

# The Attitudes of Generation Z Nursing Students Toward Brain Drain from Türkiye: A Cross-Sectional Study

## Z Kuşağı Hemşirelik Öğrencilerinin Türkiye'den Beyin Göçüne Yönelik Tutumları: Kesitsel Bir Çalışma

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### ABSTRACT

**Objective:** In recent years, certain countries began to demand a skilled workforce from Türkiye, in particular, in the fields of information and health. This, in turn, paves the way for an increase in brain drain from Türkiye. The research was conducted to analyze the attitudes of Generation Z nursing students toward brain drain from Türkiye.

**Method:** It is a descriptive and cross-sectional study. The research was carried out at the Faculty of Health Sciences of a public university in Türkiye. A total of 356 nursing students participated in the research. The research data were collected online in August – November 2022 with the Descriptive Characteristics Form and the Attitude Scale for Brain Drain.

**Results:** It was determined that the Z generation nursing students' attitudes towards brain drain were  $34.43 \pm 9.14$  (min:16, max:61). In addition, it was determined that the factors that pull students abroad are  $26.26 \pm 7.33$  (min:12, max:49) and the factors that push them are  $6.87 \pm 2.76$  (min:4, max:18) on average. Generation Z nursing students stated that they wanted to immigrate from Türkiye mostly for economic reasons (71.5%) and career development (67.8%).

**Conclusion:** To prevent nursing students from migrating from Türkiye and avoid a likely nurse shortage, the domestic factors pushing nurses to migrate from Türkiye as well as external factors enticing nurses to migrate to foreign countries should be examined. Also, measures to improve the working and economic conditions of future nurses should be taken, and professional and career development opportunities should be enlarged in nursing.

**Keywords:** Attitude, brain drain, generation Z, nursing students

### ÖZ

**Amaç:** Son yıllarda Türkiye'den enformasyon ve sağlık alanı başta olmak üzere nitelikli iş gücüne diğer ülkelerden gereksinim duyulmaya başlanmıştır. Bu da beyin göçünün artmasına yol açmaktadır. Araştırma, Z kuşağı hemşirelik öğrencilerinin beyin göçüne yönelik tutumlarını incelemek amacıyla gerçekleştirilmiştir.

**Yöntem:** Bu araştırma tanımlayıcı-kesitsel bir çalışmadır. Türkiye'de bir devlet üniversitesinin Sağlık Bilimleri Fakültesi'nde yürütülmüştür. Araştırmaya 356 hemşirelik öğrencisi katılmıştır. Araştırma verileri; Tanıtıcı Özellikler Formu ve Beyin Göçüne Yönelik Tutum Ölçeği kullanılarak Ağustos – Kasım 2022 tarihleri arasında çevrimiçi olarak toplanmıştır

**Bulgular:** Z kuşağı hemşirelik öğrencilerinin beyin göçüne yönelik tutumları puan ortalaması  $34.43 \pm 9.14$  (min:16, maks:61) olduğu belirlendi. Ayrıca öğrencileri yurt dışına çeken faktörlerin puan ortalaması  $26.26 \pm 7.33$  (min:12, maks:49), iten faktörlerin ise  $6.87 \pm 2.76$  (min:4, maks:18) olduğu tespit edilmiştir. Z kuşağı hemşirelik öğrencileri Türkiye'den daha çok ekonomik (%71.5) ve kariyer gelişimi (%67.8) nedeniyle göç etmek istediklerini belirtmiştir.

**Sonuç:** Hemşirelik öğrencilerinin göç etmemeleri ve hemşire sıkıntısı yaşanmaması için hemşireleri göçe iten nedenler ile diğer ülkelerdeki çekici faktörler incelenmelidir. Ayrıca geleceğin hemşirelerinin çalışma ve ekonomik koşullarını iyileştirici önlemler alınmalı ve hemşirelikte profesyonel ve kariyer gelişim fırsatları artırılmalıdır.

