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Regarding child-rearing anxiety, less attention has been paid to maternal depression. A recent cross-sectional study found that in Japan, "child-rearing anxiety" is the more commonly used term, and child-rearing anxiety and parenting stress are considered to be very similar concepts that are often used without clear definition [5]. Arimoto and Murashima [5] explored the variables associated with child-rearing anxiety in 371 mothers of children who underwent the 18-month health checkup. As a result, mothers with higher child-rearing anxiety had less childcare satisfaction and more depressive symptoms, were more worried about the child, and received less spousal and social support. Recent study that was published in 2013 has shown that child-rearing anxiety could be classified into four categories: (a) sense of stagnation and sacrifice, (b) fatigue, (c) lack of confidence, and (d) dissatisfaction in Japan [6]. The child-rearing anxiety scale for mothers of a 1-2 month old child is part of a questionnaire developed in Japan [7]. In this questionnaire, child-rearing anxiety is defined as "a lack of confidence or anxiety associated with child-rearing, feeling of fatigue in communicating with the child, desire to escape from child-rearing, and feeling of isolation from society due to child-rearing." Previous research has shown the association of the presence of advisors on child-rearing with maternal anxiety and depressive symptoms in Japanese women when their infants were 3-4 months old and 9-10 months old [8]. Multivariate logistic regression analysis revealed that a close advisor (including family and relatives) and a professional advisor are required at two points (3-4 months and 9-10 months), while the companionship of other child-rearing individuals is required more at 9-10 months than at 3-4 months. Previous research that was published in 2012 has indicated that the criterion-based validity of a single question about child-rearing anxiety by comparing maternal responses to that question with responses to two initially related questions about child-rearing burden and maternal QOL in Japan [9]. It was found that child-rearing anxiety and child-rearing burden were very closely correlated, and child-rearing anxiety was also closely related to maternal QOL as measured by the WHOQOL-26. The research suggested that the response to a single question about child-rearing anxiety can be used to identify mothers who are experiencing stress or burden of child-rearing and relatively poor QOL.

girls (48.4%). This study was conducted in F-ward of O city. O City has divided its area into 24 wards including F-ward. The F-ward developed as a commercial district close to the O city center. Transport is very convenient, with main highways and trains such as the JR Line, the municipal subway, and the Hanshin Line all running through major parts of the ward [10]. The population of F-ward was 60,959 on October 1, 2005, and 67,290 on October 1, 2009. Birth numbers were 575 (birth rate per 1000 people was 8.4) in 2005, and 661 (birth rate per 1000 people was 10.2) in 2009. The birth rate per 1000 people was about the same as in O city and the whole of Japan in 2009, but was higher than those in 2012. The proportion of children (aged 15 or less) was 11.3% in 2009 [11].

In Japan, health checkups for infants enable examination of all children in a region when they are 3-4 months, 18 months, and 3 years old. In O city, all families of infants receive information on the availability of health check-up by mail, and more than 98% of infants receive the 3-4 months examination. Table 1 summarizes the questionnaire. To measure uneasiness with child-rearing, we used the following question based on the previous article which has indicated that the criterion-based validity of a single question about child-rearing anxiety related questions about child-rearing burden and maternal QOL in Japan. "Do you have uneasiness with child-rearing?" and participants answered "yes" or "no".

We used chi-squared test to determine the significance of differences between various variables related to maternal factors and birth order. Univariate logistic regression analysis was used to assess the association between maternal uneasiness (dependent variable) and maternal factors (independent variables). In addition, we used multivariate ordered logistic regression models to determine the odds ratio (OR) of maternal uneasiness. We used SPSS (Version 20.0) for all analyses. All p-values presented are two-sided. The 5% significance level was used in the statistical tests.

Ethics

This study had the approval of the Ethics Committee of the School of Medicine, Osaka City University.

