

Migration-Related Stressors and Suicidal Ideation in North Korean Refugee Women: The Moderating Effects of Network Composition

Mee Young Um,¹ Eric Rice,² Lawrence A. Palinkas,² and Hee Jin Kim³

¹School of Social Work Watts College of Public Service and Community Solutions, Arizona State University, Phoenix, Arizona, USA

²Suzanne Dworak-Peck School of Social Work, University of Southern California, Los Angeles, California, USA

³Bangmok College of General Education, Myongji University, Seoul, South Korea

Alarming high rates of suicidal ideation have been reported in North Korean (NK) refugee women living in South Korea. This population often endures traumatic experiences and violence in North Korea as well as human trafficking and sexual exploitation in intermediary countries. Following resettlement in South Korea, NK refugee women continue facing multiple hardships, such as discrimination, that can negatively affect their mental health and contribute to suicidality. Support from social networks can buffer the harmful impacts of pre- and postmigration stressors on mental health in NK refugee women. Using the stress-buffering hypothesis, the present study examined the moderating effects of network composition (i.e., network diversity and church-based ties) on the associations among premigration trauma, postmigration discrimination, and suicidal ideation in NK refugee women living in South Korea. Participants ($N = 273$) were NK refugee women living in South Korea who were 19 years of age or older; 34.4% of the participants reported past-year suicidal ideation. The study results indicated that network diversity significantly moderated the association between postmigration discrimination and suicidal ideation, $p = .031$, whereas networks with church-based ties significantly moderated the association between premigration trauma and suicidal ideation, $p = .026$. The present findings support the hypothesis that social ties can buffer the appraisal of migration-related stressors on suicidality. These findings have implications for practitioners serving vulnerable populations that experience multiple traumatic events.

Refugees often experience war, traumatic events, violence, and other life-threatening conditions before and during migration (Fenta, Hyman, & Noh, 2004; Hovey, 2000) and continue to experience stressful events during resettlement in a new host country (Jankovic et al., 2013; McMichael & Manderson, 2004; Um, Chi, Kim, Palinkas, & Kim, 2015); these experiences can jeopardize their mental health and contribute to suicidality (Jankovic et al., 2013). The literature on refugee mental health has criticized prior research for predominantly focusing on the effects of premigration stressors while excluding postmigration stressors shown to be strong predictors of poor mental health. This highlights the need to examine postmigration stressors concurrently, particularly as these stressors are potentially manageable through interventions (Beiser & Hou, 2016; Ellis, MacDonald, Lincoln, & Cabral, 2008; Li, Liddell, & Nickerson, 2016; Miller & Rasmussen, 2010; Porter & Haslam, 2005).

Premigration traumatic events can force refugees into exile and tend to be more life-threatening and distal in nature, such that their detrimental effects on mental health can decrease over time, compared to postmigration stressors, such as discrimination, which are generally non-life-threatening but highly stressful migration-related proximal events that continuously affect refugees' mental health at an increased rate over time (Miller & Rasmussen, 2010; Wolf et al., 2017). In particular, postmigration discrimination has consistently been found to be the most salient and important postmigration stressor among refugees, accounting for the variance that is equal to or greater than premigration trauma exposure in explaining mental health outcomes, such as posttraumatic stress disorder (PTSD) and depression (Beiser & Hou, 2016; Ellis et al., 2008; Li et al., 2016; Miller & Rasmussen, 2010). However, ways in which premigration trauma exposure and postmigration discrimination affect suicidality have been understudied among refugees despite prior research documenting that refugees exhibit higher rates of suicidal behavior than the general population (Jankovic et al., 2013).

In a similar vein, the prevalence of suicidal behavior among North Korean (NK) refugees who live in South Korea (SK) has been found to be much higher than what has been reported in their SK counterparts (Korea Hana Foundation, 2016; Um, Rice, Lee, Kim, & Palinkas, in press). In particular, NK refugee women in SK have been reported to have high rates (i.e.,

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Correspondence should be addressed to Dr. Hee Jin Kim at 116 Myongji-ro, Cheoin-gu, Yongin-si, Gyeonggi-do 449-728, South Korea. E-mail: kjoie@mju.ac.kr

