

## Relationships between Acculturative Stress, Depression, and Quality of Life on in North Korean Refugees Living in South Korea

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### Abstract

#### Purpose

The aim of this study was to evaluate acculturative stress, depression, and quality of life, and investigate the relationship between these factors in North Korean refugees who settled in South Korea.

#### Methods

A total of 232 North Korean refugees residing in South Korea participated in the study. Participants completed a series of questionnaires, including measures of acculturative stress, depression, and quality of life. Data were analyzed using SPSS WIN 20.0.

#### Results

The results showed that Acculturative stress, depression, and quality of life were interrelated. In our sample, 40.9% of participants scored  $\geq 16$  on the BDI-II, and the mean depression score was 15.42 (range 0-55), which indicates mild depressive symptoms. The mean total acculturative stress score was 2.88 (SD=0.02). The mean total QOL total score was 3.02 (SD=0.03). The most powerful predictor of quality of life was depression in North Korean refugees. Conclusion: The results suggest that acculturative stress is a factor in preventing depression and promoting quality of life, especially mental health, in North Korean refugees.

**Keywords:** Acculturative stress; Depression; Quality of life; Refugee

### Introduction

The number of North Korean refugees entering South Korea has greatly increased for economic reasons such as hunger, malnutrition, and fear of starvation. North Korea has suffered great economic hardship and famine. The number of North Korean defectors rose to 1,143 in 2002, 1,896 in 2004, 2,018 in 2006, and 2,805 in 2008. By the end of 2013, a total of 25,560 North Korean defectors had settled in South Korea [1]. In recent years, North Korean refugees have fled to neighboring nations such as China and third world countries [2]. Hundreds of thousands of North Koreans have crossed the border to China in desperation to find the essential right to life that they were deprived by their government [3]. Many North Korean refugees experience psychological problems such as acculturative stress, depression, and post-traumatic stress disorder [4-6]. Problems that arise during the adaptation period can be aggravated by unsteady financial situations, social prejudice, and uncertainty about the future [3], as well as constant worry about government revenge against family members left in North Korea [4,6].

Acculturation is, defined as an individual's cultural learning process and the psychological change that occurs while adapting to an unfamiliar culture [7,8], and involves various forms of mutual accommodation that lead to longer-term psychological and

sociocultural adaptations. Acculturation may contribute to risk for psychiatric problems because of the extended struggles to absorb the values, behaviors, and social norms of the host culture while simultaneously sustaining one's culture of origin [6]. Acculturative stress refers to tension or strain that is correlated with the acquisition of a second-culture that may result in negative physical or mental health effects [7]. As the number of North Korean refugees residing in South Korea has increased, their settlement has become an important issue in South Korean society and the international community [3]. Difficulties during the adaptation process are clearly related to mental health [6-9]. Chronic negative emotional experiences might be detrimental to the mental health of North Korean refugees [6] and exacerbate underlying psychological problems, rendering adaptation difficult at best [9]. Several previous studies have shown that many defectors experience acculturative stress and depression [10,11]. Refugees are at risk for mental health problems due to forced migration from their home countries and other traumatic experiences. Also, refugees may experience post-resettlement problems ranging from difficulty finding jobs and accessing services to cultural and linguistic isolation, all of which could increase risk for mental illness [12]. These psychosocial problems may impair quality of life and obstruct adaptation to life in a new culture [13,14].

Quality of life (QOL) is a multidimensional concept that is associated with a person's health status [15]. Measuring patient-perceived QOL has become one of the most important outcomes in

health care and is used as a measure of effectiveness, both at the population and individual patient's levels [16]. Thus, the goals of this study were to investigate acculturative stress, depression, and QOL among North Korean refugees in South Korea, and to evaluate the relationship between mental health and QOL in this population.

## Methods

### Participants

The study was conducted from November to December 2013. Participants were selected using a snowball sampling method of individuals living in Seoul or the vicinity of the capital of South Korea. The snowball sampling method was used because North Korean refugees are often unwilling to make their identities known. The study population consisted of North Korean defectors over the age of 20 living in South Korea. The purpose and content of the study were explained to all 232 participants prior to administering the surveys. All participants were informed and assured of their right to refuse or withdraw from the study at any time. Institutional Review Board approval was received from the Ministry of Health and Welfare on Human Research (IRB No. P01-201309-SB-03-02) Instrument.

