



## Research Article

## Nursing discharge teaching of hospitalized postpartum women in China: A cross-sectional study



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## ABSTRACT

**Background:** Postpartum women encounter a diverse array of physiological challenges following childbirth, and they may also contend with issues such as a lack of self-care knowledge, childcare knowledge, and childcare experience. This study aimed to explore the quality of discharge teaching for hospitalized postpartum women. **Methods:** A total of 292 parturients who gave birth in a tertiary hospital were selected using the convenience sampling method and surveyed using a general data questionnaire and discharge teaching quality scale. **Results:** The total score for the quality of discharge teaching was  $111.95 \pm 28.64$ . In bivariate analysis, significant differences were identified between postpartum women with differences in postpartum complications, ambulation time, wound pain, infant health status, and infant feeding methods ( $p < 0.05$ ). Wound pain and infant feeding methods were significant factors in a multiple linear regression model ( $p < 0.05$ ). **Conclusions:** Nursing staff should focus on psychological nursing care and give more personalized teaching to postpartum women with severe wound pain and who bottle feed their newborns.

Nursing discharge teaching aims to provide patients and their families with important medical care information, thus enabling them to master self-care methods and take relevant precautions after discharge. Some research has suggested that high-quality discharge teaching enables patients to complete rehabilitation and recovery at home after discharge and reduces the readmission rate.<sup>1,2</sup> Delivery induces physiological and psychological stress reactions in postpartum women, resulting in emotional changes.<sup>3</sup> Postpartum women not only contend with a wide variety of physiological problems after their delivery but may also encounter issues such as a lack of self-care knowledge, childcare knowledge, and childcare experience.<sup>4</sup> Some research findings have indicated that postpartum women, especially within the six weeks after delivery, often find themselves unprepared for the health issues they encounter.<sup>5</sup> Therefore, it is particularly important to implement high-quality discharge teaching for postpartum women. Understanding the true feelings of patients will help nurses determine the advantages and disadvantages of current discharge teaching strategies and lay the basis for further improvements. In this study, a survey and analysis of

hospitalized postpartum women in a metropolitan general hospital were conducted.

## 1. Methods

## 1.1. Design

A cross-sectional design was used for this descriptive, correlational study. A questionnaire survey was conducted on a convenience sample of postpartum women before hospital discharge.

## 1.2. Sample

Potential participants were recruited through the maternity ward of a metropolitan general teaching hospital in the north of China from April 2021 to August 2021. Inclusion criteria were as follows: postpartum women who (a) were discharged on the same day as the survey, (b) had no psychiatric history or serious diseases of the heart, brain, kidney, or

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other organs, (c) and provided informed consent and voluntarily participated in this survey. Exclusion criteria were as follows: (a) patients with serious language communication disorders, mental disorders, or cognitive disorders and (b) postpartum women with induced labor or stillbirth.

### 1.3. Measures

The study was conducted using a questionnaire survey that included a general data questionnaire and the quality of discharge teaching scale–new mother form (OB-QDTS).

### 1.4. General data questionnaire

The questionnaire was developed by the researcher and consisted of questions regarding general information (e.g., age, education level, and family income); prenatal conditions (e.g., parity and gestational weeks of delivery); delivery conditions (e.g., delivery mode, baby's birth weight, and infant health status); and the following postpartum conditions: ambulation time, main caregivers during hospitalization, expected main caregivers during hospitalization, infant feeding methods, whether there were complications after delivery, type of complications, wound pain score on the day of discharge (using the visual analog scoring method Visual Analogue Scale [VAS]; the greater the VAS score, the more significant the pain), breast milk adequacy, and length of hospital stay.