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45.5%) of suicidal ideation (J. Y. Kim, Choi, Chae, & Hwang, 2013). Before migration, NK refugee women typically endure traumatic experiences in NK, such as chronic famine, political oppression, institutionalized violence, and witnessing death caused by starvation or public execution (Jeon et al., 2005; H. Lee & Gerber, 2009). In intermediary countries such as China, many of these women are easily manipulated into human trafficking and sexual exploitation because of their illegal status and the adverse consequences of repatriation (E. Kim, Yun, Park, & Williams, 2009), as leaving the country without government permission is a serious political crime in NK (H. Y. Lee & Gerber, 2009). Previous studies of other populations have demonstrated significant associations between the number of traumatic events an individual experiences and suicidal ideation (Jankovic et al., 2013; Krysinska & Lester, 2010; O'Neill et al., 2014) and indicated that trauma exposure has a stronger negative influence on suicidality than genetic markers, such as the serotonin transporter promoter polymorphism (Roy, Hu, Janal, & Goldman, 2007). Further, following resettlement in SK, NK refugee women continue facing multiple hardships, such as acculturative stress, discrimination by South Koreans, and social exclusion (J. U. Kim & Jang, 2007; Um et al., 2015). South Korea is an ethnically homogenous country that has historically valued monoculturalism; hence, although NK refugees share the same ethnicity as their SK counterparts, discrimination has been reported to be a pervasive and serious problem that hinders overall adaptation among NK refugees (J. U. Kim & Jang, 2007) and negatively affects mental health (Um et al., 2015). Perceived discrimination has been associated with an increased risk of suicidal ideation among ethnic minorities (Cheng et al., 2010; Gomez, Miranda, & Polanco, 2011). North Korean refugee women try to hide their identities from South Koreans to avoid discrimination, but they can be easily identified due to their NK dialect. The results of a national social survey indicated that 23.5% of NK refugee women experienced discrimination in SK in the previous year, with 28.8% identifying discrimination as one of the top factors that made their life difficult in SK (Korea Hana Foundation, 2016). However, to our knowledge, no study to date has examined the associations among premigration trauma, postmigration discrimination, and suicidal ideation among NK refugee women.

Social networks of migrants are significant sources of social capital that facilitate their adaptation to new host societies by providing information, support, companionship, and material aid (McMichael & Manderson, 2004; Miller & Rasmussen, 2010). As a result of forced migration, however, many refugees are separated from their families and other significant social networks, which might increase their vulnerability to suicidality (Fenta et al., 2004; Hovey, 2000). Establishing new social networks after resettlement can be challenging, but it is an important step in helping refugees gain access to various resources during times of need (McMichael & Manderson, 2004; Miller & Rasmussen, 2010).

Network composition has been shown to have direct effects on an individual's behavior and mental health outcomes (Perry,

Pescosolido, & Borgatti, 2018). Social capital theory suggests that individuals who have access to diverse sources of support gain more returns because diverse networks stimulate a wider range of interests, provide richer information, and enable individuals to develop a better sense of control of their lives (Lin & Erickson, 2008). Hence, previous studies have found that more network diversity, measured by the number of types of relationships in an individual's network, is associated with better mental health outcomes among individuals with a high risk of trauma exposure (Platt, Keyes, & Koenen, 2014; Sripada et al., 2015). In the case of NK refugee women, network diversity has been shown to exert a protective effect on suicidal ideation (Um et al., in press). In addition, the composition of specific relationship types, such as the number or proportion of friends and ties to religious or spiritual group members, have predicted decreased suicidality in other populations (Bearman & Moody, 2004; Tsai, Lucas, Sania, Kim, & Kawachi, 2014). In a sample of NK refugee women, having church-based ties was shown to be associated with decreased suicidality (Um et al., in press). Churches in SK play a pivotal role in providing instrumental assistance to NK refugees (Bell, 2013). South Korean Protestant missionaries provide shelter and material aid to NK refugees who hide in China (Han, 2016), and in SK, churches provide tailored services and stipends to NK refugees, motivating most NK refugees to become members of churches (Bell, 2013). North Korean refugee women have expressed that they go to church to seek emotional and material support (M. S. Lee, 2005) and that their church-based ties are significant sources of emotional support (Bell, 2013).

The stress-buffering hypothesis posits that social support buffers the potentially adverse impact of stress on mental health, primarily among individuals who are under stress (Cohen & Wills, 1985; Thoits, 2011). An individual may perceive a situation to be stressful when the ability to cope with the situation is not immediately available. Social support might attenuate the stress appraisal response to stress exposure by strengthening the ability to cope with stress and preventing the situation from being perceived as stressful (Cohen & Wills, 1985). Moreover, social support can most effectively protect an individual from the negative influence of stressful events when resources and support provided from social networks fit closely with the individual's specific needs (Cohen & Wills, 1985). In this sense, support from social networks can buffer the harmful impacts of pre- and postmigration stressors on refugees' mental health (Fenta et al., 2004; Miller & Rasmussen, 2010). The caring, understanding, and sympathetic presence of important social ties can reduce the impact of stress appraisal by providing aid related to the stressor, helping the refugee view an adverse situation differently, and sustaining the refugee's sense of self-worth (Cohen & Wills, 1985; Thoits, 2011). However, previous studies have generally focused on the functional element of social support by using aggregated measures of perceived social support (Smith & Christakis, 2008) rather than examining the structural element of social support (i.e., network composition) by identifying specific individuals in a network who

provide support and have stress-buffering effects (Platt et al., 2014; Sripada et al., 2015). The results of a national study in the United States demonstrated that a high level of network diversity—a structural element of social support—was protective against PTSD regardless of the level of perceived social support—a functional element—among individuals who had experienced at least one traumatic event (Platt et al., 2014). Thus, to better inform effective social network interventions for mental health outcomes, such as suicide, it is important to examine the people to whom an individual is connected. However, empirical evidence is lacking regarding the ways social network composition can moderate the association between migration-related stressors and suicidal ideation among refugees in general and NK refugee women in particular.

