



# A Study of Mental Health Literacy Among North Korean Refugees in South Korea

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**Objectives:** This study aimed to investigate North Korean refugees' knowledge of mental illnesses and treatments and analyze the factors affecting this knowledge.

**Methods:** Subjects were selected via a snowball sampling method, and the survey outcomes of 152 North Korean refugee participants were analyzed. The factors affecting knowledge of mental illnesses were analyzed via a regression analysis by constructing a multivariate model with mental illness knowledge score as the dependent variable.

**Results:** The North Korean refugees' mental illness scores ranged from 3 to 24 points, with an average score of 13.0. Regarding the factors that influence mental illness knowledge, the subjects with South Korean spouses and those who had spent more time in South Korea had higher knowledge scores. Furthermore, the subjects who considered the mental health of North Korean refugees to be a serious issue revealed lower knowledge scores than those who did not believe it was a serious issue. The subjects who visit psychiatric clinics showed higher knowledge scores than those who do not. The South Korean subjects who had at least a college education exhibited higher scores than did those without advanced education. The subjects who are satisfied with life in South Korea manifested a higher mental illness knowledge score than those who are not.

**Conclusions:** This study is significant as being the first study to ever measure and evaluate the level of North Korean refugees' knowledge of mental illnesses. In addition, the evaluations of North Korean refugees' mental illness knowledge and influencing factors while residing in South Korea created basic data that formed the foundation of an effort to enhance mental health literacy and provide proper mental health services. The results of this study can be utilized to solve mental health problems that might frequently occur during the unification process of North and South Korea in the future.

**Key words:** Democratic People's Republic of Korea, Refugees, Mental health, Mental illness, Knowledge

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## INTRODUCTION

The number of North Korean refugees who are entering South Korea has been rapidly increasing since the late 1990s, and the total in 2013 was 26 000 [1]. North Korean refugees have experienced life in North Korea, starvation during their escapes and immigration, torture, forced labor, surveillance, violation, family separations, witnessing of death, rape, life in concentration camps, diseases, malnutrition, physical injuries, large-scale massacres, and hostage situations [2,3]. All these

things lead to psychological and emotional pain and stress responses in their post-immigration lives [3-8]. After the North Koreans enter South Korea, they face more distress, in line with the aftereffects of their past psychological trauma while they adapt to the new culture, and many of them admit to mental health problems such as depression, lethargy, post-traumatic stress responses, and drug addiction [4,5,9-14].

However, medical service utilization due to mental health problems in particular is not easy for North Korea refugees because of their cultural, linguistic, institutional, and normative differences, as well as economic difficulties [15]. The cultural differences between North and South Korea increase the importance of establishing mental health literacy among North Korean refugees, which will be quantitatively different than of the South Koreans [16]. Negative literacy and a low mental illness knowledge level formed in North Korea combined with closed socialism proves a strong obstacle to the North Koreans obtaining proper medical services in South Korea [13]. As such, totally different literacy with regard to the terms and contents of "mental health" and mental illnesses used in the South Korean mental health and medical system can lead to an underestimation of the prevalence rates of health problems and an overestimation of the utilization of mental health promotion services and visits to treatment facilities. This difference in mental health literacy leads to differences in medical use behavior, which ultimately induces a difference of service delivery systems and contents.

Whereas there is no systematic definition of mental health literacy, the definition in this study includes the ability to discuss certain diseases with knowledge and the presence of beliefs concerning mental illnesses that promote literacy, management, and prevention, as well as increase the knowledge of how to obtain mental health information, recognition of the causative and risk factors of diseases, knowledge of self-treatment and professional help, and attitudes toward obtaining proper help, based on a concept suggested by Jorm et al. [17]. Measuring the mental health literacy of the North Korean refugees allows for the evaluation of their mental health knowledge and literacy levels and a more positive, informed attitude toward mental illnesses. Mental health literacy development further assists in developing alternatives to prevent mental health problems and handle them properly in an timely manner. For the prevention of mental illnesses and the development of early intervention, a widespread distribution of mental health literacy is required [17]. In order for this to occur, mental

health knowledge should be measured, and studies of the factors that affect that knowledge should be conducted.