### 1.5. Quality of discharge teaching scale–new mother form (OB-QDTS)

The original scale was developed by Weiss et al.<sup>6</sup> in 2007 in accordance with the adult patient discharge teaching quality scale. In this study, the Chinese version of the scale translated by Li Wen et al.<sup>7</sup> in 2021 was employed. The scale comprises three subscales and 27 items, namely the content that postpartum women need before discharge (items 1a–7a), the content that postpartum women actually receive before discharge (items 1b–7b), and “teaching skills and effects” subscale, which reflects the skill of the nurses as educators in presenting discharge teaching (items 8–20). Each item on the scale receives a score ranging from 0 to 10 points, with 0 indicating “completely unable/completely absent” and 10 indicating “completely able/very much”. The higher the total score, the better the quality of discharge teaching. The content validity index at the scale item level ranged from 0.83 to 1.00, and the content validity index at the scale level reached 0.96. Cronbach's  $\alpha$  coefficient for the whole scale was 0.953, and the split-half reliability was 0.889.

### 1.6. Data collection

Postpartum women discharged on the same day were selected by researchers and trained investigators in accordance with the inclusion and exclusion criteria. Before the survey, the respondents were introduced to the purpose, significance, and confidentiality of the study. The questionnaire was issued with the consent of the postpartum women, and the women were also provided instructions for completing the survey. The investigators explained the items that were difficult to understand as the patients filled out the questionnaire. The questionnaire was collected on the spot, and participants remained anonymous. A total of 318 questionnaires were distributed, and 292 valid questionnaires were recovered, with an effective rate of 91.8 %.

### 1.7. Statistical analysis

All data were checked by two people and then input into Excel software for statistical analysis using IBM SPSS21.0. The count data are expressed as frequency and percentage, and the measurement data following a normal distribution are expressed as (mean  $\pm$  SD). Whether there was any difference between the content needed and the content received by the postpartum women was determined using a paired *t*-test,

and differences in the quality of discharge teaching received by postpartum women with different characteristics were determined using the *t*-test or *F*-test. Variables with a  $p < 0.05$  were included in the final multivariate analysis model. Factors that correlated with the quality of discharge teaching for hospitalized postpartum women were determined by multiple linear regression analysis. Statistical significance was considered to be  $p < 0.05$ .

## 2. Results

### 2.1. Sample characteristics

A total of 292 postpartum women were included in the study; 77.1 % were primipara; 65.1 % were between 31 and 40 years old; 53.8 % had a college education or above; 94.2 % had a full-term delivery; 46.9 % had a vaginal delivery, 42.8 % had a Cesarean section, and 10.3 % had a forceps-assisted delivery. Of the maternal families, 59.6 % had an annual income of more than 200,000 RMB. The main caregivers during hospitalization were nursing workers, accounting for 54.5 %. The expected primary caregiver during hospitalization was the husband (expected for 40.8 % of patients). Furthermore, 82.2 % of the babies were normal-term infants.

### 2.2. Quality score of discharge teaching for hospitalized postpartum women

The total score for the quality of discharge teaching was  $111.95 \pm 28.64$  points. Table 1 lists the scores for each needed and received discharge teaching item. Table 2 lists the average score for each skills and effects item; the average score was  $8.64 \pm 1.59$ , and the total score was  $112.30 \pm 20.63$ .

### 2.3. Comparison of discharge teaching quality scores for hospitalized postpartum women with different characteristics

There was a statistically significant difference in the quality of discharge teaching scores between postpartum women with or without complications and with different ambulation times, degrees of wound pain, infant health status, and different infant feeding methods (Table 3). There was no statistically significant difference ( $p > 0.05$ ) between the scores of patients with different ages, education levels, annual family incomes, gestational weeks of delivery, delivery methods, baby weights, or days of hospitalization; whether the delivery was the first or whether the amount of breast milk was adequate also did not significantly affect the quality score (Table 4).

**Table 1**

Comparison of the scores of the contents of the discharge teaching needed and received by the hospitalized postpartum women ( $n = 292$ ) (Mean  $\pm$  SD).