### Acculturative stress

Acculturative stress was measured using the Korean version of the Acculturative Stress Scale developed by Sandhu and Asrabadi [17] and, translated into Korean by Lee [18]. The original scale consisted of 36 items from 7 subscales, including perceived discrimination (7 items), homesickness (4 items), perceived hate (5 items), fear (4 items), stress due to change/culture shock (3 items), guilt (2 items), and nonspecific concerns (10 items). However, 3 items were not applicable to our target population; thus, the final scale used here included 33 items. Each item was rated on a 5-point Likert scale ranging from strongly disagree (scored as 1) to strongly agree (scored as 5), with higher scores indicating higher levels of acculturative stress. Cronbach's alpha for this scale was .93 in a previous study [18] and .88 in this study.

### Depressive symptoms

Depression was evaluated using the Korean version of the Beck Depression Inventory (BDI-II) [19] created, by Kim, Lee and Lee [20]. The BDI-II is a 21-item, self-administered questionnaire designed to assess changes in and severity of depression during the previous week. Total BDI-II scores range from 0 to 63, and each item is answered on a 4-point scale. The instrument developers established four groups of scores and classified them as the follows: "0-9: minimal or no depression; 10-15: mild depression; 16-23: moderate depression; and 24-63: severe depression". Higher scores indicate greater depressive symptoms. The reliability of this scale was .80 in a previous study [20]. Cronach's alpha for this scale was .87 in this study.

### Quality of life

To measure QOL in North Korean refugees, a modified version of the QOL scale that included 47 questions [21] was used. The six domains evaluated by the QOL scale are physical condition and function, psychological condition, economic life, self-esteem, neighbor relations, and domestic relations. Items are rated on a 5-point Likert scale. Raw domain scores are converted to a 0-100 scale for ease of comparison with other data sets. Higher scores indicate better QOL.

The reliability of this scale was 0.94 in a previous study. Cronbach's alpha for this scale was 0.89 in this study.

### Statistical analysis

Data were analyzed using SPSS, version 20.0. Descriptive statistics were used to assess the frequency distribution and sample characteristics. Pearson correlation coefficients between acculturative stress, depression, and QOL were calculated. Bivariate analyses were performed using t-tests or one-way analysis of variance (ANOVAs), as appropriate, to assess relationships between acculturative stress, depression, QOL, and independent socio-demographic characteristics. Scheffe's tests were performed to validate inter-group comparisons. Finally, a multiple regression analysis was conducted to determine the most predictive factors for QOL.

## Results

### Participant demographic characteristics

The results of the descriptive analysis for all variables are presented in Table 1. Table 1 shows the demographic characteristics of the North Korean refugees. There were 232 participants (65 male, 28.0%; 167 female, 72.0%) who ranged in age from 23 to 84 years (M=52.88, SD=1.01), most of whom were married. Approximately half of the participants (53.4%) had low economic status, 57.8% had middle-high school education, 62.5% lived with family, 81.0% were unemployed, and 73.7% were protestant. Most participants reported that they were non-smokers (86.6%), 67.7% were non-drinkers, 59.1% reported exercising, and 57.8% had lived in South Korea for 6-10 years. Participant's monthly income was below 500,000 Won (48.3%), they had between 1 and 2 chronic disease, and lived in South Korea during an average of 99.63 months and lived in a third world country for an average of 33.93 months.

Variables	Categories	n(%)	M ± SD
Age(years) (M ± SD, 52.88 ± 1.01)	20-29	13(5.6)	
	30-39	35(15.1)	
	40-49	58(25.0)	
	50-59	42(18.1)	
	60-69	32(13.8)	
	≥ 70	52(22.4)	
Gender	Male	65(28.0)	
	Female	167(72.0)	
Marital status	Unmarried	35(15.1)	
	Married	124(53.4)	
	Divorced	29(12.5)	
	Bereaved	44(19.0)	
Living with	Alone	87(37.5)	
	Family	145(62.5)	
Religion	Protestant	171(73.7)	