The most widely known, highest-prevalence mental illness North Korea is schizophrenia. No other mental illness has yet gained much attention in the literature [18,19]. Schizophrenia, a disease with the main symptoms of auditory hallucination and delusion, as "jungshinbunyeolbyung (mind-split disorder)" in Japan, Korea, and Taiwan for a long time, but it has recently been renamed as "johyeonbyung (attunement disorder)," which metaphorically implies that schizophrenia is a brain disorder with inadequately tuned neural circuitry, to dispel the stigma associated with the name [20]. This is a chronic disease and has been the focus of mental health services globally among local communities globally. Since it shows a constant worldwide prevalence rate of 1% of the total population and exhibits the same disease patterns throughout all areas, it is mainly used to compare differences in mental illness literacy.

'Hospital 49' is responsible for the existing mental health examination process in North Korea as well. The Hospital 49 is established in each province, and Hospital 49 is present as an examination department among both county and large-scale hospitals. Hospital 49 is known to examine severe mental illnesses such as schizophrenia [16]. Although depression has rapidly increased among Koreans and is known to be a representative mental health problem, even North Korean doctors who were interviewed in a qualitative study that was separately performed by our team mentioned that they had seen the terminology "depression" once in a book but had never heard or used it in North Korea. As such, unlike South Koreans, North Korean refugees understand mental health as a mental illness that is mainly represented by one mental disorder (schizophrenia) [21].

This study aimed to investigate the level of knowledge concerning mental illnesses and its treatments in order to measure North Korea refugees' mental health literacy and identify the factors influencing their levels of mental illness knowledge

## METHODS

### Study Subjects and Data Collection

Our study subjects were selected with assistance from the professional counselors of North Korean refugees in Seoul-Incheon Hana Center. Because North Korean refugees generally do not easily agree to complete surveys since they are sensitive to their status being exposed, the subjects were selected via a snowball sampling method with the assistance of the profes-

sional counselors.

North Korean refugees using the local Hana Center had were contacted. We explained our surveys in their existing meetings and administered the surveys to those who agreed to participate in this study. Although random sampling was difficult to perform, the subjects were selected with considerations toward the year of their entrance into South Korea, their sex, and their ages in order to more accurately reflect mental health literacy and attitude changes.

As for year of South Korean entrance, the subjects were diversely distributed from the first year to 16 years post-entrance. Similar to the overall population of North Korean refugees, the subjects included 70% females and 30% males. North Korean refugees in a broad spectrum of ages were selected.

After explaining our study's purposes, intent, and survey precautions to the professional counselors, we performed preliminary surveys with 5 subjects to verify the level of difficulty in understanding the surveys, and the actual surveys were administered to 150 subjects between August 1 and August 30, 2013. The survey took 30 to 40 for each participant to complete. The survey mainly focused on mental health- and mental illness-related content rather than general content associated with adaptations to South Korean society, thereby requiring some time for the subjects to carefully understand the questions and select the appropriate answers.

## Survey Tools and Variables

### *Knowledge of mental illnesses*

McGill et al. [19] classified the knowledge of mental illnesses into knowledge concerning the causes, symptoms, treatments, drugs, and recurrences. Based on these 5 key concepts, it was developed a knowledge measurement tool with a total of 30 questions comprised of 7 questions on knowledge of mental illness causes [22], 5 questions on knowledge of symptoms, 8 questions on knowledge of drugs, 5 questions on knowledge of treatments, and 5 on knowledge of recurrences [12]. To increase validity, we performed preliminary studies with 4 family members of mental illness patients, and a knowledge measurement tool with 28 questions excluding 2 questions on knowledge of symptoms was used [12,22]. This tool was also employed in our study. Each question was answered with either 'Yes,' 'No,' or 'I don't know,' and 1 and 0 point were given to a correct and incorrect answer, respectively. 'I don't know' was considered to be an incorrect answer. The total score of mental illness knowledge was the sum of the 28 questions. As for the re-

liability of this tool, Cronbach's alpha, which measures internal consistency, was 0.81.

