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Original Article

Investigation of Nursing Students' Attitudes toward Brain Drain at a Foundation University: A Descriptive Study

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What is already known on this topic?

- *Migration of healthcare professionals, particularly nurses, is a growing global concern that affects the sustainability of national healthcare systems.*
- *Nursing students, as future professionals, often consider international opportunities due to personal, professional, and systemic factors.*

What does this study add to the existing knowledge?

- *This study reveals the attitudes of undergraduate nursing students—future healthcare professionals—toward brain drain and identifies key influencing factors such as age, willingness to work abroad, and cross-cultural communication ability.*
- *It highlights the importance of recognizing and addressing the migration intentions of nursing students to inform workforce planning and reduce potential loss of qualified healthcare personnel.*
- *Identifying in detail the factors influencing the migration tendencies of nursing students allows for the development of systems that support personal, professional, and career opportunities. These findings provide evidence-based recommendations to improve education, employment, and career prospects in the home country, which may help reduce brain drain in the nursing profession.*

ABSTRACT

Aim: The aim is to examine the attitudes of nursing students studying at a foundation university toward brain drain.

Method: This cross-sectional and descriptive study was conducted in accordance with the STROBE guidelines to examine the attitudes of nursing students toward brain drain and related factors. Data were collected from students at a foundation university in Istanbul between March 1 and May 30, 2024. The sample of the study consisted of 191 students studying in the undergraduate nursing program at a foundation university. Stratified sampling technique was used to determine the sample. The data were collected using a questionnaire form including socio-demographic characteristics and the 16-item attitude scale toward brain drain (ASBD). Descriptive statistics and Spearman correlation analysis were used in the analysis of the data.

Results: Three-quarters (74.3%) of the students participating in the study were female and the mean age was 21.18 ± 1.60 years. About 55% of the students stated that they were hesitant to go to a different country and 48.1% stated that they could easily communicate with people from different cultures. The total mean score of the nursing students on the ASBD was 54.01 ± 11.39. As a result of the examination of the factors affecting the total ASBD scores using Spearman correlation analysis, it was determined that they were related to age, hesitation to go to a different country, wanting to work in a different country, and having the ability to interact smoothly with individuals from diverse cultural backgrounds.

Conclusion: The study found that nursing students exhibited above-average attitudes toward brain drain and that factors such as age, reluctance to migrate, desire to work abroad, and the ability to communicate comfortably with individuals from diverse cultural backgrounds significantly influenced these attitudes. In order to reduce students' attitudes toward brain drain, better living, working, and educational and career opportunities should be created for students and strategies to combat the brain drain phenomenon should be developed.

Keywords: Brain drain, nursing students, attitude

Introduction

Migration is defined as the voluntary or forced movement of people from their place of residence to another place, either individually or en masse, due to economic, social, political, and cultural factors.[1-4] It is known that migrations have always occurred throughout time, but the factors that cause migration vary.[3] Migrations originate from the characteristics of the current period. People migrated in ancient times to have sustainable living conditions, which changed in later periods due to economic and political factors. Today, it is seen that population mobility for work and education has been added to migration

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reasons.[5] In particular, a significant portion of labor migration has turned into brain drain mobility.[1]

Brain drain refers to educated people working or staying in a country different from their own, and it means that people who have completed their education in their own country or abroad and are specialized in their fields migrate to other countries or from one city to another within the country to have better working conditions and higher economic income levels.[5-7]

It is seen that health workers are among the occupational groups with the highest brain drain levels. It has been observed that the migration of healthcare workers has been increasing since the mid-1970s.[8,9] The increasing migration trend and migration of healthcare workers makes it inevitable to examine migration in healthcare manpower planning.[10,11] Brain drain is increasing among healthcare workers in the authors' country as well as around the world.[12] According to the 2023 nurse migration trend study report in the authors' country, it was found that 55.7% of nurses expressed a desire to migrate for economic reasons, 25.8% for reasons related to psychological and physical violence, and 48.9% due to issues related to the profession.[9] Brain drain of healthcare workers is generally from poor countries to richer countries, from countries with limited educational background to countries with advanced educational background and from countries with low levels of domestic peace to countries with more peace.[13]

