue reporting significantly lower level of social support. There were statistically significant differences in the comparison of each dimension and total score of the role adaptation scale for primiparas with different levels of postpartum fatigue ($p < 0.001$). The degree of role adaptation in patients with severe fatigue was significantly lower. The PFS score of primiparas was negatively correlated with the level of social support and role adaptation ($r = -0.693$, $r = -0.735$, $p < 0.001$).

Conclusion The majority of primiparous women experience varying degrees of postpartum fatigue at 7 days postpartum. Poor newborn health, artificial feeding, and nighttime feeding frequency $\geq$4 times per night can exacerbate postpartum fatigue. Good social support and role adaptation are beneficial in alleviating postpartum fatigue. Strengthening social support and role adaptation can help reduce postpartum fatigue levels in primiparous women.

Key words: primiparous women; postpartum fatigue; role adaptation; social support; correlation

Submitted: 9 September 2024 Revised: 15 November 2024 Accepted: 19 November 2024

How to cite this article:
Zhuang S, Luo S, Cui Y, Zhao X, Yang H. Prevalence and Contributors of Postpartum Fatigue in Chinese Primiparous Women: A Cross-Sectional Study. Br J Hosp Med. 2024. https://doi.org/10.12968/hmed.2024.0636

Introduction

Postpartum fatigue refers to the lack of energy, low mood, fatigue and burnout of women after delivery, which can be accompanied by anxiety, irritability, depression and other emotional reactions (Baattaiah et al, 2024). The dramatic changes of hormone levels in primiparas after delivery will lead to emotional fluctuations, coupled with physical discomfort and role changes, which further aggravate fatigue (Caljé et al, 2024). Despite being commonly perceived as a simple feeling of burnout, severe cases of postpartum fatigue can lead to disorders of adrenalin regulation, decrease prolactin secretion levels, and compromise maternal feeding experience. Excessive and long-term fatigue can lead to postpartum depression. Besides, family functions and mother's role adaptation are closely connected and influence each other.

A harmonious and supportive family environment helps mothers better adapt to their multiple roles, including caregivers, educators, and family managers. Effective communication, emotional support and shared responsibilities among family members can reduce the mother's burden, enhance her sense of self-efficacy, and facilitate her role adaptation. The mother's active adaptation in her role, such as effectively managing family affairs and establishing good relationships with children, will in turn enhance family cohesion and enhance overall family functions. Therefore, optimizing the family environment and promoting mutual understanding and support among family members are crucial to the adaptation of the mother's role and family harmony.

Beyond the feeling of fatigue, postpartum fatigue is also accompanied by disrupted adrenal regulation, reduced prolactin levels, and compromised maternal breastfeeding experience, and prolonged and excessive fatigue can contribute to postpartum depression. A study has indicated that postpartum fatigue in primiparous women is closely related to their maternal role adaptation (Bombač Tavčar et al, 2024). The family environment also has a determining effect on individual characteristics and psychological states of the family members, with family functioning being closely linked to their mental health. Positive family functioning can alleviate conflicts among family members and improve adverse emotions in postpartum women (Baattaiah et al, 2023). Social support plays a crucial role in promoting the physical and mental well-being of postpartum women. While a previous study has focused on investigating postpartum fatigue in primiparous women (Kawashima et al, 2022), research remains relatively scarce on the early postpartum stage , a period during which women undergo significant role transitions and experience substantial psychological changes.

Therefore, this study investigates the postpartum fatigue in primiparous women at 7 days postpartum and analyzes its relationship with family functioning and social support, providing a basis for advancing clinical management of postpartum fatigue in primiparous women.