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Results

Table 2 shows descriptive statistics (mean, SD, variance) for the variables related to birth order. The mean age of the mother of the first child group was 29.2 ± 4.7 years old and that of the mother of the second child group was 31.5 ± 4.3 years old. The mean gestational age was significantly longer and birth weight was significantly lower in the first child group than in the second or later child group. Whether the mother had severe morning sickness, imminent abortion or threatened abortion during pregnancy was not significantly different. Mothers of first children were more frequently diagnosed with toxemia of pregnancy.

Tables 3 and 4 show variables related to mothers' background (χ^2 test for independence) (Table 3) and mothers' feelings (Table 4). Mothers of first-born children more frequently responded mothers' deliveries pathologies. On the other hand, mothers of two or more children more frequently responded the experience of child's sickness. For child-rearing support, mothers of two or more children more frequently responded that friends and neighbors provided child-rearing support. In addition, regarding individuals who can provide advice on child-rearing, mothers of two or more children more frequently responded that neighbors provided advice on child-rearing. Disturbed sleep, loneliness, a large gap between reality and perception, feeling serious and irritation were associated with mothers' anxiety. We examined the associations of each maternal factor with maternal uneasiness, using bivariate logistic regression models. Factors that had significant associations with maternal uneasiness in the bivariate logistic regression models were then taken forward to multivariate models (Table 5).

Regarding maternal uneasiness, in the first child group, mothers who felt fatigue showed a positive influence (OR=3.843; 95%CI: 2.792-5.289). In addition, mothers with disturbed sleep showed a positive influence (OR=2.155; 95%CI: 1.165-3.984), mothers who felt lonely

showed a positive influence (OR=3.016; 95%CI: 1.709-5.323), mothers who felt a large gap between reality and perception showed a positive influence (OR=2.875; 95%CI: 1.427-5.793), mothers felt irritated showed a positive influence (OR=2.093; 95%CI: 1.380-3.174), mothers who felt financial worry showed a positive influence (OR=2.493; 95%CI: 1.475-4.216), and mothers who have the experience of child's sickness showed a positive influence (OR=1.259; 95%CI: 1.009-1.572).

In the second or later child group, for maternal uneasiness, mothers who felt fatigue showed a positive influence (OR=3.781; 95%CI: 2.329-6.138), mothers who felt lonely showed a positive influence (OR=3.321; 95%CI: 1.067-10.333), mothers who felt irritated showed a positive influence (OR=2.397; 95%CI: 1.525-3.766) and mothers who felt financial worry showed a positive influence (OR=2.675; 95%CI: 1.371-5.222), mothers who have the experience of child's sickness showed a positive influence (OR=1.390; 95%CI: 1.096-1.763), and mothers who have deliveries pathologies showed a positive influence (OR=1.396; 95%CI: 1.114-1.750).

Discussion

In this research, it was found that in the both first child group and second or later child group, maternal uneasiness was affected by fatigue, mothers' loneliness, feeling irritated, financial worry and experience of child's sickness. In Japan, child-rearing support such as the home visiting service and motherhood classes are mainly provided to mothers with their first child; however, there is room for future investigation of child-rearing support for mothers who have two or more children. On the other hand, only in the first child group, maternal uneasiness

uneasiness was affected by mothers' deliveries pathologies. Although the reasons why these factors significantly affect only in the second or later child group were not founded, there is room for argument on this point. In addition, there is no reference to comparing outcomes in this study to studies conducted in other countries.

Previous research has indicated the association between parenthood and subjective well-being using survey data obtained by the Japanese Government in March 2012 [12]. It was found that mothers who are not satisfied with the quality and availability of child-rearing are more likely to report that Ueda & Kawahara are unhappy compared to those who are satisfied with the existing childcare options. In Japan, to be able to raise healthy children with peace of mind, the prefectures provide specialized maternal and child health services (e.g., screening for congenital screening for inborn error of metabolism) and municipalities provide basic maternal and child health services (e.g., health checkups for expectant or nursing mothers, and infants and home-visit guidance for expectant or nursing mothers and newborn) [1]. A visit to all families with infants is a national project that began

Citation: