

Influence of hardiness, mother-child interactions, and social support on parenting stress among North Korean refugee mothers: a cross-sectional study

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Purpose: This study investigated the factors that influence parenting stress, including hardiness, parent-child interactions, and social support, to provide basic data for developing a program to reduce parenting stress in North Korean refugee mothers. **Methods:** A descriptive study design was used. Data were collected between September and December 2021, and 123 North Korean refugee mothers participated. **Results:** The mean scores were 69.42 out of 135 for hardiness, 48.45 out of 144 for interactions, 47.32 out of 90 for social support, and 51.84 out of 90 for parenting stress. The parental distress score was higher than that of child-related stress. Hardiness was significantly related to North Korean refugee mothers' parenting stress. Multiple regression analysis indicated that the explanatory power for hardiness and the number of supporters was approximately 19% for parenting stress ($F=6.84, p<.001$). As such, the factors with a relatively strong influence on parenting stress were hardiness ($\beta =-.40, p<.001$) and having four or more supporters ($\beta =-.27, p=.027$). **Conclusion:** This study's findings suggest the need to identify ways to increase North Korean refugee mothers' psychological hardiness and encourage them to extend their sources of social support and enhance their style of parenting.

Key words: Parenting; Psychological stress; Refugees; Hardness; Social support

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INTRODUCTION

Currently, 33,718 North Korean refugees (NKR) reside in South Korea, where they are regarded as a critical population that plays a significant role in South Korean society [1]. The extreme hardship that NKR face in North Korea and the process of escape drive them to seek refuge in the south. NKR who are parents in a completely different culture and adapt to life in South Korea inevitably face a double burden [2]. Refugees, including NKR, experience increased psychological and emotional stress in parenting, as they must parent their children without preparation in a situation where they have yet to adjust to a new society. The accumulation of such stress is likely to have a direct effect on both parents and their children [3].

According to Yim [4], parent-child interactions are the main factor influencing parenting stress; specifically, there is both a child-related factor and social support as an environmental factor. Mother-child interactions refer to the mother's re-

sponse to signs expressed by the child during a natural daily activity, the child's response in return, and the behavioral patterns of mutual interchange between them [5]. Studies thus far have focused on the mother-child interaction with respect to the child's personality, but relatively few have investigated mother-child interactions with regard to the mother's psychological characteristics. In child-focused study, the parenting stress of the mother has often been taken as an independent variable [6]. In mother-focused studies, however, the parenting stress of the mother has been analyzed as a dependent variable. As this view might rely not on stress itself as sensed by the mother, but on cognitive perspectives in assessing and interpreting a stress-inducing event [7], we examined mother-child interactions in this study as a factor influencing parenting stress.

Social support refers to the care, affection, respect and admiration, recognition of self-worth, and other values felt by an individual within the mutually dependent network to which

he or she belongs. In addition, social support is divided into structural and functional aspects [8]. The former indicates objective and quantitative concepts in relation to the valid network of people who will certainly or potentially provide physical and psychological resources (e.g., network size, density, frequency, relational interconnections, mutual reciprocity, duration, homogeneity, the ratio of related and non-related people, the direction of relations and geographic distances among members), while the latter refers to "qualitative utility" (e.g., emotional, informational, instrumental, and appraisal support) [9]. Based on past research on the relationship between social support and parenting stress, we can deduce that increased social support leads to a reduction in parenting stress [6,10].

Furthermore, we aimed to investigate hardiness as a factor influencing parenting stress. Hardiness is a personality trait exhibited by individuals who can cope with stress efficiently; an individual with hardiness believes in his or her ability to adjust to the environment, engages deeply in daily activities, and perceives a change as a challenge [11]. Researchers have shown that psychological hardiness contributes substantially to helping one's child(ren) lead happier, healthier lives, as it enables parents to control themselves, focus, and constantly push forward based on faith and conviction in their lives, even in stressful situations such as psychological pain or difficulty arising in an external environment. Hardiness thus comprises an individual's internal value system and has three sub-categories (commitment, control, and challenge); it drives an individual to regulate himself or herself and to participate in daily activities in stressful situations actively, and to view change as an opportunity for growth or development to lead a healthier life [11]. Psychological hardiness can therefore be defined as an individual's power to reinforce his or her merits for self-control, actively participate in daily activities under stressful circumstances, and perceive change as an opportunity for growth or development [12]. If a mother has a high level of psychological hardiness, she has a healthy internal resource to alleviate stress and care for her child.