### *Demographic, social variables*

Of the subjects' general characteristics, spouse nationality was divided into South Korean, North Korean, and other, including Korean Chinese and Chinese. Birthplace was categorized into Hamgyeong-do, which included Hamgyeongbuk-do and Hamgyeongnam-do and others, and the other category consisted of Pyeonganbuk-do, Pyeongannam-do, Hwanghaebuk-do, Hwanghaenam-do, Yanggang-do, Jagang-do, Pyeongyang, Gaesung, and others (Gangwon-do). The reason we divided origin into Hamgyeong-do and others is because 77.7% of the North Korean refugees entering South Korea are from Hamgyeong-do, which shares a border with China [23]. Duration of South Korean residence, religion, unemployment, occupational turnover, and utilization of psychiatric clinics were also investigated.

Subjective health condition was classified into 3 steps: good, medium, and bad. The mental health severity of the North Korean refugees and the South Koreans, based on North Korean perceptions, was categorized into 'Absolutely not serious,' 'Not serious,' 'Medium,' 'Serious,' and 'Very serious' experiences of hearing about mental health and mental illnesses were investigated. The level of education obtained in South Korea was classified into no education, elementary/middle/high school dropout and graduation, and more than a college graduation. Additionally, overall life satisfaction in South Korea was investigated. The survey tools and study contents were reviewed and approved by the institutional review board at Inje University (IIT-2013-287) prior to the survey.

### *Statistical Analysis*

For all statistical analyses, frequency distribution was obtained via a descriptive analysis of variables, and we also tested whether basic assumptions for statistical techniques to be used for the variables were satisfied. Then, a correlation between variables was investigated using Pearson correlation analysis or Chi-squared analysis. The statistical significance of the differences among groups was tested via *t*-tests and an ANOVA. The factors affecting mental illness knowledge were analyzed via a regression analysis by constructing a multivariate model with mental illness knowledge score as a dependent variable. All statistical analyses were performed using IBM SPSS version 21 (IBM Co., Armonk, NY, USA).

**Table 1.** General characteristics of subjects

Characteristics	Value
Age (y)	
Younger than 30	23 (17.4)
30s	24 (18.2)
40s	40 (30.3)
50s	19 (14.4)
Older than 60	26 (19.7)
Sex	
Male	55 (36.7)
Female	95 (63.3)
Nationality of spouse	
South Korean	10 (12.5)
North Korean	59 (73.8)
Others	11 (13.7)
Birthplace	
Hamgyeong-do	96 (64.0)
Others (Pyeongang-do, Hwanghae-do, Yanggang-do, Jagang-do, Pyeongyang)	54 (36.0)
Duration after entrance to South Korea	6.8 ± 3.4 (0, 15)
Religion	
Presence	101 (69.7)
Absence	44 (30.3)
Unemployment experience	
Presence	22 (14.9)
Absence	126 (85.1)
Occupational turnover experience	
Presence	60 (40.3)
Absence	89 (59.7)
Utilization of psychiatric clinics	
Presence	17 (11.3)
Absence	130 (88.7)
Subjective health condition	
Good	41 (27.2)
Medium	74 (49.0)
Bad	36 (23.8)
Presence of family members with mental illnesses	
Yes	25 (16.7)
No	125 (83.3)
Mental health severity of North Korean refugees	
Absolutely not serious	1 (0.7)
Not serious	14 (9.4)
Medium	45 (30.2)
Serious	62 (41.6)
Very serious	27 (18.1)
Mental health severity of South Koreans	
Absolutely not serious	1 (0.7)
Not serious	11 (7.4)

**Table 1.** Continued

Characteristics	Value
Medium	67 (45.3)
Serious	45 (30.4)
Very serious	24 (16.2)
Experiences hearing of mental health	
Yes	122 (82.4)
No	26 (17.6)
Experiences hearing of mental illness	
Yes	128 (86.5)
No	20 (13.5)
Level of education obtained in South Korea	
No education	93 (61.6)
Elementary, middle, high school	23 (15.2)
College dropout or higher than college	35 (23.2)
Life satisfaction in South Korea	
Not satisfied	11 (7.3)
Medium	46 (30.7)
Satisfied	93 (62.0)
Knowledge-related correct answer rate	12.9 ± 4.3 (3, 24)

Values are presented as n (%) or mean ± SD (minimum, maximum).

## RESULTS

### General Subject Characteristics

The average age of the subjects was 45.5, and the male to female ratio was 36.7% to 63.3%. Spouse nationalities included South Korean, 12.5%; North Korean, 73.8%; and other, which included Chinese, 13.7%. As for birthplace, Hamgyeong-do accounted for 64.0% of all the reported data. A total of 69.7% reported practicing a religion. The subjects who had experienced unemployment were 14.9%, while 40.3% had occupational turnover experience. Regarding subjective health condition, 23.8% responded they were in 'bad' health, and 16.7% had family members with mental illnesses. More than half (59.75%) reported having 'serious' mental health issues, and 46.6% reported that the South Koreans had 'serious' mental health issues. This indicates that the North Korean refugees considered that their own mental health to be worse than that of their South Korean counterparts. Educational levels achieved in South Korea showed that 61.6% reported no education; 15.2% reported completing elementary, middle, and high school; and 23.2% had a college education or higher (Table 1).

## Correct Answer Rates for Mental Illness Knowledge Questions

The responses concerning "Recurrences increase in the presence of severe drug side effects" exhibited the lowest correct answer rate at 12.5%. On the other hand, "To prevent recurrences, prescribed drugs should be administered as instructed" manifested the highest correct answer rate at 85.5% (Table 2).

## Differences in the Correct Answer Rates for Mental Illness Knowledge According to the Subjects' Characteristics

The subjects with South Korean spouses showed a higher correct answer rate than did those with North Korean spouses or spouses of other nationalities. The subjects who were born in Hamgyeong-do revealed a higher correct answer rate than

did individuals from other areas, and those who had been in South Korea longer and who had more experiences hearing about mental health/illness yielded a higher correct answer rate. Additionally, higher levels of education were associated with higher correct answer rates (Table 3).

## Factors Affecting Mental Illness Knowledge

A correlation analysis confirmed that there was a correlation among the variables. The VIF (variance inflation factor) confirmed multicollinearity and showed no problems with it. Then, when all the variables were applied at the same time, the subjects with occupational turnover experience revealed higher knowledge scores than those without, and the subjects who considered the mental health issues of North Korean refugees to be very serious exhibited lower knowledge scores than did those who believed

**Table 2.** Correct answer rate for mental illness knowledge questions

Questions	Correct answer rate (%)
A mental illness originates from the parents	70.4
A mental illness is a disease caused by devil possession	72.4
A mental illness is a 100% hereditary disease	66.4
A mental illness is a brain disease	58.6
A mental illness occurs due to a weak mentality	22.4
Anyone under high stress has a mental illness	25.7
A mental illness is an infectious disease	82.9
A mental illness is an incurable disease	63.8
A mental illness makes people mentally retarded	37.5
A mental illness is improved or cured by marriage	36.8
A mental illness can be completely cured with consistent drug administration	34.2
Disappearance of inordinate words and strange behaviors indicates no more treatment is needed	60.5
Mental illness patients always show inordinate words and strange behaviors that do not correspond to situations	20.4
Mental illness patients do not get along well with others and are not interested in others. Wanting to be alone in a room is because of easefulness and laziness	48.7
Hearing of strange sounds and believing imaginary thoughts as facts are symptoms of mental illness	52.0
Receiving drugs from psychiatric hospitals makes people dumb	33.6
If good conditions remain without drug administration for a couple of days, drug administration is no longer necessary	55.3
Receiving drugs from psychiatric hospitals makes people addicted	27.0
Long-term psychiatric hospital drug administration causes people to die early	33.6
Although receiving drugs from psychiatric hospitals makes one's lips dry and droopy, the drugs should be administered continuously	25.0
Prescribed drugs are not necessary in the patient-reported absence of symptoms	38.8
Receiving drugs from psychiatric hospitals causes shaking hands, dried lips, and sleepiness	26.3
Receiving drugs from psychiatric hospitals causes a stiff body and slow movements	21.7
No administration of prescribed drugs easily induces recurrences	62.5
Recurrences increase in the presence of severe drug side effects	12.5
Maintaining a regular lifestyle can prevent recurrences	67.1
When patients who are usually not talkative and do not express emotions are suddenly irritated, this is a warning sign of a recurrence	55.3
To prevent recurrences, prescribed drugs should be administered as instructed	85.5