Although there is information that brain drain has increased in recent years in Türkiye, where there is intense migration movement, the number of studies indicating the disposition of undergraduate students toward brain drain is quite limited. Because nurses are the most important members of the multidisciplinary health team, it is obvious that determining the attitudes of nursing undergraduate students toward brain drain and related factors is important to increase quality and efficiency in healthcare. In the authors' country, where the shortage of qualified and equipped health workers is high, it is very important to make health service plans using evidence-based data. Hence, this study was carried out to explore the perspectives of nursing students at a foundation university regarding brain drain.

The objective of this study was to address the following research questions:

- What are the attitudes of nursing students in a foundation university toward brain drain?
- Which factors contribute to the tendency of nursing students in a foundation university toward brain drain?

Materials and Methods

Aim and Study Type: The research adopted a descriptive, cross-sectional methodology to explore the perspectives of nursing students on brain drain and the factors that affect these perspectives. The observational framework of the study was structured and reported in line with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) recommendations.

Place and Date of the Study: The study was conducted with students studying in the nursing department of a foundation university in Istanbul in the 2023-2024 Academic Year between March 1 and May 30, 2024.

Research Population and Sample: The population of the study consisted of 368 students enrolled at a health sciences department. Since the number of individuals in the population was known, the minimum required sample size was calculated using the Raosoft sample size calculator, with a 95% confidence level, 5% margin of error ($\alpha = 0.05$), and a population size of 368. As a result, the minimum sample size was determined to be 189 students. A total of 191 students were successfully reached and included in the study, thus meeting the minimum sampling requirement. The sample size was calculated with the stratified sampling method as 186 × (100/357) = 52 first grade, 186 × (100/357) = 52 second grade, 186 × (85/357) = 44 third grade, and 186 × (83/357) = 43 fourth grade.[14]

Data Collection Tools: Data were collected using a sociodemographic characteristics form developed by the researchers and the attitude scale toward brain drain (ASBD) in nursing students. The sociodemographic characteristics form consists of 13 questions related to the sociodemographic data of the students. The ASBD was developed by Öncü et al[7] in 2018. The scale consists of 16 items in total, 14 positive and 2 negatives. The scale has a unidimensional 2component structure. The items are grouped under 2 components as "Attractive (1,2,3,4,5,5,6,6,8,10,12,14,15,16) and Repulsive (7,9,11,13) factors." The lowest score that participants can obtain from the scale is 16, and the highest score is 80. A high score indicates that participants are prone to brain drain. The Cronbach's alpha value of the scale is 0.91, and its sub-dimensions are 0.88 and 0.86. In this study, the Cronbach's alpha value of the scale was found as 0.941, the Cronbach's alpha values of the Push and Pull Factors were found as 0.922 and 0.912, respectively. Written permission was obtained for the use of the scale.

Data Collection: Data was collected online from students who voluntarily participated in the study. Consents of the participants were obtained. Data was collected using the sociodemographic characteristics form developed by researchers and the ASBD.

In this study, the Statistical Package for Social Sciences (SPSS) 25.0 Windows programme was used, and statistical significance was accepted as $P < .05$. The distribution of data was determined using skewness and kurtosis tests. The skewness value (−0.570; 0.176) and kurtosis value (0.504; 0.350) were not between −1.5 and +1.5, and it was accepted that the data were not normally distributed.[14] Descriptive statistics were expressed as mean, standard deviation, minimum, maximum, and percentages depending on the distribution, frequency, and percentage for continuous data. Since the data were not normally distributed, the Kruskal-Wallis test was used to examine differences between independent groups. As the data were not normally distributed, Spearman correlation analysis was used to examine the relationships between variables. Cronbach alpha internal consistency analysis was used to determine the validity and reliability of the scales.

