

# The Correlation between Infant Temperament and Sleep Quality of Postpartum Mother in Primary Health Care Prambanan and Jogonalan Klaten Indonesia

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Sleep is one of the physiologic necessities of human life, the postpartum mother could experience changing of sleep pattern and loss of sleep duration in the evening. Factors that cause irregular sleep pattern and sleep deprivation of role adaptation and baby characteristic. This study aims to identify the correlation between Infant temperament and sleep quality of postpartum mother. This study was designed to cross-sectional with 168 respondents, the samples' inclusion criteria was 4-6 weeks postpartum mother, non-coffee consumer, non-alcoholic mother, did not smoke actively, healthy, literate, and mother of healthy baby/infant, who taken by consecutive sampling in work area of primary health care in Prambanan and Jogonalan, Klaten, Central Java, Indonesia. The instrument of this study was using Infant Characteristic Questionnaire (ICQ) and Pittsburg Sleep Quality Index (PSQI). Chi square test was used to analyze the data. The resulting study showed that the respondents have the average age of 27 years and had a vaginal delivery (79,8%). The respondents show that dominant had poor sleep quality (83,3%) and have a baby with non-difficult temperament (69,6%). The infant temperament and sleep quality postpartum mother were significantly correlation ( $p=0,007$ ). Education of infant temperament should share in a prenatal mother. Further research can examine the effect of education on infant temperament for a mother to sleep quality of postpartum mother.

**Keywords:** Sleep quality, postpartum, infant temperament, PSQI, ICQ

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## 1. INTRODUCTION

As the human being, sleep is one of the necessities that should be fulfilled for body balancing. The role of sleep is decreasing fatigue, increasing health condition and also for recovery process from sickness.<sup>1</sup> The mother after childbirth process will experience sleep pattern changes, the condition lack of sleep are stated by some mothers. Women lost 1,5 hours of sleep time in the first week after childbirth and only can sleep 372 minutes in third and fourth week.<sup>2,3</sup> The condition of lack sleep could cause a mother get sleep disorder.

The mother who could not adaptive to sleep changing, they will experience sleep disorder. Sleep disorder in a long duration of time, quality and consistency of sleep will cause sleep deprivation.<sup>4</sup> The sleep deprivation can affect emotional intelligence, cognitive abilities, interpersonal function and stress management.<sup>5</sup> The sleep deprivation cause symptoms of irritability, confusion, drowsiness, and decreased reflexes.<sup>6</sup> Lack of sleep also can influence mood and as trigger of postpartum depression.<sup>7-8</sup>

Most of the postpartum mothers had bad quality of sleep<sup>9-11</sup> Bad quality of sleep was caused by irregular sleep pattern after labor process<sup>12</sup>. The patterns changed regarding mothers activities in the evening after had a baby. In the evening, 89,6 % .from mother's actives was baby care activities. The baby care activities were included changing the baby sleep position, checking baby condition, breastfeeding, making food and milk.<sup>13</sup>

Factors that cause the postpartum bad quality of sleep are baby's crying in the evening, voice pollution, coming to the unfamiliar environment and sleep not well<sup>14</sup>, the baby who have bad temperament they will make baby easy to cry and the big effort for making them calm or stopping to cry. It can cause a mother hard to sleep.<sup>15</sup> The baby who had difficult temperament also hard to sleep after wake up, then cause a mother worry in their sleep.<sup>16</sup> This study aims to investigate the correlation of infant temperament and sleep quality of postpartum mother.

## 2. EXPERIMENTAL DETAILS

This was descriptive design with a cross-sectional study. The samples' inclusion criteria of this study were 4-6 weeks postpartum mother, non-coffee consumer, non-alcoholic mother, did not smoke actively, healthy, literate, life with her husband and mother of healthy baby/infant. The sample of this study is 168 samples which recruited by consecutive sampling. The samples were taken at primary health care, clinics and around work area of Prambananan Jogonalan districts.

