Development and Validation of the Postpartum Sleep Quality Scale

Chiu-Ling Yang¹ • Chen-Hsiang Yu² • ChungHEY Chen³*

¹MSN, RN, Instructor, Department of Nursing, Fooyin University of Technology • ²MD, Assistant Professor, Department of Obstetrics and Gynecology, National Cheng Kung University Medical Center • ³PhD, RN, Professor, Institute of Allied Health Sciences and Department of Nursing, National Cheng Kung University.

ABSTRACT

Background: Postpartum sleep disorders are a significant problem for postnatal women. Although factors predisposing postnatal women to sleep disorders have been identified, few sleep quality assessment instruments adequately address these factors.

Purpose: This study aimed to develop a Postpartum Sleep Quality Scale (PSQS) and test its psychometric properties.

Methods: Sixteen PSQS items were generated from clinical practice, a literature review, and expert recommendations. Two hundred two postpartum women were recruited from a medical center and an obstetric clinic in southern Taiwan in 2010–2011 to assess the internal consistency, test–retest reliability, construct validity, and convergent validity of the developed PSQS.

Results: Item analysis removed two of the initial PSQS items. The resultant 14-item PSQS showed good internal consistency (α = .81) and acceptable 5-day test–retest reliability (r = .81). Construct validity was confirmed using exploratory factor analysis, which extracted and defined “Infant night care-related daytime dysfunction” and “Physical symptoms-related sleep inefficiency” as the two main categories of postpartum sleep quality. These two factors explained 44.49% of total variance, with factor loadings between .43 and .76. Significant correlation (r = .67) with the Pittsburgh Sleep Quality Index showed convergent validity.

Conclusion: The 14-item PSQS is a reliable, valid, and useful scale for measuring postpartum sleep quality and examining intervention protocols in Taiwanese postpartum women with sleep disturbance.

Key Words: women’s health, postnatal care, sleep quality.

Introduction

Sleep is a basic human physiological need and complex physiological process essential in restoring physical agility and energy (Chen et al., 2010; Dijk & von Schantz, 2005; Ko, Chang, & Chen, 2010). Sleep quality is a critical factor affecting quality of life. Sleep disorders can cause tiredness, fatigue, daytime functional problems, and depression (Harmat, Takács, & Bódizs, 2008; Ko et al., 2010; Kung, Yang, Chiu, & Kuo, 2011; Munguia-Izquierdo & Legaz-Arrese, 2012).

Researchers have reported that postpartum women experience less total sleep time, less sleep efficiency (time asleep vs. time in bed), and lower rapid eye movement than their non-postpartum peers (Dørheim, Bondevik, Eberhard-Gran, & Bjorvatn, 2009; Li, Chen, Li, Gau, & Huang, 2011; Posmontier, 2008). New mothers normally experience 20% more wake time during their first 6 postpartum weeks (Goyal, Gay, & Lee, 2007; Posmontier, 2008). The postpartum period is a transitional stage essential in restoring and promoting the health of new mothers (Ko & Chen, 2010; Zhang et al., 2007). However, it is a period often punctuated by physical and psychological symptoms resulting from sleep disturbance. Disturbances include physical discomfort, infant crying, disturbance by bed partners, and perceived stress, among others. Postpartum women thus face increased risk of depression (Be, Milgrom, Erickson, & Trinder, 2010; Dørheim et al., 2009; Eberhard-Gran, Tambs, Opjordsmoen, Skrondal, & Eskild, 2004; Munk-Olsen, Larsen, Pefersen, Mors, & Mortensen, 2006).