Ethical Consideration: Prior to the initiation of the study, ethical approval was obtained from the Social and Human Sciences Ethics Committee of İstanbul Aydın University (Approval No: 2024-02; Date: 15.02.2024). The study adhered to the principles outlined in the 2008 version of the Helsinki Declaration. Students were informed in detail about the purpose and scope of the research before data collection began. Participation was strictly voluntary, and only those who provided informed consent were incorporated in the sample.

Results

The introductory characteristics of the students included in the study are given in Table 1. Three-quarters (74.3%) of the students participating in the study were female and their average age was 21.18 ± 1.60 years. It was found that 88.0% of the students had a sufficient income level, 81.6% had a nuclear family structure, and 56.6% lived with their nuclear family.

Table 1. Sociodemographic Characteristics of Students

		First Grades (n = 52)	Second Grades (n = 52)	Third Grades (n = 44)	Fourth Grades (n = 43)	Total (n = 191)
Age (mean ± SD) (min-max)		19.93 ± 1.16 (18-24)	21.31 ± 1.54 (19-27)	21.41 ± 1.36 (19-24)	22.42 ± 1.15 (20-27)	21.18 ± 1.60 (18-27)
Sex	Female	35 (67.3%)	40 (76.9%)	34 (77.3%)	33 (76.7%)	142 (74.3%)
	Male	17 (32.7%)	12 (23.1%)	10 (22.7%)	10 (23.3%)	49 (25.7%)
Marital status	Married	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Single	52 (100.0%)	52 (100.0%)	44 (100%.0)	43 (100.0%)	191 (100.0%)
Family's monthly income	Insufficient (income less than expenses)	0 (0.0%)	1 (1.9%)	1 (2.3%)	1 (2.3%)	3 (1.5%)
	Adequate (income equals expenses)	47 (90.4%)	48 (92.3%)	40 (90.9%)	33 (76.8%)	168 (88.0%)
	High (income more than expenses)	5 (9.6%)	3 (5.8%)	3 (6.8%)	9 (20.9%)	20 (10.5%)
Family type	Nuclear family	35 (67.3%)	39 (75.0%)	43 (97.7%)	39 (90.7%)	156 (81.6%)
	Extended family	14 (26.9%)	10 (19.2%)	1 (2.3%)	3 (7.0%)	28 (14.7%)
	Broken family	3 (5.8%)	3 (5.8%)	0 (0.0%)	1 (2.3%)	7 (3.7%)
Living place	Domestic	29 (55.8%)	17 (32.7%)	3 (6.8%)	7 (16.3%)	56 (29.3%)
	With nuclear family	15 (28.8%)	30 (57.7%)	35 (79.5%)	28 (65.1%)	108 (56.6%)
	With extended family	5 (9.6%)	2 (3.8%)	1 (2.3%)	0 (0.0%)	8 (4.2%)
	Alone/at home	3 (5.8%)	3 (5.8%)	5 (11.4%)	8 (18.6%)	19 (9.9%)

Mean ± SD, mean ± standard deviation; Min, minimum; Max, maximum.

The factors affecting the brain drain status of the students included in the study are given in Table 2. Of the students, 77.5% stated that they came to the nursing department willingly, 44.7% of the students spoke English, and 74.8% of these students stated that they spoke English at an intermediate level. Around half (55%) of the students stated that they were hesitant to go to a different country and 48.1% stated that they could easily communicate with people from different cultures. Some 39.3% also stated that they wanted to work in a different country from time to time.

The total mean score of the nursing students on the ASBD was found as 54.01 ± 11.39. When the scale score averages were examined on a class basis, it was determined that the average of first graders was 55.29 ± 13.02, the average of second graders was 52.82 ± 13.02, the average of third graders was 54.70 ± 12.95, and the average of fourth graders was 53.19 ± 11.99 (Table 3).