Sleep quality of postpartum mother in this study measured by the Indonesian version Pittsburg sleep quality index (PSQI) with the author permission.<sup>17</sup> The PSQI had seven components; subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication use, and daytime dysfunction. A total score from seven components PSQI score (range 0 – 21), a total score of < 5 is mother who had good sleep quality  $\geq 5$  is poor quality of sleep.<sup>18</sup>

The ICQ questioner used for investigated baby behavior. This instrument had four dimensions, there are fussy/difficult, unadaptable, dull, and unpredictable.<sup>19</sup> In this study used six item from fussy/difficult dimension assessing infant's fussiness,

irritability and soot ability.<sup>20</sup> in this dimension had 6 item questions with 7-point Likert scale. The possible score was ranged from 6 to 42, this study used cut-off point to ensure a reasonable number of cases into both categories, a total score of < 21 is not difficult temperament and  $\geq 21$  is difficult temperament. ICQ was validated and reliable test with Cronbach's alpha 0,851.

The data in this study were analyzed by using chi square test to examine the correlation of infant temperament on newborn and sleep quality of postpartum mother with the significance value of  $p < 0.05$ . The characteristic and variable this study summarized by descriptive statistics.

This study was an ethical principle to protecting the human rights of all the participants. This study obtained approval from the Ethics Commission of Faculty of Nursing Universitas Indonesia with the number 90/H2.F12.D/HKP.02.04/2014. All of the participants received relevant information about the research before had a questionnaire. The participant had written consent in the informed consent. They had right to withdraw from the study without any penalty.

## 3. RESULTS AND DISCUSSION

### a. The Demographic Characteristic of The Postpartum Mothers

The result of this study showed that the average age of the respondent was 27 years of minimum age of the respondents was 18 years and the maximum was 43 year. The most of the respondent had vaginal delivery 134 (79,8%), feeding method with breastfeeding only 137 (81,5%) and 85 (50,6%) were primipara.

Table 1 Age of postpartum mother (N=168)

Characteristics	Mean	SD
Age (Min = 18 year, Max = 43 year)	27,55	5,53

Table 2 Demographic Characteristic (N=168)

Characteristics	Frequency	Percentage
Parity		
Primipara	85	50,6
Multipara	83	49,4
Delivery method		
Vaginal	134	79,8
Cesarean section	34	20,2
Feeding method		
Breastfeeding only	137	81,5
Bottle and breastfeeding	24	14,3
Not breastfeeding	7	4,2

In this study was found that the average age of postpartum mother was about 27 years. This age was classified as reproductive age. The age of women in range 20 – 35 had a uterus and pelvic good condition to pregnant.<sup>21</sup> At this age, the mother has childbirth is good condition. The age of postpartum mother did not differ significantly by sleep quality.<sup>10</sup>

More than 50% of the postpartum mother was primipara. It showed that mostly mother was new mothers. The experience mothers had more sleep than new mother.<sup>3</sup> this probably because multipara mother had more experience than primipara. The parity did not differ significantly by sleep quality.<sup>3,10</sup>

More than one hundred thirty of the respondent in this study delivery with the vaginal method. The vaginal delivery method had good sleep quality than cesarean method.<sup>22</sup> The mother with vaginal delivery had duration sleep of 386 minutes, it's more long duration than cesarean delivery.<sup>23</sup> The Sleep quality of postpartum mothers did not differ significantly by delivery method.<sup>10,22</sup>

More than 80% baby in this study got breastfeeding only. The new born also has a high metabolic demand, which leads to waking up 4 – 5 at night.<sup>24</sup> The feeding schedule at night cause mother had sleep disturbance.<sup>25</sup> The mother with breastfeeding had more 30 minutes duration than not breastfeeding.<sup>26</sup> The sleep quality of postpartum mother did not differ significantly by feeding method.<sup>10</sup>

b. Component Sleep Quality by PSQI

The result of this study showed that the most of the respondent were sleep disturbance (60,7%), but only 0,6% respondent report had poor sleep quality and used sleep medication. The postpartum mother was sleep latency more than 30 minutes (47,6%), and most mothers had poor sleep efficiency (63,7%). The most of the respondent had sleep duration 6 – 7 hours (82,7%) and report only very slight problem of daytime dysfunction. Detail information related to a characteristic of postpartum mother available in table 3.

