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ORIGINAL ARTICLE

Prevalence of Posttraumatic Stress Disorder Among North Korean Defectors During Preparation for Early Settlement

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ABSTRACT

Objective : This study examined the prevalence of posttraumatic stress disorder (PTSD) among North Korean defectors during preparation for early settlement. In addition, the correlation between PTSD and other mental disorders with suicidal ideation was assessed.

Methods : A total of 639 North Korean defectors aged 19–65 years were included from resettlement and training centers. PTSD was assessed using the PTSD Diagnostic Scale (PDS). The prevalence of other mental disorders and suicidal ideation were assessed using the Korean version of the Psychiatric Diagnostic Screening Questionnaire (K-PDSQ).

Results : A total of 6.8% of North Korean defectors had a PDS score >23, which was suggestive of a diagnosis of PTSD. Prior repatriation to North Korea was significantly associated with PTSD. The defectors with PTSD had a higher prevalence of other mental disorders (major depressive disorder prevalence: adjusted odds ratio [AOR], 14.5; 95% confidence interval [CI], 6.7–31.2, panic disorder prevalence: AOR, 9.5; 95% CI, 4.6–20.0, generalized anxiety disorder prevalence: AOR, 5.6; 95% CI, 2.4–13.2). No significant association was found between suicidal ideation and PTSD.

Conclusion : North Korean defectors had a relatively high prevalence of PTSD and suicidal ideation during preparation for early settlement. Cohort studies are needed to assess the lasting effects of PTSD on North Korean defectors' settlement in Korea for a longer period. (Anxiety and Mood 2021;17(2):67-72)

KEYWORDS : PTSD; Mental health; Repatriation; Comorbidity; Early settlement.

Introduction

Since 1994, the number of North Korean defectors has increased significantly due to political, economic, and social difficulties. According to previous research, most North Korean defectors had experienced at least one traumatic event before escaping, or during escape from North Korea and China.[1] North Korean defectors are known to experience physical, political, ideological, and family-related trauma while living in North Korea. In addition, it is known that various North Korean defectors experience a variety of trauma when living in North Korea, including physical trauma, trauma related to detection and arrest, and trauma related to separation from their families until they safely enter South Korea after defection.[2]

Mental health is one of the most significant factors for refugees to adapt to new environments.[3,4] Posttraumatic stress disorder (PTSD) is an important mental health problem in North Korean defectors. A systematic review showed that individuals with PTSD were more likely to have comorbid mental disorders than those without PTSD. The most common comorbid mental disorders with PTSD are affective, anxiety, and substance use disorders.[5] Several studies found that the prevalence of PTSD in refugees was much higher than in general populations.[6,7] Suicidal ideation among individuals with PTSD is one of the most important factors to be considered for successful adaptation. Several studies have shown that suicide rates among refugees in new countries was higher than general suicide rates among individuals in settled countries.[8-10]

Despite accumulating studies regarding the mental health of North Korean defectors, few studies have shown the relationship between PTSD and comorbid mental disorders and

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suicidal ideation in North Korean defectors who escaped less than 3 months prior. Several studies have shown that the initial evaluation of mental health is important to predict the later mental health of refugees.[11,12] This study addresses the prevalence of and associations between PTSD and other mental disorders, and identifies demographic factors associated with PTSD in North Korean defectors. In addition, the associations between PTSD and suicidal ideation in North Korean defectors were investigated.

Subjects and Methods

The prevalence of PTSD were examined in 639 North Korean defectors aged between 19 to 65 residing in a Settlement Support Center for North Korean Refugees from June 2012 to February 2013.The original objective of this study was to assess the stigma of North Korean refugees in South Korea. All 639 participants had been in South Korea for less than 3 months. We excluded illiterate individuals as well as self-surrendered individuals who had lived in South Korea for more than 1 year. Of these 639 participants, 545 completed the PTSD Diagnostic Scale (PDS), the Korean version of the Psychiatric Diagnostic Screening Questionnaire (K-PDSQ), and sociodemographic questionnaires with an overall response rate of 85.3%. Two primary physicians with more than 6 months of experience in treating North Korean defectors conducted the interviews. Before the interviews, physicians explained the symptoms of depression to the participants because the participants were unfamiliar with the term. The study was approved by the Institutional Review Board of Inha University College of Medicine and by the Settlement Support Center for North Korean Refugees. All participants were informed of the purpose and methods of the study and provided written informed consent.