Kobasa et al. [11] reported that psychological hardiness is observed among people who receive encouragement from people around them and people who have actually turned crisis into opportunity, based on which they asserted that support from others or family could contribute to fostering psychological hardiness in individuals under stress. For a mother, becoming psychologically hardy means that she develops healthy internal resources for relieving her stress and facilitating the recovery of her children from trauma. However, most studies on hardiness have focused on physical health, and the study by Jung and Lee [13] is the only study that examined hardiness in relation to parenting attitudes.

NKR mothers experience an escalated level of psychological and mental stress in terms of parenting, as they face parenthood without preparation in a socioculturally unfamiliar society [3]. The Korea Institute of Child Care and Education reported in their study on parenting in NKR families that the current parenting environment is at a high-risk level due to husbands' domestic violence, mothers' emotional disorders and language and communication barriers, and families' financial hardship [14]. Amid a growing need for educational support and social support systems to mitigate the negative impact of parenting stress among NKR parents, past studies have found evidence of an association between maternal depression, widespread problems among children, children externalizing and internalizing problems, social support, maternal educational level and maternal parenting stress [6]. Studies investigating parenting stress in NKR mothers have primarily focused on its association with parenting efficacy, acculturative stress [2,3], parenting behaviors, and posttraumatic stress symptoms [2], whereas few studies have identified predictors of parenting stress. A few studies have investigated predictors of parenting stress and have identified spousal support and social support as predictors in immigrant women in Korea [15] and marital conflict and social support as predictors in women with career interruption [4]. However, none of the existing studies have examined hardiness, social support, and interactions with children together as potential predictors of parenting stress.

In this study, we defined psychological hardiness as a trait of enhancing one's strengths such that an individual is able to control himself or herself, actively get involved in life, consider adversities as opportunities for growth, and accept challenges in any stressful situation and the capacity to enjoy a healthy life. We view that NKR mothers under stress require positive emotions that can offset their negative emotions, and to this end, we focused on boosting psychological hardiness to bolster their strengths and transform their psychological states positively.

Therefore, we investigated the factors that influence parenting stress, ranging from hardiness, which enhances an individual's internal resources, to parent-child interactions (consisting of a child-related factor and social support), with the aim to provide basic data for developing a program to reduce parenting stress in NKR mothers.

METHODS

Ethics statement: This study was approved by the Institutional Review Board (IRB) of Hannam University (No. 21-02-03-0913). Informed consent was obtained from all participants.

1. Study Design

Using a descriptive survey, we aimed to explore the factors influencing parenting stress with a focus on the hardiness of NKR mothers, which enhances their internal resources, mother-child interactions, and social support. This study was reported in compliance with the STROBE criteria [16].

2. Participants

The participants were NKR mothers with a child aged 20 years or below, who were registered at the Saejowi Initiative for National Integration and the NKR Counseling Center of the Korea Hana Foundation. The study period was between September and December 2021. We calculated the number of participants using G*Power 3.1.7 and the required number of participants for regression analysis was 98 with six predictors, an effect size of .15, a power of .80, and a significance level of .05. Considering a dropout rate of roughly 20%, 118 participants were required. We included 130 mothers who were able to communicate, did not have any problems with Korean literacy, did not have a disease requiring hospitalization, understood the study's purpose and methods, and agreed to participate. Ultimately, we obtained data from 123 mothers, excluding 7 subjects whose responses were below the expected quality.

3. Study Tools

1) Hardiness

To measure hardiness, we used a scale developed by Kobasa et al. [11], then revised and modified by Bartone et al. [17] and translated by Cho [18] for the survey. This scale is used among parents, workers, and patients and consists of three subscales (commitment, control, and challenge). First, commitment is defined as fully committing oneself to various life situations based on the perceived importance and perceived values of oneself and one's work. Second, control refers to the attempt to properly adjust to one's environment amid various life events by developing generalized confidence in one's adaptation resources instead of feeling helpless. Third, challenge refers to the ability to welcome changes and new things in life as challenges, as opposed to threats, and to be determined to address them. The survey had a total of 45 questions, with 15 questions in each subcategory. The rating was on a 4-point Likert scale (0-3), and we reverse-coded the negative statements. The score ranged from a minimum of 0 to a maximum of 135, with higher scores indicating greater levels of hardiness. Cronbach's α was .69 according to Cho [18] and .63 in this study.