**Table 3.** Differences in mental illness knowledge scores according to subject characteristics

	Correct knowledge answer rate		
	Mean ± SD	t (F)	p-value
Age (y)		0.606	0.66
Younger than 30	13.7 ± 1.3		
30s	13.8 ± 0.9		
40s	12.5 ± 0.6		
50s	12.6 ± 1.1		
Older than 60	12.4 ± 0.7		
Sex		-0.782	0.43
Male	12.5 ± 4.6		
Female	13.1 ± 4.1		
Nationality of spouse		2.740	0.07
South Korean	14.9 ± 4.9		
North Korean	12.6 ± 3.5		
Others	11.3 ± 2.8		
Birthplace		2.227	0.03
Hamgyeong-do	13.5 ± 4.0		
Others	11.9 ± 4.5		
Duration of stay in South Korea	12.9 ± 4.3	2.485	0.003
Religion		0.234	0.81
Presence	13.0 ± 4.7		
Absence	12.8 ± 3.6		
Experience hearing of mental health		3.716	0.00
Presence	13.5 ± 4.0		
Absence	10.2 ± 4.7		
Experience hearing of mental illness		3.620	0.00
Presence	13.4 ± 4.2		
Absence	9.9 ± 3.7		
Unemployment experience		-0.360	0.72
Presence	12.6 ± 3.4		
Absence	13.0 ± 4.4		
Occupational turnover experience		-0.184	0.85
Presence	12.8 ± 3.8		
Absence	13.0 ± 4.6		
Utilization of psychiatric clinics		1.014	0.31
Presence	13.9 ± 3.7		
Absence	12.8 ± 4.4		
Subjective health conditions		2.073	0.13
Good	13.7 ± 5.3		
Medium	12.2 ± 4.0		
Bad	13.4 ± 3.3		
Presence of family members with mental illnesses		0.394	0.69
Yes	13.2 ± 4.1		
No	12.8 ± 4.3		

**Table 3.** Continued

	Correct knowledge answer rate		
	Mean ± SD	t (F)	p-value
Mental health severity of North Korean refugees		1.468	0.21
Absolutely not serious	16.0		
Not serious	13.2 ± 3.6		
Medium	11.6 ± 3.9		
Serious	13.3 ± 4.4		
Very serious	13.6 ± 4.6		
Mental health severity of South Koreans		1.290	0.28
Absolutely not serious	11.0		
Not serious	11.6 ± 2.3		
Medium	12.3 ± 4.0		
Serious	13.3 ± 4.5		
Very serious	14.3 ± 5.1		
Level of education obtained in South Korea		5.788	0.004
No education	12.1 ± 3.8		
Elementary, middle, high school	13.1 ± 4.0		
Higher than college	14.9 ± 5.1		
Life satisfaction in South Korea		0.484	0.62
Not satisfied	12.3 ± 4.1		
Medium	12.5 ± 4.0		
Satisfied	13.1 ± 4.4		

the issue was absolutely not serious. The subjects who used psychiatric clinics exhibited higher knowledge scores than those who did not. The subjects who obtained at least a college education in South Korea showed higher scores than those without advanced education. The subjects who were satisfied with life in South Korea manifested a higher mental illness knowledge scores than those who were not (Table 4).

## DISCUSSION

This study analyzed North Korean refugees' knowledge regarding mental illnesses, which presents a basis for designing and providing mental health services within the local community as if they were treating a chronic disease. Additionally, we assessed subjects' knowledge and attitudes toward mental health. The mental illness knowledge scores for the North Korean refugees ranged from 3 to 24 points, with an average score of 13.0. This was lower than the average knowledge score of the caregivers of mental illness patients assessed in the study by