**Anahtar Kelimeler:** Beyin göçü, hemşirelik öğrencileri, tutum, Z kuşağı

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## Introduction

Humans, who are social beings, have tended to live together and move collectively from past to present. Human beings who live in the same years and accordingly share similar conditions and experiences are affected by each other. Departing from this point, scientists put forward the concept of "generation" (Dimock, 2019). The generation is defined as the community of individuals who were born approximately in the same years, shared the conditions and challenges of the same period, and assumed similar responsibilities (Rudolph et al., 2018). Even if it is impossible to limit the time frame for each generation, a new generation develops every 15-20 years in general (Schenarts, 2020). Generation Z covers individuals born approximately between 1995 and 2015 (Fry and Parker, 2018). Generation Z is the first generation to grow up in the technological age. As it grew up alongside technology, it can rapidly access information (Douglas and Gray, 2020). Therefore, they want everything to be practical and are impatient (Dolot, 2018; Fry and Parker, 2018). They are courageous and attach more importance to individualism. They know no boundary to stop them from practicing innovation and creativity in their lives (Chunta et al., 2021). As well as being the most educated among the generation groups, they make more efforts for their education and careers than other generations do (Parker and Igielnik, 2020). It is discerned that the independent and courageous side of Generation Z members, who take a more active role in their education, affects their lifestyles and decisions. It was identified that its members were more interested in adding an overseas experience to their academic resumes than members of the previous generations were (Banov et al., 2017). Studies show that, compared to other generations, Generation Z travels abroad more, settles down (Sillero et al., 2023), and has a higher tendency to brain drain (Dikeç et al., 2023). The migration of Generation Z abroad concerns the nursing profession as much as it concerns every professional group. Countries need a newly graduated nurse workforce. It has been determined that Generation Z nursing students leave their profession to go abroad after graduation (Kim et al., 2021). The migration of nurses to different countries creates a serious shortage of nurses worldwide. The International Council of Nurses (ICN) has stated that the nursing shortage should be addressed as a "global health emergency" (ICN, 2023). In order to take precautions against the nursing shortage, it is important to determine the

attitudes of Generation Z nursing students, who are currently receiving education, towards brain drain and the affecting factors.

The migration of skilled individuals to developed countries due to factors such as better education, working, and living conditions is called the brain drain (Peters et al., 2020). The brain drain constantly raises the education level and number of skilled workers in a developed country, further elevating its development level by influencing every area of the country. Therefore, to attract skilled individuals, developed countries compete with each other and constantly exhibit changes (Khan, 2021; Shinwari et al., 2021). These countries used to receive skilled or unskilled individuals; however, later on, along with the development of new strategies and policies, they focused on individuals who had received high school, undergraduate, and master's education and were likely to exhibit career developments (Özdemir and İlhan, 2021). While the number of individuals migrating from Türkiye alongside brain drain was 287651 in 2021, this figure has increased by over 62% in recent years and reached 466914. It can be stated that the age group migrating most from Türkiye alongside brain drain was the group aged 25-29 years (TurkStat, 2022), in other words, the age group migrating most from Türkiye was formed by the first members of Generation Z (Özdemir and İlhan, 2021). It is discerned that students who are currently from Generation Z prefer the USA and Germany mostly (UNESCO, 2020). The most significant factors inducing students to go abroad and continue to stay there are systematic and regular living conditions abroad and economic and political instabilities experienced in Türkiye (Özdemir and İlhan, 2021). Likewise, in the context of brain drain, earning a better income and having the possibility of having a proper career advancement in the professional occupation in the destination country looked attractive to students, whilst the impossibility of being occupied with a profession well-suited to their areas of specialization and negative working conditions in the country of origin pushed students to brain drain (Öncü et al., 2021). Particularly in recent years, foreign countries began to demand a skilled workforce from Türkiye, primarily in the fields of information and health. In the field of health, it is estimated that approximately 800 doctors and 48 nurses migrated from Türkiye in the first four months of 2022, and 2,000 doctors and nearly 3,000 nurses and midwives are likely to migrate from Türkiye toward the end of 2022 (Kahya, 2022; Korcu, 2022). It is discerned that the

professional group that was pushed most to the brain drain was health workers. The International Labor Organization (ILO) found that brain drain increased by 60% among nurses that formed a large part of the army of health workers (Peters et al., 2020). Such a large increase necessitates the evaluation of factors pushing nurses to brain drain. Therefore, it is necessary to analyze the attitudes of nursing students, who receive education to be part of a professional group, toward brain drain. There are studies examining the attitudes of nursing students towards brain drain in Türkiye (Demiray et al., 2020; Seven and Adadioğlu, 2022; Turan, 2021). However, the changing conditions of the country during the period when these studies were carried out and the significant increase in the migration of nurses abroad in recent years caused the Turkish Nurses Association to work to take precautions in this regard (TNA, 2023). Departing from this need, this research was conducted to analyze the attitudes of Generation Z nursing students toward brain drain.

## Methods

### Design and Setting

This research is a descriptive and cross-sectional study.

### Setting and Participants

The research population was the students enrolled in 2022 in the Department of Nursing of the Faculty of Health Sciences of a public university in Türkiye (N=465). The research was conducted August – November 2022. In the research, it was aimed to reach the entire population without using the sample selection method, and the sample was formed by n=356 students who could be reached during the period when the research was conducted and who agreed to participate in the research. 76.5% of the students making up the population participated in the study.

### Measurement

An online survey form containing the “Descriptive Characteristics Form” and the “Attitude Scale for Brain Drain” was used in the collection of research data.

