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Parental loneliness, perceptions of parenting, and psychosocial factors among parents having new children during the COVID-19 pandemic

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Abstract: Individuals who had new children during the coronavirus disease 2019 (COVID-19) pandemic became parents in challenging situations, starting from pregnancy and continuing to after birth. This study aimed to clarify the characteristics of parental loneliness, perceptions of parenting, and psychosocial factors among parents having new children during the COVID-19 pandemic. The participants comprised a first-child group (523 parents; those who had their first child) and a second-child group (621 parents; those who had their second or subsequent child). We used web-based questionnaires to explore parental loneliness, perceptions of parenting, and psychosocial factors (distress, parental burnout, well-being, marital satisfaction, and social isolation). Participants answered the questionnaires in November 2022, during the eighth COVID-19 wave in Japan. We compared the groups and subgroups according to parental sex and determined the relationship between variables. The parents in the first-child group felt lonelier than the parents in the second-child group ($p < 0.05$), and their loneliness was correlated with psychosocial factors. Significantly, more mothers in the second-child group answered "agree" to negative perceptions of parenting than mothers in the first-child group. Additionally, parenting difficulties were correlated with a negative perception of parenting and parental burnout in both groups. Furthermore, providing parental support may improve parenting and promote parents' health.

***Keywords*:** COVID-19, loneliness, parents, parenting

Introduction

The coronavirus disease 2019 (COVID-19) has affected parents' daily lives in raising children for long periods. Currently, approximately 3 years have passed since the initial pandemic, and many countries are no longer enforcing measures, including lockdowns, to prevent COVID-19 infection because of increased vaccination rates or the accumulation of knowledge about COVID-19 (*1,2*). People are slowly returning to their pre-pandemic state. However, most Japanese, including parents, maintain practices that help prevent COVID-19 infection, such as wearing a mask, washing their hands, or avoiding closed spaces voluntarily, in accordance with the recommendations of the Japanese government (*3,4*). In other words, parents maintained unusual social situations longitudinally during the pandemic.

Many studies of parents having children during the COVID-19 pandemic have suggested several unique characteristics. For example, some studies reported that parents experienced positive changes, such as increased association and familiarity between parents and children, because they spent more time at home (*5-7*). On the other hand, other studies reported that parents showed dangerous characteristics such as increased mental distress regarding parenting or increased violence towards their children (*8-12*). It is possible that the results of these studies reflect the psychosocial context of parents during the COVID-19 pandemic.

Individuals who had new children during the COVID-19 pandemic became parents in challenging situations, starting from pregnancy and continuing to after birth. They experienced cancelled maternity classes, limited partner-accompanied births, or parenting with little interpersonal interaction to prevent COVID-19 infection in Japan (*13,14*). Previous studies also reported that they experienced high parenting stress or marital problems due to a lack of social support for parenting or opportunities to rejoice with others at the birth of a child (*15-18*). Additionally, we conducted a pilot study on parents who had new children during the COVID-19 pandemic. We clarified that parents who had their first child during the pandemic felt lonelier than parents who had their second or subsequent child and that parental loneliness was correlated with negatively perceived parenting (*19*). Parental social isolation and loneliness

