Community Mental Health Journal, Vol. 43, No. 1, February 2007 (© 2006)
DOI: 10.1007/s10597-006-9066-3

Postpartum Stress as A Predictor of Women's Minor Psychiatric Morbidity

Chich-Hsiu Hung, R.N., Ph.D.

ABSTRACT: The purpose of this study was to predict women's minor psychiatric morbidity after they had childbirth as measured repeatedly at the first, the third, and the fifth weeks of the postpartum period. The Chinese Health Questionnaire, the Postpartum Stress Scale, the Zung's Self-rating Depression Scale and Anxiety Scale, and the Social Support Scale were used at the three points of time. A total of 526 women in Taiwan participated in the study. The results indicated that postpartum stress and anxiety are important predictors for postpartum women's minor psychiatric morbidity at three points in time.

KEY WORDS: health status; postpartum stress; social support

The postpartum period has been conceptualized as a time of vulnerability to stress for women. It is characterized by dramatic changes and requires mandatory adjustments that involve many difficulties and concerns, possibly leading to new demands, or structural constraints and, therefore, stress (Hung, 2001a). All mothers face the multiple demands of adjusting to changes in the body, learning about the new infants, and getting support from significant others (Hung,

Chich-Hsiu Hung is affiliated with the College of Nursing and Department of Nursing at Chung-Ho Memorial Hospital, Kaohsiung Medical University, Kaohsiung City, Taiwan.

Address correspondence to Chich-Hsiu Hung, R.N., Ph.D., College of Nursing and Department of Nursing at Chung-Ho Memorial Hospital, Kaohsiung Medical University, No. 100, Shih-Chuan 1st Road, Kaohsiung City, 807, Taiwan; e-mail: chhung@kmu.edu.tw

2001a, 2005). For women going through this transition, it may be a uniquely stressful life experience.

For most women, parturition is an intense physical experience. Immediately after giving birth, women experience pain and a feeling of tiredness as a result of the tremendous physiological changes which they experienced during the process. Discomfort from episiotomy may inhibit sexual relations and effective elimination of waste. Breast engorgement is also a source of discomfort and women may experience nipple soreness or the annoyance of leaking milk.

The woman must also establish a relationship with her infant as she learns about her infant. Mothering capability involves the mother's sensitivity to the infant's behavioral cues and the mother's ability to respond appropriately (Leitch, 1999). In the postpartum period she needs to understand her infant's unique patterns of crying, sleeping, feeding, and other behaviors. If a woman is unable to soothe her infant's crying, is awkward in giving care, or feels she is in other ways not achieving her maternal tasks, she may view herself as a failure (Ruchala & Halstead, 1994). Challenges to a mother's self-confidence may evoke postpartum stress (Hall, Kotch, Browne, & Rayens, 1996).

A lack of intimacy or negative relationships can also induce postpartum stress and therefore adversely affect a woman's health status. Hung (2001b) constructed a postpartum stress scale and found that lack of social support was one of components of postpartum stress. Flagler's (1990) study indicated that postpartum women's self-descriptions of negative emotional feelings were related to poorer relationships with husbands, less life satisfaction, and less support for the maternal role in the postpartum. Thus, a lack of social support may influence a woman's ability to view herself as competent and capable of carrying out her role responsibilities, which consequently raises the level of postpartum stress.

Postpartum stress has an important role in a woman's life and influences her health status, both physical and mental. Studies also have indicated that the immediate responsibilities of parenthood may affect the dyadic relationship and increase anxiety and depression in postpartum women (Gennaro, 1988; Midmer, Wilson, & Cummings, 1995). The Western literature shows that over the last decade, depression has become an important issue in women's health during the postpartum period.

Most of the published studies, however, posit that support buffers individuals from the potentially adverse effects of stressful postpartum

events. A woman's husband, family, and friends can provide the major source of feedback on how she is fulfilling the role of mother. The validation she receives from these individuals influences her role expectations. Reece's (1993) study found that social support from spouse and family was associated with both positive self-evaluation in parenting and lower stress. The research has suggested that adaptive maternal behavior was influenced favorably by the mother's perception of the amount of positive support she received (Baker & Taylor, 1997; Logsdon, Birkimer, & Barbee, 1997; Reece, 1993). These findings are consistent with the findings of the relationship of social support to health status during the stressful perinatal period (Maguire, 1991).

Few studies, however, have attempted to measure postpartum women's health status and predict its key factors involved. The purpose of this study was to examine the postpartum women's demographic characteristics, postpartum stress, anxiety, depression, social support, and health status in order to establish a means of predicting women's minor psychiatric morbidity after childbirth as measured at three points in time.

METHODS

Design

A repeated measure was conducted with data collected at the first, the third, and the fifth weeks of the postpartum period.

Sample

The sample was recruited from Taiwanese postpartum women, who (a) had a single, healthy, full-term baby, without complications; (b) had no major postnatal complications or underlying medical problems; and (c) remained in Kaohsiung City during their postpartum period were recruited. A sample of 526 postpartum women participated in the study. A 4.0% (n = 21), 2.7% (n = 14), and 1.5% (n = 8) attrition rate due to missing data from some items resulted in 505, 512, and 518 study subjects at each point in time respectively. The average age of the 526 participating postpartum women was 28.33 years (SD = 4.12) and most had obtained a senior high school or below (60.90%). 58.0% of the women were employed full-time. The mean length of marriage was 39.09 months (SD = 32.55) and primiparas were less than multiparas (49.6% vs. 50.4%). At the time of the study, only 40.3% of the women indicated that the pregnancy was planned. 54.9% of the women had vaginal deliveries. 55.7% of the infants were boys and 59.5% of the women expressed no preference about infant gender. Most of the women (59.7%) fed their infants by a combination of formula and breast-feeding. The key helpers during the postpartum period were the women's own mothers (40.3%), her mother-in-law (31.4%), and either husband or other (28.2%).

Instruments

Health Status. The postpartum women's health status was measured with the 12-item Chinese Health Questionnaire (CHQ) (Chong & Wilkinson, 1989). This culture-specific questionnaire is designed to reflect Chinese sociocultural preferences in the expression of distress, including anxiety, depression, and sleep disturbance and somatic symptoms, somatic concerns, and interpersonal difficulties (Cheng, 1985). Respondents rated how frequently each symptom was experienced during the past week on a 4-point scale of 1 (rarely) to 4 (most). All items were recoded to range from 0 to 1 and all the ratings were added, forming a summary score of 0 to 12 (Chong & Wilkinson, 1989). The cut-off point on 'case'/ 'non-case' judgment for minor psychiatric morbidity in community samples was 3/2 and the sensitivity and specificity was 91.9% and 66.7%, respectively. Cronbach's alpha in this study was .84.

Postpartum Stress. Postpartum stress was measured with the 42-item Postpartum Stress Scale. On a 5-point scale rating from 1 (not at all) to 5 (always), women rated how much each item of stress was perceived during the postpartum. The score for postpartum stress was derived by summing all ratings, resulting in scores between 42 and 210. Higher values coincide with higher stress perceptions. Construct validity and reliability were supported by Hung's study (2001b). The internal consistency coefficient using Cronbach's α in this sample was .93.

Depression and Anxiety. The Zung's Self-rating Depression Scale (SDS) obtained high correlations with the specific Hamilton and Beck Depression Scale (Zung, 1969). In addition, a validation study showed a high correlation with the "D" scale of the Minnesota Multiphasic Personality Inventory (Zung, Richards, & Short, 1965). The split-half reliability was found to be .73. The Zung's Self-rating Anxiety Scale (SAS) can qualify the symptoms, and is short and simple; these three characteristics are not met by most scales today. The Pearson-Product Moment correlation between the SAS and the Hamilton Anxiety Scale was found to be .75. In the SDS or SAS, the subject is asked to rate each of the 20 items as it applies to her at the time of testing, in the following four quantitative terms: a little of the time, some of the time, a good part of the time, and most of the time, each of which has a numerical value of 1 to 4. Cronbach's alpha was .76 for the SDS and .72 for the SAS.

Social Support. The Social Support Scale (SSS) is a 10-item, 5 point scale and includes the Family APGAR (Adaptation, Partnership, Growth, Affection, and Resolve) and Friend APGAR (Smilkstein, 1978; Smilkstein, Ashworth, & Montano, 1982). Items were scored using a 1 (not at all) to 5 (always) scale and a cumulative score was derived. The total score represented the frequency with which social support was accepted from either family or friends. High summed scores indicated high social support during the postpartum period. The correlations with the Pless-Satterwhite Family Function Index and the Psychotherapist Estimate was .80 and .64, respectively (Smilkstein et al., 1982). Cronbach's alpha was .92 in this sample.

Procedure

After approval from the Institutional Review Board at each participating institute, the potential participants were visited during their postpartum hospitalization. The written research purpose, procedure, and consent forms were distributed to them. Once informed consent was obtained, an appointment was made before each data collection

point. Each woman was visited three times, when all the instruments were completed by the women, in the first postpartum week in the hospital and the third and fifth weeks postpartum at home.

Data were analyzed with the non-parametric Cochran's test and McNemar post-test, one-way analysis of variance with repeated measures, and tests of within-subjects contrast with Helmert, chi-square, *t*-test, and direct logistic regression using Statistical Package for the Social Science (SPSS) 9.0 version.

RESULTS

Women's Health Status, Postpartum Stress, Anxiety, Depression, and Social Support at Three Points in Time

Of the 526 women, 156, 218, and 216 in each respective time point had CHQ scores in the 'minor psychiatric morbidity' category (scores of CHQ ≥ 3). The Nonparametric Cochran's test showed that there were significant differences of women's health status among the three points of time (Table 1). Post-tests with the McNemar test demonstrated that the proportion of 'minor psychiatric morbidity' at the third week was higher than the proportion of 'minor psychiatric morbidity' at the first week, and that at the fifth week was higher than at the first week (Table 1).

The means of postpartum stress were 72.11 ± 19.91, 79.40 ± 20.16, and 78.89 ± 20.99 for each of the three points of time. One-way ANOVA with repeated measures showed that the mean scores of postpartum stress at the first, third, and fifth weeks were significantly different (Table 1). Post-tests of within-subjects contrasts with Helmert showed

TABLE 1

Women's Health Status and Mean Scores of Women's Postpartum Stress, Anxiety, Depression, and Social Support

	Time 1 First week	*Time 2 Third week*	*Time 3 Fifth week*	*F*	*df*	*p*
Health status				31.29	2	.000
Non-case	370	308	310			
Case	156	218	216			
Postpartum stress	72.11 ± 19.91	79.40 ± 20.16	78.89 ± 20.99	75.21	2	.000
Anxiety	44.64 ± 7.84	44.78 ± 8.61	44.52 ± 9.27	.64	2	.530
Depression	47.16 ± 9.43	49.40 ± 10.10	48.97 ± 10.49	19.80	2	.000
Social support	36.69 ± 7.54	35.20 ± 7.33	34.99 ± 7.81	26.26	2	.000

that the mean score of postpartum stress at the first week was the lowest among the three points of time ($F = 104.06$, $df = 1$, $p < .0005$). However, the postpartum women's anxiety level was not significantly different among the three points of time.

The means of depression at the three points of time were 47.16 ± 9.43, 49.40 ± 10.10, and 48.97 ± 10.49. A significant difference among these mean scores was found (Table 1) and post-tests indicated that the mean score at the first week was significantly lower than the mean scores at the third and fifth weeks ($F = 27.16$, $df = 1$, $p < .0005$).

The means of social support were 36.69 ± 7.54, 35.20 ± 7.33, and 34.99 ± 7.81 for each of the three points of time. One-way ANOVA with repeated measures showed that there was a significant difference among the mean scores for social support (Table 1). Post-tests indicated that the mean score for social support at the first week was significantly higher than the mean score at the third and fifth weeks ($F = 26.26$, $df = 2$, $p < .0005$).