2) Parent-child interaction

To measure the parent (mother)-child interaction, we used the Parent-Child Interaction scale, developed by Hetherington et al. [19] and translated by Moon and Oh [20], then revised through factor analysis by Han [21]. The original scale consisted of a total of 65 items with four subcategories from the Parent Discipline Behavior (PDB) scale and two subcategories from the Expression of Affection (EAF) scale. We used the instrument developed by Han [21] to reduce the participants' burden. After exploratory factor analysis [21], the revised scale consisted of two factors of positive PDB and two factors of EAF across 24 questions; the former comprised questions about the child's opinions and encouragement for the child's independent behaviors, while the latter comprised questions about emotional EAF and EAF through sharing activities. The responses were on a 7-point Likert scale from 0 ("none") to 6 ("twice or more a day"), with a total score of 144 and higher scores indicating greater levels of positive parent-child interactions. In the work of Han [21], Cronbach's α was .94 overall, .93 for positive PDB, and .90 for EAF. In this study, Cronbach's α was .96 overall, .96 for positive PDB, and .93 for EAF.

3) Social support

To measure social support, we used the Multi-Dimensional Scale of Perceived Social Support developed by Zimet et al. [22], which was later restructured by Kim [23] with modifications. In the study of Kim [23], the scale was used on immigrant women and consisted of 16 questions. The "friends" factor in the original scale was divided into South Korean and North Korean friends. Family support denoted support from a spouse, a parent(-in-law), or one's child(ren), South Korean friend support referred to support from South Korean friends with whom a close personal relationship has been maintained, and North Korean friend support indicated support from North Korean friends. Significant other support referred to support from an expert at an institution or an individual with whom a significant, influential bond has been formed. However, given that NKRs usually receive social support from government-related institutions and religious or social welfare organizations, we extended and modified this factor to social group support, which included organizational support and support from experts at institutions. The responses were on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores signaling greater levels of social support. Cronbach's α for all questions was .88 in the original scale, .91 in Kim [23], and .85 in this study.

4) Parenting stress

We utilized the Parenting Stress Index as a modified ver-

sion of the scale developed by Kim [24]. We used the same instrument as in our previous study [3]. We modified the content of the scale using language that NKR mothers could understand by consulting two nursing professors, one psychiatrist and a nurse at Hanawon, a South Korean settlement support center for the re-education of NKRs. The scale determined the overall stress that can occur between parents and children and consisted of 18 items, including eight items for parental distress as self (parent)-related stress and 10 items for children-related stress.

The items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items with negative statements were modified to positive statements and reverse-coded, and the score ranged from a minimum of 18 to a maximum of 90, with a higher score denoting more parenting stress. At the time of development, the Cronbach's α values were .89, .85, and .88 for the entire survey, the items on parental distress, and the items on children-related stress, respectively [24]. In our study, these values were .63, .60, and .61, respectively.

4. Data Collection Method and Procedure

Following approval of the IRB of the Hannam University and with approval from the Director of the Saejowi Initiative for National Integration and the cooperation of local counselors, we recruited NKR mothers. The survey was administered by a research assistant who explained the study's purpose and content in a way that was easy for the participants to understand. Additionally, the participants were told that this was an anonymous survey with no possible leakage of personal information or threat to their personal safety and that participation was voluntary without any negative effects. The participants were also informed that they could withdraw from the study at any time before, during, or after the study without any disadvantages. We explained that all information would be coded and safely processed only for the purpose of this study, and those who voluntarily agreed to participate in the study were selected. A self-report questionnaire was then completed by the participants after they provided written consent to participate. Approximately 15 to 20 minutes were required to complete the questionnaire, and a small gift was given after questionnaire completion as a token of gratitude for the respondents' participation.

5. Data Analysis

We analyzed the data using IBM SPSS ver. 21.0 (IBM Corp., Armonk, NY, USA). The participants' demographic traits were represented by whole numbers and percentages, while

demographic details, hardiness, social support, parent-child interaction, and parenting stress were represented by percentages, means, and standard deviations. To evaluate variations in hardiness, parent-child interaction, social support, and parenting stress according to the demographic details, we performed the t test and analysis of variance (ANOVA), with the Scheffé post hoc test. For intervariable correlations, we conducted Pearson correlation analysis and used multiple regression analysis to examine the factors influencing parenting stress.