**Table 4.** Factors affecting mental illness knowledge

	Coefficient	Standard error	t	p>t
<b>Age (y)</b>				
Younger than 30	Reference			
30s	-1.421	2.172	-0.650	0.517
40s	0.828	2.257	0.370	0.716
50s	2.619	2.352	1.110	0.273
Older than 60	3.336	2.409	1.380	0.175
<b>Sex</b>				
Male	Reference			
Female	1.220	1.236	0.990	0.331
<b>Nationality of spouse</b>				
South Korean	Reference			
North Korean	-1.342	1.708	-0.790	0.437
Others	-0.536	2.509	-0.210	0.832
<b>Birthplace</b>				
Hamgyeong-do	Reference			
Others	1.163	1.166	1.000	0.326
<b>Duration of stay in South Korea</b>				
	-0.232	0.175	-1.330	0.194
<b>Religion</b>				
Presence	Reference			
Absence	1.599	1.233	1.300	0.204
<b>Experience hearing of mental health</b>				
Presence	Reference			
Absence	-2.944	1.547	-1.900	0.066
<b>Experience hearing of mental illness</b>				
Presence	Reference			
Absence	2.987	1.814	1.650	0.109
<b>Unemployment experience</b>				
Presence	Reference			
Absence	2.866	1.748	1.640	0.111
<b>Occupational turnover experience</b>				
Presence	Reference			
Absence	-3.326	1.395	-2.380	0.023
<b>Utilization of psychiatric clinics</b>				
Presence	Reference			
Absence	-6.416	2.564	-2.500	0.017
<b>Subjective health conditions</b>				
Good	Reference			
Medium	-0.846	1.381	-0.610	0.544
Bad	-0.066	1.546	-0.040	0.966
<b>Presence of family members with mental illnesses</b>				
Yes	Reference			
No	0.365	1.439	0.250	0.801
<b>Mental health severity of North Korean refugees</b>				
Absolutely not serious	Reference			

**Table 4.** Continued

	Coefficient	Standard error	t	p>t
<b>Mental health severity of South Koreans</b>				
Absolutely not serious	Reference			
Not serious	-16.808	5.628	-2.990	0.005
Medium	-16.834	5.195	-3.240	0.003
Serious	-16.582	5.219	-3.180	0.003
Very serious	-12.549	4.922	-2.550	0.016
<b>Level of education obtained in South Korea</b>				
No education	Reference			
Elementary, middle, high school	1.810	1.841	0.980	0.333
Higher than college	4.286	1.863	2.300	0.028
<b>Life satisfaction in South Korea</b>				
Not satisfied	Reference			
Medium	8.579	2.607	3.290	0.002
Satisfied	7.669	2.419	3.170	0.003

Lim and Ahn [22], which was 16.4 points. It is also lower than the average score for the families of mental illness patients assessed by Kim and Jung [24], which was 17.0 points. Such a discrepancy seems to be associated with the more frequent exposure to mental health problems and relevant information among the caregivers and family members of the patients.

As a result of analyzing the correct answer rates of the 28 knowledge tool questions, we found that there is a substantial lack of knowledge regarding the relationships between drug side effects and mental illness recurrences. However, the study by Lim and Ahn [22] showed a similar correct answer rate of 19% for the drug-related question among family caregivers of mental illness patients, so knowledge of how drug use affects mental illness is lacking for family caregivers as well as for North Korean refugees. However, the results also indicate that most North Korean refugees are well aware that they need to administer prescribed drugs as instructed. When we compared each correct answer rates, there was no significant difference from the results of the study with family caregivers, but overall correct answer rate was low. This indicated that more opportunity to contact mental illness patients improves knowledge about their conditions.

TV and newspapers in North Korea only report good aspects

of society, so mental illnesses and Nuber 49 wards are not mentioned in the media [16]. Moreover, Hospital 49 that segregates patients with severe mental illnesses are located in isolated areas; therefore, the chances are very rare to have any contact with them [16]. As a result, the level of knowledge on mental illness among North Korean refugees were generally quite low.

However, the knowledge scores were increased with the experience of psychiatric clinic utilization, the higher education levels obtained in South Korea, and the longer duration of stay in South Korea. These results showed that the increased experience of mental health service utilization and getting education in South Korea would positively influence on the acquisition of relevant knowledge on mental illness.

As for mental illness knowledge scores according to the characteristics of the subjects, those who had experienced occupational turnover, those who considered mental health among North Korean refugees as being serious, and those who had experience with psychiatric clinic utilization showed higher knowledge score. In addition, the subjects with at least a college education had higher knowledge scores than those who had received no education in South Korea. Similarly, those who were satisfied with life in South Korea showed higher knowledge scores than those who were not. This indicates that the mental illness knowledge of North Korean refugees is improved via education after their entrance into South Korea. Consequently, it is essential to provide North Korea refugees with education on mental health in order to improve their knowledge level and encourage them to utilize proper medical services when needed.