Methods

Research Subjects

This study recruited 210 patients who sought medical attention at the Women's Hospital of Nanjing Medical University from February 2023 to March 2024. According to the conventional statistical principles for research on influencing factors, for this study involving 17 variables, the sample size required should be 5–10 times of the variables, considering a loss to follow-up rate of 20% (Pedersen et al, 2024). Therefore, the sample used for this study should be 102–204. After recruitment, 201 patients were included (see in Fig. 1). The inclusion criteria are as follows: (1) mothers aged ≥18 years old; (2) full-term infants from single birth; (3) no endocrine disorders like acid-base or electrolyte imbalances; and (4) possessing normal understanding and communication abilities. The exclusion criteria are as follows: (1) individuals with cognitive or communication impairments; (2) individuals not involved in infant care; (3) individuals with severe organic diseases; (4) individuals with history of depression; (5) infant hospitalized due to illness, low birth weight, congenital diseases, or intrauterine fetal death; (6) individuals with infectious diseases; and (7) individuals with incomplete clinical data. This study was approved by the Medical Ethics Committee of the Women's Hospital of Nanjing Medical University (2022KY-160-01), and informed consent was obtained from the research subjects. The design of this study conforms to the Declaration of Helsinki.

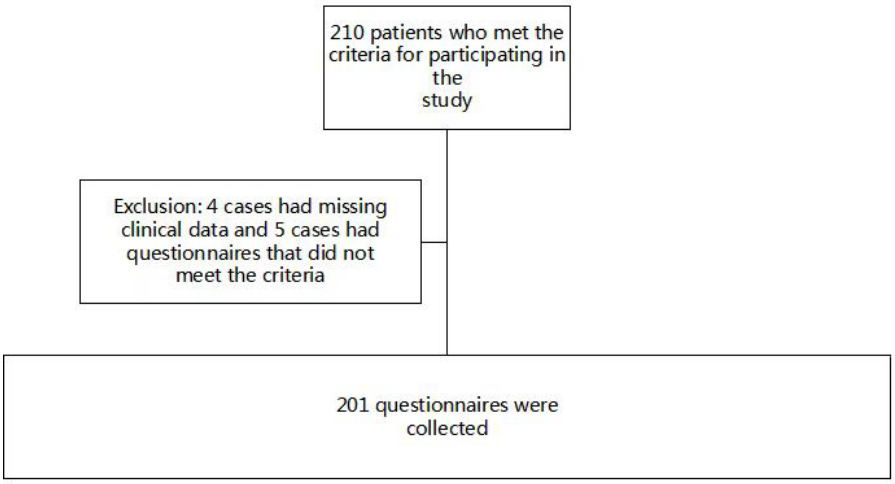

Fig. 1. Sample screening flow chart.

Missing data were handled with complete case analysis, that is, direct deletion of observations with missing values.

Research Methods

Baseline Information Collection

Baseline information or general data of the research subjects were collected from the electronic medical record system. These data include age, education level,

work status, per capita monthly income of the family, delivery method, feeding method, place of residence, premature infants/low-weight infants, frequency of night feeding (times/evenings), etc.

Postpartum Fatigue Scale

Developed by Milligan et al (1997) to assess postpartum fatigue using a multidimensional simple scale, the Postpartum Fatigue Scale (PFS) has a Chinese version translated by Qian et al (2020), which includes two dimensions, physical fatigue and mental fatigue, with 10 items rated on a 4-point scale from 1 (not at all) to 4 (always) to indicate the level of fatigue over the past week. The total score ranges from 10 to 40 points, with higher scores indicating higher levels of fatigue. Scores of 10 indicate no fatigue, 11–14 indicate mild fatigue, 15–20 indicate moderate fatigue, and 21–40 indicate severe fatigue. The Chinese version of the PFS has a Cronbach's α coefficient of 0.818, demonstrating good reliability and validity. According to PFS score, the patients were divided into multiple groups: no fatigue (n = 50), mild fatigue (n = 58), moderate fatigue (n = 78), and severe fatigue (n = 15).

Postpartum Social Support Scale

The Postpartum Social Support Scale was designed by Lu et al (2014). It comprises 20 items across four dimensions, namely emotional support, material support, informational support, and evaluative support, with each dimension containing 5 items. All items are rated using a positive 4-point scale (0–3 points). A higher score in each dimension indicates a higher level of the specific social support received after childbirth. Additionally, a higher total score indicates a greater overall amount of social support received postpartum. This questionnaire demonstrates good reliability and validity, with a content validity index of 0.90 and a Cronbach's alpha coefficient of 0.89.

