ORIGINAL ARTICLE

The Relationship between the EPDS in the Early Postpartum Period and Infant Weight Gain during the Two Weeks after Birth

Ken Ando[1)], Hironori Suzuki[2)], Miho Umeda[3)]

ABSTRACT

Objective: **To investigate the relationship between Edinburgh Postnatal Depression Scale (EPDS) in the early postpartum period and infant weight gain during the two weeks after birth.**

Design: **This study was a single-center, retrospective study.**

Materials and Methods: **The EPDS at the discharge and the infant weight gain during the two weeks after birth were collected from the medical records of 802 mothers. At the two-week-old checkup, children who gained less than 18g per day were classified as the poor group, and those who gained 18g or more per day were classified as the good group. The analysis was conducted separately for primipara and multipara.**

Results: **As for the multipara, the poor group had a higher total EPDS score at discharge than the good group. In contrast, among primipara, there was no significant difference between the two groups.**

Conclusions: **We found that multiparous women with the high EPDS in the early postpartum period are at high risk of their infants' showing poor weight gain at the 2-week checkup. When multipara show high EPDS in the early postpartum period, their infants poor weight gain should be expected, and care must be taken appropriately.**

KEY WORDS

postpartum depression, EPDS, infant weight gain

INTRODUCTION

Recently, postpartum depression has become an important topic in the perinatal period. The prevalence of depression within 3 months of delivery has been reported to be as high as 7.1%[1)], and there have been quite a few reports of the adverse effects of postpartum maternal depression on the child[2,3)]. It has been increasingly recognized that postpartum depression requires attention not only from the perspective of maternal mental health but also for the child's health.

Diagnosis of postpartum depression is made by psychiatrists, but it is difficult to ensure that all mothers can easily see psychiatrists, and so screening is important. While various screening methods have been proposed, the Edinburgh Postnatal Depression Scale (EPDS) proposed by Cox *et al*. in 1987[4)] is widely used worldwide. The cutoff values for the EPDS vary from country to country[5-7)], as might be expected from the fact that the environment surrounding perinatal mental health varies from country to country. In Japan, setting the cutoff at 8/9 point is proved to be effective for screening at the 1-month postpartum checkup. Meanwhile, it has also been reported that performing the EPDS on the fifth postpartum day can pick up early-onset postpartum depression groups[8)], and the EPDS is widely used in a variety of settings.

Although many studies have shown that postpartum depression hinders child development, few have examined what implications the EPDS may have concerning child development. The EPDS's use is limited mostly to screening, and no sufficient evidence has been available that a high or low score immediately reflects a mother's mental state. However, if earlier intervention with puerperae can be carried out by obstetricians and midwives, before they are diagnosed with postpartum depression, when they have the high EPDS, it is highly possible that the negative effects on their child may be minimized.

On the other hand, weight gain has long been used as indicator of good growth, and although there is no consensus on the appropriate daily weight gain, some consider a weight gain of 18-30 g/day or more to be good. Poor weight gain in newborns has been reported as being a risk factor for hyperbilirubnemia[9)]. It has also been reported to cause hypetnatremia in newborns[10)].

Considering these circumstances, we sought to determine whether the EPDS in the early postpartum period are associated with poor weight gain of infants during the two weeks after birth.

MATERIALS AND METHODS

The study was conducted at Shizuoka Saiseikai General Hospital in Japan. Of 1462 deliveries between April 1, 2019, and December 31, 2021, 6 stillbirths, 47 multiple births, and 210 premature births at < 37

Received on March 4, 2023 and accepted on April 5, 2023

1) Ogaki Municipal Hospital
4-86 Minaminokawa-cho, Ogaki City, Gifu 503-8502 Japan
2) Nagoya University Hospital
65 Tsurumai-cho, Showa-ku, Nagoya 466-8560 Japan
3) Shizuoka Saiseikai General Hospital
1-1-1 Oshika, Suruga-ku, Shizuoka 422-8527 Japan
Correspondence to: Ken Ando
(e-mail: Ken.ando.acha@gmail.com)

Table 1: Baseline Characteristic of the primipara n = 398

category		good group n = 370	poor group n = 28	p value
maternal characteristic	maternal age (years)	31.1 (± 5.344)	30.5 (± 5.802)	0.514
delivery mode	vaginal delivery	294	19	0.149
	cesarean section	76	9	
neonatal sex	male	192	14	0.847
	female	178	14	

Note: Data are shown as mean ± SD or n. To compare the two groups, we used the unpaired t-test for maternal age and the chi-square test for delivery mode and neonatal sex.

Table 2: Baseline Characteristic of the multipara n = 404

category		good group n = 376	poor group n = 28	p value
maternal characteristic	maternal age (years)	33.4 (± 4.877)	33.9 (± 4.592)	0.654
delivery mode	vaginal delivery	264	21	0.592
	cesarean section	112	7	
neonatal sex	male	186	11	0.298
	female	190	17	

Note: Data are shown as mean ± SD or n. To compare the two groups, we used the unpaired t-test for maternal age and the chi-square test for delivery mode and neonatal sex.

weeks or birth weight < 2500 g were excluded, which left 1199 deliveries, and of them, 802 deliveries in which consents to the EPDS at discharge were obtained and infants' weight transitions could be followed up until the two-week-old medical checkups were investigated. At medical examination on puerperae that was to be followed by discharge from the hospital, either the doctor or the midwife explained the details of the study and the EPDS on paper, and the consent form and the EPDS were handed to the mothers. When consent was obtained, the patient was asked to complete the consent form and the EPDS alone in the hospital room. After their completion of the form, it was handed to the staff at any time before discharge from the hospital so that no coercive force would be exerted. The patients were also asked to come to the hospital with their child at the two-week-old checkup to examine the child's weight gain.