RESULTS

1. Demographic Traits and Differences in Parenting Stress According to General Characteristics

Thirty-five (28.5%) of the participants were in their 30s or below, 54 (43.9%) were in their 40s, and 34 (27.6%) were in their 50s. Fourteen (11.4%) had a legal spouse, indicating that most participants were single parents. As for education level, 89 (72.4%) had graduated from middle or high school (completed formal education in South Korea), and 17 (13.8%) had a college or university degree. Seventy (56.9%) had one child, 46 (37.4%) had two children, and 3 (5.7%) had three or more children. The duration since being admitted into South Korea was 3 years or less for 7 (5.7%), between 3 and 5 years for 29 (23.6%), between 5 and 10 years for 44 (35.8%), and more than 10 years for 43 (35.0%).

The most frequent response to the question of whether participants had anyone or a group that would support them was a religious or social group ($n=65$; 52.8%), followed by an acquaintance from North Korea ($n=52$; 42.3%), an acquaintance from South Korea ($n=35$; 28.5%), a colleague ($n=27$; 22.0%), a relative ($n=25$; 20.3%), a sister or brother ($n=25$; 20.3%), a parent ($n=17$; 13.8%), a professional (such as a teacher or healthcare personnel) ($n=9$; 7.3%), an officer from the government or a public institution ($n=5$; 4.1%), and a South Korean foster parent ($n=3$; 2.4%). While 107 (87.0%) stated that they had two or more such supporters or supportive groups, 16 (13.0%) stated that they had none.

The score of parenting stress was significantly higher among participants who stated that they had no supporters (54.88 ± 5.37 points) than among those with four or more supporters (49.57 ± 6.25 points; $F=2.79$, $p=.029$). There were also differences between the two groups by domain. Parental distress did not significantly differ in the post hoc test, but it did significantly differ according to education level ($F=4.40$, $p=.014$). There were significant differences in child-related stress according to the presence of a legal spouse and the number of supporters, where the score was significantly higher

Table 1. General Characteristics of North Korean Refugee Mothers and Their Degree of Parenting Stress (N=123)

Variables	Categories	n (%)	Parenting stress		Parental distress		Child-related stress	
			M±SD	F (p)	M±SD	F (p)	M±SD	F (p)
Age (year)*	≤ 39	35 (28.5)	51.71±7.25	0.23	27.11±4.54	1.22	24.60±3.91	0.78
	40-49	54 (43.9)	51.80±6.01	(.978)	28.35±3.30	(.300)	23.44±4.44	(.461)
	≥ 50	34 (27.6)	52.03±6.20		28.03±3.29		24.00±4.38	
Marital status	Have a legal spouse	14 (11.4)	48.71±8.40	-1.97	27.21±5.18	-0.55	21.50±4.38	-2.30
	No legal spouse	109 (88.6)	52.24±6.01	(.051)	28.00±3.49	(.589)	24.24±4.18	(.023)
Education level	≤ Elementary school	17 (13.8)	50.00±5.70	1.73	26.35±3.62	4.40	23.65±3.90	0.05
	Middle-High school	89 (72.4)	52.49±6.47	(.181)	28.51±3.47	(.014)	23.99±4.48	(.955)
	≥ College or University	17 (13.8)	50.24±6.24		26.35±4.21		23.88±3.71	
Number of children	1	70 (56.9)	51.36±6.74	0.54	27.57±3.79	0.86	23.79±4.35	0.09
	2	46 (37.4)	52.61±5.77	(.587)	28.48±3.64	(.424)	24.13±4.08	(.914)
	More than 3	7 (5.7)	51.57±6.95		27.57±3.10		24.00±5.32	
Period after arrival in South Korea (month)	Less than 36	7 (5.7)	51.86±7.88	0.42	28.86±3.24	1.43	23.00±6.25	1.06
	37-60	29 (23.6)	50.83±7.16	(.741)	26.86±3.83	(.238)	23.97±4.80	(.369)
	61-120	44 (35.8)	52.55±6.89		27.80±4.21		24.75±3.75	
	More than 121	43 (35.0)	51.79±5.05		28.58±2.99		23.21±4.04	
Total number of supporters	0	16 (13.0)	54.88±5.37 ^a	2.79	28.81±3.82	0.92	26.06±4.04 ^a	4.71
	1	31 (25.2)	53.65±4.72 ^b	(.029)	28.35±3.13	(.457)	25.29±3.24 ^b	(.001)
	2	32 (26.0)	51.13±6.90 ^c	a > e	27.41±4.09		23.72±4.19 ^c	a > e
	3	16 (13.0)	50.69±7.79 ^d		26.75±4.64		23.94±4.31 ^d	
	≥ 4	28 (22.8)	49.57±6.25 ^e		28.14±3.15		21.43±4.47 ^e	