The relationship between attitudes toward brain drain and factors affecting brain drain by grades is analyzed in Table 4. A statistically positive relationship was found between the total score averages obtained from the ASBD of the first and second graders and their hesitation to go to a different country ($r = 0.338$, $P < .05$; $r = 0.330$, $P < .05$). It was also determined that there was a positive relationship between the students' desire to work in a different country and their age ($r = -0.370$, $P < .001$; $r = 0.077$, $P < .01$) and their hesitation to go to a different country ($r = -0.531$, $P < .01$; $r = -0.438$, $P < .05$).

A statistically positive relationship was found between the total mean scores of the third-year students from the ASBD and the intention to work in a different country ($r = -0.432$, $P < .001$). It was also found that there was a positive relationship between the ability to establish easy communication with people from other cultures and the reluctance to go to a different country country ($r = -0.352$, $P < .05$), and between

Table 2. Characteristics of Factors Affecting the Brain Drain Status of Students

		First Grades (n = 52), n (%)	Second Grades (n = 52), n (%)	Third Grades (n = 44), n (%)	Fourth Grades (n = 43), n (%)	Total (n = 191), n (%)
Willingness to come to the nursing department	Yes	46 (88.5)	39 (75.0)	32 (72.7)	31 (72.1)	148 (77.5)
	No	6 (11.5)	13 (25.0)	12 (27.3)	12 (27.9)	43 (22.5)
Knowledge of a foreign language	Don't know	27 (51.9)	25 (48.1)	20 (45.5)	13 (30.2)	85 (44.5)
	English	22 (42.3)	23 (44.2)	22 (50.0)	28 (65.1)	95 (44.7)
	Other	3 (5.8)	4 (7.7)	2 (4.5)	2 (4.7)	11 (5.8)
English proficiency level*	Poor	6 (27.3)	2 (8.7)	2 (9.1)	0 (0.0)	10 (10.5)
	Fair	14 (63.6)	19 (82.6)	18 (81.8)	20 (71.4)	71 (74.7)
	Good	2 (9.1)	2 (8.7)	2 (9.1)	8 (28.6)	14 (14.7)
Reluctance to go to a different country	Always	2 (3.8)	1 (1.9)	4 (9.1)	0 (0.0)	7 (3.7)
	Frequently	6 (11.6)	10 (19.3)	7 (15.9)	4 (9.3)	27 (14.1)
	Sometimes	31 (59.6)	26 (50.0)	19 (43.2)	29 (67.4)	105 (55)
	Never	13 (25.0)	15 (28.8)	14 (31.8)	10 (23.3)	52 (27.2)
Easy communication with people from different cultures	Always	8 (15.4)	6 (11.5)	8 (18.2)	8 (18.6)	30 (15.7)
	Frequently	15 (28.8)	16 (30.8)	10 (22.7)	17 (39.5)	58 (30.4)
	Sometimes	26 (50.0)	28 (53.9)	23 (52.3)	15 (34.9)	92 (48.1)
	Never	3 (5.8)	2 (3.8)	3 (6.8)	3 (7.0)	11 (5.8)
Wanting to work in a different country	Always	14 (26.9)	15 (28.8)	9 (20.5)	5 (11.6)	43 (21.5)
	Frequently	11 (21.2)	13 (25.0)	13 (29.5)	16 (37.2)	53 (27.7)
	Sometimes	21 (40.4)	20 (38.5)	16 (36.4)	18 (41.9)	75 (39.3)
	Never	6 (11.5)	4 (7.7)	6 (13.6)	4 (9.3)	20 (10.5)

Table 3. Total Average Score of the Groups from the Attitude Scale Toward Brain Drain

Scale	First Grades (n = 52)		Second Grades (n = 52)		Third Grades (n = 44)		Fourth Grades (n = 43)		Total (n = 191)	
ASBD	**Mean ± SD**	**Min.-Max.**	**Mean ± SD**	**Min.-Max.**	**Mean ± SD**	**Min.-Max.**	**Mean ± SD**	**Min.-Max.**	**Mean ± SD**	**Min.-Max.**
	55.29 ± 11.39	24-80	52.82 ± 13.02	18-79	54.70 ± 12.95	17-74	53.19 ± 11.99	20-74	54.01 ± 12.29	17-80

ASBD, attitude scale toward brain drain; Mean ± SD, mean ± standard deviation; Min, minimum; Max, maximum.

the ability to work in a different country and the ability to communicate easily with people from different cultures ($r = 0.379$, $P < .05$). A statistically positive relationship was found between the total mean scores of the fourth-year students from the ASBD and being hesitant to go to a different country and being able to work in a different country ($r = -0.301$, $P < .05$). It was also found that there was a positive relationship between being able to establish easy communication with people from other cultures ($r = 0.469$, $P < .001$).

Discussion

The factors affecting the total scores of the ASBD of the students were examined, and it was determined that they were related to age, hesitation to go to a different country, wanting to work in a different country, and being able to establish easy communication with people from other cultures. The total mean score of the ASBD of the nursing students was found as 54.01 ± 11.39. When the mean scores of the scale were examined on a class basis, it was concluded that the means were close to each other, but the highest mean was in the first year (55.29 ± 13.02) and the lowest was in the second year (52.82 ± 13.02). It was thought that the higher attitudes of the first-year students, who constituted the lowest age group, toward brain drain, might be because they did not yet have clinical experience and had not yet developed a professional identity.[15] In the research by Gostautaite et al.,[16] it was also revealed that the participants' desire to migrate decreased as they became older.

When the literature on nursing students' attitudes toward brain drain is reviewed, findings appear to be inconsistent. While researches carried out by Demiray et al[17] and Gençbaş et al[18]reported below-average attitude scores (42.98 and 40.23, respectively),[17,18] research by Tosunöz et al[19] and Seven et al[12] found higher attitude scores (56.64 and 53.88, respectively), indicating a more favorable view toward brain drain.[12,19] In the current study, students' attitudes were also found to be above average, with a mean score of 54.01 (Table 3). These discrepancies among reseaches may be attributed to factors such as differences in sample sizes, geographical regions, or academic year levels.

A statistically relevant positive relationship was identified among the total mean scores of third- and fourth-year students on the ASBD and their desire to work in another country (Table 4). Furthermore, a positive association was observed between the desire to work abroad and the ability to communicate effectively with individuals from diverse cultural backgrounds. This finding suggests that effective intercultural communication—particularly the absence of language barriers—plays a role in shaping students' attitudes toward brain drain. Previous studies in the literature have likewise indicated that students' attitudes toward brain drain are influenced by comparable concerns.[6,7,12,19] It has been found that these concerns have not changed students' perspectives on brain drain and that they want to work in different countries.

The attractive factors of migration include better living conditions and economic opportunities in target countries, economic stability, social and cultural life opportunities, academic, political and religious freedoms, ease of access to health services, security, better education, work and career opportunities, and the need for a qualified workforce.[7,17,20-23] A review of the literature indicates that nursing students generally exhibit positive attitudes toward brain drain,[12,17] and that these attitudes and tendencies vary depending on a range of sociodemographic factors, prior experience abroad, foreign language proficiency, knowledge regarding international nursing employment, and

Table 4. Investigation of the Relationship between Attitudes toward Brain Drain and Factors Affecting Brain Drain on the Basis of Grades

