Author’s response to reviews

Title: Risk factors for impaired maternal bonding when infants are 3 months old: a longitudinal population based study from Japan

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RESPONSE TO REVIEWER:

First of all, we deeply appreciate the reviewer for a careful reading of our manuscript and for giving important comments. We have revised the manuscript “Risk factors for impaired maternal bonding when infants are 3 months old: a longitudinal population based study from Japan” on the basis of the reviewer's comments.

Our responses to the reviewer's comments are as follows:

Reviewer reports 1) The introduction fails to define precisely what is the gap in the literature that aims to be filled by the study, and why is this important. For instance, they mention that "only several non-clinical longitudinal studies have examined the association between maternal depression and bonding in non-western countries", but "previous studies did not collect data from the first trimester of pregnancy". However, there is no description of assessments at first trimester in the Methods section. Authors then mention that the time of follow up of 3 months was innovative, citing previous Japanese studies that only assessed maternal bonding at 1 month and 1 year. However, they do not justify the importance of filling this specific gap.
Response: We have revised the text (Background section, paragraph 3, page 4, lines 2-10; Methods section, page 5, lines 10-12) as follows.

“To our knowledge, most previous longitudinal studies investigating the risk factors for impaired maternal bonding did not collect data from the first trimester of pregnancy [13-19]. Although one study collected data from the first trimester [3], this information was collected for a proportion of participants retrospectively, which may pose a memory bias. As maternal bonding already starts to emerge early in pregnancy, it is of major importance to reliably identify early risk factors in order to be able to prevent the development of impaired maternal bonding. Additionally, in the majority of studies, maternal bonding has been measured during the first two months after giving birth [15, 18]. As it has been suggested that maternal bonding could be formed until three months after delivery [30], it is important to extend the assessment of bonding until then.”

“Information for the study was collected at four time points: the first trimester of pregnancy by pregnancy notification form, until two weeks after delivery by birth registration form, one month after delivery by home visiting, and three months after delivery by infant’s check-up.”

Reviewer reports 2) Authors select cut-offs for the PBQ based on means and standard deviations, but not on previous validations of the instrument. This selection affects the results of the entire study and should be carefully assessed. Cut-offs are most commonly based on previously published validity studies, preferably in a similar sample. If authors have solid reasoning for keeping a data-driven cut-off, they should assure the reader that the PBQ follows normal distribution, which is a premise for considering mean and standard deviations as valid references for cut-offs. Similarly, is there any reasoning or previous example for using three categories of maternal bonding in the study? On one extreme, a binary dichotomous outcome is easier for summarizing the evidence and for the understanding of the reader. On the other hand, analyzing the data as a continuous outcome increases power and richness of information.

Responses: The Japanese version of PBQ has not validated cut-offs yet so we selected data-driven cut-offs. Although the Japanese version of the PBQ did not show normal distribution, normal distribution is not necessary for setting cut scores (e.g. [36]). We have revised the text (Methods section, page 6, lines 8-15) as follows.

“As the Japanese version of PBQ has not validated cut-offs yet, we used data-driven cut-offs. A score above 24 (mean + 2 SD) was categorized as a high level of impaired maternal bonding, a score of between 17 and 23 (mean +1 SD to mean +2SD) was categorized as a moderate level of impaired maternal bonding and a score under 16 (mean + 1 SD) was categorized as a low level of impaired maternal bonding. Consequently, 35 (3.3%) mothers were categorized as reporting a high level, 116 (10.9%) mothers a moderate level, and 909 (85.8%) mothers a low level of impaired maternal bonding. Although the Japanese version of the PBQ did not show normal distribution in Shapiro-Wilk test, normal distribution is not necessary for setting cut scores (e.g. [36]).”
Furthermore, we conducted the multiple regression analysis with impaired maternal bonding as a continuous measure that showed that the same variables were significantly associated with impaired maternal bonding. We added following text (Result section, page 8, lines 12-15):

“We also conducted the multiple regression analyses with impaired maternal bonding as a continuous measure and confirmed that the same variables as in the logistic regression analysis, i.e. postpartum depression at one month after delivery (β = -4.59, p <0.01), maternal negative feelings towards pregnancy (β = -1.58, p <0.01), and primipara (β = -2.52, p <0.01) were significantly associated with impaired maternal bonding.”

Reviewer reports 3) It is not clear the time on which the additional variables were collected (i.e., maternal feelings towards pregnancy, perceived mental illness before pregnancy). It is convenient that the questions used and possible answers are provided, for instance, in supplemental material, for guaranteeing reproducibility of the current study.

Response: We have made a new table “Measurements across antenatal and postnatal period (Table 1)” (Methods section, page 7, line 9). In addition, we have included the questions used and possible answers (Methods section, page 6, line 17 to page 7, line 8) as follows. Furthermore, we have changed the variable name from “sleeping difficulties” to “maternal stress symptoms” on the basis of question.

“Information from the first trimester of pregnancy

Single questions on the pregnancy notification form asked for the mother’s age (≤19, 20-24, 25-30, 30-34 or ≥35 years), parity (primipara or multipara), maternal feelings towards pregnancy asking “How did you feel when you found out about this pregnancy?” (delighted or negative feelings i.e., unintended but happy, confused because unintended, or worried), maternal stress symptoms asking “Are you having symptoms such as sleeplessness, irritability, cry easily, lack of motivation etc continuously for 2 weeks during the last year?” (yes or no) and perceived mental illness before pregnancy asking “Have you suffered from a disease in the past or are currently getting treated for one (Disease name: mental illness (depression etc.))” (yes or no).

Information within two weeks after delivery

The birth registration form included information about the infant’s sex (boy or girl) and birth-weight (≥2500g or <2500g).

Information three months after delivery

Three months after delivery, during the infant checkup, the mothers were asked about details of the type of birth (vaginal delivery, Cesarean section, vacuum extraction or forceps delivery),
their feeding style (only breast-feeding, only bottle-feeding or combined breast- and bottle-feeding), maternal health after delivery asking “Do you have health problems after delivery?” (problems or no problems), maternal employment status during the antenatal period (employed or unemployed) and gestational age (≥ 37 weeks or < 37 weeks).”

Reviewer reports 4) There is no justification provided for performing two multivariable analyses, with and without post-partum depression. All variables involved should be considered at once.

Responses: Since post-partum depression is strongly associated with maternal bonding, we conducted separate multivariate analyses in two models (Methods section, page 7, lines 16-18). The first model included all other antenatal and postnatal variables without post-partum depression. The second model included all variables including post-partum depression. We have added following explanation.

“Since post-partum depression is strongly associated with maternal bonding, we conducted separate multivariate analyses in two models. The first model included all other antenatal and postnatal variables without post-partum depression.”

5) We have changed two references 5 and 6 to appropriate ones.

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Again, thank you very much for giving us the opportunity to strengthen our manuscript with your valuable suggestions and comments. We have worked hard to incorporate your feedback and hope that these revisions persuade you to accept our submission.

Sincerely,

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