**Descriptive characteristics form:** The form contained 27 questions designed to find out nursing students’ individual characteristics (age, gender, marital status, and so on) and views about going abroad (purpose of wanting to go abroad, situations that affect wanting to go abroad, expectations from abroad, possible problems about abroad, and country wanted to go). Students gave more than one

answer to the views about going abroad questions in the descriptive characteristics form.

**Attitude scale for brain drain (BD-s):** The BD-s that was developed by Öncü et al. (2018) to evaluate nursing students’ attitudes toward brain drain comprises 16 items (2 negatively-worded items and 14 positively-worded items). Items 3 and 15 are reverse-scored. The BD-s has no subscale but has a structure with two components, pull (12 items) and push (4 items). Push components cover factors that affect an individual’s decision to leave the country of origin and are related to the circumstances of the country of origin. Pull components refer to the conditions attracting an individual to the destination country, such as the possibility of finding employment, better career opportunities, a better life, and freedom in several areas. BD-s pull components are items 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 15, and 16, while BD-s push components are items 7, 9, 11, and 13. Each BD-s item is rated through a five-point Likert scale (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree). Minimum and maximum scores to be obtained from the BD-s are 16 and 80 points, respectively, and an increase in the BD-s score shows that the brain drain tendency increases. Cronbach’s alpha coefficient was 0.91 for the 16-item overall BD-s and 0.88 and 0.86 successively for its pull and push components. In the current study, Cronbach’s alpha coefficient was calculated as 0.89 for the overall BD-s and 0.84 and 0.83 consecutively for its pull and push components (Öncü et al., 2018).

### Data Collection

The research data were collected with a survey form that was prepared online. The link to the online survey form was sent to all students via students’ university e-mail addresses and through applications establishing intra-institution communication, and accordingly, all students were invited to participate in the research. A total of 356 students volunteered to participate in the research. The Google Forms for the research was prepared via the e-mail address of the university where the study was conducted. Students cannot access the survey form without logging in with their university e-mail addresses. Logging in from the settings section of the form is required and limited to a single response to prevent repeated entries.

### Data Analysis

The research data were analyzed with the Statistical Package for Social Science (SPSS) 22.0.

In the analysis, numbers, percentages, means, medians, and standard deviations were used as descriptive statistics. The independent samples t-test and the one-way analysis of variance (ANOVA) were used in the analysis of normally-distributed data, whilst the Mann-Whitney U test and the Kruskal-Wallis H test were utilized in the analysis of data with non-normal distribution. Besides, post hoc tests were employed to find which group had a statistically significant difference from other groups

### Results

Upon the review of participant nursing students' characteristics, it was found that students had a mean age of 20.73 years, and of all students, 27.8% were first-year students, 26.6% were second-year students, 22.8% were third-year students, and again 22.8% were fourth-year students. Moreover, it as discerned that nearly all participant nursing students were female (75.8%), single (91.6%), and Turkish (89.6%), and more than half of them voluntarily selected the nursing profession (66.3%). Besides, it was identified that nearly all participant nursing students wanted to go abroad (92.7%) (Table 1).