Comparison of Women's Demographic Characteristics, Postpartum Stress, Anxiety, Depression, and Social Support based on Women's Health Status at Three Points in Time

The postpartum women's health status at the three points in time was categorized as either 'non- minor psychiatric morbidity' or 'minor psychiatric morbidity' group. The women's demographic characteristics, and the level of the postpartum stress, anxiety, depression, and social support between the two groups were compared at the first, third, and fifth weeks postpartum. The *t* test indicated that the health status of the postpartum women with a 'minor psychiatric morbidity' category had higher postpartum stress, anxiety, and depression, and less social support than the women in the 'non- minor psychiatric morbidity' category at the first and fifth weeks of postpartum. Similarly, at the third week, the women in a 'minor psychiatric morbidity' category had higher scores in postpartum stress, anxiety, and depression than their opposites. However, the level of social support did not significantly different between the two groups at the third week postpartum (Table 2).

The women in either a 'minor psychiatric morbidity' or 'non-minor psychiatric morbidity ' category at the time of the third and fifth postpartum weeks after a chi-square test had significantly different educational levels (Table 2). Other demographic characteristics were not statistically different between these two categories of postpartum women's health status.

TABLE 2

Comparison of Women's Demographic Characteristics, Postpartum Stress, Anxiety, Depression, and Social Support based on Women's Health Status at Three Points in Time

	Health status				
	Non-case	*Case*	*t or* χ^2	*df*	*p*
Time 1 (First week)					
Postpartum stress	67.66 ± 17.65	82.67 ± 21.01	−8.41	524	.00
Anxiety	43.12 ± 7.23	48.15 ± 8.09	−6.97	510	.00
Depression	45.85 ± 9.33	50.29 ± 8.94	−5.04	521	.00
Social support	37.27 ± 7.48	35.31 ± 7.52	2.74	524	.01
Time 2 (Third week)					
Education			8.10	1	.01
Senior high or below	201	119			
Junior college or above	107	99			
Postpartum stress	72.49 ± 17.32	89.17 ± 19.88	−9.99	425.78	.00
Anxiety	41.80 ± 6.83	48.94 ± 9.13	−9.72	378.14	.00
Depression	46.55 ± 9.50	53.41 ± 9.55	−8.13	523	.00
Time 3 (Fifth week)					
Education			4.29	1	.04
Senior high or below	200	120			
Junior college or above	110	96			
Postpartum stress	70.96 ± 17.25	90.27 ± 20.67	−11.27	407.62	.00
Anxiety	41.09 ± 7.70	49.49 ± 9.10	−10.96	401.26	.00
Depression	45.84 ± 9.66	53.41 ± 10.04	−8.67	520	.00
Social Support	35.84 ± 8.00	33.78 ± 7.38	3.00	524	.00

Predictors of Postpartum Women's Health Status at the First, Third, and Fifth Weeks Postpartum

The women's health status at the three points in time was categorized as 'minor psychiatric morbidity'/'non-minor psychiatric morbidity' based on the CHQ scores (CHQ $\geq$ 3 vs. CHQ $\leq$ 2). According to the cut-off point of 'case'/'non-case' judgment for minor psychiatric morbidity, direct logistic regression was used to examine the magnitude of the effect of potential predictors, including demographic characteristics, postpartum stress, anxiety, depression, and social support, on the postpartum women's health status. A test of the full model with all predictors against a constant-only model was statistically reliable [χ^2 (17, N = 501) = 103.47, $p < .001$; χ^2 (17, N = 509) = 165.39, $p < .001$; and χ^2 (17, N = 507) = 175.14, $p < .001$] at each of three points in time, indicating that the predictors, as a set, reliably distinguished between the health of the women with 'minor psychiatric morbidity' and the health of those with 'non-minor psychiatric morbidity' status.

Table 3 shows regression coefficients, Wald statistics, odds ratio, and 95% confidence intervals for odds ratios for each significant predictor at each point in time. At the first week of the postpartum period, the postpartum women with an increase of one unit in the anxiety score or postpartum stress score were, respectively, approximately 1.08 and 1.03 times more likely to suffer minor psychiatric morbidity. Likewise, they were, respectively, 1.09 and 1.04 times as likely to suffer minor psychiatric morbidity at either the second or third point in time.

A woman with her mother-in-law as her key postpartum helper was .56 and .55 times less likely to suffer minor psychiatric morbidity at the second and the third points in time than a woman whose postpartum key helper was either the woman's own mother, her husband, or her other relatives. In addition, the women who gave birth to a boy baby were 1.61 times more likely to suffer minor psychiatric morbidity at the third week of postpartum than women who gave birth to a girl baby.

DISCUSSION

The postpartum women on average had a higher social support level and lower postpartum stress and depression scores at the first week

TABLE 3

Important Factors for Postpartum Women's Health Status at Three Points in Time Based on Direct Logistic Regression

Variables	*B*	*Wald*	*Odds ratio*	*95% Confidence interval for odds ratio*
Time 1 (1 week)				
Constant	−6.71	20.48		
Anxiety	.08	18.34	1.08	1.04–1.12
Postpartum stress	.03	27.70	1.03	1.02–1.05
Time 2 (3 weeks)				
Constant	−9.45	35.96		
A boy baby	.48	4.64	1.61	1.04–2.48
Mother-in-law as a key helper	−.59	4.11	.56	.32–.98
Anxiety	.09	23.22	1.09	1.05–1.13
Postpartum stress	.04	29.37	1.04	1.02–1.05
Time 3 (5 weeks)				
Constant	−8.41	32.55		
Mother-in-law as a key helper	−.60	4.29	.55	.31–.97
Anxiety	.09	22.20	1.09	1.05–1.13
Postpartum stress	.04	31.53	1.04	1.03–1.05

than at either the third week or the fifth week. Moreover, the lowest number of women with minor psychiatric morbidity was found in the first of the three points in time. Since the beginning of the universal health policy in Taiwan in 1995, the length of the postpartum stay has decreased to 3 days for a vaginal birth and five days for a cesarean delivery. The study's participants received the most attention during the first week of the postpartum period. Most of the women were visited and greeted by their relatives more frequently in the first week than in the following weeks. Postpartum care-related health care services were also provided to the women during their hospital stay. Women's perception of high social support facilitates decreasing postpartum stress and depression level, and therefore benefits their health.

The postpartum women with minor psychiatric morbidity reported higher postpartum stress, anxiety, and depression, and less social

support than women with non-minor psychiatric morbidity. The findings support the importance to postpartum women's health of low postpartum stress, anxiety, and depression, and high social support (Hung & Chung, 2001). Education level was associated with significant differences between the 'minor psychiatric morbidity' and 'non-minor psychiatric morbidity' women at the time of the third and fifth postpartum period. Further research is needed to compare the effects of education level on women's postpartum stress, anxiety, depression, social support, and health status.

An infant can be seen as an active partner in the maternal role-taking process. In this study, an infant's gender was found to affect maternal health status. At the third week of the postpartum period, the women with a baby boy were 1.61 times more likely to suffer minor psychiatric morbidity than the women with a baby girl. It may be informative to compare boy and girl infant's biorhythms, such as regular sleep-wake cycles, feeding patterns, and visual attention patterns, and to examine differences in the reciprocal interaction of a mother and her infant based on the infant's gender.

During the first month after childbirth, a postpartum woman in Taiwan is customarily accompanied by someone who facilitates her recovery by promoting her rest, nutrition, and physical well-being (Hung, 2005). In the past, it was the woman's mother-in-law, because of the predominant pattern of patrilocal residence after marriage. Women in present-day Taiwan have more options for receiving help and assistance during the postpartum period. Compared to a woman whose postpartum key helper was her husband, her mother or some other relative, a woman whose key postpartum helper was her mother-in-law was .56 and .55 times less likely to suffer minor psychiatric morbidity at, respectively, the second and third points in time researched in this study. This suggests that a woman, who has her mother-in-law as her key helper during the postpartum period, usually has had a better relationship with and can receive social support from her mother-in-law and therefore would have a better health status than a woman whose postpartum key helper was someone else.

Women's postpartum stress and anxiety levels were also important predictors of their health status across the three points in time. These findings are consistent with Hung's previous conclusions (2004) that postpartum stress may adversely affect maternal health status.

CONCLUSION

Accordingly, postpartum women require the assistance of health care professionals, through assessment and possible intervention regarding postpartum stress. It is necessary to develop a community health care means of assessing postpartum stress and stressors in order to delineate nursing strategies that meet the postpartum needs of the women in the community. Thus, identifying postpartum stressors, assessing postpartum stress, creating primary prevention strategies, and offering nursing interventions are all imperative for efficient, effective, and complete postpartum care and decreasing postpartum stress and anxiety.

REFERENCES

Baker, D., & Taylor, H. (1997). The relationship between condition-specific morbidity, social support and material deprivation in pregnancy and early motherhood. *Social Science & Medicine*, *45*, 1325–1336.

Cheng, T. A. (1985). A pilot study of mental disorders in Taiwan. *Psychological Medicine*, *15*, 195–203.

Chong, M. Y., & Wilkinson, G. (1989). Validation of 30- and 12-item versions of the Chinese Health Questionnaire (CHQ) in patients admitted for general health screening. *Psychological Medicine*, *19*, 495–505.

Flagler, S. (1990). Relationships between stated feelings and measures of maternal adjustment. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *19*, 411–416.

Gennaro, S. (1988). Postpartal anxiety and depression in mothers of term and preterm. *Nursing Research*, *37*, 82–84.

Hall, L. A., Kotch, J. B., Browne, D., & Rayens, M. K. (1996). Self-esteem as a mediator of the effects of stressors and social resources on depressive symptoms in postpartum mothers. *Nursing Research*, *45*, 231–238.

Hung, C.H. (2001a). The construct of postpartum stress: A concept analysis. *Journal of Nursing* (Published by the Nurses' Association of the Republic of China), 48, 69–76.

Hung, C. H. (2001b). Validity and reliability testing of the Hung Postpartum Stress Scale. *The Kaohsiung Journal of Medical Sciences*, *17*, 423–429.

Hung, C. H. (2004). Predictor of postpartum women's health. *Journal of Nursing Scholarship*, *36*, 345–351.

Hung, C. H. (2005). Women's postpartum stress, social support, and health status. *Journal of Western Nursing Research*, *27*, 148–159.

Hung, C. H., & Chung, H. H. (2001). The effects of postpartum stress and social support on postpartum women's health status. *Journal of Advanced Nursing*, *36*, 676–684.

Leitch, D. B. (1999). Mother-infant interaction: Achieving synchrony. *Nursing Research*, *48*, 55–58.

Logsdon, M. C., Birkimer, J. C., & Barbee, A. P. (1997). Social support providers for postpartum women. *Journal of Social Behavior and Personality*, *12*, 89–102.

Maguire, L. (1991). *Social support systems in practice: A generalist approach*, Silver Spring, MD: National Association of Social Workers.

Midmer, D., Wilson, L., & Cummings, S. (1995). A randomized, controlled trial of the influence of prenatal parenting education on postpartum anxiety and marital adjustment. *Family Medicine*, *27*, 200–205.

Reece, S. Mc. (1993). Social support and the early maternal experience of primiparas over 35. *Maternal-Child Nursing Journal*, *21*, 91–98.

Ruchala, P. L., & Halstead, L. (1994). The postpartum experience of low-risk women: A time of adjustment and change. *Maternal-Child Nursing Journal*, *22*, 83–88.

Smilkstein, G. (1978). The family APGAR: A proposal for a family function test and its use by physicians. *The Journal of Family Practice*, *6*, 1231–1239.
Smilkstein, G., Ashworth, C., & Montano, D. (1982). Validity and reliability of the family APGAR as a test of family function. *The Journal of Family Practice*, *15*, 303–311.
Zung, W. (1969). A cross-cultural survey of symptoms in depression. *American Journal of Psychiatry*, *126*, 116–121.
Zung, W., Richards, C. B., & Short, M. J. (1965). Self-rating depression scale in an outpatient clinic. *Archives of General Psychiatry*, *13*, 508–515.