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Research Article

# Bladder Symptoms, Fatigue and Physical Activity in Postpartum Women

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## SUMMARY

**Purpose:** Physical activity is important for postpartum women. The objective of this study was to evaluate bladder symptoms, fatigue, and physical activity according to time after birth and birth modes.

**Methods:** This was a cross-sectional study using web-based questionnaire or one-to-one contact. A total of 290 women after giving birth responded to self-administered questionnaires. Multivariate analysis of variance determined the differences in variables.

**Results:** Bladder symptoms were significantly different by time after birth and birth mode; they were the highest in the first week after birth and in Cesarean birth. Postpartum fatigue showed a significant tendency by birth mode, but not by time after birth. Physical activity was significantly different by birth mode. The lowest level of physical activity was found for women who gave Cesarean birth. Moderate physical activity was also significantly different by time after birth, but vigorous physical activity was not significantly different.

**Conclusions:** In conclusion, bladder symptoms and physical activity are different by time after birth and birth mode in postpartum women. The first week after giving birth is an important period for postpartum women whose bladder symptoms and physical activity should be of concern.

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## Introduction

In women, childbirth is a dramatic situation that creates new life. During parturition, women need enormous amounts of physical and psychological energy to adapt to the new role as a mother [1]. After birth, childrearing demands coupled with fatigue, depression, and isolation may exacerbate unhealthy activities [2]. Therefore, postpartum period is an opportune time for obstetric care providers to initiate, recommend, and reinforce healthy behavior lifestyle of postpartum women. Resuming exercise activities or incorporating new exercise routines after birth is important to support life-long healthy habits [3].

Physical activity in all phases of life including pregnancy, promotes health benefits. When the American College of Obstetrician and Gynecologists released new recommendations and guidelines, they included postpartum women from 2002 [4] and updated the

recommendations and guidelines in 2015 [3]. According to the American College of Obstetrician and Gynecologists, many physiological morphological changes of pregnancy will persist in postpartum women for 4–6 weeks [5]. Dunstan et al [6] have insisted that reductions in time spent in sitting down do have positive health effects on postpartum women.

The prevalence of physical activity remains suboptimal in women. Moreover, this trend becomes clear in pregnancy and postpartum. In the United States, the prevalence of insufficiently active lifestyles has increased from 12.6% before pregnancy to 21.7% among postpartum women [7]. In Korea, it has not been reported for postpartum women; data is only available for women aged over 19 years old. The prevalence rate of moderate or vigorous physical activity decreased from 24.2% in 2008 to 16.0% in 2013 in women generally [8]. In Australia, adults spent an average of just over 30 minutes per day doing physical activity in 2011 and 2012 [9].

On the other hand, after giving birth, women experience health problems such as hemorrhoids, constipation, urinary incontinence, sleeping disorders, and so on [10]. Women experience more bladder symptoms after birth. Almost 90.0% women experience painful bladder symptoms after giving birth [11]. However, there is

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no consistency on whether the mode of birth might affect bladder symptoms. One study has reported that urinary incontinence can significantly affect the aspects of physical and mental health during the puerperal period [12]. Another study has reported that the incidence of postpartum urinary incontinence was 26.0% at 3 months postpartum, and was lower in women who gave Cesarean birth compared to those who gave vaginal birth [13]. However, the impact of physical activity on bladder symptoms such as urinary leakage has not been considered in relation to birth mode [14].

In addition, women usually experience postpartum fatigue, the most common unpleasant physical symptom following childbirth [1]. It has a high prevalence rate within 2 months after birth. The prevalence of fatigue after birth is 55.0% in Canada [15] and 76.0% in the US [10]. At postpartum week 12, higher overall fatigue levels are associated with increased anxiety, stress, and mood disruption [16]. One study has found that physical exercise can significantly reduce postpartum maternal fatigue in Singapore [17]. However, the impact of physical activity on fatigue after birth has rarely studied. Childbearing and motherhood, especially in the early years of raising children, have been identified as common barriers to regular physical activity in women 25–35 years old [18]. Today, moderate exercise has found to be safe for healthy women. Physical activity can prevent excess maternal weight gain [19]. Awareness regarding the extent of physical activity during pregnancy and postpartum period is increasing [18]. However, few studies have reported the effect of physical activity after birth on the health of postpartum women.