**Table 1.** Nursing students' descriptive characteristics and BD's mean scores (n=356)

Properties	Attitude Scale for Brain Drain (BD-s)		
	Pull components Mean±SD (min-max)	Push components Mean±SD (min-max)	BD-s Mean±SD (min-max)
Age	Mean±SD = 20.73±1.99		
<b>Class</b>			
1. Class (n=99. %27.8) <sup>a</sup>	28.94±7.05 (12-45) <sup>a</sup>	7.52±2.73 (4-15) <sup>a</sup>	37.54±8.55 (19-58) <sup>a</sup>
2. Class (n=95. %26.6) <sup>b</sup>	25.78±7.43 (12-48) <sup>b</sup>	6.76±2.73 (4-18) <sup>b</sup>	33.94±8.91 (20-58) <sup>b</sup>
3. Class (n=81. %22.8) <sup>c</sup>	24.06±7.57 (12-49) <sup>c</sup>	6.18±2.69 (4-16) <sup>c</sup>	31.80±9.65 (16-61) <sup>c</sup>
4. Class (n=81. %22.8) <sup>d</sup>	25.75±6.40 (12-41) <sup>d</sup>	6.88±2.77 (4-18) <sup>d</sup>	33.85±8.66 (17-57) <sup>d</sup>
<b>Test value</b>	F=7.512	F=3.633	F=6.551
<b>p value</b>	<b>p=0.000*</b>	<b>p=0.013*</b>	<b>p=0.000*</b>
<b>Post-hoc</b>	<b>a-b, a-c, a-d***</b>	<b>a-c****</b>	<b>a-b, a-c, a-d***</b>
<b>Student Nationality</b>			
Turkish Students (n=319. %89.6)	26.15±7.54 (12-49)	6.72±2.69 (4-18)	34.31±9.25 (16-61)
Foreign Students (n=37. %10.4)	27.27±5.13 (17-42)	8.16±3.05 (4-18)	35.54±8.09 (19-57)
<b>Test value</b>	t=-1.186	t=-3.029	t=-0.774
<b>p value</b>	p=0.241	<b>p=0.003*</b>	p=0.439
<b>Gender</b>			
Female (n=270. %75.8)	27.00±7.15 (12-49)	7.02±2.84 (4-18)	35.47±9.06 (16-61)
Male (n=86. %24.2)	23.94±7.43 (12-44)	6.38±2.46 (4-13)	31.18±8.67 (16-53)
<b>Test value</b>	t=3.426	t=1.894	t=3.861
<b>p value</b>	<b>p=0.001*</b>	p=0.059	<b>p=0.000*</b>
<b>Marital status</b>			
Married (n=30. %8.4)	26.40±7.09 (14-44)	6.90±3.43 (4-18)	32.96±10.84(16-57)
Single (n=326. %91.6)	26.25±7.36 (12-49)	6.87±2.70 (4-18)	34.57±8.97 (16-61)
<b>Test value</b>	t=0.104	t=0.055	t=-0.921
<b>p value</b>	p=0.917	p=0.956	p=0.358
<b>Childhood place</b>			
Village/Town (n=77. %21.6) <sup>a</sup>	27.80±6.63 (12-45) <sup>a</sup>	7.54±2.98 (4-18) <sup>a</sup>	36.49±8.78 (19-58) <sup>a</sup>
District (n=115. %32.3) <sup>b</sup>	26.85±7.77 (12-44) <sup>b</sup>	6.56±2.64 (4-16) <sup>b</sup>	32.70±9.25 (16-58) <sup>b</sup>
City (n=164. %46.1) <sup>c</sup>	26.53±7.19 (12-49) <sup>c</sup>	6.77±2.70 (4-18) <sup>c</sup>	34.68±9.05 (17-61) <sup>c</sup>
<b>Test value</b>	F=4.010	F=3.132	F=4.147
<b>p value</b>	<b>p=0.019*</b>	<b>p=0.045*</b>	<b>p=0.017*</b>
<b>Post-hoc</b>	<b>a-b***</b>	<b>a-b****</b>	<b>a-b***</b>

**Table 1.** (continue) Nursing students' descriptive characteristics and BD's mean scores (n=356)

Properties	Attitude Scale for Brain Drain (BD-s)		
	Pull components Mean±SD (min-max)	Push components Mean±SD (min-max)	BD-s Mean±SD (min-max)
Age	Mean±SD = 20.73±1.99		
<b>Family structure</b>			
Traditional/conservative(n=263. %73.9)	26.65±7.36 (12-49)	6.96±2.73 (4-16)	34.87±9.17 (16-61)
Modern (n=93. %26.1)	25.17±7.18 (12-48)	6.60±2.83 (4-18)	33.21±9.00 (16-57)
Test value	t=1.679	t=1.102	t=1.504
p value	p=0.094	p=0.271	p=0.134
<b>Voluntarily selected the profession</b>			
Yes (n=236. %66.3)	27.28±6.99 (12-49)	7.20±2.88 (4-18)	35.64±8.92 (16-61)
No (n=120. %33.7)	24.25±7.60 (12-45)	6.22±2.39 (4-15)	32.06±9.14 (16-58)
Test value	t=3.751	t=3.197	t=3.546
p value	<b>p=0.000*</b>	<b>p=0.002*</b>	<b>p=0.000*</b>
<b>Had been abroad before</b>			
Yes (n=58. %16.3)	26.67±6.24 (12-42)	7.55±2.91 (4-18)	34.60±8.39 (17-57)
No (n=298. %83.7)	26.18±7.53 (12-49)	6.74±2.71 (4-18)	34.40±9.29 (16-61)
Test value	t=0.522	t=2.051	t=0.150
p value	p=0.603	<b>p=0.041*</b>	p=0.881
<b>Had a relative abroad</b>			
Yes (n=164. %46.1)	25.18±7.04 (12-45)	6.65±2.63 (4-18)	33.28±8.63 (16-58)
No (n=192. %53.9)	27.18±7.47 (12-49)	7.05±2.86 (4-18)	35.42±9.46 (16-61)
Test value	t=-2.583	t=-1.358	t=-2.208
p value	<b>p=0.010*</b>	p=0.175	<b>p=0.028*</b>
<b>Making an effort to go abroad</b>			
Yes (n=135. %37.9)	23.36±6.88 (12-42)	6.24±2.36 (4-14)	31.10±8.19 (16-55)
No (n=221. %62.1)	28.04±7.04 (12-49)	7.25±2.92 (4-18)	36.47±9.11 (16-61)
Test value	t=-6.131	t=-3.406	t=-5.604
p value	<b>p=0.000*</b>	<b>p=0.001*</b>	<b>p=0.000*</b>
Properties	Attitude Scale for Brain Drain (BD-s)		
	Pull components Median (25-75) percentil	Push components Median (25-75) percentil	BD-s Median (25-75) percentil
<b>Income perception</b>			
Low (n=50. %14) <sup>a</sup>	21.00 (19-26) <sup>a</sup>	4.50 (4-8) <sup>a</sup>	29.00 (21-34) <sup>a</sup>
Medium (n=278. %78.1) <sup>b</sup>	27.00 (22-32) <sup>b</sup>	7.00 (4-9) <sup>b</sup>	36.00 (29-41) <sup>b</sup>
High (n=28. %7.9) <sup>c</sup>	26.00 (21,5-30) <sup>c</sup>	6.00 (4-8,5) <sup>c</sup>	33.50 (27-39,5) <sup>c</sup>
Test value	X <sup>2</sup> =21.859	X <sup>2</sup> =12.885	X <sup>2</sup> =25.220
p value	<b>p=0.000*</b>	<b>p=0.002*</b>	<b>p=0.000*</b>
Post-hoc	<b>a-b, a-c***</b>	<b>a-b, a-c***</b>	<b>a-b, a-c***</b>
<b>Mother's education level</b>			
Illiterate (n=25. %7.0) <sup>a</sup>	24.00 (21-29) <sup>a</sup>	7.00 (4-8)	30.00 (24-36) <sup>a</sup>
Elementary school graduate(n=159. %44.7) <sup>b</sup>	27.00 (22,5-32) <sup>b</sup>	7.00 (5-8)	36.00 (29-41) <sup>b</sup>
Middle/highschool graduate (n=147. %41.3) <sup>c</sup>	26.00 (20-30) <sup>c</sup>	6.00 (4-8)	34.00 (27-40) <sup>c</sup>
Undergraduate/Postgraduate (n=25. %7.0) <sup>d</sup>	25.00 (20-27) <sup>d</sup>	6.00 (4-8)	31.00 (25-37) <sup>d</sup>
Test value	X <sup>2</sup> =8.429	X <sup>2</sup> =3.720	X <sup>2</sup> =8.868
p value	<b>p=0.038*</b>	p=0.293	<b>p=0.031*</b>
Post-hoc	<b>b-c***</b>		<b>b-c***</b>