According to traditional Chinese medicine, pregnancy and childbirth cause a transient functional imbalance among major organs that disrupts a woman’s normal physical well-being (Tien, 2004). Chinese culture thus embraces a set of beliefs and practices referred to collectively as doing-the-month (zuo yuezi, that is, remaining largely inactive and confined during the first postnatal month). Adherence to the doing-the-month regimen is believed to help restore organs to a healthy balance (Cheung, 1997; Wang, Wang, & Wang, 2008). The regimen requires that postpartum women remain indoors, rest for 1 entire month, and follow many restrictive practices (Chien, Tai, Ko, Huang, & Sheu, 2006). Although many postpartum Taiwanese mothers follow some or most of the doing-the-month regimen, studies show that doing so...
does not ensure nocturnal sleep quality. Anecdotal studies have shown two to four major sleep disruptions (awakenings) to be common and nightly sleep duration the first postpartum month to range from less than 5 to 6.9 hours (Cartt, Bradley, & Winslow, 1996; Huang, 2002; Lee, 2005; Quillen, 1997). This situation may inhibit physical and psychological recovery to health. Huang et al. (2004) and Hung (2006) reported that postpartum mothers identified insufficient sleep as the primary stressor during the early postpartum period. Huang (2002) classified most (95.4%) postpartum women in her study as “poor sleepers.” Mothers reported a perceived nightly sleep debt of approximately 3 hours during the early postpartum period.

Infants’ sleep patterns in the early stage may influence mothers’ sleep quality. Studies on newborn infant sleep have reported significantly different average sleep times. Quillen’s (1997) study of 44 four-week-old infants found an average sleep time of 13.9 hours per 24-hour period, with the number of nighttime awakenings averaging between 1 and 2 (1.57 ± 0.47). Yamazaki, Lee, Kennedy, and Weiss (2005) found an average daily sleep time for infants of 12.2 hours; Teng, See, Cheng, and Lee (2007) found an average of 2.61 ± 1.56 nighttime awakening at 1 month old, 1.93 ± 1.18 at 3 months old, and 1.85 ± 1.33 at 6 months old.

Although sleep quality is a readily accepted clinical construct, it is difficult to define and measure objectively (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). Most researchers have utilized subjective measures to assess sleep quality and sleep disturbances (Tsai et al., 2005). Self-rating questionnaires represent a cost-effective, easy-to-implement alternative to polysomnography and actigraphy, which objectively measure sleep.

In a concept analysis of sleep quality (Chiu & Chao, 2000), scales recognized as widely available and able to subjectively measure adult sleep included the Leeds Sleep Evaluation Questionnaire (Parrott & Hindmarch, 1980), Verran and Snyder-Halpern Sleep Scale (Snyder-Halpern & Verran, 1987), Medical Outcomes Study Sleep Questionnaire (Stewart & Ware, 1992), and Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989). The above scales assess between four and eight dimensions of sleep. Of these questionnaires, PSQI has been shown to be a highly reliable tool for evaluating sleep quality and sleep disturbance and has been extensively used in a variety of clinical populations (Tsai et al., 2005). The PSQI assesses sleep quality using seven dimensional scores that measure, respectively, subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, sleeping medication use, and daytime dysfunction.

Postpartum women need to experience physical and psychological adjustment to restore the status of body and mind and must also take care of their newborn babies. Therefore, postpartum sleep quality is a critical health index. According to the literature (Huang, 2002; Hunter, Rychnovsky, & Yount, 2009; Lee, 2005; Li et al., 2011; Teng et al., 2007), inadequate rest because of lack of sleep is a major source of stress for postpartum women. None of the aforementioned sleep scales address sleep issues unique to the physical-psychosocial adjustment and infant care conditions faced by postpartum women. Therefore, we aimed to develop and validate PSQS that uniquely measures sleep quality in postpartum women.

Methods

We used a cross-sectional design to develop and test the PSQS. The PSQS was developed and validated in two phases.

Phase 1: Developing the PSQS

The PSQS is in Chinese and was constructed using a review of the literature that focused particularly on postnatal women’s sleep problems and clinical practices. PSQS elements included quantitative aspects (e.g., sleep duration, sleep latency, number of arousals), subjective aspects (e.g., restfulness, daytime function; Buysse et al., 1989), and factors influencing postnatal women’s sleep quality. Five experts critiqued the PSQS for item clarity, relevance, and comprehensiveness (Grant & Davis, 1997), with four specializing in maternity nursing and one as a senior obstetrician. Three postnatal women assessed the face validity of the scale. On the basis of expert recommendations, four items were reworded and three new items were added including “disturbed by leg cramping,” “blue mood,” and “take medicine to help sleep.”

We used the content validity index (CVI) described by Lynn (1986) to ensure consistency between study conceptualization and the measurement content domain. CVI evaluation results (CVI score = .97) indicated a high rate of agreement on PSQS items among experts.

The PSQS was revised based on expert recommendations and included 16 self-rated questions designed to assess postnatal women’s sleep quality during the past 2 weeks, with items scored on a 5-point Likert scale (0 = never, 1 = few, 2 = sometimes, 3 = often, 4 = almost always). A 5-day test–retest was used to assess scale stability, Cronbach’s alpha evaluated internal consistency, and two junior high school Chinese teachers assessed reading level appropriateness. Exploratory factor analysis (EFA) was used to examine construct validity and assessed PSQS convergent validity using the PSQI.

The PSQI, developed by Buysse et al. (1989), uses scores ranging from 0 (no difficulty) to 3 (severe difficulty) to measure subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of scores for the seven components yields the global PSQI score (range = 0–21). Higher scores indicate poorer sleep quality.

Using a sample of “good” sleepers (healthy subjects, n = 52) and “poor” sleepers (depressed patients, n = 54; sleep-disorder patients, n = 62), Buysse et al. (1989) found a Cronbach’s α of .83 for internal consistency and a 2-week test–retest correlation coefficient of 0.85. A global PSQI score higher than 5 yielded a diagnostic sensitivity of 89.6% and specificity of 86.5% in distinguishing good and poor sleepers. Therefore, 5 was adopted as the cutoff, with a global PSQI score greater than 5 indicating poor sleep quality.
and less than or equal to 5 indicating good sleep quality. A Taiwan study conducted by Ko et al. (2010) on 300 pregnant and 300 non pregnant women supported the internal consistency of the Chinese-version PSQI, with a Cronbach’s α of .73.

Phase 2: Validating the PSQS

Participants and settings

After the study protocol was approved by the institutional review board, we recruited participants from the postnatal clinic of one medical center and one obstetric clinic in southern Taiwan. Data were collected from November 2010 to March 2011. Enrolled participants met the following criteria: (a) at least 18 years old and married, (b) delivery of a normal newborn, and (c) consent to participate. Postpartum women experiencing stillbirth were excluded. In factor analysis, a ratio of at least 10 subjects for each item is desirable to generalize from the sample to a wider population, and 100–200 subjects are enough for most purposes (Munro, 2005). For our validation, 202 postnatal women met the criteria and completed the PSQS.

Demographic data

A demographic form collected descriptive data from participants. This included age, number of children, employment status, socioeconomic status (SES), type of delivery, gender of the infant, prenatal complications, postnatal complications, premature delivery, household work burden (hours per day), and daytime nap habit (hours per day). The index of status was used to stratify family SES according to social status (Lin, 1978). Education and occupation data were combined into one nuclear family unit status score. The index classifies social status into levels I through V. In this study, levels I and II were categorized as high SES, level III as middle SES, and levels IV and V as low SES.

Data Analysis

We performed data analyses using SPSS for Windows 17.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics summarized sample characteristics and variables of interest. Data were expressed as mean ± SD for continuous variables and n (%) for categorical variables. Item analyses included calculations of item means, standard deviation, and item-to-total correlations. We considered internal consistency reliabilities of .70 or above as acceptable for this newly developed scale (DeVellis, 2003; Wu, Chin, Chen, Lai, & Tseng, 2011). We assessed PSQS test–retest reliability using intraclass correlation coefficient criteria over a 5-day time frame and PSQS construct validity using EFA. Criteria used were (a) a factor loading between .3 and .9, (b) an eigenvalue greater than 1 for each component, and (c) at least three items in each factor (Netemeyer, Bearden, & Sharma, 2003). A Pearson correlation coefficient was used to examine convergent validity with PSQI. All results were considered significant at p < .05.

Results

Two hundred two participants completed the required scales. Table 1 shows participants’ demographic data. Participant mean age was 31.50 ± 4.28 years (range, 20–43 years), with most below the age of 35 years (77.7%). Most were employed (n = 126, 62.40%) and of high SES (n = 101, 50.00%), a majority experienced vaginal delivery (n = 136, 67.30%), slightly more than half the neonates were men (n = 110, 54.50%), and most experienced no prenatal complications (n = 187, 92.60%) or postnatal complications (n = 195, 96.50%). The household work burden of participants averaged 2.12 ± 1.17 hours per day during the previous 2-week period and daytime napping time averaged 1.85 ± 1.21 hours per day.

Item Analysis

Two Chinese language teachers reviewed the PSQS and determined that the scale was easily understood by respondents with a ninth grade or better reading level. Item-to-total correlations for the 16-item PSQS ranged from .21 to .67. Two items, “disturbed by leg cramping” and “take medicine to help

### TABLE 1.
Participant Demographic and Clinical Characteristics (N = 202)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)a</td>
<td>31.50</td>
<td>4.28</td>
</tr>
<tr>
<td>Number of childrena</td>
<td>1.50</td>
<td>0.62</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>76</td>
<td>37.6</td>
</tr>
<tr>
<td>Employed</td>
<td>126</td>
<td>62.4</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>101</td>
<td>50.0</td>
</tr>
<tr>
<td>Middle</td>
<td>75</td>
<td>37.1</td>
</tr>
<tr>
<td>Low</td>
<td>26</td>
<td>12.9</td>
</tr>
<tr>
<td>Type of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>136</td>
<td>67.3</td>
</tr>
<tr>
<td>Cesarean</td>
<td>66</td>
<td>32.7</td>
</tr>
<tr>
<td>Baby gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boy</td>
<td>110</td>
<td>54.5</td>
</tr>
<tr>
<td>Girl</td>
<td>92</td>
<td>45.5</td>
</tr>
<tr>
<td>Prenatal complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>187</td>
<td>92.6</td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>7.4</td>
</tr>
<tr>
<td>Postnatal complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>195</td>
<td>96.5</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td>Premature birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preterm</td>
<td>40</td>
<td>19.8</td>
</tr>
<tr>
<td>Term</td>
<td>162</td>
<td>80.2</td>
</tr>
<tr>
<td>Household work (hours per day)a</td>
<td>2.12</td>
<td>1.17</td>
</tr>
<tr>
<td>Napping (hours per day)a</td>
<td>1.85</td>
<td>1.21</td>
</tr>
</tbody>
</table>

Note. aFigures quoted are means and standard deviation.
“sleep” were removed because item-total correlation coefficients for these two fell below the .3 threshold (Chiou, 2010).

Reliability
The remaining 14 PSQS items all had an acceptable item-total correlation range of .32–.67. The alpha for each subscale was satisfactory and ranged from .71 to .81. The internal consistency of the total PSQS scale yielded a Cronbach’s alpha of .81, indicating good internal consistency. Intraclass correlation coefficient analysis gave 5-day test–retest reliability a score of .81 (n = 10), indicating acceptable PSQS stability.

Construct Validity
Two factors extracted from the 14-item PSQS are presented in Table 2 along with item-total correlations and factor loadings. After calculating a middling Kaiser-Meyer-Olkin value of 0.75 (χ² = 917.41, p < .001) for the 14-item PSQS, we generated and defined these two factors using eigenvalues above 1.0 and screen plots. The factors were defined, respectively, as “Factor 1: Infant night care-related daytime dysfunction” and “Factor 2: Physical symptoms-related sleep inefficiency.” These two factors collectively explained 44.49% of total variance, with factor loadings ranging from .43 to .76.

Convergent Validity
The PSQS correlated positively with the PSQI (r = .67, p < .001), supporting convergent validity.