*Total age (M±SD)=43.8±8.1 [range: 24-69]; M, mean; SD, standard deviation.

among participants without a spouse (24.24±4.18 points) than among those with a spouse (21.50±4.38 points) (F=-2.30, p=.023). Further, the score was significantly higher among participants without any supporters (26.06±4.04 points) than among those with four or more supporters (21.43±4.47 points) (Table 1).

2. Levels of Hardiness, Parent-Child Interaction, Social Support, and Parenting Stress

The mean total score of hardiness was 69.42±6.40 out of 135 points. The subcategory with the highest mean score was commitment (24.45±4.14 points), followed in descending order by control (23.63±3.96 points) and challenge (21.34±3.11 points). The mean total scores for parent-child interactions and social support were 48.45± 25.80 out of 144 points and 47.32±8.94 out of 90 points, respectively. The mean score was 51.84±6.38 out of 90 points (2.88±0.35 points on a 5-point scale) for parenting stress, 27.91±3.70 points (3.10±0.41 points on a 5-point scale) for parental distress, and 23.93±4.27 points (2.66±0.47 points on a 5-point scale) for child-related stress, indicating higher level of stress for parental distress (Table 2).

3. Correlations among Hardiness, Parent-Child Interactions, Social Support, and Parenting Stress

Analyzing the correlations among the main variables showed that hardiness had a negative correlation with parenting stress (r=-.43, p<.001). Hence, greater levels of hardiness were associated with lower levels of parenting stress. We noted a significant and negative correlation with the number of supporters (r=-.28, p=.001), implying that parenting stress decreased with an increasing number of supporters (Table 3).

4. Factors Influencing Parenting Stress

To identify the factors influencing parenting stress, we performed multiple regression analyses with hardiness and the number of supporters as the input variables. Table 4 outlines the results.

To test the basic assumptions of regression analysis, we checked the residual autocorrelation (Durbin-Watson statistic=1.744), residual normality and linearity (normality P-P plot and histogram), and the homogeneity of residuals (scatter plot). In addition, the tolerance in checking the multicollinearity of errors for the model in this study was below 1.0 (range, .434-.903), and the variance inflation factor ranged between 1.108 and 2.303, well below the limit of 10, which confirmed that all basic assumptions were satisfied.

The results of regression analysis indicated that the explanatory power for hardiness and the number of supporters was

Table 2. Level of Hardiness, Parent-Child Interactions, Social Support, and Parenting Stress among North Korean Refugee Mothers (N=123)

Variables	M±SD	Range	M±SD (scale)
Total hardiness	69.42±6.40	53-90	1.54±0.14
Commitment	24.45±4.14	16-48	1.63±0.28
Control	23.63±3.69	12-34	1.58±0.25
Challenge	21.34±3.11	14-28	1.42±0.21
Parent-child interactions	48.45±25.80	4-127	2.02±1.08
Positive discipline	32.16±17.94	4-80	2.29±1.28
Affective behavior	16.28±10.53	0-55	1.63±1.05
Social support	47.32±8.94	20-82	2.96±0.56
Parenting stress	51.84±6.38	33-68	2.88±0.35
Parental distress	27.91±3.70	15-39	3.10±0.41
Child-related stress	23.93±4.27	12-33	2.66±0.47

M, mean; SD, standard deviation.