	Catholic	2(0.9)	
	Buddhist	10(4.3)	
	No religion	49(21.1)	
Education	None	2(0.9)	
	Elementary school	10(4.3)	
	Middle-High school	134(57.8)	
	College	86(37.1)	
Economic status	High	2( 0.9)	
	Middle	28(12.1)	
	Low	202(87.1)	
Smoking	Yes	31(13.4)	
	No	201(86.6)	
Drinking	Yes	75(32.3)	
	No	157(67.7)	
Exercise	Yes	137(59.1)	
	No	95(40.9)	
Occupation	Yes	44(19.0)	
	None	188(81.0)	
Monthly income	≤ 500,000	112(48.3)	
	510,000-990,000	87(37.5)	
	100,000-149,000	22(9.5)	
	≥ 150,000	11(4.7)	
Number of comorbidity	0	67(28.9)	
	1-2	121(52.2)	

(M ± SD, 1.05 ± 80)(years)	3-4	38(16.3)	
	≥ 5	6(2.6)	
Living in the other countries	months		33.93 ± 1.96
Duration in South Korea	months		99.63 ± 2.52

Table 1: Participant Demographic Characteristics.

### Acculturative stress, depression, and QOL

The means, standard deviations, and ranges for the study variables are presented in Table 2. At the time of the survey, the mean depression score was 15.42 (range 0-55), a score indicating mild depressive symptoms; 41.8% of respondents had no depressive symptoms, 17.2% had mild depressive symptoms, 12.9% had moderate depressive symptoms, and 28.0% had severe depressive symptoms. The mean total acculturative stress score was 2.88 (SD=0.02). The mean total QOL score was 3.02 (SD=0.03; possible range=1-5). For acculturative stress (possible range=1-5; higher scores indicate higher acculturative stress), homesickness ratings were highest, with a mean score of 3.66 (SD=0.04). The mean perceived discrimination score was 2.78 (SD=0.03), the mean perceived hate score was 2.12 (SD=0.02), the mean change/culture shock score was 2.72 (SD=0.03), the mean guilt score was 3.09 (SD=0.05), the mean fear score was 2.78 (SD=0.04), and the mean miscellaneous score was 3.06 (SD=0.03). For the QOL subscales (possible range=1-5; higher scores indicate better QOL), neighbor relation was reported as the most positive, with a mean score of 3.32 (SD=0.03). The mean economic life score was 3.08 (SD=0.03), the mean physical condition and function score was 2.93 (SD=0.03), the mean domestic relation score was 2.68 (SD=0.06), the mean psychological condition score was 2.94 (SD=0.04), and the mean self-esteem score was 3.19 (SD=0.04).

Categories	Mean ± SD	Actual range	Potential range	n(%)
Acculturative stress				
perceived discrimination	2.78 ± 0.03	1.00-4.67	1-5	
homesickness	3.66 ± 0.04	1.50-5.00	1-5	
perceived hate	2.12 ± 0.02	0.80-3.20	1-5	
stress due to change/ culture shock items	2.72 ± 0.03	1.00-5.00	1-5	
Guilt	3.09 ± 0.05	1.00-5.00	1-5	
Fear	2.78 ± 0.04	1.00-4.25	1-5	
miscellaneous	3.06 ± 0.03	1.22-4.56	1-5	
Total	2.88 ± 0.02	1.39-3.97	1-5	
Quality of life				
economic life	3.08 ± 0.03	1.09-5.00	1-5	

physical condition/function	2.93 ± 0.03	1.11-4.56	1-5	
domestic relation	2.68 ± 0.06	0.33-5.00	1-5	
neighbor relation	3.32 ± 0.03	1.00-5.00	1-5	
psychological condition	2.94 ± 0.04	1.00-4.89	1-5	
self-esteem	3.19 ± 0.04	1.00-4.88	1-5	
Total	3.02 ± 0.03	1.11-4.79		
Depression	15.42 ± 0.91	0-55	0-63	
minimal				97(41.8)
Mild				40(17.2)
moderate				30(12.9)
severe				65(28.0)