Items	Content needed	Content received	<i>t</i> -test	<i>p</i> value
Information on self-care after returning home	7.69 $\pm$ 2.49	7.92 $\pm$ 2.27	-1.470	0.143
Information on emotional regulation after returning home	7.13 $\pm$ 2.94	7.41 $\pm$ 2.82	-1.644	0.101
Information on baby care after returning home	7.96 $\pm$ 2.36	7.75 $\pm$ 2.43	1.418	0.157
Information on feeding infants after returning home	7.94 $\pm$ 2.49	8.01 $\pm$ 2.31	-0.564	0.573
Skills in infant care before returning home	7.98 $\pm$ 2.43	7.47 $\pm$ 2.51	3.326	0.001
Information to ask for help after returning home	7.84 $\pm$ 2.41	7.78 $\pm$ 2.34	0.446	0.656
Matters for your family to take care of you and your baby after returning home	8.02 $\pm$ 2.26	7.86 $\pm$ 2.26	1.152	0.250
Total score	54.55 $\pm$ 14.76	54.21 $\pm$ 14.72	0.418	0.676

**Table 2**Scores of hospitalized postpartum women on skills and effects of discharge teaching ( $n = 292$ ) (Mean  $\pm$  SD).

Items	Score
Information provided to address concerns and questions	8.32 $\pm$ 1.93
Listen to your concerns	8.48 $\pm$ 1.87
Respect your religious beliefs or values	8.90 $\pm$ 1.85
Like the way nurses guide self-care and baby care	8.79 $\pm$ 1.83
The teaching method can let you understand	8.87 $\pm$ 1.63
Nurses break down knowledge to help understand	8.72 $\pm$ 1.89
Check to ensure understanding of the information provided or the demonstration	8.63 $\pm$ 1.97
Whether the information obtained from nurses, doctors, and other medical personnel is consistent	8.84 $\pm$ 1.67
The time to provide information is appropriate	8.83 $\pm$ 1.66
Choose when your family or caregiver will be present to provide information	8.50 $\pm$ 2.24
Help you improve your confidence in self-care and baby care	8.67 $\pm$ 1.86
How confident you are that you know what to do in an emergency	8.20 $\pm$ 2.15
Reduce your anxiety about returning home from the hospital	8.54 $\pm$ 1.89
Total score	112.30 $\pm$
Average score	8.64 $\pm$ 1.59

#### 2.4. Multivariate analysis of factors affecting the quality of discharge teaching

Factors with a  $p < 0.1$  in univariate analysis were then included as independent variables in multiple linear regression analysis with the quality of discharge teaching score as the dependent variable. These factors were postpartum complications, ambulation time, degree of wound pain, infant health status, level of education, and infant feeding methods. The variables degree of wound pain and infant feeding methods were significant in the multiple linear regression model ( $p < 0.05$ ) (Table 5).

### 3. Discussion

#### 3.1. The discharge teaching content received by hospitalized postpartum women currently meets the expected needs of postpartum women

In this study, the total discharge teaching quality score was 111.95  $\pm$  28.64, the average score of the received content items was 7.74, and the average score of the teaching skills and effects items was 8.64. This suggests that postpartum women highly approve of nurses' discharge teaching skills but that the content of discharge teaching should be improved. As depicted in Table 1, there was no statistically significant difference between the total scores of the teaching content needed and received ( $p > 0.05$ ). The scores for the six items for the content needed subscale were consistent with the received scores ( $p > 0.05$ ), thus revealing that the content obtained by the patients satisfied their needs. Only the item "Skills in infant care before returning home" had a higher score for what should be obtained than for what was actually obtained. One possible reason for this result is that 77.1 % of the postpartum women in this study were primipara, 54.5 % of the postpartum women's main caregivers were nurse workers during hospitalization, 26.7 % of the main caregivers were husbands, and 40.8 % of the expected primary caregivers during hospitalization were husbands. Although the husband is a vital baby caregiver, it is particularly common for the father to lack knowledge and skills in baby care.<sup>8,9</sup> Mothers who are preparing to be discharged are more likely to need to acquire more baby care skills when their husbands do not accompany them during hospitalization. Accordingly, obstetric doctors and nurses can use a variety of health education methods during hospitalization, such as providing videos or health education materials to family members, to improve the baby care skills of postpartum women before they return home.