TABLE 2. Descriptive Statistics and Factor Loading for the PSQS

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Mean</th>
<th>SD</th>
<th>ITC</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor sleep quality:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 1: Infant night care-related daytime dysfunction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Because of infant care during the middle of night</td>
<td>3.04</td>
<td>1.09</td>
<td>.56</td>
<td>.761</td>
</tr>
<tr>
<td>2. Resulting in low energy level during the day</td>
<td>2.17</td>
<td>1.12</td>
<td>.66</td>
<td>.744</td>
</tr>
<tr>
<td>3. Overall satisfaction with sleep quality*</td>
<td>2.48</td>
<td>1.04</td>
<td>.52</td>
<td>.725</td>
</tr>
<tr>
<td>4. Actual sleep over 7 hours per night*</td>
<td>3.17</td>
<td>1.04</td>
<td>.40</td>
<td>.666</td>
</tr>
<tr>
<td>5. Resulting in lacking energy to get things done</td>
<td>1.68</td>
<td>1.06</td>
<td>.65</td>
<td>.591</td>
</tr>
<tr>
<td>6. Because of worry about baby’s condition</td>
<td>2.35</td>
<td>1.27</td>
<td>.60</td>
<td>.585</td>
</tr>
<tr>
<td>7. Resulting in blue mood</td>
<td>1.64</td>
<td>1.15</td>
<td>.67</td>
<td>.571</td>
</tr>
<tr>
<td><strong>Factor 2: Physical symptoms-related sleep inefficiency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Wake up in the middle of the night</td>
<td>0.96</td>
<td>1.07</td>
<td>.63</td>
<td>.758</td>
</tr>
<tr>
<td>2. Difficult to fall asleep</td>
<td>0.96</td>
<td>1.09</td>
<td>.55</td>
<td>.701</td>
</tr>
<tr>
<td>3. Because of getting up to use the bathroom</td>
<td>0.75</td>
<td>0.91</td>
<td>.41</td>
<td>.668</td>
</tr>
<tr>
<td>4. Because of the disturbance of postpartum physical symptoms</td>
<td>0.56</td>
<td>0.98</td>
<td>.47</td>
<td>.566</td>
</tr>
<tr>
<td>5. Get to sleep within 30 minutes*</td>
<td>1.14</td>
<td>1.17</td>
<td>.48</td>
<td>.484</td>
</tr>
<tr>
<td>6. Because of bad dreams</td>
<td>0.49</td>
<td>0.77</td>
<td>.32</td>
<td>.480</td>
</tr>
<tr>
<td>7. Wake up early in the morning</td>
<td>1.43</td>
<td>1.33</td>
<td>.55</td>
<td>.432</td>
</tr>
</tbody>
</table>

Note. PSQS = Postpartum Sleep Quality Scale. ITC = item-to-total correlation. Asterisk (*) indicates reverse scored.

Discussion
On the basis of our study, it is evident that the 14-item PSQS is a reliable and valid instrument for assessing sleep quality in postpartum women. Internal consistency and test–retest reliability were both used to test scale reliability. The Cronbach alpha coefficient for homogeneity of the scale was .81, indicating a high degree of internal consistency. Burns and Grove (2005) suggested that instruments with slightly lower coefficients (.8–.9) could more richly reflect the fine discriminations in construct levels. The acceptable alpha coefficients (.71 and .81) for two subscales indicated that two strong factors were formed in PSQS, thus providing evidence of internal consistency reliability and supporting initial evidence of construct validity for a developing scale (Munro, 2005). Test–retest reliability used to examine consistency in repeated measures found a correlation coefficient of .81, which confirmed good instrument stability.

In addition, we verified the 14-item PSQS validity using the PSQI as our criterion. The correlation coefficient (r = .64) confirmed PSQS validity in measuring the sleep quality of postpartum women. In the absence of absolute validity evaluation criteria, we confirmed PSQS validity as an adequate instrument to measure sleep quality based on Chiou’s (2010) 0.6–0.8 correlation coefficient range.