Table 3 Component of Sleep Quality PSQI

Component	Mean (SD)	Score=0 n(%)	Score=1 n(%)	Score=2 n(%)	Score=3 n(%)
Subjective sleep quality	3,30(1,000)	12(7,1)	139(82,7)	16(9,5)	1(0,6)
Sleep latency	2,21(0,847)	33(19,6)	80(47,6)	42(25)	13(7,7)
Sleep duration	2,04(0,436)	14(8,3)	24(14,3)	28(16,7)	102(60,7)
Habitual sleep efficiency	3,20(1,175)	28(16,7)	18(10,7)	15(8,9)	107(63,7)
Sleep disturbance	2,20(0,418)	0	135(80,4)	32(19,0)	1(0,6)
Sleep medication	1,08(0,289)	156(92,9)	11(6,5)	1(0,6)	0
Daytime dysfunction	1,65(0,649)	75(44,6)	77(45,8)	16(9,5)	0

The most of the postpartum mother was sleep duration less than 5 hours, this result similar with other research, the average sleep duration of the postpartum mother was 4,84 at night.<sup>10</sup> In another researcher, the average of a postpartum mother was 7,29, because of her measure a sleep duration in 24 hours.<sup>2</sup>

More than 60% postpartum mother had habitual sleep efficiency less than 65%. The postpartum mother had good sleep efficiency on 6 weeks after delivery.<sup>8</sup> These differences may be due the time of measure the period of postpartum and different culture ritual for the postpartum mother, in this study collected data in 4 – 6 weeks postpartum. The sleep efficiency of postpartum did improve across weeks.<sup>24</sup>

More than 80% mother in this study had sleep disturbance less than once a week. This result similar with another researcher.<sup>7,8</sup> The new mother had activity at night to change the diapers, breastfeeding, and care the baby.<sup>13</sup>

More than 45% postpartum mother had only a very slight problem in daytime activity. After delivery, the mother had a very slight problem about activity at daytime.<sup>7,8</sup> The postpartum mother sleep at daytime to replace loss of sleep at night.<sup>26</sup>

The most of the postpartum mother expressed the sleep quality was fairly good. This result is similar to the previous report for Australian postpartum women<sup>7</sup> and Norway postpartum women,<sup>8</sup> but differed from that for Taiwan postpartum women.<sup>10</sup> These difference may be due to a different characteristic of the respondent.

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More than 90% respondent did not use sleep medication during the past month. This result similar to the previous report for Taiwan postpartum mother.<sup>10</sup> The chlorpheniramine maleate one of the antihistamines can cause sleep. Antihistamines are considered safe to a mother during breastfeeding and would not cause any adverse effects on breast milk.<sup>27</sup>

More than 45% postpartum mother had good sleep latency. The postpartum mother had to fall to sleep needed more than 30 minutes. This result different with Norway postpartum mother, that had an average of sleep latency was less than thirty minutes.<sup>8</sup> In these study different cause of characteristic of a respondent.

c. Global Sleep Quality

More than 80% postpartum mother had a poor score of global sleep quality more than 5 (table 4). This is shown that most of the postpartum mother had poor sleep quality. This result is similar to Taiwan postpartum mother, Norway postpartum mother, and Australian postpartum mother.<sup>7,8,10</sup> After delivered the baby mothers lost the time of sleep in the evening, it's time for baby care such change diapers, breastfeeding, and company the baby<sup>13</sup>, new born baby has a high frequency of breastfeeding in the evening. Mother loss of sleep caused by awakenings during the night.<sup>3</sup> This condition would cause changing of mother's sleep pattern from pregnant period<sup>28</sup> postpartum mothers had to sleep disorder because of role changing.<sup>7-8</sup>