**Table 1.** (continue) Nursing students' descriptive characteristics and BD's mean scores (n=356)

Properties	Attitude Scale for Brain Drain (BD-s)		
	Pull components	Push components	BD-s
	Median (25-75) percentil	Median (25-75) percentil	Median (25-75) percentil
<b>Father's education level</b>			
Illiterate (n=7. %2) <sup>a</sup>	26.00 (23,5-30,5)	7.00 (6,5-10)	34.00 (31-40)
Primary school graduate (n=108. %30.3) <sup>b</sup>	27.00 (23,5-31,5)	7.00 (4,5-8)	35.00 (30-41)
Middle/highschool graduate (n=189. %53) <sup>c</sup>	26.00 (20-31)	6.00 (4-8)	35.00 (27-41)
Undergraduate/Postgraduate(n=52. %14.7) <sup>d</sup>	25.50 (17,5-31)	6.00 (4-8)	32.50 (24-40)
<b>Test value</b>	X <sup>2</sup> =4.507	X <sup>2</sup> =4.183	X <sup>2</sup> =3.752
<b>p value</b>	p=0.212	p=0.242	p=0.290
<b>Working status</b>			
Part/Full time (n=28. %7.9)	24.00 (20-28,5)	6.00 (4-8)	29.50 (24,5-37,5)
Not working (n=328. %92.1)	27.00 (21-31)	7.00 (4-8)	35.00 (27-41)
<b>Test value</b>	Z=-1.633	Z=-1.447	Z=-2.060
<b>p value</b>	p=0.103	p=0.148	<b>p=0.039*</b>
<b>Wanting to go abroad</b>			
Yes (n=330. %92.7)	26.00 (21-31)	6.00 (4-8)	34.00 (27-40)
No (n=26. %7.3)	35.00 (30-39)	9.00 (6-12)	45.50 (39-50)
<b>Test value</b>	Z=-5.161	Z=-3.301	Z=-4.746
<b>p value</b>	<b>p=0.000*</b>	<b>p=0.001*</b>	<b>p=0.000*</b>

\*,p<0.05. \*\*\*, Dunnett's T3. \*\*\*\*, Bonferroni. Z= Mann Whitney U. t= Student t Testi. F= One Way Anova. X<sup>2</sup>= Kruskal Wallis. SD:Standart Deviation.

In Next, in the context of examining nursing students' mean BD-s scores, it was discerned that the mean scores obtained by nursing students from the overall BD-s and its pull and push components were successively 34.43±9.14, 26.26±7.33, and

6.87±2.76 points. The minimum and maximum values obtained by nursing students from the overall BD-s and its pull and push components were successively 16-61, 12-49 and 4-18 (Table 2).