At the two-week-old checkup, children who gained less than 18g per day were classified as the poor group, and those who gained 18g or more per day were classified as the good group. Since the amount of weight gain was considered to be strongly influenced by breastfeeding techniques, and since breastfeeding techniques differed greatly between primiparae and multiparae, the analysis was conducted separately for primiparae and multiparae. SPSS statistical software was used, and the significance level was set at 5%.

This study was conducted with the approval of the ethics committee of the institution. Subjects were informed orally and in writing that they were free to participate in the study, that they would not be disadvantaged even if they did not participate, and that their privacy would be protected, and their consent was obtained in writing.

RESULT

Descriptive statistics of the subjects are shown in Table 1 and 2. The mean age of the good group among primipara was 31.1 years (± 5.344), and the mean age of the poor group was 30.5 years (± 5.802). The mean age of the good group among multipara was 33.4 years (± 4.877) and the mean age of the poor group was 33.9 years (± 4.592).

A graph of the mean score of the EPDS between the two groups of primipara is shown in Figure 1. The mean score for the good group was 3.96 and the mean score for the poor group was 4.54. Mann-Whitney's U test showed no significant difference between the two groups (p = 0.501).

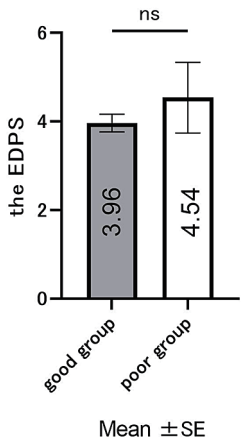

Figure1: Comparison of the EPDS between good group and poor group in primipara

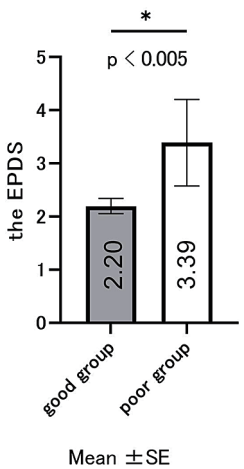

Figure2: Comparison of the EPDS between good group and poor group in multipara

A graph of the mean score of the EPDS between the two groups in multipara is shown in Figure 2. The mean score for the good group was 2.20 and the mean score for the poor group was 3.39. The Mann-Whitney U test was performed and found a significant difference between the two groups ($p = 0.036$).

DISCUSSION

In this study, we found that among multiparae, the poor weight gain group had the higher EPDS in the early postpartum period compared to the good weight gain group at 2 weeks postpartum. The same trend was not observed in primiparae.

Poor infant weight gain has been associated with inadequate breast-feeding techniques. Primiparae may not be able to acquire lactation skills immediately, which may lead to poor weight gain. However, considering that multiparae often have acquired lactation skills, the influence of their lactation skills on poor infant weight gain may be small, and therefore, the higher EPDS of multiparae in the poor weight gain group in this study suggest that the poor weight gain in the postpartum group may be the result of the mother's mental state.

Although there are many reports of postpartum depression affecting poor infant growth, few reports have evaluated infant weight gain in the short postpartum period. There are also few reports examining the association between the EPDS and infant weight gain in the early postpartum period. In Japan, there is a system in place for early postpartum follow-up for mothers, with a 2-week postpartum checkup, but in some cases, the 1-month checkup is the first follow-up for infants, and cases of poor weight gain may be overlooked until 1 month after birth if there are no active intervention by institutions. Although it would be desirable to check the weight gain of all infants at the same time as the mothers, not all facilities are able to do so due to labor shortages. In this study, we found that the high EPDS in postpartum women is a risk factor for poor weight gain. We believe that the analysis of factors in the early postpartum period in both cases provides information for early intervention for poor infant weight gain.

A limitation is the presence of confounding factors for poor infant weight gain. Descriptive statistics showed no significant differences between the two groups, but there may be unknown confounding factors among the items that could not be examined in this study. In addition, since postpartum depression involve more social factors, rather than medical factors, risk factors are expected to differ from country to country. Accumulation of data not only from Japan but also from other countries would be desirable. Besides, although it has been reported that differences in the ways infants are fed, that is, whether they are breast-fed, bottle-fed, or both, have an impact on their weight gain[11], this study did not consider this aspect. We will take this perspective into consideration in our future research.

In medical practice, where workers are ever-busier, multiprae and poor weight gain of their infants tend to receive less attention because the mothers are thought to have better lactation skills. However, we believe that, in cases with the high EPDS in the early postpartum period, more attention should be paid to poor development of infants, and that early intervention should be provided if necessary.

CONCLUSION

We found that multiparous women with the high EPDS scores in the early postpartum period are at high risk for their infants' showing poor weight gain at the 2-week checkup. When multiparae show the high EPDS scores in the early postpartum period, their infants' poor weight gain should be expected and care must be taken appropriately.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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