To fill these research gaps, we tested the moderating effects of network composition on the associations among premigration trauma, postmigration discrimination, and suicidal ideation in a sample of NK refugee women living in SK. Specifically, network composition in the present study was defined as network diversity and church-based ties. Although previous researchers have found direct effects of network diversity and church-based ties on lower suicidal ideation among NK refugee women (Um et al., in press), little is known about their moderating effects on suicidality. To our knowledge, this was the first study to examine the moderating effects of network composition on the associations between migration-related stressors and suicidality in NK refugee women.

The present study focused on NK refugee women for two reasons. First, similar to the findings of a meta-analysis that showed refugee women to have significantly poorer mental health than men (Porter & Haslam, 2005), a national social survey found that NK refugee women reported significantly elevated rates of suicidal ideation relative to men (Korea Hana Foundation, 2016). Second, the experience of NK refugees is viewed as a gendered one. The population of NK refugee women living in SK is 2.5 times larger than that of men, but, since 2015, four times more women than men have been consistently arriving in SK each year (Ministry of Unification, 2019). When the NK public distribution system began to fail in the 1990s, women became the household breadwinners by participating in underground markets (Park, 2016). Because NK men are monitored by the government much more strictly than women, NK women have more mobility to cross the border to China to seek food (Park, 2016). In China, NK women are in high demand and are often sold to Chinese men due to a shortage of Chinese women; this results in NK women living in China for significantly longer than NK men and exposes them to more premigration trauma due to their illegal status. A national social survey reported that more than half of NK refugee men did not live in intermediary countries at all, whereas almost half of women spent 5 years or more in intermediary countries, and, of these women, 18.3% spent 9 years or more in intermediary countries (Korea Hana Foundation, 2016). In SK, these women face discrimination by South Koreans based on a widespread stigma that they are victims of human trafficking and sexual

slavery in addition to discrimination based on their refugee status (Park, 2016). Thus, the intensity and nature of pre- and postmigration stressors and how these stressors affect suicidal ideation in NK refugee women are potentially different when compared with men.

In the current study, we tested two research questions: (a) How are premigration traumatic experiences and postmigration discrimination associated with suicidal ideation among NK refugee women who live in SK? and (b) Does network composition (i.e., network diversity and church-based ties) moderate the association between these migration-related stressors and suicidal ideation?

Method

Participants and Procedure

From April to May 2014, a sample of NK refugees living in SK who were 19 years of age or older was recruited by snowball sampling, whereby trained recruiters initially reached out to some participants (i.e., seeds) who, in turn, introduced other participants to the researchers. To reduce the initial seeds' potential influence on the final composition of the study sample (i.e., recruitment bias), the number of participants seeds could recruit was limited to four, resulting in long chains of recruitment. Participants recruited by this procedure were living in various districts across three metropolitan areas and provinces in SK (Seoul, Gyeonggi province, and Incheon), where more than half (64.8%) of all NK refugees reportedly reside (Ministry of Unification, 2019). Although snowball sampling may lead to potential recruitment bias, it is the most commonly used method when sampling NK refugees due to the lack of a sampling frame (Um et al., 2015). If an NK refugee's escape from NK is reported to the NK government, his or her family remaining in NK will face severe punishments (H. Y. Lee & Gerber, 2009). For this reason, the SK government keeps the list of NK refugees residing in SK strictly confidential; however, many NK refugees have reported being concerned that they might be monitored by the SK government as they were in NK (Um et al., 2015).

A trained researcher and interviewer visited each household. Surveys were self-administered after obtaining informed consent. Each participant received 20,000 Korean won (approximately \$20 [USD]) as compensation for their participation. The institutional review board at Korea University approved all survey items and procedures. Among 407 participants who were interviewed, two participants with incomplete data were removed, generating a sample of 405 participants. For the purpose of this study, we only used female participants for the analyses, resulting in a sample size of 273 NK refugee women.