Grades		1	2	3	4	5
First grades	1. Total score	1				
	2. Age	0.230	1			
	3. Hesitation to go to a different country	**0.338***	0.227	1		
	4. Ability to communicate easily with people from different cultures	0.014	−0.177	0.057	1	
	5. Wanting to work in a different country	**−0.557****	**−0.370****	**−0.531****	0.027	1
Second grades	1. Total score	1				
	2. Age	**0.230**	**1**			
	3. Hesitation to go to a different country	**0.330***	**0.471**	**1**		
	4. Ability to communicate easily with people from different cultures	−0.154	−0.102	−0.159	1	
	5. Wanting to work in a different country	**−0.491****	**0.077****	**−0.438****	0.270	1
Third Grades	1. Total score	1				
	2. Age	−0.167	1			
	3. Hesitation to go to a different country	0.090	0.203	1		
	4. Ability to communicate easily with people from different cultures	−0.251	0.195	**-0.352***	1	
	5. Wanting to work in a different country	**−0.432****	0.049	−0.256	**0.379***	1
Fourth Grades	1. Total score	1				
	2. Age	−0.048	1			
	3. Hesitation to go to a different country	**−0.301***	−0.189	1		
	4. Ability to communicate easily with people from different cultures	−0.068	−0.014	−0.063	1	
	5. Wanting to work in a different country	**−0.536****	0.014	0.116	**0.469****	1

Bold values are made for emphasis. r, Spearman Correlation Coefficient; **$P < .001$; *$P <$,05.

aspirations to work abroad after graduation.[12,19] The outcomes of this research are in agreement with these results.

A statistically positive relationship was found among the total mean scores of the third- and fourth-year students from the ASBD and the desire to work in a different country (Table 4). It was determined that there was a positive relationship between the intention to work in a different country and the ability to communicate easily with people from different cultures. This result shows that being able to communicate easily with people from different cultures, i.e. not having a language problem, affects the attitude toward brain drain. When the studies in the literature are examined, it is concluded that knowing a language is important and necessary when migrating from one's place of residence to another country,[19,24] and that knowing a foreign language positively affects the intention to migrate.[25] It is thought that the students' level of proficiency in speaking a foreign language is an effective factor in their desire to go abroad.

Strengths and Limitations

One of the main strengths of this research is its focus on nursing students' attitudes toward brain drain—an issue of growing concern in the healthcare sector. The research offers valuable insights into how personal and cultural factors such as foreign language proficiency and intercultural communication skills influence students' migration tendencies. The use of a standardized measurement tool (ASBD) and statistical analysis strengthens the reliability of the findings. Additionally, by highlighting the relationship between students' desire to work abroad and their ability to communicate with people from different cultures, the study contributes meaningfully to the existing literature on brain drain and global workforce mobility.

However, the study has some limitations. It was conducted with nursing students from a single foundation university, and the sample did not include students from different regions or institutional backgrounds. Therefore, the results cannot be generalized to all nursing students in Türkiye. One limitation is its restricted sample, as data were collected solely from nursing students enrolled in a single foundation university. The exclusion of students from other universities and regions limits the diversity of perspectives. As a result, the findings may not be fully applicable to the broader population of undergraduate nursing students. Future research involving a more diverse and representative sample would provide broader and more generalizable insights.

Conclusion

The findings indicated that nursing students' attitudes and migration tendencies related to brain drain were above average (54.01 ± 11.39) and were significantly associated with factors such as age, reluctance to migrate, aspiration to work in another country, and the ability to communicate effectively with individuals from diverse cultural backgrounds. The factors affecting the migration tendencies of student nurses should be determined in detail and systems supporting individual, occupational, and career prospects should be developed to preserve this competent workforce. To reduce the attitudes of nursing students who will be among the qualified workforce in the health field toward brain drain, it is recommended that better living, working, education, and career opportunities be created for students, wages should be improved, and strategies should be developed to combat the brain drain phenomenon. Studies should be conducted in different sample groups to raise awareness.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of İstanbul Aydın University (Approval No: 2024-02; Date: 15.02.2024).

Informed Consent: Written informed consent was obtained from the students who agreed to participate in the study.

Peer-review: Externally peer reviewed.

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