Table 3. Correlations between Research Variables among North Korean Refugee Mothers (N=123)

Variables	Hardiness	Parent-child interactions	Social support	Parenting stress
	r (p)	r (p)	r (p)	r (p)
Hardiness	-			
Parent-child interactions	-.07 (.460)	-		
Social support	.17 (.059)	.16 (.080)	-	
Parenting stress	-.43 (<.001)	-.05 (.588)	-.14 (.123)	-

Table 4. Multiple Regression Analysis of Variables Influencing Parenting Stress among North Korean Refugee Mothers (N=123)

Variables	B	SE	β	t	p
Hardiness	-0.39	0.08	-.40	-4.56	<.001
Total number of supporters (ref.: 0)*					
1 supporter	-1.59	1.77	-.11	-0.90	.370
2 supporters	-2.18	1.79	-.15	-1.22	.225
3 supporters	-3.55	2.04	-.18	-1.65	.102
4 or more supporters	-4.08	1.82	-.27	-2.25	.027

R²=.23, Adjusted R²=.19, F=6.84, p<.001

*Dummy variable; SE, standard error.

approximately 19% in relation to parenting stress, with the model being statistically significant (F=6.84, p<.001). As such, the factors with a relatively strong influence on parenting stress were hardiness (β=-.40, p<.001) and having four or more supporters (β=-.27, p=.027) (Table 4).

DISCUSSION

We conducted this study to identify the factors influencing parenting stress in various processes of adaptation that ac-

company the settlement of NKR mothers in South Korean society, with the goal of providing basic data for parenting education that will contribute to the stable adaptation of both parents and children.

Hardiness showed a mean total score of 69.42, with mean scores of 24.45 for commitment, 23.63 for control, and 21.34 for challenge, respectively. This suggests that NKR mothers do perceive the importance and value of their work—parenting — and wish to remain confident in parenting and be in control, but they lack the determination to address new changes

actively. In a study by Woo [12], applying the same tool, the mean score on the 4-point Likert scale was 2.01, with higher scores of hardiness associated with higher levels of education, but the psychological hardiness in NKR mothers exhibited a lower score (1.54 on a 4-point Likert scale), and the difference according to education level was not significant. This may be due to a particular circumstance in which the participants were female NKRs. Hardiness entails a buffering effect of alleviating the negative impact of stress. Individuals with high levels of hardiness tends to actively engage in and commit themselves to daily activities, with the belief that they can adjust to or control their experiences while viewing change as a challenge [13]. It is important to bolster hardiness in NKR mothers such that they can actively commit to parenting while striving to adjust to South Korean society, control their environment and themselves, and welcome any changes in their parenting as a positive challenge as they shape their own parenting style based on North Korean and South Korean parenting styles in the new environment.

In a previous study [21] on parent-child interactions involving mothers with young children, the mean score of EAF was 1.56, and that of positive PDB was 3.14. In this study, the mean total score was 2.02, and the mean scores of EAF and positive PDB were 1.63 and 2.29. This difference in score can also be interpreted in relation to the general characteristics of the subjects, since the age of children was limited to early childhood in previous studies, whereas this study included all parents of children under the age of 20. In addition, this discrepancy may be explained by the fact that most participants in the present study were single parents facing economic and emotional hardship, as they were required to earn a living and care for their families while assuming the burden of a challenging role and responsibility as the heads of their household. An earlier study [2] also showed that NKR mothers most frequently engaged in "rejecting, restricting" parenting behaviors, such as negative evaluation or criticism of the child, the expression of negative emotions, hostile discipline, and ignoring, as opposed to "warm, accepting" parenting behaviors. The heavy burden on the mother in carrying out her role inevitably reduces her time spent with her child or interactions such as conversation, which places an additional sense of guilt on the mother, who may feel she is not providing adequate care for her child. This could easily induce a negative emotional attitude in the child and reduce the consistency of parenting, causing problems in the mother-child relationship [25]. Notably, mother-child interactions have substantial effects on the child's growth, including physical development, as well as cognitive, linguistic, social, and emotional abilities [5]. To promote the growth and development of children from NKR families, parenting education sessions and programs to

nurture a positive parent-child relationship rooted in the use of and connection to community support resources should be established.