Posttraumatic Stress Diagnostic Scale (PDS)

The PDS consists of 49 items and has 4 different parts. The first 2 parts of the instrument address the criterion A of PTSD using a checklist of 12 potentially traumatic events. The third part consists of 17 items assessing criteria B to D on the subscales re-experiencing, avoidance, and arousal. On a 4-point Likert-scale (0="*not at all or only one time*" to 3="*five or more times a week/almost always*"), the frequency of symptoms related to the index trauma is rated for the last month. Finally, respondents rated the level of impairment caused by their symptoms across nine areas of life function, such as occupation, interpersonal relationships, housework, studies, and sex life. The total score (ranging from 0 to 51) reflects the severity of PTSD symptoms. The cut offs for symptom severity rating are 1–10 mild, 11–20 moderate, 21–35 moderate to severe and >36 severe.[13] In the current study, a score of 24 was used to be indicative of PTSD.[14] The PDS used was translated and validated by Nam.[15]

Cronbach's alpha coefficient was 0.92. Test-retest reliability was also highly satisfactory for the diagnosis of PTSD over a 2- to 3-week period (kappa=0.74). The scale was validated on samples aged between 18 to 65years.[16]

The Korean Version of Psychiatric Diagnostic Screening Questionnaire (K-PDSQ)

The Psychiatric Diagnostic Screening Questionnaire (PDSQ) is a useful self-reporting test with 125 questions. Kwak et al. reported PDSQ optimal cutoff scores for 10 types of psychiatric status: major depressive disorder(MDD), PTSD, obsessive-compulsive disorder(OCD), panic disorder, psychosis, agoraphobia, alcohol-related problems, generalized anxiety disorder(GAD), hypochondriasis, and social phobia among the general population of South Korea.[17] The cutoff scores suggested for MDD, PTSD, OCD, panic disorder, psychosis, agoraphobia, alcohol-related problems, GAD, hypochondriasis, and social phobia are 9 points out of 21, 5 out of 15, 2 out of 7, 4 out of 8, 2 out of 11, 1 out of 6, 2 out of 6, 5 out of 10, 4 out of 6, and 5 out of 15 respectively. We defined mental illness based on the presence of one of these ten types.

The six "yes-no" questions regarding suicidal ideation in the PDSQ depression subscale were included to assess such ideation in the past 2 weeks. The total possible scores ranged from 0 to 6. The items assessed both passive and active ideation and are representative of the current definitions of suicidal ideation.[18,19]

Sociodemographic and clinical variables

We assessed sociodemographic variables, including age, sex, level of education (years), and marital status (married/previously married or never married). The date of escape from North Korea, number of days spent in transit countries, experience of compulsory repatriation to North Korea, and number of family members in South Korea were also documented.

Statistical analysis

We calculated the prevalence of PTSD by using PDS cut-off score and other mental disorders using the K-PDSQ cut-off

score. 151 defectors didn't appropriately respond to PDS items, we didn't include missing values in our analyses. We estimated associations between demographic characteristics and PTSD prevalence using univariable logistic regression analysis, with demographic characteristics as independent variables.

Similarly, logistic regression analysis was conducted to analyze the comorbidity of PTSD and other mental disorders. Where associations were observed, we performed multivariable logistic regression analyses to minimize confounding. Finally, we estimated the relationship between suicidal ideation and PTSD using logistic regression analysis. Statistical analyses were conducted using SPSS version 21 (IBM Corp., Armonk, NY, USA), and statistical significance was set at $p<0.05$.

Results

Participants' demographic characteristics

The mean overall age of the 545 defectors was 35.5 years (standard deviation, 10.6). Female defectors accounted for 78.0% of the defectors, and 52.1% of all defectors were aged <35 years. A total of 79.4% had attended elementary school. Of the defectors, 23.3% had previously been repatriated to North Korea, and 32.5% of all defectors had stayed in a transit country for more than 3 months (Table 1).

Table 1. Sociodemographic characteristics of North Korean defectors

	n (%)
Total number	545
Sex (female)	425 (78.0)
Age (years)	
<35	284 (52.1)
35–49	214 (39.3)
>50	46 (7.6)
Invalid	1 (0.0)
Number of family members	
0	356 (65.3)
1	88 (16.1)
2	41 (7.5)
>3	60 (11.1)
Education (years)	
0–6	57 (10.5)
7–12	433 (79.4)
>12	55 (10.1)
Number of Repatriation	
0	417 (76.5)
1	96 (17.6)
2	19 (3.5)
>2	13 (2.4)
Duration of stay in transit countries	
<1 month	238 (43.4)
1–3 months	130 (23.9)
>3 months	177 (32.5)
Marital status	
Married/previously married	397 (73.0)
Never married	148 (27.0)

Prevalence and comorbidity of PTSD

PTSD prevalence was 6.8% according to the PDS, and 31.8% according to the K-PDSQ. The K-PDSQ also indicated the prevalence of MDD, psychosis, panic disorder, and GAD to be 16.1%, 14.7%, 8.1%, and 39.6%, respectively (Table 2).