Maternal Role Adaptation Questionnaire

The Maternal Role Adaptation Questionnaire, developed in 2006 by Geng et al (2006), consists of 24 items across three dimensions: role identification, establishment of parent-child attachment, and implementation of caregiving behaviors. Each dimension comprises eight items, each rated on a 5-point scale (0–4 points), with a total score range of 0–96 points. Higher scores indicate better role adaptation, with scores of 0–19 indicating poor adaptation, 20–25 moderate adaptation, and 26–32 good adaptation for each dimension. A total score of 0–57 indicates poor role adaptation, 58–76 moderate role adaptation, and 77–96 good role adaptation. This scale has a Cronbach's alpha coefficient of 0.87 and a content validity index of 0.85.

Data Collection and Quality Control

In conducting the data collection for this study, we implemented a series of meticulous quality control measures to ensure the accuracy of the data and the credibility of the research. First, we emphasized effective communication with the mothers and their families. The researchers explained the background, purpose, and significance of the study to the mothers, ensuring they had a clear understand-

Table 1. Baseline information of mothers and their newborns.

	Range	Average
Age (years)	21–44	31.50 ± 4.18
Body weight (kg)	49–100	69.75 ± 9.06
Gestational age (weeks)	32–41	38.60 ± 0.98
Fetal weight (g)	2360–4030	3289.30 ± 330.75

ing of the research content and voluntarily participated in the study after giving informed consent. Before the survey commenced, we specifically communicated with family members, stressing the importance of minimizing their presence during the questionnaire completion process to reduce external influences on the mothers' responses. This approach aimed at ensuring that all items truly reflected the mothers' intentions and feelings. The questionnaires were administered at 7 days postpartum, a time when the mothers' physical conditions were relatively stable, allowing them to accurately assess their fatigue levels. Should any mothers encounter unclear items during the completion process, the researchers would provide timely and clear explanations to ensure mothers' understanding of the items so as to make accurate responses. Additionally, we allowed ample time for the mothers to fill out the questionnaires, preventing hasty answers due to time constraints. Data entry was a critical aspect of quality control. We employed a dual verification data entry method, where two independent researchers entered data from the same questionnaire and compared their results to ensure accuracy and consistency. In cases of discrepancies, we promptly investigated the reasons and corrected them until the data entries from both researchers were fully consistent.

Statistical Analysis

The collected experimental data were analyzed using SPSS version 27.0 (IBM Corp., Armonk, NY, USA). The Kolmogorov-Smirnov test was conducted to assess data normality. For continuous variables that followed a normal distribution, their data are presented as mean ± standard deviation. Comparisons were performed using independent samples *t*-test. According to Levene's test, the data met the statistical requirements of variance homogeneity, and were subsequently analyzed by analysis of variance (ANOVA). Spearman correlation analysis was used to analyze correlations among variables. $p < 0.05$ was considered statistically significant.

Results

Baseline Information

From the 210 survey questionnaires distributed, we received 201 valid questionnaires. The average age of the participants was 31.50 ± 4.18 years, with a range of 21 to 44 years. The mother's weight ranged from 49 to 100 kg, with an average of 69.75 ± 9.06 kg. The gestational age ranged from 32 to 41 weeks, with an average of 38.60 ± 0.98 weeks. The baby weight ranged from 2360 to 4030 g, with an average of 3289.30 ± 330.75 g (Table 1).

Table 2. Postpartum fatigue levels of the primiparous women.

Fatigue level	Number of cases (n)	Percentage (%)	Score range (points)	Average score (points)
No fatigue	50	24.87	5–10	8.10 ± 1.61
Mild fatigue	58	28.86	11–14	12.97 ± 0.91
Moderate fatigue	78	38.81	15–20	16.56 ± 1.56
Severe fatigue	15	7.46	21–28	23.40 ± 2.69
Total	201	100	5–28	13.93 ± 4.53

Note: Average scores are presented as mean ± standard deviation.