**Table 2:** Acculturative Stress, Depression, and Quality of Life.

**Acculturative stress, depression, and QOL scores by participant’s demographic characteristics**

Table 3 shows the differences in acculturative stress, depression, and QOL scores based on demographic characteristics. The analyses showed a significant difference in acculturative stress based on education (F=5.09, p=0.002). There was a significant difference in QOL (F=6.09, p=0.003) based on economic status. There was a significant difference in acculturative stress (F=2.09, p=0.037), depression

(F=4.11, p<0.001), and QOL (F=-5.11, p<0.001) based on exercise. There was a significant difference in depression (F=-2.11, p=0.036) based on occupation. There was a significant difference in depression (F=4.32, p=0.005) based on monthly income. There was a significant difference in acculturative stress (F=4.41, p=0.005), depression (F=5.52, p<0.001), and QOL (F=9.49, p<0.001) based on the number of comorbidities.

Variables	Classification	Acculturative stress		Depression		Quality of life	
		Mean (SD)	± t or F	Mean ± SD	t or F	Mean ± SD	t or F
Age(years) (M ± SD 52.88 ± 1.01)	20-29	89.69 16.59	1.69(0.138)	9.85 12.12	1.29(.268)	149.46 17.36	0.68(.636)
	30-39	96.00 15.26		15.91 13.98		143.94 22.59	
	40-49	94.79 10.48		13.17 11.69		142.17 22.82	
	50-59	98.40 ± 8.98		17.81 16.11		140.67 25.04	
	60-69	96.94 11.66		18.41 14.52		136.34 27.62	
	≥ 70	92.48 12.67		15.23 13.83		143.40 28.18	
Gender	Male	97.60 13.46	1.87(0.063)	15.72 14.20	0.20(.837)	137.35 25.99	-1.76(.837)
	Female	94.16 12.26		15.31 13.76		143.75 24.24	
Marital status	Unmarried	95.00 15.57	0.07(0.975)	15.06 14.66	0.83(.476)*	145.20 18.16	0.37(.773)
	Married	95.35 12.15		16.11 14.18		140.71 25.46	

	Divorced	95.44 11.47	±		17.10 15.23	±		140.97 33.68	±	
	Bereaved	94.36 12.74	±		12.66 11.16	±		143.52 21.15	±	
Living with	Alone	96.07 12.18	±	0.88(0.378)	16.86 14.12	±	1.22(.221)*	140.93 27.55	±	-0.48(.627)
	Family	94.55 12.96	±		15.56 13.68	±		142.57 23.16	±	
Religion	Protestant	94.32 12.89	±	2.36(0.072)	15.35 14.11	±	2.52(.059)	142.87 25.39	±	1.84(.141)
	Catholic	102.50 2.12	±		1.00 ± 1.41			156.50 ± 2.12		
	Buddhist	89.90 12.24	±		7.10 ± 9.15			152.40 19.96	±	
	None	98.69 12.67	±		17.96 13.17	±		136.04 23.30	±	
Education	None	98.00 ± 2.83		5.09(0.002)†	8.00 ± 5.66		1.08(.355)	133.00 11.31	±	0.96(.409)
	Elementary	85.50 16.15	±		13.90 16.29	±		153.40 36.55	±	
	Middle-high	97.51 12.02	±		16.75 14.68	±		140.61 26.58	±	
	College	92.44 12.46	±		13.70 12.20	±		142.93 20.22	±	
Economic status	Higha	87.50 ± 2.12		2.72(0.068)	15.50 2.12	±	0.70(.494)	147.00 ± 4.24		6.09(0.003)† b>a,c
	Middleb	90.36 10.35	±		12.50 14.19	±		156.89 12.69	±	
	Lowc	95.86 12.88	±		15.83 13.87	±		139.83 25.53	±	
Smoking	Yes	96.58 14.15	±	-0.68(.492)	17.84 14.43	±	-1.04(.298)*	135.87 30.99	±	1.46(.143)
	No	94.90 12.45	±		15.05 13.77	±		23.72 ± 1.67		
Drinking	Yes	94.97 13.29	±	0.12(.903)	13.81 13.15	±	1.22(.222)	140.63 28.30	±	0.56(.574)
	No	95.19 12.40	±		13.81 13.15	±		140.63 28.30	±	
Exercise	Yes	93.68 11.44	±	2.09(.037)*	12.41 12.12	±	4.11(<.001)†	148.55 19.83	±	-5.11(<.001)†
	No	97.20 14.06	±		19.77 15.07	±		132.44 28.17	±	
Occupation	Yes	96.55 12.30	±	0.82(.408)	11.48 11.69	±	-2.11(.036)*	143.50 18.65	±	.45(.648)
	None	94.79 12.73	±		16.35 14.19	±		141.60 26.12	±	
Monthly income (10,000won)	≤50	96.72 12.13	±	2.27(.080)	18.43 14.93	±	4.32(.005)†	140.32 26.17	±	.92(.431)