Social support showed a mean total score of 47.32 points (mean, 2.96 out of 5 points), corresponding to a slightly greater level than the 2.75 reported for immigrant wives in rural regions [15] and a slightly lower level than that of 3.12 reported for NKR women [10]. Social support could be a critical factor influencing the mother's parenting stress, as it can reduce the level of parenting stress and serve a protective role by creating a physical and psychological support system through which mothers can express themselves and share the difficulties of parenting [9]. The question about whether a certain person or group supported the participants elicited the most responses: 52.8% received help from a religious or social group, followed by an acquaintance from North Korea at 42.3%, indicating that a greater level of support came from neighbors or groups outside participants' homes, rather than from individuals or families. As for the question regarding the number of supporters or supportive groups, 87.0% of participants said they had two or more supporters or supportive groups. However, 13.0% replied that they had none. As part of the integrated social survey administered to NKRs each year, the current analysis of social networks suggests that NKRs have considerably small networks, consisting of 2 to 3 individuals to whom they can talk or from whom they can request help when not feeling well. Further, NKRs primarily receive help from fellow North Korean acquaintances [26]. Likewise, we found that 4.1% of participants in the present study received support from the government or public institutions; in the study of Lee et al. [14], support from social organizations, including government institutions, was insignificant regarding parenting, instead frequently being a mere formality. Diverse sources of support from neighbors, government institutions, and regional adaptation centers are critical for NKR mothers facing the difficulties of parenting, as well as the need to adapt to a new setting in terms of social support, which could ensure that they have opportunities to obtain valuable information and resources for counseling. Compared to other mothers, NKR mothers have highly limited social resources, implying that the quality of their parenting will improve if they have a close source of support for parenting.

The total score of parenting stress was 2.96, with mean scores of 3.10 for parental distress and 2.66 for child-related stress, indicating a greater level of stress for parental distress. This outcome is in line with Lee and Jeon [3] in the high score of parental distress as a subcategory, although we observed slight variations in the mean total score (2.70), parental distress (2.97), and child-related stress (2.49). The results indicate that because the perceived level of stress could vary according

to the individual's personality or perceptions, as well as a specific event or the child's characteristics, the mother's characteristics exerted the largest impact on parenting stress. Many NKR women have had complex and unforeseeable experiences, such as trauma before and after becoming refugees, so we can assume that they would be dealing with an even deeper level of psychological difficulties. Parenting stress could arise as a side effect of efforts to adapt to one's roles and responsibilities as a parent [27], such that clinical professionals must provide active interventions to alleviate parenting stress along with educational support to promote the healthy growth of the child and high-quality parenting. In particular, since the subscale scores showed that parents suffered from higher parental distress than stress from children, it is crucial to examine parents' stress and psychological states in relation to life events or past events to ensure that their stress does not adversely impact their parenting styles. Furthermore, social organizations and institutions, such as NKR support groups and local governments, must continue to pay attention and provide support to transform these parents' psychological states positively.

Analyzing the correlations among the main variables in this study showed that, as the level of hardiness increased, the number of supporters rose and the level of parenting stress declined. Parent-child interactions were negatively correlated with the number of supporters, indicating that a lower number of supporters was associated with more positive parent-child interactions. This may have been because negative interactions with the child could lead the parent to seek support from others to improve the relationship with the child, or it could be due to the reduced level of challenges in parenting as interactions with the child increase. Nevertheless, care should be taken in interpreting these findings, since a previous study [28] reported positive interactions with children following an increase in social support.

In addition, participants with higher scores of social support had more supporters. Parenting stress decreased with a greater number of supporters, which may be interpreted as one's social network and the associated practical support having a significant effect on reducing parenting stress, as positive emotions were induced in NKR mothers. Importantly, NKR mothers have left their hometowns to take refuge in South Korean society, so they may be seen as having lost nearly all their former social support networks [14]. In such circumstances, close and ongoing social support and practical help from supporters provide highly efficient aid for parenting among NKR mothers.

We performed multiple regression analysis to identify the factors influencing parenting stress in NKR mothers; the results revealed that the explanatory power for the effects of

hardiness and having four or more supporters on parenting stress was approximately 19%, while the factors with a fairly strong influence on parenting stress were hardiness and the number of supporters. Studies on the mothers of premature babies [29] and the mothers of children with special needs [30] lend support to the finding that psychological hardiness is a critical factor in parenting. Moreover, the bulk of parenting stress arose from parental factors and not child-related factors, highlighting the need for programs that improve hardiness, which would enable individuals to bolster their strength to control themselves and positively perceive stress as an opportunity for growth and development. These programs would offset the adverse impact of negative emotions in any type of stressful situation and thus alleviate their parenting stress. Although we did not observe a significant influence of parent-child interactions and social support on parenting stress, unlike previous findings [4,9,10,15], it is possible that other factors served as a mediator or interacted with these factors, considering that the study populations did not share the same socioeconomic characteristics—as North Korean defectors or have children with comparable ages. However, our finding that the number of supporters in a social network affects parenting stress is in line with previous findings that mothers' parenting stress declines with increasing psychological and physical support, which allows mothers to express and share their parenting difficulties [6].