Measures

Dependent Variable: Suicidal ideation

The dependent variable, suicidal ideation, was assessed by a five-item scale measuring suicidal ideation (Harlow,

Newcomb, & Bentler, 1986). Participants were asked how often during the previous year they had suicidal thoughts and attempted suicide, with response options given on a 5-point Likert scale ranging from 0 (*almost never*) to 4 (*almost always*). Items were “I have thought about suicide,” “I have recently wanted to die,” “I have told someone that I wanted to commit suicide,” “I have thought that my life will end by committing suicide,” and “I have attempted to commit suicide.” A total score was calculated by summing the five items. Because of high skewness and kurtosis as well as a large number of 0 ratings, this variable was dichotomized to indicate at least one experience of suicidal ideation during the previous year versus none; the suicide literature shows this to be a common method used to operationalize suicidal ideation (Johnson, Wood, Gooding, Taylor, & Tarrier, 2011). In the present sample, the Cronbach’s alpha value was .94.

Independent Variables: Premigration Trauma Exposure and Discrimination

Premigration traumatic experiences were assessed using a traumatic events checklist developed for NK refugees (Y. H. Kim, Jeon, & Cho, 2010). Traumatic events included life-threatening experiences due to starvation, severe illness, or cold weather; being shot or severely beaten; political punishment, such as imprisonment or torture; witnessing death by public execution or starvation; unwanted separation from family due to searching for food or other reasons; sexual violence; and natural disasters. Nineteen identical items related to traumatic events were asked regarding experiences in NK and China or other intermediary countries. One additional item, “Were you repatriated or almost repatriated to North Korea?”, was asked only regarding experiences in China or other intermediary countries. Response options for all 39 items were *yes* or *no*. These items were summed to create a total score, with higher scores indicating more experiences of premigration trauma. In the present sample, the Kuder–Richardson 20 coefficient was .84.

Postmigration discrimination was measured using the Everyday Discrimination Scale, which captures chronic, routine, and generally minor experiences of unfair treatment (Williams, Yu, Jackson, & Anderson, 1997). Measures of routine discrimination have been found to be more predictive of health outcomes than those that assess acute discrimination (Gee et al., 2006). The original scale consists of nine items, but 10 items were used to collect these data. One item (“You are treated with less respect than other people are”) that appeared to somewhat overlap with another item (“You are treated with less courtesy than other people are”) was excluded. Two items (i.e., “People exclude you from social activities at your school or workplace” and “People make fun of your accent/dialect”) were added to better reflect discriminatory experiences of NK refugees in SK. Participants were asked how often they had experienced these 10 items in their everyday lives in SK, using a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). A total score was calculated by summing the items, with higher

scores indicating more frequent experiences of perceived discrimination in SK. In the present sample, the Cronbach’s alpha value was .90.

Moderating Variable: Network Composition

Social networks were measured using each respondent’s egocentric (i.e., personal) network data, which were collected via a name generator, in which respondents identified “alters,” or network members, in their networks, and a name interpreter, in which respondents reported information on the characteristics of and their relationships with each alter (Burt, 1984; Perry et al., 2018; Rice, Kurzban, & Ray, 2012). The name generator asked, “We would like to understand your social relationships with the most important people to you. Please name 5 people with whom you have stayed in contact with and have significantly influenced you the most during the past 6 months. These people can include family, friends, coworkers, teachers, doctors, and so on.” The name interpreter then asked about the following information for each alter: type of relationship (spouse, parent, sibling, children, other family, coworker, friend, neighbor, church acquaintance, and other), gender, age, length of relationship (years), and nationality. We fixed the number of alters (i.e., network size) to five because prior research has stated that this can be useful for comparison and standardization in egocentric data while reducing respondent burden (Jariego, 2018) and that five alters are the most cost-effective to record sociometric choices when collecting such data (Merluzzi & Burt, 2013).

Network composition

Measures of network composition were network diversity and church-based ties. Network diversity was defined as the total number of different types of relationships. Because each respondent had a fixed network size of five, the possible range for the number of relationship types (i.e., network diversity) was between one and five types. For example, if a respondent reported that all five alters were kin ties, which indicates only one relationship type, network diversity would be one; likewise, if a respondent reported having one kin, one friend, one coworker, one neighbor, and one church-based tie, network diversity would be five. Church-based ties were defined as the total number of reported church-based social ties. The number of church-based ties ranged from zero to five because respondents could report no such ties or up to five in their networks.

Covariates

Sociodemographic Variables

The sociodemographic characteristics of age (years); marital status (1 = *married or cohabiting*, 0 = *separated or single*); years since leaving NK, which was created by summing the number of years spent in China and other intermediary countries and the number of years living in SK; religious affiliation (1 = *Christian*, 0 = *not Christian*; 84.6% of Christians in our study reported attending church at least 3 or 4 times a month); and perceived low

socioeconomic status in SK (1 = *low*, 0 = *low to middle*, *middle*, *middle to high*, or *high*) were included as covariates.

Self-Esteem

Previous researchers have demonstrated associations between self-esteem and suicidal ideation (Bearman & Moody, 2004; Johnson et al., 2011). The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure global self-esteem. Participants responded to 10 items, using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Negatively worded items were reverse-scored. A total score was calculated by summing the items, with higher scores indicating higher levels of self-esteem. In the present sample, the Cronbach's alpha value was .80.