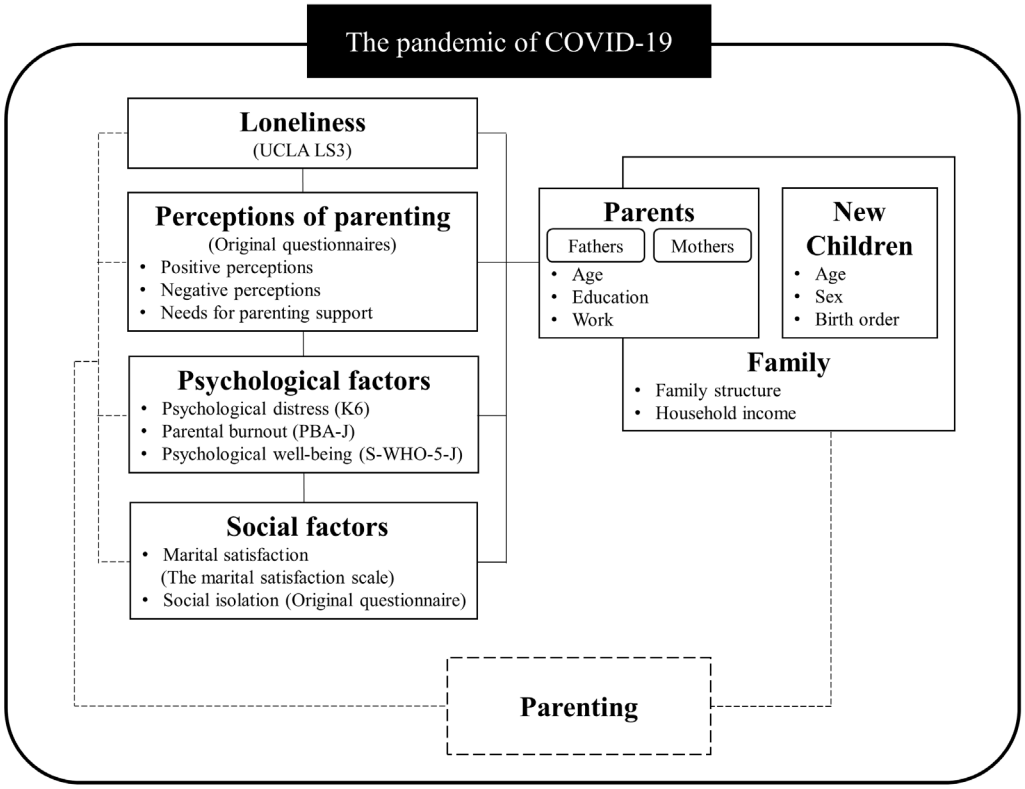

Figure 1. Conceptual framework. The scales measured each variable were shown in parentheses.

during the COVID-19 pandemic are likely to cause poor mental health or negative feelings toward their children (*20,21*). Moreover, these are risk factors that reduce parental coping skills and trigger inadequate behavior in children (*22-24*). We believe that it is important to understand the psychosocial context and parenting perceptions of parents who had new children during the pandemic to provide more appropriate support for them. In addition, it is desirable that parents receive support based on the needs of each father and mother because they do not necessarily have similar needs (*25-28*). However, studies on these factors and their characteristics are lacking. It has not been clarified yet which measures should be taken to support these parents in the process of recovering from the pandemic.

This study aimed to clarify the characteristics of parental loneliness, perceptions of parenting, and psychosocial factors among parents who had new children during the COVID-19 pandemic (Figure 1). We also focused on differences and similarities in these characteristics between fathers and mothers.

Materials and Methods

Design

This study employed a cross-sectional observation design.

Participants and recruitment

We conducted a web-based survey using an online panel; approximately thirteen million panelists (general Japanese people aged 15–99 years) were invited by a web research company (iBRIDGE Corporation) in Japan. First, we selected 1,425 participants from 7,000 online panel registers after checking the appearance ratio of participants who satisfied the following criteria: *i*) their age was over 18 years, *ii*) they had at least one new child during the pandemic, *iii*) their children did not have severe diseases or disabilities, and *iv*) they lived in Tokyo, which was the area in Japan with the most COVID-19 infection. Parents were excluded from the study if their children were born before March 2020, when the COVID-19 pandemic was confirmed in Japan, or if they answered malapropos such as selecting the same number in all questions. Participants responded to the questionnaire in November 2022, during the eighth wave of COVID-19 in Japan (*29*).

The participants were divided into two groups based on the birth order of children born during the pandemic. The first-child group were parents who had their first child during the pandemic, and the second-child group were those who had their second or subsequent child during the same period.

Measures

Socio-demographic data

Parents provided socio-demographic information, including parental age, years of education, employment status, family structure, annual household income,

children's age in months, and sex.

Parental loneliness

The Japanese version of the UCLA Loneliness Scale Version 3 (UCLA LS3) was used to evaluate parental loneliness. The reliability and validity of the UCLA LS3 have been previously verified (*30*). The UCLA LS3 comprises 20 items rated on a four-point Likert scale ranging from never (1) to always (4). The higher the scores, the lonelier respondents feel.

Perceptions of parenting

We assessed perceptions of parenting using questionnaires created for this study based on a longitudinal national survey in Japan (*31*). Parents responded to nine items regarding their positive and negative perceptions of parenting. Regarding positive perceptions, parents were asked the following questions: *i*) enjoy interacting with my child, *ii*) expansion of my circle of interaction among parents, *iii*) pleasure seeing my child grow, and *iv*) proactive involvement in parenting. Regarding negative perceptions, parents were asked the following questions: *i*) parenting fatigue, *ii*) increased expenses due to parenting, *iii*) cannot have much free time on my own, *iv*) little involvement in parenting with my partner, *v*) parenting difficulties. However, parents who had no partners did not answer question *iv*) of the negative perception. Participants responded on a four-point Likert-type scale ranging from strongly disagree (1) to strongly agree (4). We also explored the need for parenting support using the same scale.

Psychosocial factors

Parents were asked about psychological distress, burnout, well-being, marital satisfaction, and social isolation as psychosocial factors.

The Japanese Version of the K6 was used to evaluate parental psychological distress. The reliability and validity of K6 have been previously verified (*32*). The K6 comprises six items regarding the frequency of experiencing symptoms of psychological distress in the last month on a five-point Likert scale ranging from none of the time (0) to all of the time (4). Higher scores indicate greater psychological distress.

The Japanese version of the Parental Burnout Assessment (PBA-J) was used to measure parental burnout. The reliability of the PBA-J has been previously verified (*33*). The PBA-J comprises 23 items rated on a seven-point Likert scale ranging from never (0) to every day (6). Higher scores indicate higher levels of parental burnout.

A simplified Japanese version of the WHO-5 Well-Being Index (S-WHO-5-J) was used to evaluate parental psychological well-being. The reliability and validity of the S-WHO-5-J have been previously verified (*34*). The S-WHO-5-J comprised five items regarding parental well-being in the last 2 weeks on a four-point Likert scale ranging from at no time (0) to all of the time (3). Higher scores indicate better psychological well-being.

A marital satisfaction scale was developed based on the Quality of Marriage Index (*35*). The reliability and validity of this scale have been verified (*36*). The marital satisfaction scale comprises six items rated on a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4). Higher scores indicate better marital satisfaction. Parents with no partners did not respond to this scale.

Parental social isolation was assessed using a questionnaire based on our pilot study. Parents subjectively responded to the number of people who became acquainted with them because they had children on a scale of 1 to 10 ranging from none (0) to many acquaintances (10).

Statistical analysis

To calculate the appropriate sample size for comparison between the two groups, we assumed an effect size using the result of a previous study that reported parental loneliness, which assessed parents with infants using the UCLA LS3 (*37*). Assuming a two-tailed test, an effect size of 0.175, a significance level of 0.05, and a statistical power of 0.8, we needed to enroll 513 parents in each group. To allow for responses that included missing values, the sample size was set to 520 in each group.

We performed the following analyses to determine statistical differences between the first-child and second-child groups: *i*) socio-demographic data were examined using the Mann–Whitney *U* test and the chi-square test, *ii*) differences in medians of parental loneliness, perceptions of parenting, and psychological factors were assessed using the Mann–Whitney *U* test. We used *r*, which was calculated by dividing the z-score (derived from each test statistic) by the square root of the sample size for the Mann–Whitney *U* test. Additionally, we explored the differences and similarities in parental characteristics during the COVID-19 pandemic using a subgroup analysis based on sex.

The Spearman rank correlation coefficient was used to determine the relationship between parental loneliness, perceptions of parenting, and psychosocial factors in the first- and second-child groups. Furthermore, we used "proactively involved in parenting", "parenting fatigue", and "parenting difficulties" as variables for perceptions of parenting based on our pilot study.

Two-tailed p values < 0.05 were considered significant. All analyses were performed using IBM SPSS Statistics ver. 28 and R version 4.1.3.

Ethical considerations

An explanation concerning this study, including voluntary participation, no disadvantage because of non-

participation, anonymous survey, and data management security, was given to participants before the survey. All participants provided informed consent before response to the questionnaire. The study was reviewed and approved by the Institutional Review Board of the National Center for Global Health and Medicine (approval no: NCGM-S-004562-00).

Results

We requested 1,425 participants to answer a web-based questionnaire and obtained answers from 1,212 participants (participation rate: 85.1%). In total, 1,144 participants responded (valid response rate: 80.3%). The first-child group included 523 parents (243 fathers and 280 mothers), and the second-child group included 621 parents (282 fathers and 339 mothers).

Socio-demographic data

Table 1 shows the participants' socio-demographic characteristics. There were significant differences in parental age ($p < 0.01$), family structure ($p < 0.05$), and children's ages ($p < 0.05$) between the first- and second-child groups. However, the effect size of the children's age was small. Most participants in both groups were in the middle or higher class.

Parental loneliness

Table 2 reports on parental loneliness. There was a significant difference in parental loneliness between the two groups ($p < 0.01$). Subgroup analysis also showed that the first-child group had a significantly higher loneliness score than the second-child group for both fathers ($p < 0.05$) and mothers ($p < 0.01$). All comparisons between the groups indicated effect sizes > 1.0.

Perceptions of parenting

Figure 2 shows parents' positive perceptions of parenting. There were significant differences and effect sizes > 1.0 in these two items between the two groups. According to the results of the subgroup analysis, those who answered "agree" to "expanded my circle of interaction among parents through my child" was significantly lower for both parents in the first-child group than for both parents in the second-child group ($p < 0.01$).

Figure 3 shows parents' negative perceptions of parenting. There were significant differences and effect sizes > 1.0 in the three items between the two groups. According to the results of the subgroup analysis, those who answered "agree" to "increased expenses due to parenting" ($p < 0.05$), "cannot have much free time on my own" ($p < 0.05$), and "little involvement in parenting with my partner" ($p < 0.01$) were significantly lower among mothers in the second-child group than mothers in the first-child group.

Psychosocial factors

Table 2 shows the parental psychosocial factors. There were significant differences in parental burnout ($p < 0.01$) and social isolation ($p < 0.01$) between the two groups. According to the results of the subgroup analysis, fathers' burnout scores were higher in the first-child group than in the second-child group; however, mothers' burnout scores were significantly higher in the second-child group than in the first-child group.

Table 1. Participants' socio-demographic data

Characteristics	First-child Group		Second-child Group		$p^{\dagger}$	$r^{\ddagger}$
	n (%)	Median (IQR)	*n* (%)	Median (IQR)		
Parent						
Age (years)		35 (31–40)		37 (33–41)	< 0.001	0.13
Education (years)		16 (14–16)		16 (14–16)	0.05	0.06
Employment Status						
Employment	437 (83.6)		523 (84.2)		0.76	
Non-employment	86 (16.4)		98 (15.8)			
Family structure						
Single parent and children	44 (8.4)		27 (4.3)		0.02	
Two parents and children	471 (90.1)		581 (93.6)			
Three generation family	8 (1.5)		13 (2.1)			
Annual household income (ten thousand yen)						
< 300	30 (5.7)		45 (7.2)		0.23	
300–1,000	332 (63.5)		410 (66.0)			
> 1,000	161 (30.8)		166 (26.7)			
Children						
Age (months)		18 (11–27)	17 (7–26)		0.01	0.08
Sex						
Boy	269 (51.4)		318 (51.2)		0.94	
Girl	254 (48.6)		303 (48.8)			

† Mann–Whitney *U* test and chi–square test. ‡ Effect size: *r* was calculated by dividing the z-score (derived from each test statistic) by the square root of the sample size.

Table 2. Comparison of parental loneliness and psychosocial factors between the first-child and second-child groups

Characteristics	All				Fathers				Mothers			
	First-child Group Median (IQR)	Second-child Group Median (IQR)	$p^{\dagger}$	$r^{\ddagger}$	First-child Group Median (IQR)	Second-child Group Median (IQR)	$p^{\dagger}$	$r^{\ddagger}$	First-child Group Median (IQR)	Second-child Group Median (IQR)	$p^{\dagger}$	$r^{\ddagger}$
Loneliness	48 (42–53)	47 (38–51)	< 0.001	0.14	48 (42–53)	48 (40.8–51)	0.02	0.10	48 (41–53.8)	45 (36–50)	< 0.001	0.17
Psychological factors												
Psychological distress	3 (0–6)	3 (0–8)	0.41	0.02	3 (0–7)	3 (0–9)	0.27	0.05	3 (0–6)	3 (0–7)	0.94	0.00
Parental burnout	10 (1–30)	14 (3–37.5)	< 0.001	0.10	6 (0–25)	11 (0–34)	0.08	0.08	12.5 (3–31)	17 (6–41)	< 0.001	0.12
Psychological well-being	9 (7–10)	9 (6–10)	0.51	0.02	9 (6–10)	9 (6–10)	0.98	0.00	9 (7–10)	9 (6–10)	0.37	0.04
Marital satisfaction	18 (16–22)	18 (15–21)	0.04	0.06	18 (15.3–21.8)	18 (15–20)	0.26	0.05	18 (16–22)	18 (15–22)	0.07	0.07
Social isolation	3 (1–6)	5 (2–7)	< 0.001	0.20	3 (1–5)	4 (2–6)	< 0.001	0.14	3 (1–6)	5 (3–8)	< 0.001	0.25

†Mann–Whitney *U* test and chi–square test. ‡Effect size: *r* was calculated by dividing the z-score (derived from each test statistic) by the square root of the sample size.

Correlations between parental loneliness, perceptions of parenting, and psychosocial factors

Table 3 and Table 4 present the correlation coefficients between parental loneliness, perceptions of parenting, and psychosocial factors in the first- and second-child groups. Significant correlations were observed between multiple variables in both groups. In the first-child group, parental loneliness had a slightly stronger correlation with psychological distress (ρ = 0.31, p < 0.01), parental burnout (ρ = 0.33, p < 0.01), and social isolation (ρ = -0.33, p < 0.01). In the second-child group, parental loneliness had strong correlations with psychological distress (ρ = 0.48, p < 0.01), parental burnout (ρ = 0.43, p < 0.01), psychological well-being (ρ = -0.46, p < 0.01), and marital satisfaction (ρ = -0.44, p < 0.01). Psychological distress had the strongest positive correlation with parental burnout for both parents in the first-child (ρ = 0.64, p < 0.01) and second-child (ρ = 0.67, p < 0.01) groups.

Discussion

This study aimed to determine the characteristics of parental loneliness, perceptions of parenting, and psychosocial factors among parents having new children during the COVID-19 pandemic. There were clear differences between parents in the first- and second-child groups. Parents in the first-child group felt lonelier than those in the second-child group, and their loneliness correlated with psychosocial factors such as social isolation. Parents in the second-child group had more negative parenting perceptions, such as greater expenses because of parenting, and felt higher parental burnout than parents in the first-child group. Additionally, parenting difficulties were correlated with a negative perception of parenting and parental burnout in both groups.

In terms of loneliness, there was a significant difference between the two groups; both fathers and mothers in the first-child group felt lonelier than parents in the second-child group. This finding is similar to that of previous studies (*19,38*). Moreover, the scores of all groups in this study were nearly 10 points higher than those of a previous study that assessed the loneliness of parents raising infants before the pandemic (*39*). Although there was an overall increase in loneliness among parents of new children during the pandemic, parents who had their first child felt lonelier. Parental interaction or social isolation related to loneliness was also higher in the first-child group than in the second-child group. Basically, parents who had their first child were more likely to feel isolated. They experienced limited opportunities to interact with separated families or limited contact with family support workers, for example, public health nurses, because of the COVID-19 pandemic (*40,41*). In other words, changes in social interactions due to the pandemic spurred loneliness in

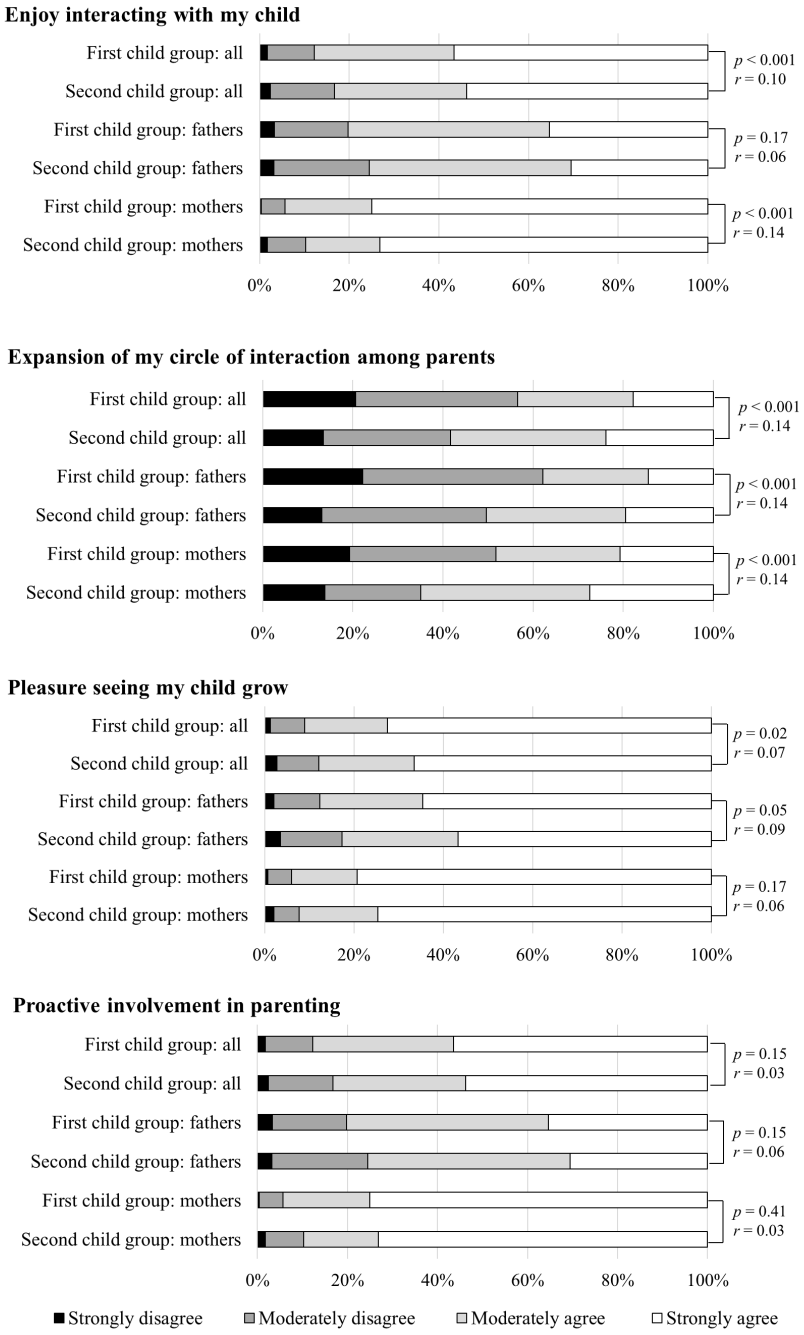

Figure 2. Positive perceptions of parenting. Mann–Whitney *U* test. Effect size: *r* was calculated by dividing the z-score (derived from each test statistic) by the square root of the sample size.

parents, and loneliness might be particularly evident in parents in the first-child group because they had limited social connections after becoming parents. Additionally, previous studies have reported that isolated parents have difficulty receiving support to help with parenting, which exacerbates their parenting difficulties or mental health problems (*42,43*). This study also showed that parental loneliness correlated with parenting difficulties and psychosocial problems, including high levels of psychological distress. This result emphasized that resolving parental loneliness is useful for maintaining parental psychosocial factors and improving parenting health. However, it is possible that parents will feel anxious about being infected with COVID-19 and will need time to start interacting with others because they want to avoid COVID-19. Thus, we recommend that family support workers provide support to promote parental interactions using appropriate strategies, such as providing a place where parents can have relationships without worrying about COVID-19.

There were significant differences in the parenting perceptions between the two groups. In particular, we observed clear differences between fathers and mothers in the second-child group. Mothers in this group had less interaction with their children, had little free time for themselves, and were less involved in parenting

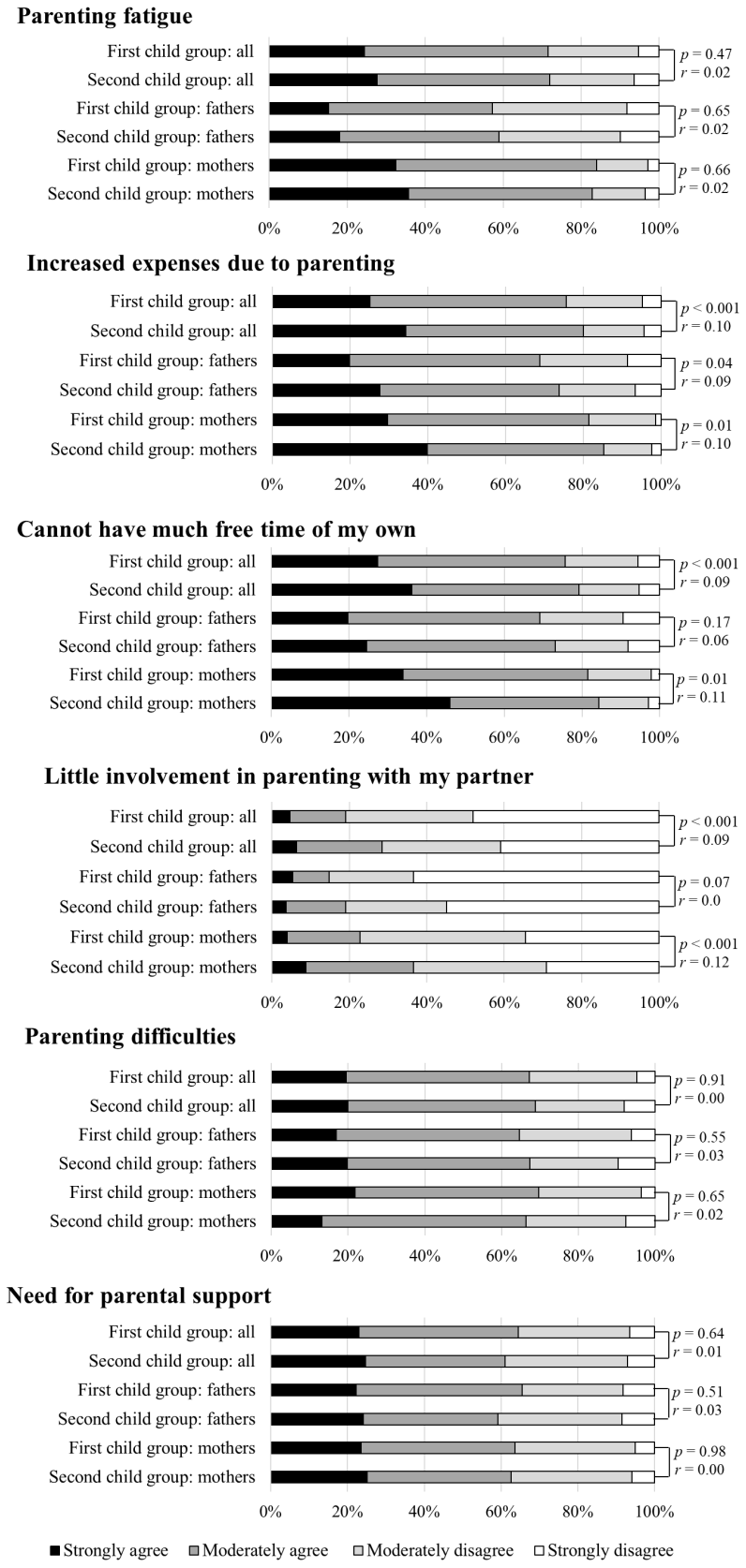

Figure 3. Negative perceptions of parenting. Mann–Whitney *U* test. Effect size: *r* was calculated by dividing the z-score (derived from each test statistic) by the square root of the sample size.

with their partners than mothers in the first-child group. These characteristics were not observed in fathers in the second-child group. Previous studies reported that the more children parents had, the more parenting time was required (*44*), and fathers became less involved in parenting as birth order decreased (*45*). In other words,

Table 3. Correlations between parental loneliness, perceptions of parenting, and psychosocial factors in the first-child group

Characteristics	Loneliness	Proactive involvement in parenting	Parenting fatigue	Parenting difficulties	Psychological distress	Parental burnout	Psychological well-being	Marital satisfaction
Loneliness	—							
Proactive involvement in parenting	- 0.17	—						
Parenting fatigue	0.12	0.32	—					
Parenting difficulties	0.24	0.04	0.31	—				
Psychological distress	0.31	- 0.18	0.23	0.19	—			
Parental burnout	0.33	- 0.19	0.37	0.30	0.64	—		
Psychological well-being	- 0.27	0.28	- 0.20	- 0.24	- 0.42	- 0.44	—	
Marital satisfaction	- 0.24	0.29	- 0.01	- 0.04	- 0.24	- 0.30	0.32	—
Social isolation	- 0.33	0.08	- 0.04	- 0.16	0.03	0.00	0.20	- 0.04

Spearman's rank correlation coefficient.

Table 4. Correlations between parental loneliness, perceptions of parenting, and psychosocial factors in the second-child group

Characteristics	Loneliness	Proactive involvement in parenting	Parenting fatigue	Parenting difficulties	Psychological distress	Parental burnout	Psychological well-being	Marital satisfaction
Loneliness	—							
Proactive involvement in parenting	- 0.32	—						
Parenting fatigue	0.09	0.38	—					
Parenting difficulties	0.18	0.06	0.35	—				
Psychological distress	0.48	- 0.26	0.15	0.20	—			
Parental burnout	0.43	- 0.17	0.31	0.32	0.67	—		
Psychological well-being	- 0.46	0.28	- 0.09	- 0.15	- 0.46	- 0.43	—	
Marital satisfaction	- 0.44	0.31	0.03	- 0.05	- 0.32	- 0.32	0.42	—
Social isolation	- 0.32	0.17	- 0.02	- 0.06	- 0.11	- 0.05	- 0.05	0.09

Spearman's rank correlation coefficient.

mothers with more children had a greater parenting burden. It is possible that many mothers in the second-child group answered "agree" with little free time for them and little involvement of their partners in parenting because they experienced similar situations. Lack of free time or parenting cooperation from their partners led to an increase in maternal exhaustion or stress, especially during the COVID-19 pandemic, which was a stressful situation. In fact, mothers in the second-child group had significantly higher parental burnout, resulting in chronic and overwhelming parental stress (*46*), than parents in the first-child group. Moreover, some of them did not enjoy interacting with their children. There was concern about relationships with their children because parental burnout was more likely to result in child abuse and neglect (*47*). Therefore, it is important to help mothers who give birth to their second or subsequent child to reduce their parenting burden through support such as providing better childcare services or promotion of co-parenting.

There were no significant differences in parenting difficulties between the two groups. According to correlation coefficients between parenting difficulties and other variables, parenting difficulties had slightly stronger correlations with parenting fatigue and parental burnout. These results indicate that the physical and mental strain of parenting causes parents to experience parenting difficulties. They may also reflect parental situations that increase the parental burden, poor support for parents, or greater difficulty in accessing parental support during the pandemic. Previous studies have reported that parents who had new children during the pandemic have unique parenting support needs because they gave birth and are parenting with many restrictions, and faced challenging situations as parents (*48,49*). It is important to further expand parenting support to reduce the parental burden and meet the needs of these parents.

This study had several limitations. We did not control for differences in situations due to the COVID-19 pandemic, including the state of emergency; therefore, there may be some variations in the parenting status of the participants. This study was conducted using an online panel to prevent the spread of COVID-19. Thus, there was a risk of limited participation of parents who had difficulty accessing the Internet. The possibility of selection bias cannot be excluded because the majority of parents said that they were proactively involved in parenting. They may have participated in the study because they were interested in parenting on a daily basis. Furthermore, it is difficult to understand concrete parenting difficulties and support needs using quantitative data alone. Next, we plan to analyze parenting difficulties and parental support needs using the free texts collected in this study. Future studies should apply longitudinal methods to explore changes in parental loneliness, perceptions of parenting, and psychosocial factors or provide specific measures of parental support in the process of recovering from the pandemic.

In conclusion, parents who had their first child during the COVID-19 pandemic felt lonelier or more isolated, and mothers who had a second or subsequent child had more negative perceptions of parenting and parental burnout. The results suggest that parents in both groups required more support than they were provided. Furthermore, providing parental support may improve parenting, promote parental health, and promote good parent-child relationships.

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Conflict of Interest: The authors have no conflicts of interest to disclose.

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