The items with the lowest scores for the content needed and received during discharge teaching were related to information on emotional

**Table 3**Comparison of quality scores of discharge teaching for hospitalized postpartum women with different characteristics ( $n = 292$ ) (Mean  $\pm$  SD).

Items	n	Content needed	Content received	Teaching skills and effects	The total score of discharge teaching quality
Postpartum complications					
Yes	47	54.79 $\pm$ 14.36	49.15 $\pm$ 18.27	105.13 $\pm$ 27.40	99.49 $\pm$ 39.25
No	245	54.51 $\pm$ 14.87	55.18 $\pm$ 13.77	113.68 $\pm$ 18.82	114.35 $\pm$ 25.54
t-test		0.119	-2.596	-2.629	-3.313
p value		0.905	0.010	0.009	0.001
Ambulation time					
Day of delivery	140	53.29 $\pm$ 15.39	53.39 $\pm$ 15.45	110.54 $\pm$ 23.39	110.64 $\pm$ 31.34
Afternoon of the Second day of delivery	100	55.77 $\pm$ 14.83	56.37 $\pm$ 13.08	116.70 $\pm$ 15.77	117.30 $\pm$ 22.19
Morning of the second day of delivery	38	54.74 $\pm$ 13.13	53.42 $\pm$ 13.88	110.24 $\pm$ 17.21	108.92 $\pm$ 24.61
The third day of delivery	14	58.00 $\pm$ 11.72	49.00 $\pm$ 19.29	104.14 $\pm$ 25.87	95.14 $\pm$ 42.59
F-test		0.825	1.490	2.764	3.073
p value		0.481	0.217	0.042	0.028
Degree of wound pain					
No	22	56.82 $\pm$ 14.74	57.27 $\pm$ 14.54	114.86 $\pm$ 18.11	115.32 $\pm$ 20.49
Mild pain	196	54.21 $\pm$ 15.23	55.27 $\pm$ 14.17	115.12 $\pm$ 19.21	116.17 $\pm$ 25.42
Moderate pain	62	54.55 $\pm$ 13.97	51.90 $\pm$ 14.30	105.66 $\pm$ 22.06	103.01 $\pm$ 31.94
Severe pain	12	55.92 $\pm$ 11.84	43.17 $\pm$ 20.81	95.92 $\pm$ 56.35	83.17 $\pm$ 45.75
F-test		0.239	3.501	6.325	8.125
p value		0.869	0.016	0.000	0.000
Infant health					
Healthy	261	54.40 $\pm$ 14.96	54.61 $\pm$ 14.49	113.36 $\pm$ 19.66	113.57 $\pm$ 26.38
Physiological defect	4	53.75 $\pm$ 16.52	4.00 $\pm$ 12.65	108.25 $\pm$ 20.95	108.50 $\pm$ 22.84
Transfer to pediatrics	27	56.11 $\pm$ 12.85	50.33 $\pm$ 16.94	102.63 $\pm$ 27.09	96.85 $\pm$ 43.57
F-test		0.169	1.033	3.448	4.293
p value		0.845	0.357	0.033	0.015
Infant feeding methods					
Breast-feeding	118	55.00 $\pm$ 14.99	56.98 $\pm$ 13.46	114.68 $\pm$ 18.67	116.66 $\pm$ 24.31
Mixed-feeding	146	54.40 $\pm$ 15.01	53.60 $\pm$ 14.24	112.47 $\pm$ 19.99	111.66 $\pm$ 26.92
Bottle-feeding	28	53.43 $\pm$ 12.76	45.64 $\pm$ 18.69	101.43 $\pm$ 27.96	93.64 $\pm$ 44.10
F-test		0.142	7.261	4.799	7.658
p value		0.868	0.001	0.009	0.001

adjustment after returning home. This indicates that, compared with postpartum physical rehabilitation and newborn care, both postpartum women and nurses pay less attention to mental health. The birth of a child brings joy to the family but also adds considerable troubles and challenges to the parents. Postpartum women not only need to adapt to their physical discomfort after childbirth but also take responsibility for taking care of their children. Postpartum depression is a common negative emotion of postpartum women. Numerous epidemiological studies have suggested that the prevalence of postpartum depression in developing countries and developed countries during the perinatal period ranges from 14% to 25 %, <sup>10,11</sup> and the prevalence in China is 1.66%–34.8 %.<sup>12,13</sup> In general, postpartum depression occurs within 2 weeks after delivery, with significant symptoms apparent by 4–6 weeks. The symptoms begin to abate by 6 months after delivery, but they can also last for 1–2 years.<sup>14</sup> As revealed by a systematic review, the incidence of

**Table 4**

Comparison of quality scores of discharge teaching for hospitalized postpartum women with different general information (n = 292) (Mean ± SD).

Items	n	Score	t/F	p-value	
Age	21–30years	94	112.04 ± 27.54	0.946	0.617
	31–40years	190	111.78 ± 29.59		
	≥41years	8	115.00 ± 19.39		
Level of education	Middle school or below	3	108.00 ± 33.05	1.327	0.059
	High school	12	115.83 ± 19.75		
	Junior college and Bachelor	157	114.65 ± 29.99		
	Master or above	120	108.14 ± 27.32		
Annual family income	≤10,000 ¥	24	110.79 ± 26.56	1.100	0.286
	100000-200000¥	94	116.31 ± 27.34		
	≥200000¥	174	109.76 ± 29.48		
Gestational weeks of delivery	≤28week	1	130.00	0.959	0.587
	28–37week	16	112.13 ± 27.91		
	≥37week	275	111.88 ± 28.76		
Parity	Primipara	225	111.49 ± 28.83	-0.505	0.614
	Multipara	67	113.51 ± 28.15		
Mode of delivery	Vaginal	137	110.83 ± 28.76	1.076	0.331
	Cesarean section	125	114.21 ± 24.27		
	Forceps-assisted delivery	30	107.70 ± 42.29		
Adequacy of breast milk	sufficient	63	116.38 ± 26.25	0.889	0.741
	Relatively sufficient	70	116.21 ± 25.48		
	Normal	81	108.72 ± 33.83		
	Insufficiency	78	107.92 ± 26.73		
Days of hospitalization	One day	4	92.75 ± 36.60	1.005	0.481
	Two days	37	104.62 ± 23.71		
	Three days	78	115.81 ± 24.59		
	Four days	75	111.57 ± 26.57		
	Five days	98	112.73 ± 33.83		

postpartum depression is the highest at 1 week after delivery.<sup>15</sup> Existing research indicates that health education during pregnancy and postpartum support can reduce postpartum depression in pregnant women to varying degrees.<sup>16</sup> Accordingly, obstetric nurses should pay attention to the emotional changes of postpartum women, listen more to their complaints, and provide more newborn care guidance and psychological support. The development of maternal mental health education programs, early identification of maternal psychological symptoms, and timely provision of psychological help and resources should be highlighted. This will enhance the ability of pregnant women to solve psychological problems, ensure the health of postpartum women and infants, and help restore the physiological, psychological, and social functions of the mother to the optimal state.

**Table 5**

Multiple regression analysis of the quality of discharge teaching among hospitalized postpartum women (n = 292).