**Table 2.** BD-s Mean Values of Nursing Students (n=356)

Variables	Min-max points of the original scale	Mean±SD (Min-Max)
Pull Components	12-60	26.26±7.33 (12-49)
Push Components	4-20	6.87±2.76 (4-18)
BD-s	16-80	34.43±9.14 (16-61)

Moreover, upon the evaluation of nursing students' migration-related characteristics, it was found that nursing students wanted to go abroad mostly for the purpose of working (64.5%), and this interest in going abroad for work was triggered mostly by economic factors (71.5%) and circumstances related to their professional/career development goals (67.8%). Also, it was identified

that they wanted to go mostly to Germany (55.7%) and Canada (41.5%), generally expected to have a better work environment (77.2%) and higher economic welfare (74.5%) abroad, on the other hand, they primarily experienced language problems (68.1%) and feared staying away from the family (47.5%) (Table 3).

**Table 3.** Evaluation of nursing students' migration-related characteristics

Immigration Situations Abroad	n	%
<b>Purpose of wanting to go abroad*</b>		
Education	68	20.6
To work	213	64.5
To live	163	49.3

**Table 3.** (continue) Evaluation of nursing students' migration-related characteristics

Immigration Situations Abroad	n	%
<b>Situations that affect wanting to go abroad*</b>		
Family/Social reasons	121	36.6
Educational reasons	92	27.8
Economic factors	236	71.5
Politic reasons	69	20.9
Reasons related to the health system	77	23.3
Professional/career development goals	224	67.8
Other	12	3.63
<b>Expectations from abroad*</b>		
Better education	130	39.3
Better work environment	255	77.2
Better career	195	59.0
Higher economic welfare	246	74.5
Better social prosperity	171	51.8
Other	12	3.63
<b>Possible problems about abroad*</b>		
Languages problems	225	68.1
Stay away from family	157	47.5
Fear of exclusion	92	27.8
Fear of not getting a job	59	17.8
Cultural problems	115	34.8
Economic problems	94	28.4
Other	8	2.42
<b>Country wanted to go*</b>		
Germany	184	55.7
America	123	37.2
England	107	32.4
Switzerland	100	30.3
Canada	137	41.5
Other	49	14.8

\*It was calculated over the number of students who stated that they wanted to go abroad (n=330), and the students gave more than one answer.

Besides, in the context of analyzing nursing students' BD-s mean scores as per their descriptive characteristics, it was discerned that nursing students who were first-year students, who were female, who were foreigners, who perceived themselves as having a medium-level income, who spent their childhood in a village or town, who had a traditional family structure, whose mothers were elementary school graduates, whose mothers and/or fathers were working, who were not working, who voluntarily selected the nursing profession, who had been abroad before, who had a relative abroad, who did not want to go abroad, and who made no effort to go abroad obtained higher mean scores from both the overall BD-s and its pull and push components. Also, it was identified that there were statistically significant between-group differences in means of nursing students' BD-s pull components scores as per the variables of class year, gender, income perception, the place of residence during childhood, mother's education level, the status of voluntarily selecting the nursing profession, the status of having

a relative abroad, the status of wanting to go abroad, and the status of making efforts to go abroad (p<0.05) (Table 1). Additionally, it was found that there were statistically significant between-group differences in means of nursing students' BD-s push components scores as per the variables of class year, nationality, gender, perceived income level, the place of residence during childhood, the status of voluntarily selecting the nursing profession, the status of staying abroad previously, status of wanting to go abroad, and the status of making efforts to go abroad. Lastly, it was discerned that there were statistically significant between-group differences in means of nursing students' overall BD-s scores as per the variables of class year, gender, income perception, the place of residence during childhood, mother's education level, the status of voluntarily selecting the nursing profession, the status of having a relative abroad, the status of wanting to go abroad, and the status of making efforts to go abroad. According to the analyses conducted to find out which group/groups

caused the statistically significant difference between the groups according to the class levels of the students, it was found that the difference between the 1st class and 2nd class, 1st class and 3rd class and 1st class and 4th class groups in the pull component and BD-s, and between the 1st and 3rd class groups in the push component. The pull, push component and BD-s difference between the village/town and district groups caused the difference between the groups. According to the income perception of the students, it was found that the between-group difference in the pull, push component and BD-s was caused by the group with low and medium income perception and low and high income perception. According to the educational level of the mother, it was found that the between-group difference in the pull component and BD-s was caused by the group with elementary school graduates and middle/highschool graduates ( $p < 0.05$ ) (Table 1).