General Health

Self-rated health is also known to be associated with suicidal ideation (Johnson et al., 2011). Participants were asked to self-rate their health status by responding to one item: "Compared to your past (e.g., in North Korea or during migration), how would you rate your health?" Responses were given using a 5-point scale ranging from 1 (*very poor*) to 5 (*very good*).

Length of Relationships

A social network covariate measuring the mean length of participants' relationships with alters was included, as this variable is an indicator of tie strength, which has been shown to be associated with mental health outcomes (Perry et al., 2018). This variable was measured using one item asked for all five alters: "How long have you known [alter]?" The average relationship length, in years, was then calculated.

Data Analysis

To compare descriptive statistics and social network variables by past-year suicidal ideation, chi-square tests and independent-group *t* tests were performed. Based on a similar methodology suggested by Hosmer, Lemeshow, and Sturdivant (2013), covariates associated with suicidal ideation at *p* values less than .05 were included in the subsequent multivariable models to avoid numerically unstable estimates and large standard errors. The only exception was applied to religious affiliation when the moderating variable included a church-based tie, as it was important to control for this variable.

Multivariable logistic regression analyses were divided into two parts: Analyses examining (a) the moderating effect of network diversity on suicidal ideation and (b) the moderating effect of church-based ties on suicidal ideation. All continuous variables were mean-centered. To test the moderating effect of network composition, each analysis started with the main-effects model before examining one interaction term of the network composition variable and one independent variable at a time. If both interaction terms were significant at *p* < .05, the subsequent model would include two interaction terms; however, this was not the case in our study. Likelihood ratio tests

were conducted to compare whether the fit of the model with an interaction term was significantly improved compared to the model without an interaction term. Post hoc power analyses indicated that our sample size of 273 afforded power of .80 to detect odds ratios (*ORs*) as small as 1.06 or, for negative associations, as large as 0.91 for main effects and odds ratios as small as 1.02 or, for negative associations, as large as 0.98 for interaction effects ($\alpha = .05$). No missing data were present. All analyses for this study were performed using Stata (Version 15.1).

Results

In the present sample, 34.4% of participants reported contemplating suicide during the previous year. Participants reported having experienced an average of 7.20 (*SD* = 5.10) types of premigration traumatic events. With a possible range of 10 to 50, the mean score for postmigration discrimination was 15.93 (*SD* = 6.02). Regarding network diversity, participants reported, on average, approximately two types of social ties in their networks (range: 1–4). The average number of church-based ties in participants' networks was 0.60 (*SD* = 1.20). The mean participant age was 41.38 years (*SD* = 12.71; range: 19–69), and the majority of individuals were married or cohabiting with a partner (69.2%) and identified as Christian (69.2%). The average time since leaving NK was 8.60 years (range: 0.75–24.33 years). Almost half (46.5%) of participants perceived themselves to have the lowest-level socioeconomic status in SK. Participants rated their current health to be between similar and worse (*M* = 2.85, *SD* = 1.12), on average, compared to when they lived in NK or were fleeing to other countries. The mean relationship length with participants' social ties was 7.57 years (*SD* = 6.94).

Descriptive statistics and other study variables were compared by suicidal ideation (see Table 1). Higher levels of premigration trauma, $t(271) = 5.64, p < .001$, and postmigration discrimination, $t(271) = 6.29, p < .001$, were positively associated with suicidal ideation. Higher levels of network diversity, $t(271) = -2.90, p = .004$, were negatively associated with suicidal ideation. Higher levels of self-esteem, $t(271) = -6.14, p < .001$, and self-rated health, $t(271) = -4.73, p < .001$, were negatively associated with suicidal ideation. A longer mean relationship length with alters, $t(271) = -2.34, p = .020$, was negatively associated with suicidal ideation.

Table 2 presents the results of multivariable logistic regression models that tested the moderating effects of network composition (i.e., network diversity and church-based ties) on the associations between premigration trauma and postmigration discrimination and suicidal ideation. Model 1 shows the main-effects model of all study variables on past-year suicidal ideation. Model 2 includes the interaction term of the network composition variable and premigration trauma, whereas Model 3 includes the interaction term of the network composition variable and postmigration discrimination.