As mentioned above, bladder symptoms, fatigue and physical activity might interact and affect each other in postpartum women. Based on previous studies, we need to evaluate bladder symptoms, fatigue, and physical activity according to the time after birth and the mode of birth among women during the first 12 weeks after giving birth. The objectives of this study were to determine the differences in bladder symptoms, fatigue, and physical activity by time after birth and by birth modes, and to identify any associations among the three variables (bladder symptoms, fatigue, and physical activity) during the first 12 weeks after birth. This study provides new knowledge for the development of postpartum care guidelines.

## Methods

### Study design

This was a cross-sectional study that assessed bladder symptoms, fatigue, and physical activity in three subgroups of postpartum women by time after birth and by birth mode.

### Sample recruitment

Participants were recruited when they visited the outpatient clinic or public health care center, and were informed on the explanation sign how they could participate in this survey. When they agreed to participate, they could fill out the questionnaires right there or at home. Participants were also recruited by making a pop-up window on the internet site of Aga Sarang that provided information about “Healthy pregnancy and birth, Happy child care” (<http://www.agasarang.org>). Participants were classified into three subgroups by the variable of time after birth (1st week after birth, 4th week after birth, and 12th week after birth).

The required sample size was calculated using G-power 3.1. A priori power analysis by *F* test calculation with effect size of 0.3, significance level of .05, statistical power of .95, and three groups revealed that the sample size should be 281. Considering the possibility of missing data, we collected data from 304 women. After

excluding those who did not complete the questionnaire or were diagnosed with hypertension, diabetes, thyroid disease, or anemia by a physician, 290 participants were included in the final analysis.

### Ethical consideration

We obtained ethical approval from the institutional review board (approval no. 2012-82) of the affiliated university, and provided an “information letter for this study”. Participants signed the sheet of informed consents at outpatient clinic, public health center, or signed to participate at online site for each respective case after they understood this study. All personal information was placed securely as strictly confidential according to the Institutional Review Board policies.

### Data collection

After we got the permission from Agasarang in the Korean Population and Health, Welfare Association, chief doctor of pediatrics, and chief doctor of obstetrics, we provided leaflets and explanation sheet to potential participants on how they could attend to this survey at each site. Data was collected using self-administered questionnaires from January 28th to May 2nd, 2013. Two formats (online and offline) of questionnaires with the same contents were used. Participants answered either online or off-line. We explained the purpose of the study and the process to participants in a pop-up window for those who completed the questionnaires online. In total, 244 women gave their answers via a professional online survey organization website (<http://www.ksdc.re.kr/>) designed for structured questionnaires via smart phones or computers. Forty-six women (hospital:  $n = 32$ , health center:  $n = 14$ ) responded while they were at the waiting area after two research assistants got the informed consent. To organize these data, we collected the response data by personal contact and exported them to an excel file.

### Measurements

The questionnaires included information about their age, body mass index, education level, and monthly income. Information on obstetric characteristics including planned pregnancy, postpartum period and birth mode was gathered. We measured the status of bladder symptoms, fatigue, and physical activity among postpartum women.

### Bladder symptoms

We used the Korean version of interstitial cystitis symptom index/interstitial cystitis problem index (ICSI/ICPI) [20] for bladder symptoms. Participants were asked about their bladder symptoms (ICSI) and how serious they perceived their problems (ICPI) arising from each of the ICSI item. ICSI scores ranged from 0 to 20 while ICPI scores ranged from 0 to 16. The higher the score, the more severe interstitial cystitis/painful bladder syndrome the participant experienced. The ICSI/ICPI was verified to be a reliable and valid scale for bladder symptoms [20,21]. Cronbach  $\alpha$  for the ICSI and ICPI in this study were .83 and .81, respectively.

### Postpartum fatigue

Postpartum fatigue was assessed using the Modified Fatigue Symptom Checklist (MFSC) [22,23], a 30-item self-report checklist with ordinal response (“very much so”, “moderately so”, “somewhat”, or “not at all”) to measure psychological and physical symptoms of fatigue experienced after giving birth. Possible scores

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