Table 2 also shows the comorbidity of PTSD with other psychiatric disorders. Compared to defectors without PTSD, those with PTSD were 14.5 times more likely to have MDD, 9.5 times more likely to have panic disorder and, and 5.6 times more likely to have GAD.

Association between demographic characteristics and PTSD prevalence

Table 3 presents the associations between PTSD prevalence and demographic characteristics of defectors. Prior repatriation to North Korea was found to be associated with PTSD. However, age, sex, and duration of stay in a transit country were not associated with PTSD. A high number of repatriations were associated with PTSD when other significant variables were controlled.

Relationships between PTSD and suicidal ideation

Table 4 shows the association between PTSD and suicidal ideation. The percentage of participants with suicidal ideation was 0.26% (145/545). The presence and severity of PTSD were not significantly associated.

Discussion

This study shows that North Korean defectors were more likely to have PTSD because many of them had experienced at least one traumatic event before or during escape from North Korea. In addition, these defectors were more susceptible to other comorbid mental disorders.

Several studies have shown that early intervention is crucial to the recovery of trauma victims after a traumatic event.[20-22] The North Korean defectors' PTSD prevalence over time needs to be understood to apply early intervention to individuals.[23]

Table 2. Prevalence and comorbidity of posttraumatic stress disorder and other mental disorders among North Korean defectors

	North Korean defectors, n (%)	Unadjusted OR	Adjusted OR†
PTSD by PDS		-	-
Yes	37 (6.8)	-	-
No	357 (65.5)	-	-
Invalid	151 (27.7)		
PTSD by PDSQ		-	-
Yes	172 (31.8)	-	-
No	372 (68.2)	-	-
Invalid	1 (<0.1)		
MDD comorbidity	88 (16.1)	14.5 (6.7–31.2)**	14.5 (6.7–31.2)**
OCD comorbidity	67 (12.3)	4.1 (2.0–8.4)**	4.1 (2.0–8.4)**
Panic disorder comorbidity	44 (8.1)	9.2 (4.4–19.5)**	9.5 (4.6–20.0)**
Psychosis comorbidity	80 (14.7)	2.6 (1.3–5.2)*	2.4 (1.3–5.2)**
Agoraphobia comorbidity	300 (55.0)	3.7 (1.5–9.2)**	3.6 (1.5–9.0)**
Social phobia comorbidity	210 (38.5)	5.6 (2.3–13.2)**	5.5 (2.4–13.0)**
GAD comorbidity	216 (39.6)	5.7 (2.4–13.2)**	5.6 (2.4–13.2)**
Alcohol-related problem comorbidity	89 (16.3)	1.7 (0.9–3.3)	1.7 (0.9–3.2)
Hypochondriasis comorbidity	184 (33.8)	4.4 (2.4–8.1)**	4.4 (2.4–8.1)**

*p<0.05; **p<0.01; †Adjusted models include sex, age, education, number of family members, number of repatriation, duration of stay in transit countries and marital status

Table 3. Sociodemographic factors associated with posttraumatic stress disorder

	Unadjusted OR	p value	Adjusted OR	p value
Sex (female)	1.1 (0.5–2.5)	0.812	1.2 (0.5–3.0)	0.646
Age				
<35	1 (reference)		1 (reference)	
35–49	1.0 (0.6–1.8)	0.987	0.9 (0.5–1.7)	0.812
>50	1.0 (0.4–2.9)	0.915	1.0 (0.3–2.8)	0.923
Education				
<6 years	1 (reference)		1 (reference)	
6–12 years	2.1 (0.6–7.0)	0.270	3.2 (0.8–12.0)	0.124
>12 years	2.3 (0.6–9.8)	0.254	3.5 (0.7–16.5)	0.195
Number of repatriations				
0	1 (reference)		1 (reference)	
1	1.6 (0.7–3.7)	0.306	1.6 (0.7–3.7)	0.362
2	3.4 (1.0–11.1)	<0.05*	3.4 (1.0–11.1)	<0.05*
>2	3.6 (0.7–18.5)	0.116	5.4 (1.3–22.5)	<0.05*
Duration of stay in transit country				
<1 month	1 (reference)		1 (reference)	
1–3 months	1.2 (0.5–2.7)	0.789	1.1 (0.4–2.6)	0.936
>3 months	1.1 (0.5–2.3)	0.961	0.8 (0.3–2.0)	0.638

*p<0.05; **p<0.01

Several studies have shown that North Korean defectors living in South Korea were more likely to have PTSD symptoms. The present study targeted the North Korean defectors residing in a Settlement Support Center for North Korean Refugees, which is a support center for those who have arrived within the last 3 months. From a perspective that early intervention is important for the recovery, applying early intervention and refugee screening programs might be helpful for defectors to adopt in life in South Korea.