	51-99a	93.17 ± 12.68		12.79 ± 12.29		142.89 ± 23.58	
	100-149b	97.45 ± 14.11		14.68 ± 13.08		141.14 ± 26.41	
	≥150	89.55 ± 12.96		7.09 ± 7.98		152.91 ± 15.78	
Duration in South Korea(years)	1-5	92.85 ± 13.68	1.53(.207)	16.07 ± 14.42	1.91(.129)	149.19 ± 27.93	1.59(.191)
	6-10	94.85 ± 12.99		13.80 ± 12.73		141.08 ± 25.31	
	11-15	97.92 ± 10.55		19.09 ± 15.64		138.39 ± 20.82	
	≥16	90.25 ± 12.66		14.25 ± 14.86		144.00 ± 15.44	
Number of comorbidity (M ± SD, 1.05 ± .80)	0a	91.60 ± 12.27	4.41(0.005)† a<c	10.68 ± 11.12	5.52(.001)† a<c	150.86 ± 15.29	9.49(<.001)† a,b>c,d
	1-2b	95.55 ± 12.29		15.94 ± 14.10		142.62 ± 25.54	
	3-4c	98.08 ± 12.99		21.28 ± 14.74		126.33 ± 29.44	
	≥ 5d	107.00 ± 12.19		20.66 ± 15.94		128.33 ± 14.03	

Table 3: Acculturative Stress, Depression, and QOL Scores by Participants' Demographic Characteristics (N=232). \*p<0.05, †p<0.01.

**The correlations between acculturative stress, depression, and QOL**

Pearson coefficients are shown in Table 4. There was a moderate positive correlations between acculturative stress and depression (r=0.46, p<0.001). There were moderate negative correlations between QOL and acculturative stress (r=-0.50, p<0.001) and depression (r=-0.58, p<0.001) (Table 4).

	Acculturative stress	Depression	Quality of life
Acculturative stress	1		
Depression	0.46(<.001)†	1	
Quality of life	-0.50(<.001)†	-.58(<.001)†	1

Table 4: The Correlations between Acculturative Stress, Depression, and Quality of Life. \*p<0.05, †p<0.01.

**Factors that influence QOL**

A multiple regression analysis was conducted to identify important predictors of QOL among North Korean refugees. The results revealed that the most powerful predictor was depression. Depression, acculturative stress, exercise, and number of comorbidities account for 45.4% of the variance in QOL in North Korean refugees. The regression model revealed that depression (β=-0.295) was a strong factor in predicting QOL (Table 5).

Variables	β	t	p	Adj. R <sup>2</sup>	F	p
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(Constant)		9.97	<0.001	0.454	10.455	<0.001
Age	0.025	0.38	0.700			
Gender	0.061	0.99	0.323			
Education	0.020	0.34	0.727			
Marital status	-0.009	-0.16	0.873			
Living with	-0.032	-0.54	0.588			
Religion	0.005	0.08	.934			
Smoking	-0.029	-0.48	0.628			
Drinking	-0.036	-0.62	0.534			
Exercise	0.216	3.38	<.001†			
Job	-0.006	-0.10	0.918			
Monthly income	-0.062	-0.97	0.329			
Economic status	-0.104	-1.86	0.064			
Duration in South Korea	-0.029	-0.51	0.607			
Length of stay in a third country	0.035	0.62	0.531			
Number of comorbidity	-0.170	-2.74	0.007†			
Acculturative stress	-0.294	-4.90	<0.001†			

depression	-0.295	-4.78	<0.001†			
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**Table 5:** Multiple Regression Analysis of Influencing Factors of Quality of Life (N=232). \*p<0.05, †p<0.01.

## Discussion

The present data revealed that North Korean refugees in South Korea exhibit moderate acculturative stress, mild depression, and low QOL. This study elucidates the degree of acculturative stress, depression, and QOL in North Korean refugees. Participants had lived in South Korea for an average of 8.3 years (SD=2.52). Among North Korean refugees, depressive symptoms (BDI scores greater than 16) were found in 40.9% of the total sample, which is higher than previously reported [22]. The prevalence of depressive symptoms found in this study was higher than that found in Korean immigrants in the Eastern United States (30.0% of the participants)[23]. Living in a foreign country, leaving without family, and being away from home alone, can cause nervousness and depression [24]. These data show that North Korean refugees are more troubled than Korean immigrants.

In this study, there was a significant difference in depression based on exercise, job, monthly income, and number of comorbidities. North Korean refugees who exercise have fewer depressive symptoms than those who do not exercise. North Korean refugees with a job have fewer depressive symptoms than those who do not have a job. North Korean refugees with a high monthly income fewer depressive symptom than those with a low monthly income. Previous research indicates that economic factors have influence depression [16,25]. Similarly, individuals with a lower family income report more depressive symptoms [26]. In addition, as depressive conditions increase, the prevalence of comorbidities increases.

North Korean refugees were exposed to poor medical services while they were escaping from North Korea and settling in South Korea. This likely caused psychological problems. To prevent depression at this early stage, North Korean refugees need economic and public health assistance. Similar to previous studies, this study revealed that unemployment and a subjective sense that one's health is poor were correlated with depressive symptoms in North Korean refugees [27].

Analysis of the correlation between BDI and acculturative stress in North Korean refugees revealed that higher BDI scores were associated with higher acculturative stress scores. The correlation between BDI and QOL revealed that higher BDI scores were associated with lower QOL, and the correlation between acculturative stress and QOL showed that higher acculturative stress was associated with lower QOL.

North Korean refugees, who feel they have low QOL, low psychological health, high acculturative stress, low physical health, low economic status, and low government funding experience greater depression.

In this study, acculturative stress was one of the most psychologically damaging factors. Acculturative stress was higher when depression was higher and QOL was lower. It is important to note that depression has been found to be a significant contributor to acculturative stress in other ethnic groups [28]. Depression is one of the most prevalent mental health problems among immigrants in the US., and is associated with acculturative stress. A similar situation was reported by Bauer and Priebe [29], who examined 122 East German

refugees who, experienced anxious-depressive symptoms immediately after migrating to West Berlin. Acculturative stress scores in this sample were higher than in the Kim study [29], where the mean acculturative stress score was 2.81, and other previous studies. This difference may be due to the fact that our participants faced harsh conditions that threatened their survival. Furthermore, after settling in South Korea, rivalry and acculturative stress caused stress and anxiety. The loneliness and alienation experienced by North Korean defectors exacerbated these psychological problems.

North Koreans living in South Korea did not have access to adequate medical services, and health problems combined with one or two comorbidities can cause chronic illness. North Korean defectors with these problems may also have mental health problems. In addition, health interventions were not available. These findings indicate that mental health programs should provide early interventions for North Korean defectors who are experiencing psychological problems such as depressive symptoms and acculturative stress that could detract from their QOL and their adaptation to South Korean society.

There are some limitations to this study. Our sample may have been biased. It is unclear whether this sample would is representative of the all North Korean refugees living in South Korea. However, this study is valuable in that it serves as a foundation for assessing acculturative stress, depression, and QOL in North Korean refugees.

## Conclusion

In conclusion, acculturative stress and depression impact QOL. It is important to focus on North Korean refugees to better understand the factors that contribute to lower QOL and to distinguish the effects of these factors. This study showed that lower QOL causes acculturative stress, depression, and physical comorbidities. This study also showed that economic status and monthly income influenced psychological status and QOL of North Korean refugees, and elucidated the mental health status of North Korean refugees living in South Korea. Therefore, special attention to QOL and psychological status in North Korean refugees is needed. In addition, mental and economic support should be provided to improve the psychiatric characteristics and QOL of North Korean refugees.

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