PFS Scores of Primiparous Women

The total PFS score of this sample was 13.93 ± 4.53 points. Among the participants, 50 cases (24.87%) experienced no fatigue, 58 cases (28.86%) with mild fatigue, 78 cases (38.81%) with moderate fatigue, and 15 cases (7.46%) with severe fatigue (Table 2).

Comparison of Postpartum Fatigue Levels among Parturient Women with Different Characteristics

Comparison of postpartum fatigue levels in parturient women based on different characteristics such as age, educational level, employment status, average monthly family income, and residential area showed no statistically significant differences ($p > 0.05$). On the other hand, the comparison based on delivery mode, feeding method, premature/low-birth-weight infants, and nighttime feeding frequency revealed statistically significant differences ($p < 0.05$) (Table 3).

Comparison of Social Support Levels among Primiparous Women across Different Postpartum Fatigue Levels

Significant differences were found in the comparison of the social support levels of various dimensions among primiparous women across different levels of postpartum fatigue and the total score of the social support scale ($p < 0.001$) (Table 4).

Comparison of Role Adaptation Levels among Primiparous Women across Different Postpartum Fatigue Levels

Significant differences were observed in the comparison of the role adaptation levels in various dimensions among primiparous women across different levels of postpartum fatigue and the total score of the role adaptation levels ($p < 0.001$) (Table 5).

Correlation Analysis of Postpartum Fatigue across Social Support Levels and Role Adaptation Levels among Primiparous Women

Feeding methods (exclusively breastfeeding = 0, mixed feeding = 1, artificial feeding = 2), premature/low-birth-weight infants (No = 0, Yes = 1), frequency of nighttime feeding (<4 = 0, ≥4 = 1), and the PFS score of primipara were negatively correlated with the level of social support and role adaptation. The PFS score was positively correlated with feeding methods, premature/low-birth-weight infants, and frequency of nighttime feeding (r = 0.674, 0.393, 0.684, respectively; p

Table 3. Comparison of postpartum fatigue levels in primiparous women across different parameters.

Item		Number of cases	PFS scale score (points)	*t/F* value	*p* value
Age (years)	<30	65	14.42 ± 4.97	1.055	0.293
	≥30	136	13.70 ± 4.30		
Educational level	≤Junior high school	4	14.75 ± 2.06	1.712	0.183
	Senior high school and vocational school	14	16.02 ± 4.57		
	≥College and above	183	13.75 ± 4.54		
Employment status	Unemployed	24	14.56 ± 3.87	0.729	0.467
	Employed	177	13.84 ± 4.61		
Average monthly family income (USD)	≤415	6	16.83 ± 3.87	1.328	0.267
	415–829	12	14.25 ± 4.16		
	>829	183	13.81 ± 4.56		
Mode of delivery	Vaginal	101	13.01 ± 4.76	5.026	0.007
	Cesarean section	98	14.78 ± 4.09		
	Forceps delivery	2	18.50 ± 3.54		
Feeding method	Exclusively breastfeeding	97	11.09 ± 3.84	82.278	<0.001
	Mixed feeding	72	15.35 ± 2.43		
	Artificial feeding	32	19.33 ± 3.61		
Residential area	Urban	187	14.01 ± 4.48	0.918	0.360
	Rural	14	12.86 ± 5.23		
Premature/low-birth-weight infants	No	196	13.65 ± 4.20	6.001	<0.001
	Yes	5	25.00 ± 2.83		
Nighttime feeding frequency (times/night)	<4	102	10.94 ± 3.59	12.822	<0.001
	≥4	99	17.01 ± 3.10		

Note: PFS scale scores are presented as mean ± standard deviation. PFS, Postpartum Fatigue Scale.