Table 1
Univariable Comparison of Descriptive Statistics and Study Variables, by Past-Year Suicidal Ideation

Variable	Suicidal ideation (n = 94)			No suicidal ideation (n = 179)			Statistical test ^a	p
	M	SD	%	M	SD	%		
Migration-related stressors								
Premigration trauma	9.48	6.00		6.01	4.09		t(271) = 5.64	< .001
Postmigration discrimination	18.88	7.02		14.37	4.75		t(271) = 6.29	< .001
Social network variables								
Network diversity	1.91	0.91		2.23	0.84		t(271) = -2.90	.004
Church-based ties	0.64	1.37		0.58	1.11		t(271) = -0.71	.709
Covariates								
Age (years)	40.03	12.07		42.08	13.01		t(271) = -1.27	.206
Married			66.0			71.0	$\chi^2(1, N = 273) = 0.72$.396
Christian			66.0			71.0	$\chi^2(1, N = 273) = 0.72$.396
Years since leaving NK	9.40	4.97		8.19	4.88		t(271) = 1.93	.054
Low socioeconomic status in SK			48.9			45.3	$\chi^2(1, N = 273) = 0.34$.562
Self-esteem	27.13	4.03		30.15	3.77		t(271) = -6.14	< .001
Self-rated health	2.43	0.99		3.08	1.13		t(271) = -4.73	< .001
Length of relationship (years)	6.22	6.04		8.28	7.29		t(271) = -2.34	.020

Note. N = 273. NK = North Korea; SK = South Korea.

^aChi-square tests for percentage difference. t-tests for mean differences.

Table 2

Multivariable Logistic Regression of Moderating Effects of Social Networks on Migration-Related Stressors and Past-Year Suicidal Ideation

Variable	Model 1		Model 2		Model 3	
	Network diversity					
	<i>OR</i>	95% CI	<i>OR</i>	95% CI	<i>OR</i>	95% CI
Premigration trauma	1.10**	[1.03, 1.17]	1.10**	[1.03, 1.17]	1.10**	[1.04, 1.17]
Postmigration discrimination	1.09**	[1.03, 1.15]	1.09**	[1.03, 1.15]	1.08**	[1.02, 1.14]
Social network ^a	0.69*	[0.48, 0.98]	0.69*	[0.49, 0.99]	0.71	[0.50, 1.01]
Self-esteem	0.88**	[0.81, 0.96]	0.88**	[0.81, 0.96]	0.87**	[0.80, 0.95]
Self-rated health	0.64**	[0.48, 0.84]	0.64**	[0.48, 0.84]	0.63**	[0.48, 0.83]
Mean length of relationship	0.96*	[0.91, 0.99]	0.96*	[0.91, 0.99]	0.95*	[0.91, 0.99]
Trauma × Social Network ^a			0.98	[0.91, 1.06]		
Discrimination × Social Network ^a					0.93*	[0.87, 0.98]
Likelihood ratio test ^b			0.23		4.92*	
	Church-based ties					
Premigration trauma	1.10**	[1.04, 1.17]	1.14***	[1.06, 1.23]	1.10**	[1.04, 1.17]
Postmigration discrimination	1.09**	[1.03, 1.15]	1.09**	[1.03, 1.15]	1.09**	[1.03, 1.16]
Social network ^a	1.03	[0.80, 1.33]	1.06	[0.82, 1.37]	1.03	[0.80, 1.33]
Christian	0.74	[0.38, 1.47]	0.70	[0.35, 1.40]	0.74	[0.38, 1.47]
Self-esteem	0.89**	[0.82, 0.97]	0.88**	[0.81, 0.96]	0.89**	[0.82, 0.97]
Self-rated health	0.65**	[0.50, 0.86]	0.66**	[0.50, 0.88]	0.65**	[0.50, 0.86]
Mean length of relationship	0.95*	[0.90, 0.99]	0.95*	[0.91, 0.99]	0.95*	[0.91, 0.99]
Trauma × Social Network ^a			0.94*	[0.89, 0.98]		
Discrimination × Social Network ^a					1.00	[0.97, 1.03]
Likelihood ratio test ^b			5.33*		0.00	

Note. *N* = 273. Suicidal ideation is the dependent variable for all models. Model 1 is the main-effects model. Models 2 and 3 include interaction terms.

^aCorresponding social network variables appear in columns. ^bModel 1 is the reference model; chi-square test (df = 1).

* *p* < .05. ** *p* < .01. *** *p* < .001.

In the models that included network diversity as the network composition variable, experiences of premigration trauma, *OR* = 1.10, 95% CI [1.03, 1.17], and postmigration discrimination, *OR* = 1.09, 95% CI [1.03, 1.15], were significantly associated with increased odds of past-year suicidal ideation. Network diversity significantly moderated the association between discrimination and suicidal ideation, *OR* = 0.93, 95% CI [0.87, 0.98]. This association is graphically depicted in Figure 1, which shows that the association between postmigration discrimination and suicidal ideation decreased as network diversity increased.