### Discussion

It was determined that the components that pull and push Generation Z nursing students participating in this study to brain drain and their attitudes towards brain drain were low. The factors that drive students towards brain drain include the desire for improved conditions, such as enhanced career prospects and better work opportunities. However, it can be said that the low level of factors pulling students to brain drain in our study may be due to the fact that the procedures required to go abroad in our country are expensive, difficult and take a long time (Tanrısevdi et al., 2019) and that they experience uncertainty about their ability to have the life they dream of abroad (Özdemir and İlhan, 2021). The components that push students to brain drain are factors arising from the country's conditions, such as the country's economic and labor structure. In this study, it is thought that the factors that push students to brain drain were found to be low due to the fact that nursing students have not yet graduated and have not started their professional life, so they could not realize the difficulties of working life in Türkiye and could not have information about opportunities. In contrast to the literature (Seven and Adadioğlu, 2022), our study suggests that the low attitudes of Generation Z nursing students towards brain drain may be influenced by their economic dependence on their families until they secure employment, which is shaped by Turkish culture and structure (Hosseinmezhad and Karataş, 2021). The finding

that the brain drain tendencies of the new generation of nurses who will join the workforce in the near future are low is a pleasing result for the future of nursing manpower in Türkiye. On the other hand, these findings suggest that even if nursing students have not yet made an attempt to migrate from Türkiye, measures should be taken to ensure that they stay in Türkiye and to reduce their desire to migrate from Türkiye after graduation.

In the relevant literature, there are different findings about nursing students' attitudes toward brain drain. In a similar vein to the current study, certain studies found that brain drain tendencies were below average (Demiray et al., 2020), however, certain studies reported that brain drain tendencies were high (Öncü et al., 2021; Seven and Adadioğlu, 2022; Turan, 2021). In particular, it is put forward that members of Generation Z exhibited an attitude of valuing the family structure due to receiving more attention from their parents and spending more time with parents than members of other generations did (Parker and Igielnik, 2020), and members of Generation Z felt anxious about leaving their family and the surrounding environment in which they lived (Etcı and Özbek, 2019). Thus, in the current study, nursing students' assertions that, after language problems, they would mostly experience the fear of staying away from the family when abroad are consistent with the findings in the relevant literature.

In the current study, it was found that nursing students wanted to go mostly to Germany and Canada to work, and this interest was triggered by economic factors as well as circumstances related to their professional/career advancement goals, and they expected to have a better work environment and higher economic welfare in the destination country. Obtaining these findings is evaluated as an expected outcome because Türkiye was affected by the economic crisis experienced across the entire world in recent years, particularly after the COVID-19 pandemic, and both nursing students and the currently-working nurses were affected by the economic measures implemented in Türkiye as a result of this economic crisis. This situation affected the welfare levels and living conditions of students whose income levels decreased (Özmen et al., 2022; Yıldırım et al., 2021). As a consequence, it can be said that nursing students wanted to go to countries with high levels of economic welfare and continue their future lives in these countries both to improve their current societal living conditions and raise their living standards and to have better working

conditions to support their career and professional development goals in the future. These findings once again demonstrate that, first of all, the economic welfare level and working conditions should be improved to ensure that the educated human force stays in Türkiye. In a similar vein, a previous study found that students perceiving themselves as having medium and high levels of income had high brain drain tendencies (Demiray et al., 2020). Along with this situation, it is considered that students' expectations about career and professional development as well as their economic expectations will come to the fore in working life in the future.

It can be said that female nursing students had higher brain drain tendencies due to factors such as the identification of women with traditional roles like being a mother and being a wife in both societal and working lives, the failure to ensure gender equality adequately, and the insufficiency of opportunities offered to women in the working life along with the patriarchal structure of Turkish society (Akgül, 2022; Biehl and Daniş, 2020). However, the high tendency of students with low maternal education levels suggests that they want to provide support to their families by obtaining better conditions. This consideration is also supported by the findings that nursing students wanted to migrate from Türkiye primarily to work abroad, and familial and social factors ranked third among the factors associated with migration. In the relevant literature, it is emphasized that nursing students with elementary school graduate mothers had higher migration tendencies (Seven and Adadioğlu, 2022), mothers with high-level education supported the child's career development more (Lim and You, 2019), and strong family ties in Türkiye and the respect and affection felt toward the mother had effects on the child's career development, and the willingness to provide the mother with a better life and opportunities motivated members of Generation Z to take risks in their career development (Akran, 2020), and hence, the findings in the relevant literature support our above consideration. Additionally, in light of the finding that female nursing students had high brain drain tendencies in terms of both push and pull components, it is thought that they believed that they would not be able to meet their expectations about the working life in Türkiye, and therefore, they tended to migrate to foreign countries that were attractive in this regard. Alongside this tendency, it can also be commented that female nursing students from

Generation Z reacted to negative circumstances in their working lives and sought to work under equal terms and conditions that they deserved. In summary, the current study reveals that female nursing students had higher brain drain tendencies due to a variety of factors. The identification of these factors can help health education institutions, policy-makers, and nurse instructors design strategies well-suited to the elimination of female nursing students' worries and prevent the loss of the valuable nursing workforce in the health sector.