< 0.001). The level of role adaptation was negatively correlated with feeding methods, premature/low-birth-weight infants, and frequency of nighttime feeding (r = –0.491, –0.454, –0.488, respectively; $p < 0.001$), whereas the level of social support was negatively correlated with feeding methods, premature/low-birth-weight infants, and frequency of nighttime feeding (r = –0.611, –0.335, –0.698, respectively; $p < 0.001$) (Table 6).

Discussion

After childbirth, women undergo significant physiological and psychological changes and are required to gradually adapt to the role of motherhood that involves learning parenting knowledge and skills (Kazeminia et al, 2022; Khatun et al, 2021). Fatigue, as a common symptom in postpartum women, not only reduces their phys-

Table 4. Comparison of social support levels among primiparous women across different postpartum fatigue levels.

Fatigue level	Number of cases	Emotional	Material	Informational	Evaluative	Total score
No fatigue	50	14.80 ± 0.57	13.90 ± 0.54	13.56 ± 0.84	13.42 ± 0.93	55.68 ± 2.14
Mild fatigue	58	13.60 ± 0.77	13.90 ± 0.61	13.66 ± 0.76	12.21 ± 0.87	53.36 ± 1.87
Moderate fatigue	78	13.76 ± 1.65	13.32 ± 1.04	11.76 ± 0.79	12.76 ± 1.49	51.59 ± 3.76
Severe fatigue	15	10.20 ± 2.04	9.53 ± 2.13	9.33 ± 2.38	11.60 ± 1.96	40.67 ± 6.54
F		50.675	90.64	110.048	12.316	84.126
p		<0.001	<0.001	<0.001	<0.001	<0.001

Note: The points are presented as mean ± standard deviation.

Table 5. Comparison of role adaptation levels among primiparous women across different postpartum fatigue levels.

Fatigue level	Number of cases	Role identity	Parent-child attachment	Care behavior	Total score
No fatigue	50	28.96 ± 1.44	29.12 ± 2.72	26.20 ± 2.64	84.28 ± 4.88
Mild fatigue	58	27.79 ± 1.84	27.14 ± 1.41	28.07 ± 2.31	83.00 ± 3.83
Moderate fatigue	78	24.64 ± 1.52	24.92 ± 1.60	23.69 ± 1.64	73.26 ± 3.38
Severe fatigue	15	21.53 ± 3.74	21.67 ± 1.95	20.73 ± 1.94	63.93 ± 6.20
F value		101.902	82.092	72.547	156.277
p value		<0.001	<0.001	<0.001	<0.001

Note: The points are presented as mean ± standard deviation.

iological, psychological, and cognitive functions but also has a severe negative impact on nurturing their newborn children.

Previously, a study found that the prevalence of postpartum fatigue on the second day, first month, and third month after delivery was 63.5%, 82.5%, and 81.8%, respectively (Kiliçli Id and Zeyneloglu Id, 2024). This study conducted an in-depth investigation of postpartum fatigue in primiparous women at 7 days postpartum, scientifically assessed the fatigue status of primiparous women, and the results showed that out of 201 participants, 50 cases (24.87%) reported no fatigue, 58 cases (28.86%) with mild fatigue, 78 cases (38.81%) with moderate fatigue, and 15 cases (7.46%) with severe fatigue. The fatigue score for women who underwent cesarean section was higher than those who had a natural delivery. The slower recovery rate and the higher likelihood of complications like incision infections, bleeding, pain, abdominal distension, and gastrointestinal dysfunction in cesarean deliveries contribute to increased fatigue (Mariman et al, 2024). In this study, postpartum fatigue was more severe in mothers of premature/low-birth-weight infants. The health status of newborns directly affects the psychological well-being of mothers postpartum. Poor health status of the newborn is undoubtedly a strong psychological stressor for mothers, exacerbating their postpartum fatigue (Odabas et al, 2023).

The present study revealed that compared to breastfeeding mothers, artificially feeding mothers faced significantly higher levels of fatigue. Breastfeeding is highly

Table 6. Correlation analysis of postpartum fatigue across social support levels and role adaptation levels among primiparous women.