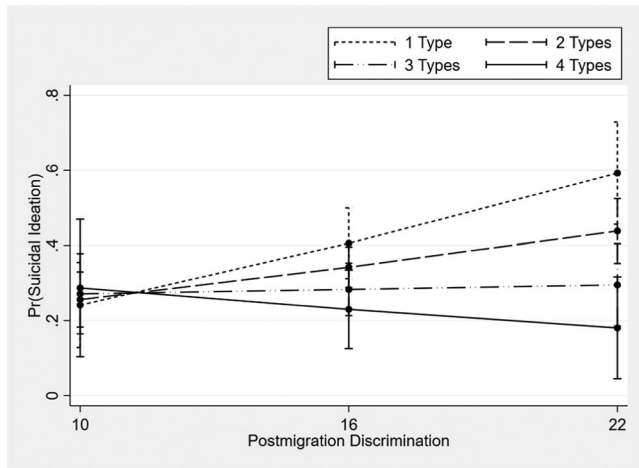
In the models that included church-based ties, having experienced premigration trauma, *OR* = 1.10, 95% CI [1.04, 1.17], and postmigration discrimination, *OR* = 1.09, 95% CI [1.03, 1.15], were significantly associated with increased odds of suicidal ideation. Church-based ties significantly moderated the association between trauma and suicidal ideation, *OR* = 0.94, 95% CI [0.89, 0.98]. Figure 2 portrays this association, which indicates that the relation between premigration trauma and suicidal ideation decreased as the number of church-based ties increased.

Discussion

The current study tested the moderating effects of network composition on the associations between migration-related stressors and suicidality in NK refugee women living in SK. We found that both premigration trauma exposure and postmigration discrimination were risk factors for suicidal ideation. In addition, the results suggest that network diversity moderates the association between postmigration discrimination and suicidal ideation and that church-based ties moderate the association between premigration trauma exposure and suicidal ideation. The present findings provide empirical evidence that partially supports the stress-buffering hypothesis. This study extended previous literature by using social network composition rather than a global scale of social support.

Consistent with previous studies (Jankovic et al., 2013; Krysinska & Lester, 2010; O’Neill et al., 2014), we found that a higher level of premigration trauma exposure was associated with increased risk of suicidal thoughts. The traumatic events that the NK refugee women in our sample experienced might have made the deleterious consequences of trauma exposure persist for a prolonged period and could have affected their

Figure 1
Moderating Effect of Network Diversity on the Association Between Postmigration Discrimination and Past-Year Suicidal Ideation, After Controlling for Covariates

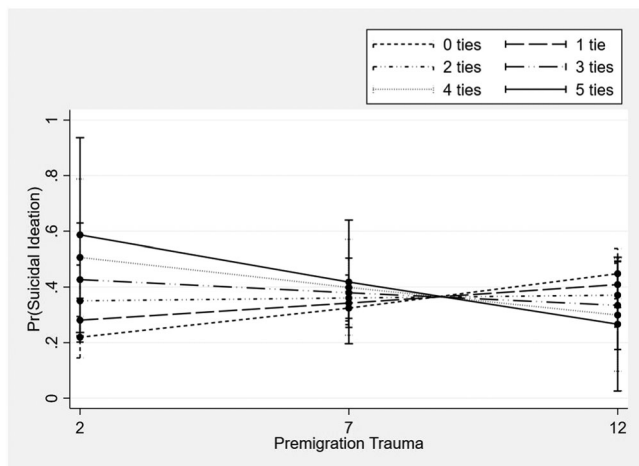


Note. $N = 273$. Covariates include self-esteem, self-rated health, mean relationship length, and premigration trauma. The range of postmigration discrimination is plus or minus 1 standard deviation from the mean.

suicidal thoughts after resettlement. This finding highlights the need for early identification of trauma exposure that occurred before arrival in SK. It is necessary for practitioners working with NK refugee women to screen for premigration traumatic experiences and help high-risk women receive appropriate treatment and resources at an early stage of their resettlement.

The present findings suggest that perceived discrimination after resettlement in SK harmfully affected suicidal ideation among our study participants. This is consistent with previous

Figure 2
Moderating Effect of Church-Based Ties on the Association Between Premigration Trauma and Past-Year Suicidal Ideation, After Controlling for Covariates



Note. $N = 273$. Covariates include Christian religion, self-esteem, self-rated health, mean length of relationship, and postmigration discrimination. The range of premigration trauma exposure is plus or minus 1 standard deviation from the mean.

studies in samples of other ethnic minorities (Cheng et al., 2010; Gomez et al., 2011). Because previous studies have indicated that discriminatory and prejudicial attitudes toward NK refugees are widespread in SK (J. U. Kim & Jang, 2007; Um et al., 2015), the present findings indicate the need to create multicultural educational programs and campaigns in schools, workplaces, and the broader SK society to ensure diversity and cultural differences are respected. Moreover, health care and mental health practitioners who work with NK refugee women should strive to identify perceptions of unfair treatment and help them cope with such issues.