Given the status of NKR mothers as refugees, establishing a channel that would offer direct support for parenting and adaptation from a wider variety of sources—in addition to South Korean friends and social groups—is anticipated to substantially reduce parenting stress in NKR mothers. To achieve this goal close acquaintances and family members, as well as society and institutions, should take a greater interest in NKR mothers, and research should continue to investigate parenting education programs to enhance hardiness.

These results collectively imply that for NKR mothers, psychological hardiness and the number of supporters one has (as part of a social network) are significant for parenting. NKR mothers' exposure to unstable parenting conditions and poverty has a direct and negative psychological and emotional impact, ultimately hindering the adequate growth of their children [2]. Thus, to ensure healthy growth and development of children, as well as a healthy home life, greater interest should be taken in developing programs to increase the level of hardiness in NKR women and to cultivate social networks to educate parents and reinforce social support systems. It would also be helpful to establish a steady social support system in the community to allow for the sharing of parenting tips to reduce the level of parenting stress. Moreover, our finding that mothers without a legal spouse

had greater children-related stress partially supports previous findings pertaining to the influence of spousal support [15]. Hence, providing social support systems for mothers without a spouse to allow them to share parenting-related information would help mitigate their parenting stress. Emotional support through measures such as self-help groups for female heads of household and periodic parental education is needed.

Regarding parenting stress, studies from South Korea have thus far actively investigated parenting efficacy, social support, and the parent-child relationship, but to our best knowledge, no studies have verified the effects of psychological hardiness and social support on parenting stress in NKR mothers. The significance of this study lies in having determined how parenting stress is influenced by psychological factors to minimize negative responses to stress, especially hardiness, and in being the first study to report the significant influence of the number of supporters in a social network. Nevertheless, one limitation of our study is that it is difficult to generalize the results to all NKR mothers, as we analyzed the minimum number of a certain group of NKR mothers for whom data collection was challenging. A follow-up study repeating this survey with an extended sample size should thus be conducted. Moreover, the scores for our major study parameters—namely, hardiness and parenting stress—were lower than those reported in a different study that used an instrument with the same reliability [3]. Therefore, subsequent replication studies on NKR mothers should examine the possibility of random errors caused by participants' trying to speed through the questionnaire due to fatigue, and improve reliability through measures such as questionnaire administration training for research assistants. These factors may even lead to contradictory results pertaining to the association between parent-child interaction and parenting stress reported in previous studies. Hence, replication studies are required, and the results must be interpreted with caution. We present the following recommendations for future studies: First, in the future, it may also be possible to perform a comparative analysis between fathers and mothers. Second, as this study's findings regarding the influence of the parent-child interactions did not coincide with those of previous research, subsequent studies should develop instruments that reflect the unique situations that NKR mothers face in order to shed light on the association or influence. In addition, it is necessary to evaluate the effect of parent-child interactions on parenting stress according to children's age. Third, as we did not examine the children's characteristics, future studies should address children's personality or behavioral and emotional characteristics when assessing parenting stress. Fourth, qualitative studies should be conducted to extract in-depth

and comprehensive results pertaining to NKR mothers' parenting experiences, and parenting stress relief programs for NKR mothers should be developed and evaluated accordingly. Finally, parental distress significantly differed according to education level in our study, implying that educational gaps should also be considered when devising nursing interventions, including the provision of information about a child's growth and development as well as parental education for NKR mothers.

CONCLUSION

For NKR mothers, hardiness and the number of supporters in a social network exhibited an explanatory power of approximately for parenting stress. Among the participants, 13% stated that they had no supporters at all. To help NKR mothers stably settle in their new society and to promote the healthy growth and development of their children, their level of parenting stress should be reduced by increasing their psychological hardiness and encouraging them to actively engage with neighbors to extend their sources of social support to accumulate and extend their sources of parenting. In addition, interventions to mitigate parenting stress in NKR mothers should be developed (e.g., counseling and stress management programs) that provide accurate data on parenting. Healthy parenting by NKR mothers will not only promote the positive growth and development of their children but also make it more likely that all family members lead healthy, high-quality lives in South Korean society. Our findings are expected to serve as basic data for parenting education to support not only NKR mothers but their entire families as well.

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Conflict of interest

No existing or potential conflict of interest relevant to this article was reported.

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Data availability

Please contact the corresponding author for data availability.

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