		PFS	Feeding method	Premature/low-birth-weight infant	Frequency of nighttime feeding
PFS	r	-	0.674	0.393	0.684
	p	-	<0.001	<0.001	<0.001
Social support level	r	–0.693	–0.491	–0.454	–0.488
	p	<0.001	<0.001	<0.001	<0.001
Role adaptation level	r	–0.735	–0.611	–0.335	–0.698
	p	<0.001	<0.001	<0.001	<0.001

PFS, Postpartum Fatigue Scale.

convenient as breast milk is readily available anytime and anywhere for the baby, without the need for bottle and formula preparation or addressing concerns such as water temperature and milk quantity (Ozcan, 2024). This convenience not only reduces the burden of childcare for mothers but also decreases physical and psychological fatigue caused by frequent feeding. On the other hand, artificial feeding requires preparation of formula, bottles, and ensuring cleanliness, which to some extent increases the workload for mothers (Ozdemir and Ozcan, 2023). Some scholars have pointed out that the degree of postpartum fatigue is related to the lack of postpartum sleep and the sleep difficulties (Qian et al, 2021; Saleh et al, 2022). This aligns closely with the results of this study. In this research, higher levels of fatigue were observed in mothers who fed their babies four or more times at night. Nighttime feeding of newborns disrupts the sleep patterns of mothers, leading to irregular sleeping times, interruptions during nighttime sleep, and difficulties falling back asleep, consequently increasing fatigue levels. Nighttime is a critical period for the body's repair and recovery, especially for mothers who have undergone the significant physiological event of childbirth; adequate sleep is crucial for recovery. However, frequent nighttime feeding severely disrupts the sleep cycles of mothers, leading to irregular sleep, interruptions during nighttime sleep, and difficulties falling back asleep. These issues not only affect the quality of sleep for mothers but also exacerbate feelings of fatigue, impacting daily life and the ability to care for the newborn. Furthermore, from a psychological perspective, postpartum fatigue entails not only physical exhaustion but also emotional fluctuations and stress. In addition to increasing physical burden, frequent nighttime feeding trigger negative emotions such as anxiety and depression in mothers. These emotional issues not only affect the mental health of mothers but may also have negative implications for the mother-infant relationship, thereby impacting the healthy growth of the newborn. Therefore, our results underscore the need to address the nighttime sleep issues the postpartum mothers face, especially those who require frequent nighttime feeding. By optimizing feeding strategies, providing necessary support and assistance (such as sharing nighttime feeding tasks among family members, using assistive tools, etc.), reducing the number of nighttime feedings, improving maternal sleep quality, and alleviating fatigue, postpartum recovery can be promoted.

Additionally, healthcare professionals and family members should enhance psychological care and support for postpartum mothers, help them cope with potential emotional issues postpartum, and ensure the mental and physical well-being of both mother and baby.

Families represent the most important social unit for human society, providing a supportive environment for the physical, psychological, and social well-being of their members. The beliefs and mutual care among family members have a certain impact on the health and psychological state of postpartum women. In this study, family functioning was found to be negatively correlated with the degree of postpartum fatigue in women. Good family functioning fosters mutual understanding and support among family members, facilitates self-regulation in postpartum women, improves stress responses, and alleviates postpartum fatigue (Wang et al, 2024). The relationships between spouses and between mothers-in-law and daughters-in-law are significant factors affecting postpartum distress. Conflicts within the family, arising from differences in child-rearing philosophies, work demands, and other issues, often lead to disharmony between spouses and tension between mothers-in-law and daughters-in-law. These factors present further challenges for postpartum women to seek warmth within the family, a condition that exacerbates postpartum fatigue. Postpartum women with better family functioning have their living needs better fulfilled, thereby enhancing the quality of life during the postpartum period (Yan et al, 2022). Therefore, it is crucial in clinical practice to emphasize the important role of family care for postpartum women during the parenting period, encourage mutual understanding among family members, and create a warm and comfortable family atmosphere.