We found that network diversity moderated the effect of postmigration discrimination on suicidal ideation but not the effect of premigration trauma exposure on suicidal ideation. North Korean refugee women with more diverse networks were less likely to be negatively affected by the detrimental consequences of discrimination with regard to suicidality compared to women whose networks were less diverse. It is possible that by being connected to people across diverse domains, these women had more access to various solutions and necessary resources to cope with discrimination, an ongoing stressor, which might have had less of an impact on the stress appraisal response from premigration trauma exposure, a more distal stressor. Suicide prevention and intervention programs for NK refugee women can emphasize the importance of participating in diverse types of social settings and building relationships with diverse groups of people, which could, in turn, mitigate the stress appraisal response of discriminatory treatment. In addition, it may be beneficial for governmental and nongovernmental officials and volunteers who interact with NK refugee women to try to maintain relationships and keep in contact with these refugees.

We also found that church-based ties moderated the effect of premigration trauma exposure on suicidal ideation but not the effect of postmigration discrimination on suicidal ideation. Specifically, reporting more church-based ties attenuated the association between increased premigration trauma exposure and increased risk of suicidal ideation. Along with the caring and empathetic nature of Christian fellowship, it is possible that church-based ties provided emotional support that alleviated the stress appraisal response from premigration trauma exposure by helping NK refugee women view their distal traumatic experiences differently and improve their self-worth, which might not have been enough to cope with ongoing unfair treatment. To reduce the negative impact of premigration trauma exposure on suicidality, suicide intervention programs that use NK refugee women's social networks with church-based ties could be designed. Moreover, community organizations that serve refugee women could collaborate with churches that many NK refugees attend and involve church members in providing services to these refugee women to help them better cope with their posttraumatic stress.

Our findings should be interpreted in the context of their limitations. First, our cross-sectional data did not allow inferences regarding causality between migration-related stressors

and suicidal ideation. For instance, NK refugee women who are at a higher risk of suicidality might have perceived more unfair treatment daily. Future research should seek to identify the causal association between these stressors and suicidal ideation, using longitudinal data. In addition, our data could not account for respondents who had suicidal ideation prior to migration. Collecting such data longitudinally before and after NK refugee women migrate to SK can improve our understanding of the effects of migration-related stressors on suicidal ideation. However, the challenging nature of data collection from this population before migration should be noted. Data collection in NK is impossible, and in intermediary countries, such as China, these women are often reluctant to participate in studies due to security issues related to their illegal status. Second, the use of snowball sampling prevents generalization of study findings to all NK refugee women who live in SK. We encourage future researchers to use a more systematic sampling method, such as respondent-driven sampling (Heckathorn, 1997) to minimize recruitment bias. Third, our network data were limited such that fixing the network size to five may have not captured respondents who had many more ties or those who were socially isolated. However, the network size (i.e., five alters) in our study sample is fairly comparable to the average network size (i.e., four alters) reported in a nationally representative sample of NK refugee women (Korea Hana Foundation, 2016). Additionally, our data did not include valid information on the nationalities of alters; this information could have increased our understanding of whether SK or NK social ties moderated the association between migration-related stressors and suicidal ideation. The nationality of each alter was sought in the social network survey; however, respondents wrote “North Korean,” “South Korean,” or “Korean.” Thus, responses were considered invalid because a Korean alter could be originally from NK or SK. We recommend that future researchers ask this question using multiple choices rather than an open-ended format. Fourth, our measure of premigration trauma exposure did not account for the frequency or intensity of each traumatic event. Some studies have noted that the effects of traumatic experiences on suicidal behavior might vary depending on whether the trauma exposure was a time-limited, solitary event or a chronic or repeated experience as well as whether it was an individually focused trauma or collective trauma (Krysinska & Lester, 2010; Stein et al., 2010). In addition, because prior research has stressed that the additional subjective response (i.e., perceived stress) to traumatic events is more predictive of mental health than the events themselves (Boals & Schuettler, 2009), our measure of traumatic experiences may not be the best indicator of trauma exposure. Future studies should seek to additionally control for perceived stress or examine whether perceived stress mediates or moderates the effects of premigration trauma exposure on suicidal ideation. Finally, this study may have lacked the power to detect subtle main and interaction effects, which could explain why we could not find significant moderation effects among all social network variables. Future research should

be conducted with larger samples of NK refugee women to determine the associations examined in this study.

Despite these limitations, our findings represent an important contribution to the literature. First, our research underscores the importance of examining stressful events experienced by refugees before and after migration. The results of the current study suggest that the detrimental consequences of pre-migration trauma exposure can persist after several years of resettlement and lead to suicidal behavior, and indicate that postmigration discrimination exerted an independent effect on suicidality beyond premigration trauma exposure. Second, the present findings bolster the hypothesis that social ties can buffer the appraisals of migration-related stressors on suicidality. More importantly, we generated findings not apparent at the aggregate level by using network composition rather than an overall scale of perceived social support. Furthermore, our research suggests that intervention and prevention efforts involving social networks designed to reduce suicidal behavior among NK refugee women are urgently needed.

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