Factor analysis is an important statistical tool for confirming validity for the structure of instruments (Munro, 2005). Using EFA, two factors extracted from the PSQS explained 44.49% of total variance, with factor loadings ranging from .43 to .76. The first factor “infant night care-related
daytime dysfunction” showed how taking care of infants at night affected the postpartum woman’s sleep quality and competency to manage daytime activities. This result echoes the findings of several other studies of poor sleep quality in postpartum women (Dørheim et al., 2009; Hunter et al., 2009; Teng et al., 2007). Taking care of infants during the night disrupts and fragments the sleep cycle of postpartum women and degrades overall sleep quality. The second factor “physical symptoms-related sleep inefficiency” addresses the woman’s physiological interference factors affecting sleep and sleep inefficiency symptoms. Previous studies that used the PSQI to investigate postpartum sleep quality found that most postpartum women exhibit poor sleep quality (Hedman, Pohjasvaara, Tolonen, Suuronen-Malm, & Myllylä, 2002; Huang, Carter, & Guo, 2004). Because previous research could not determine the unique effect of taking care of infants on postpartum sleep quality, we recommend using the newly developed 14-item PSQS to evaluate postpartum sleep quality because of its specific and comprehensive focus on postpartum women. This study verified the 14-item PSQS as reliable and valid. The PSQS is primarily intended to measure postnatal women’s sleep quality and is not intended to provide accurate clinical diagnoses. The developed scale provides to health personnel a tool to quickly and completely evaluate sleep quality in postpartum women. Also, individual needs highlighted in the scale can assist healthcare professionals to provide proper health education to their postpartum clients, direct future research on postpartum sleep quality, and inspire the development of innovative intervention protocols to improve postpartum sleep quality. This study also found low (<4%) use of sleep-enhancing medications among participants, which may reflect participant concern that doing so would affect breastfeeding and fetal health. Although considerable efforts were made to ensure design soundness, this study had several limitations. First, it is possible that some participants who met the sample selection criteria and exhibited heterogeneity with the sample were not recruited because of their location outside targeted institutions. Second, the use of convenience sampling may have recruited subjects who were atypical of the general population with regard to measured variables. Most participants were of moderate to high SES and thus likely represented a significantly higher SES-range sample than the average of all postpartum women in Taiwan. The PSQS is primarily intended to measure women’s sleep quality during postpartum and is not intended to provide accurate clinical diagnoses. Future research could consider defining an appropriate cutoff PSQS value to delineate good and poor sleepers.

In conclusion, we recommend the use of the developed 14-item PSQS in future studies. The scale can contribute to nursing and academic knowledge on the sleep quality of postpartum women by enriching the body of empirical data available. Adequate psychometric qualities in terms of internal consistency, 5-day test–retest reliability, content validity, construct validity, and convergent validity show PSQS as an effective instrument for measuring sleep quality in Taiwanese postpartum women. PSQS may be a valuable tool to assess the efficacy of intervention protocols designed to improve sleep quality. However, continued evaluation is required to verify instrument applicability in different ethnic and cultural settings.

**Acknowledgments**

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**References**


產後睡眠品質量表之發展與驗證

楊秋鈴1  游振祥2  陳彩惠3*

1輔英科技大学護理學系講師  2國立成功大學附設醫院婦產部助理教授
3國立成功大學健康照護科護理學研究所暨護理學系教授

背 景
產後睡眠障礙是產後婦女所要面對的重要課題：雖然產後婦女睡眠障礙的相關因素已被探討，但都使用一般性睡眠品質表，目前缺乏針對產婦睡眠品質特殊性而設計的測量工具。

目 的
本研究目的是發展一份「產後睡眠品質量表」，並驗證其信度和效度。

方 法
本研究依據臨床經驗、文獻查證和專家意見編製一份16題「產後睡眠品質量表」，檢定其內部一致性、再測信度、建構效度和收斂效度，樣本來源為南部地區某醫學中心和婦產科診所之產後門診，共收集有效樣本202位產後婦女，收集時間為2010年至2011年。

結 果
「產後睡眠品質量表」經項目分析後，由16題減為14題，其內部一致性為α = .81，5天再測信度為φ = .81。進行因素分析萃取出二個因素，分別是「夜晚照顧嬰兒睡眠中斷相關之白天功能障礙」和「身體症狀相關之睡眠無效率」，可解釋44.49%的總變異量，每題因素負荷量介於.43和.76之間。本量表與匹茲堡睡眠品質量表有顯著相關φ = .67，顯示其收斂效度。

結 論
14題「產後睡眠品質量表」經由驗證後，針對測量婦女產後睡眠品質是一份可信、有效與實用的量表，且本量表可作為未來有睡眠障礙的產後婦女介入措施之成效測量工具。

關鍵詞：婦女健康、產後照顧、睡眠品質。

接受刊載：101年11月30日
*通訊作者地址：陳彩惠   70101台南市大學路1號
電話：（06）2353535－5846   E-mail: chunghay@mail.ncku.edu.tw