Table 4 Global Sleep Quality PSQI

Quality of sleep	Frequency (N=168)	Percentage (%)
Good	28	16,7%
Poor	140	83,3%

d. Infant Temperament

Table 5 infant temperament (N=168)

Infant temperament	Frequency	Percentages
Not-difficult Temperament	117	69,6%
Difficult temperament	51	30,4%

In this study, was found that more than half of respondent had a not-difficult temperament in an infant. The boy and girl infant there is no difference between infant temperament.<sup>29</sup> Mothers who had not difficult temperament baby had the lower possibility to get a bad quality of sleep than mothers who had difficult temperament infant.<sup>10</sup> This result differed with previous research in European countries.<sup>30</sup> These differences may be due to different collect data for respondent, this study used questioners to collect the data.

#### e. Correlation Infant Temperament and Sleep Quality of postpartum

The result of this study showed that postpartum had infant by difficult temperament baby had bad sleep quality 96,1%, and the infant with difficult temperament had poor sleep quality 91%. The correlation between infant temperament and sleep quality of postpartum were significant, with statistical analyzing p value < 0.05 (0.007). Detail information related to the correlation between infant temperament and sleep quality of postpartum mother available in table 6.

Table 6 correlation between infant temperament and sleep quality of postpartum

Infant Temperament	Sleep Quality				p-value
	Poor		Good		
	N	%	N	%	
Not-difficult	91	77,8	26	22,2	0,007*
Difficult	49	96,1	2	3,9	

More than 90% showed that mothers who had difficult temperament baby had poor sleep quality, there is a significant correlation between infant temperament and sleep quality of postpartum mothers. New born baby had not adaptive with circadian rhythm, until 1 month old has high awakened period, a baby can sleep 16-20 hours a day with most of the stage of their sleep is REM (rapid eye movement)<sup>10</sup> in the stage of REM, babies will easy to awaken then get up in the evening. A baby who had a difficult category in their temperament are unstable mood, crying frequently, hard to adapt, and irregular sleep and feeding.<sup>27</sup>

Meanwhile, difficult temperament baby is hard to a response about severing and uncomfortable, easy to cry and a hard to stop when she/he was crying.<sup>28</sup> A mother who had difficult temperament will experience sleep disorder.<sup>31</sup> The postpartum mother with a baby in difficult temperament baby have 7 times more for getting sleep disorder.<sup>4</sup> The quality of sleep has the correlation with baby temperament condition, baby/infant who has not-difficult temperament has longer sleep duration than difficult one.<sup>14</sup>

More than 20% mother had a baby with not difficult temperament were good to sleep quality. The baby with non-difficult temperament was easy to fall to sleep, adaptation, and easy.<sup>28</sup> The baby not difficult temperament was easy to fall to sleep than difficult temperament.<sup>16</sup>

More than 90% showed that mothers who had not difficult temperament baby had poor sleep quality. In other research sleep quality of postpartum mother be affected by fatigue.<sup>32</sup> After delivery, the mother had new activity at evening.

## 4. CONCLUSION

From this study, we can conclude that there is significant correlation between infant temperament and sleep quality of postpartum mothers p value 0.007 (p<0.05), some of the mothers who have difficult temperament have bad sleep quality. The mother must get an education about infant characteristic at a prenatal period. Information on how to care for infant difficult temperament helps the mother to care their baby. Before delivery, the mother can discuss with her husbands such as caring the baby in evening and nighttime hours. The mother must nap when their baby naps in a suggestion to allow the mother to catch up on sleep.

This study had some limitations. This study used PSQI to measure the sleep quality. This questionnaire measured sleep at night. In this study, the mothers sleep in the daytime to replace the sleep at night. Another limitation on sampling technique, the selected sample of study used consecutive sampling that therefore the possible selected bias. Further research can develop the intervention to increase sleep quality of postpartum mothers such as guided imagery and aroma therapy, and the education for a mother to increase knowledge about infant temperament.

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