In the current research, finding that nursing students who grew up in relatively small settlements had high brain drain tendencies was an expected outcome, and it is evaluated that this situation was associated with the socio-economic development levels of these small settlements. This situation is thought to have arisen from nursing students from small towns and villages having less access to goods and services than those from cities. On the other hand, contrary to these findings of the current study, in the relevant literature, it is discerned that nursing students raised in large metropolises were more inclined to brain drain than those raised in less developed cities and villages (Öncü et al., 2021).

The finding that nursing students who had no relatives abroad had high brain drain tendencies despite having nobody to supply them social support after migrating to a foreign country, such as friends, relatives, and acquaintances, proves how courageous they were on the matter of migration from Türkiye. It is considered that this situation stemmed from the characteristics of Generation Z, to which the nursing students belonged.

The finding that nursing students who were first-year students and were accordingly at the beginning of their professional education and who voluntarily selected the nursing profession had higher brain drain tendencies in the current study is evaluated as a striking and worrying result for the future of the human force in nursing in Türkiye. This is a situation that needs to be addressed by policy-makers in both the economy and health fields in the context of the professional migration likely to take place in both nursing and other fields in the future. Another study also yielded similar findings (Demiray et al., 2020). The lack of sense of belonging to the nursing profession and the absence of nursing experience may have led first-year students, who have recently started to receive nursing education, to have high brain drain tendencies. Besides, nursing students who voluntarily selected the nursing profession had high

brain drain tendencies to have professional career opportunities and continue their professional development. Also, in the relevant literature, nursing students who voluntarily selected the nursing profession performed the profession willingly and took a proactive role in developing their professionalism, evaluating their career opportunities, and creating working conditions that they aspired to have (Bölükbaş, 2018; Çetin Avcı et al., 2019; Sönmez et al., 2019).

In light of the finding that foreign students had high brain drain tendencies, particularly in terms of push components, it is estimated that foreign students' expectations, primarily economic expectations, were not met in Türkiye, the country where they received education (Öncü et al., 2021). The majority of foreign students studying at the institution where the current study was conducted came from Africa where there were mostly less developed countries. Türkiye, which is a developing country, spends money on education 4.5 times as much as African countries do (Birgücü, 2022). Along with this situation, it is estimated that students coming from Africa viewed Türkiye as a transit country to be used in the migration to developed countries after they completed their education in Türkiye (Şişman and Balun, 2021).

It is considered that nursing students who went abroad previously felt more confident due to factors such as getting acquainted with countries that they visited and experiencing the processes for going abroad, and thus, they had higher brain drain tendencies. In a similar vein, certain studies stated that previously staying abroad affected migration positively (Abou Hashish and Ashour, 2020; Seven and Adadioğlu, 2022), however, unlike the current study, it was also suggested that nursing students who did not participate in student exchange programs had higher brain drain tendencies (Demiray et al., 2020).

### Limitations

Collecting research data not face-to-face but online led to a decrease in the participation of nursing students in the research. Also, the research results are limited to the self-reports of nursing students who studied at one institution and volunteered to participate in the research.

### Conclusion and Recommendation

According to research results, to have a better work environment and higher economic welfare in light of economic factors as well as factors related to career development, the majority of Generation Z nursing students want to go to Germany and Canada

for the purpose of working. However, they have brain drain tendencies below the average and take no action to migrate from Türkiye. Students' brain drain tendencies differ as per the class year, gender, income perception, the place of residence during childhood, mother's education level, the status of voluntarily selecting the nursing profession, the status of having a relative abroad, the status of wanting to go abroad, and the status of making efforts to go abroad.

Both the domestic factors pushing nurses toward migration from Türkiye and external factors enticing nursing students to migrate to foreign countries should be analyzed to prevent the recently growing brain drain from increasing even further and to avoid a shortage in the human force in nursing in the near future. Also, by having an understanding of the concerns of Generation Z nursing students, measures to improve working and economic conditions should be taken to ensure the availability of a sustainable and qualified health workforce in the future. Besides, in future research studies, an assessment of the general situation should be made by prospectively examining the brain drain attitudes of Generation Z nurses and nursing students. Taking into account different factors that may affect Generation Z nursing students' attitudes towards brain drain, it is recommended that the study be repeated on a larger sample using multiple analysis methods in order to control confounding factors.

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### What did the study add to the literature?

- Generation Z nursing students' attitudes towards brain drain are low.

- While the economic policies and economic structure followed by Türkiye recently are among the factors that push Generation Z nursing students to brain drain, professional/career development is among the factors that pull them.
- Career development-oriented job opportunities and better working conditions are needed to prevent the brain drain of Generation Z nursing students.
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