The mental health of North Korean refugees is deeply associated with the experience of escaping North Korea and entering South Korea, as well as their experiences while residing in North Korea [15, 25]. A number of North Korean refugees suffer from severe trauma and stress while escaping from North Korea and in settling down in South Korea. Such conditions can trigger the onset of mental and physical illnesses and the worsening of existing diseases. Health problems are barriers for North Korean refugees against settling down successfully in South Korea, so their mental health is very important [26]. Despite the importance of mental health for North Korean refugees and the highlighted necessity of diagnosis, refugees' limited knowledge and illiteracy has been an obstacle to proper medical service use. In March 2010, the Ministry of Unification amended their Act on North Korea Refugee Protection and Settlement Support and designated so called 'professional counselors for North Korea refugees' to Hana Centers at 32 sites in order to support the set-

tlement and mental health of North Korean refugees. However, besides mental health support, the professional counselors are to perform many other tasks including taking care of emergency situations and complaints, and giving career counseling. There is only a small number of counseling experts and registered counselors; thus, so far, this program is critically lacking in professional expertise and link to mental health care system preexisting in South Korea.

In order to enhance the mental health status of North Korean refugees and improve their literacy of service utilization, education to provide them essential knowledge on mental health with consideration to cultural understanding should be performed with proper data using Hanawon and the Hana Center. Hanawon and Hana Center are government organizations that provide social fundamental education for North Korean refugees. As such, these organizations serve as early settlement education for North Korean refugees, although their levels of understanding may be slightly low. It is therefore important to provide relevant data and options for the refugees to make decisions based on their specific time constraints and needs. According to Cho's study [27], 70% of North Korean refugees responded that they do not, or almost do not, know the roles of counseling centers or psychological counselors. More than half (58%) of them answered that they do not know, or almost do not know, the roles of the psychiatrists. As such, it is important to provide data to help them to understand mental health-related organizations and experts.

Second, education for North Korean refugees should be performed by existing mental health professionals, instead of establishing separate organizations and jobs without sufficient training and education by mental health professionals. Mental health professionals cannot be trained within a short period of time. Their Korean national qualifications require long-term clinical training. As such, when well-trained and managed professionals understand the distinctiveness of North Korean refugees, they would be able to provide more qualified services. In particular, 60% of North Korean refugees reside in Seoul and Incheon. Since they reside in dense permanent and national rental housings, tailored education should be performed to this unique situation and should be centered on guiding the North Korean refugees to making optimal mental health decisions.

This study has a couple of limitations. First, study subject selection was restricted. There are 26 000 North Korean refugees distributed throughout the country. However, the subjects in this study were selected via a snowball sampling method cen-

tered on residents in the metropolitan areas with support from the North Korea Refugees Support Institute. It is therefore hard to consider this to be an optimum sample representing the overall population of North Korean refugees. However, considering the characteristics of North Korean refugees, such as limited opportunities to contact them and restricted information collection and reduced accessibility without the support from relevant centers, this limitation is somewhat inevitable. In order to overcome such limitations, the authors tried to match the sex ratios of the subjects and the distribution of the residential areas (metropolitan) according to the relevant population ratios.

The second limitation is the issue of the responder's level of understanding with regards to survey tools. Our team performed preliminary surveys and revised the surveys in order to increase the respondent's understanding of them. However, difficulty in understanding the surveys may still have remained due to large differences in the socio-cultural backgrounds of the North Korean refugees.

Third, the knowledge was measured with the common name of "mental illnesses," instead of measuring the direct overall knowledge of diverse mental illnesses. Despite such limitations, the significance of this study rests in the fact that it is the first study to measure and evaluate the level of mental illness knowledge among North Korean refugees. Investigating these mental illness knowledge levels and their influencing factors further generates basic data that can form a foundation for other studies of mental health literacy and attitudes. Furthermore, this study provides basic data necessary for solving mental health problems that are highly likely to occur in the future unification of North and South Korea.

## CONFLICT OF INTEREST

The authors have no conflicts of interest with the material presented in this paper.

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