Social support refers to the material, spiritual, and cognitive support obtained from one's social relationships. This support system can effectively alleviate mental tension in postpartum women, reduce psychological stress, and play a positive role in aiding them to adapt to postpartum changes (Yan et al, 2022). Social support is a significant influencing factor in the development of the maternal role. Effective social support can promote the achievement of the maternal role, with higher levels of social support during the perinatal period correlating with lower rates of postpartum depression and other psychological issues (Zuchatti et al, 2022). In this study, the degree of postpartum fatigue in primiparous women was negatively correlated with social support. Good social support can help postpartum women relieve stress and maintain better emotional experiences, as well as assist primiparous women in gaining knowledge, boosting confidence, and relieving the burden of childcare.

Certain limitations of this study should be noted. This study solely focuses on the analysis of maternal fatigue at a single time point, i.e., at 7 days after delivery, without comprehensively exploring the dynamic changes in fatigue status at different stages after delivery through long-term follow-up observation. The shortcoming in terms of study duration limits our in-depth understanding of the trajectory of maternal fatigue and its deep-seated causes. In order to overcome this shortcoming, future research should consider adopting a more complete longitudinal follow-up design to achieve multi-stage and long-term monitoring of postpartum fatigue. Only through long-term, regular data collection and analysis can we gather enough

evidence to illustrate the dynamic evolution process of maternal fatigue and reveal the complex influencing factors and mechanisms underlying this postpartum condition. In addition, concurrent assessments of family function and social support level should be considered to help further refine the specific action paths of these factors in the formation of maternal fatigue at different postpartum stages, providing solid scientific support for formulating more precise and efficient intervention strategies. In terms of methodology, researchers should actively explore and apply advanced statistical and data analysis techniques, such as time series analysis, latent variable growth models, etc., to better process and analyze complex data generated by longitudinal tracking. In addition, strengthening cross-disciplinary cooperation and exchanges as well as integrating research results and methods from psychology, sociology and other fields will also help advance our understanding of postpartum fatigue and promote the further development of related research.

Conclusion

In conclusion, fatigue in primiparous women is closely related to family functioning and social support. We found that the majority of primiparous women experience varying degrees of postpartum fatigue at 7 days postpartum, and that the condition can be exacerbated by factors such as poor newborn health conditions, artificial feeding, and nighttime feeding frequency of $\geq$4 times per night. Good family functioning and social support are beneficial in alleviating postpartum fatigue. Therefore, spouses and family members should play supportive roles during the postpartum care process to ensure that postpartum women have more rest and sleep time. Encouraging postpartum women to actively seek external help, confide in relatives, friends, etc., about their concerns, and to seek constructive assistance, can also help reduce postpartum fatigue.

Key Points

- The majority of primiparas have varying degrees of fatigue 7 days after delivery, with moderate fatigue accounting for the highest proportion (38.81%).
- The levels of social support and role adaptation of primipara are negatively correlated with the degree of postpartum fatigue. Specifically, primiparas with insufficient social support and difficulty adapting to their roles are more likely to experience severe fatigue.
- Strengthening social support and prescribing role adaptation intervention are recommended to alleviate postpartum fatigue among primiparas and help them better adapt to the mother's role.

Availability of Data and Materials

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

Author Contributions

This manuscript was authored by SZ, with the study jointly designed by SZ and SL. HY and XZ were responsible for data collection and organization, while data analysis was conducted by SZ. SL and YC provided guidance and assistance in addressing difficulties encountered during the research process. All authors contributed to important editorial changes in the manuscript. All authors have read and approved the final manuscript. All authors have been actively involved in this work and agreed to be accountable for all aspects of the research.

Ethics Approval and Consent to Participate

This study was approved by the Medical Ethics Committee of the Women's Hospital of Nanjing Medical University (2022KY-160-01). The entire experimental procedure adhered to the principles of informed consent, with patients or their family members being provided with information about the study.

Acknowledgement

Not applicable.

Funding

This study was supported by HuAi Fund of China Social Welfare Foundation (HLCXKY-20230162).

Conflict of Interest

The authors declare no conflict of interest.

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