The prevalence of PTSD among North Korean defectors was higher than that among the general South Korean population (1.6%).[24] However, this differed between PDS and K-PD-

Table 4. Association between posttraumatic stress disorder severity and suicidal ideation

	Unadjusted OR	p value	Adjusted OR	p value
PTSD severity				
Mild	1 (Reference)		1 (Reference)	
Moderate	1.1 (0.7–1.8)	0.685	1.1 (0.7–1.7)	0.789
Moderate to severe	1.2 (0.6–2.4)	0.554	1.2 (0.6–2.4)	0.614
Severe	0.7 (0.2–3.6)	0.712	0.6 (0.1–3.3)	0.582

*p < 0.05; **p < 0.01

SQ. The prevalence assessed by PDS was 6.8%, while PDSQ reported 31.8% prevalence. This difference occurred because PDS is a more appropriate diagnostic tool for PTSD compared to K-PDSQ, which is a screening tool for several mental disorders and is not a diagnostic tool. In addition, PDS items are more similar to diagnostic and statistical manual of mental disorders(DSM-IV)'s PTSD criteria than PDSQ items.

We found demographic factors associated with PTSD in defectors, and this included the occurrence of compulsory repatriation to North Korea. Compulsory repatriation is an undoubtedly excessive stress for any defector in the world, and can induce mental health problems.[25,26] However, factors such as the number of repatriations to North Korea, age, and sex were not significantly associated with PTSD. Although many defectors had stayed in China or other Asian countries until they arrived in South Korea, the duration of stay was also not associated with PTSD.

With respect to comorbid mental disorders, we found a much higher prevalence of comorbidities in our study than in other PTSD similar studies. One study regarding PTSD comorbidity in Bosnian refugees shows that refugees with PTSD were about 5 times more likely to have depression, while we found that North Korean defectors with PTSD were 11.4 times more likely to have a depression.[27] In addition, the prevalence of comorbid mental disorders was much higher in our study than in other studies. These results could be explained by the different diagnostic tool used in studies. In addition, considering the fact that defectors had arrived in South Korea within the previous3 months, they could have suffered multiple stressful events, such as worries concerning family left in North Korea, sexual assault/harassment, fear of being caught, physical assault, and even death by both Chinese and North Korean national guards during their escape; therefore, these results are reasonable.[1]

Some studies have found that PTSD is associated with suicidal ideation; however, there is no consensus on the association between PTSD and suicidal ideation in refugees or military populations who might have experienced past traumatic stress.[28-30] One meta-analysis showed no evidence of an association between PTSD and subsequent suicide. It showed that PTSD was moderately associated with suicidal ideation, but this association weakened after controlling comorbid mental disorders.[32] We also did not find any associations between suicidal ideation and PTSD severity. This result can be interpreted in the context of defectors' situations because they had just arrived in South Korea and felt relief due to the expectation of a safe place without worries being caught, and bright, upcoming future in South Korea. Despite the strong association between PTSD and depression, there was no relationship between PTSD and suicidal idea. This result may be due to the expectation of a safe place without worries being caught, and bright future at the early stages of settlement. Further research is needed on the effect of the hopes of refugees in the early stages of settlement on PTSD.

This study had several limitations. First, the original objective of this study was to assess the stigma of North Korean refugees in South Korea. Thus, it was not possible to add more questions regarding other psychological symptoms. Second, the only measurement to assess suicidal ideation was six questions included in the K-PDSQ. There was no consensus cut-off score for suicidal ideation when using the PDSQ. Therefore, the results were difficult to apply to other defectors' association between PTSD and suicidal ideation. Third, due to self-reported psychopathology, the prevalence of psychosis, GAD, agoraphobia, social phobia, and hypochondriasis could have been high, possibly leading to misdiagnoses. The PDSQ scales used to assess comorbid mental disorders should be accompanied by psychiatrist's interview and discussed. The question of the validity of self-reporting for mental disorders remains significant in assessing the mental health of refugees or defectors.

Conclusion

We found that North Koreans in the early stage of defections showed a high prevalence of PTSD and other comorbid

mental disorders. We also found that prior repatriation was associated with a higher prevalence of PTSD in defectors. Those with PTSD were more likely to have other comorbid mental disorders, especially MDD. We attempted to determine the association between PTSD and suicidal ideation in North Korean defectors and found no significant associations between PTSD/PTSD severity and suicidal ideation. Further research is necessary to ascertain that those with PTSD still have PTSD symptoms and suicidal ideation during adjustment to South Korean life.

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