	$\beta$	Standard error	t-test	p-value	95 % CI
Intercept	152.646	10.793	14.143	0.000	131.402 to 173.890
Level of education	-4.380	2.605	-1.682	0.094	-9.507 to 0.747
Postpartum complications	-6.450	4.680	-1.378	0.169	-15.662 to 2.761
Ambulation time	1.013	1.949	0.520	0.604	-2.824 to 4.849
Degree of wound pain	-3.508	0.908	-3.862	0.000	-5.295 to -1.720
Infant health status	-5.257	2.806	-1.873	0.062	-10.781 to 0.267
Infant feeding methods	-6.642	2.562	-2.593	0.010	-11.684 to -1.600

### 3.2. Analysis of the difference in the discharge teaching quality scores for hospitalized postpartum women with different characteristics

The results of multivariate analysis showed that the degree of wound pain and infant feeding methods were the factors influencing the quality of discharge teaching for hospitalized postpartum women. However as depicted in Table 3, the scores of the skills and effects of discharge teaching and the total scores for the quality of discharge teaching for postpartum women with postpartum complications, long ambulation time, and severe wound pain were significantly lower than those of the postpartum women without complications, early resumption of activities, and less wound pain, respectively. The reason for the difference in scores between women with and without complications is that patients with postpartum complications (e.g., fever, abdominal distension, or urinary retention) need more discharge teaching content. However, because the clinical discharge teaching content is not targeted, the actual discharge teaching content received by the postpartum women will not be sufficient, and the skills and effects scores of discharge teaching will be poor. Therefore, nurses should be aware of the occurrence of postpartum complications and give targeted instructions. Moreover, for postpartum women with severe wound pain after cesarean section and vaginal delivery, nurses should provide effective pain care to reduce the risk of abdominal distension or other complications due to the effect of wound pain on ambulation time. Existing research suggests that pain care significantly increases the ability of postpartum women to produce endorphins after surgery, which can act on enkephalin receptors and provide pain relief.<sup>17</sup> Pain management can help postpartum women become more confident and significantly reduce the probability of postpartum depression. Nurses should be committed to building a trusted platform between medical care professionals and maternity patients so that patients can gain more knowledge about pain relief.

The total discharge teaching quality scores for content received, teaching skills and effects for postpartum women with bottle-fed infants were significantly lower than those of postpartum women with breastfed infants. In this study, 28 postpartum women could not breastfeed during hospitalization because of specific diseases or the use of certain drugs, and they used the formula provided by the hospital. After discharge, these postpartum women need to know how to feed a newborn and the precautions to take when using formula. Therefore, the nurse should provide instruction on neonatal feeding and the precautions for breast care after discharge, to meet the needs of these postpartum patients, improve the skills learned during discharge teaching, and thus improve the quality of discharge teaching.

Although the results of multivariate analysis indicated that infant health status is not an influencing factor, previous studies have shown that 10%–21.2 % of newborns are transferred to the neonatal department for monitoring and treatment due to premature delivery, asphyxia,

infection, neonatal jaundice, or other high-risk factors, thus resulting in separation of mother and infant.<sup>18,19</sup> When separated from their baby, postpartum women not only face worries about the safety of their newborn but also get used to being separated from their newborns, resulting in negative emotions, anxiety, depression, and other symptoms.<sup>20</sup> Thus, nurses should pay more attention to the concerns of postpartum women who have been separated from their infants or whose infants have birth defects and give them the confidence to provide self-care and baby care.

#### 4. Conclusions

This study suggests that nursing staff should focus on psychological nursing care and give more personalized teaching to postpartum women with severe wound pain and who bottle feed their newborns. Few similar studies have been conducted in China, and additional research should be conducted on the effect of maternal-related factors on the quality of discharge teaching and the corresponding nursing interventions further to meet the rehabilitation needs of postpartum women after discharge.

#### Author contributions

LS took responsibility for conceptualization, methodology, data curation, and writing-original draft preparation; LY was responsible for conceptualization, methodology, validation, and writing review & editing; LG oversaw the project as the supervisor and also contributed to supervision and writing review & editing.

#### Ethics approval and consent

This study was approved by the institutional review board of Peking University People's Hospital (No. 2020PHB245-01). Informed consent was obtained from all patients. All authors consent to publication.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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