



# Nursing student volunteerism for marginalized populations: Predictive analysis of influencing factors

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## ABSTRACT

**Background:** As access to healthcare remains a global challenge, the potential for voluntary community service by nurses to address the issue of healthcare in underserved communities is significant. For educational institutions, the creation of incentives and motivation for student volunteerism represents a substantial challenge. The present research examines nursing students' motivation to volunteer in the context of socioeconomic determinants of health status, with a particular focus on attitudes towards poverty as a predictor of student motivation.

**Objective:** To predict the willingness of Hungarian nursing students to engage in voluntary care for disadvantaged populations.

**Participants:** Graduate nursing students from three of the four national university centers in Hungary participated in the study (N = 240). Convenience stratified sampling was employed.

**Methods:** Cross-sectional study design was conducted. The online survey included the Volunteer Functions Inventory (VFI), Helping Attitudes Scale, Social Justice Scale, Attitude to Poverty Scale Short Form, and Beliefs Related to Poverty and Health. One-way ANOVA, and multivariate linear regression were performed.

**Results:** The strongest predictor of volunteer intention was education, although VFI 'values', social motivation, helping attitudes, and Beliefs Related to Poverty and Health were also identified as important factors. Conversely, experience in the health sector had a negative impact on volunteer intention.

**Conclusion:** The role of the educational institution is critical in shaping student volunteerism. It would be critical to introduce dedicated courses into the educational curriculum that specifically prepare nursing students for participation in community voluntary service. The course should be designed to clarify students' knowledge in the context of socio-economic factors affecting health while increasing their belief in helping others.

## 1. Introduction

According to the Universal Health Coverage (UHC) Global Monitoring Report, over half of the global population lacks access to fundamental health services. Indeed, less than one-third of countries have demonstrated an improvement in health service coverage over the past two decades (World Health Organization and World Bank, 2023). While novel forms of connectivity have emerged during the pandemic, facilitating numerous opportunities for patient-provider relationships, telemedicine has inherent limitations in addressing the multifaceted challenges facing underserved communities. The absence of suitable

conditions, including the lack of appropriate devices, internet access, and digital skills, may serve to further exacerbate the disadvantages faced by these populations (Guthrie and Snyder, 2023; Ryskina et al., 2021).

Volunteering can be defined as an activity in which individuals voluntarily offer their time for the benefit of another person, group or organization (Wilson (2000). The contribution of volunteers to their communities is immeasurable. They offer their expertise, abilities, resources, and time, forming a significant and rapidly expanding informal workforce (Snyder and Omoto, 2008). While volunteering can contribute to addressing gaps in formal health systems, this form of

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volunteering is still in its infancy in Hungary. In the present study volunteering has been defined on the basis of the Government Resolution currently in force in Hungary as the “activity that an individual engages in of their own free will, based on their personal choice and motivation, without the intention of financial gain, for the benefit of another person, persons, or the community” (1068/2012. (III.20.) Government Resolution, 2012). The volunteering process model of Omoto and Snyder (2010) encompasses the antecedents, experiences and consequences of volunteering. The present cross-sectional research explores the antecedents of volunteering among nursing students, where the consequence is the provision of health services to marginalized social groups, taking into account previous experiences.

The theory of planned behavior (TPB) is a widely utilized conceptual framework for predicting behavioral intention and actual behavior. According to the TPB intentions to engage in specific behaviors can be predicted from attitudes towards those behaviors, subjective norms, and perceived behavioral control. Furthermore, perceived behavior control and behavioral intention influence actual behavior (Ajzen, 1991). Hu et al. (2023) have confirmed the TPB in college students' volunteer service participation, as they found that attitudes, subjective norms, and perceived behavior control had a significant positive effect on behavior intention, and behavioral intention and perceived behavior control had a significant favorable influence on behavior. Yao and Enright (2020) employed the TPB to demonstrate a sequential mediation model underlying prosocial behavior. The findings indicated that belief in altruistic human nature influences prosocial attitudes (i.e., helping attitudes), which, in turn, affects behavior through prosocial self-efficacy. The concept of volunteering in the health discipline is most closely aligned with the ‘public goods model’, which is predicated on the assumption that there are intrinsic motivations underlying the decision to volunteer, whereby individuals choose to dedicate their time and effort to the benefit of others (Hustinx et al., 2010; Strkljevic et al., 2024). The Volunteer Functions Inventory is founded on a functional approach, which posits that individuals engage in volunteer activities primarily to fulfil specific personal needs (Clary et al., 1998). In the context of a global health crisis, such as the Coronavirus Disease 2019 (Covid-19) pandemic, health and medical students were primarily driven by traditional values-based motivations, including altruism, moral obligation, and a desire to serve their communities through volunteering (Domaradzki and Walkowiak, 2021; Hj Abdul Aziz et al., 2021; Lazarus et al., 2021). However, traditional value-based volunteer motivation is concomitant with the personal and professional growth of the individual (Xu et al., 2021). A variety of motivators concerning the self were also studied during the course of the Coronavirus disease 2019 (Covid-19) pandemic, including understanding, enhancement, career, and social motivations. (Chow et al., 2021; Susanti et al., 2023). A number of studies have utilized a combination of the aforementioned two approaches for the purpose of predicting volunteer behavior (Jiranek et al., 2013; Saha and Chandra, 2018). Jiranek et al. (2013) developed an integrated model of the components of the TPB and the VFI, which they complemented with social justice as a motivational function. The variables VFI values, VFI understanding, social justice, and subjective norm (equivalent to the VFI social function) were identified as significant predictors of volunteer intention among volunteers in organized settings within the social sector. In a subsequent study, Saha and Chandra (2018) sought to validate the influence of ‘values’, social, career, and enhancement functions as VFI variables, in addition to the components of the TPB, on the intention to donate blood on a voluntary basis.

Behavioral intention is the most important predictor of actual volunteer activity (Greenslade and White, 2005; Okun and Sloane, 2002; Warburton and Terry, 2000). Prior experience with volunteering, irrespective of whether it was in the health sector, has been identified as a significant predictor of future volunteering behavior (Kim et al., 2019; Lazarus et al., 2021).

Although Strkljevic et al. (2024) argue that volunteering should be

focused on health promotion for older adults and other target groups, rather than on primary care, we maintain the position that volunteering has significant potential to reduce health inequalities, particularly in those countries where the problem is most acute. Nurses are regarded as being among the most strategically positioned healthcare providers globally to spearhead population health transformations and promote health equity (Atherton et al., 2017; Scheffer et al., 2019). The contribution of voluntary community service by nurses represents a potential solution to the issue of delivering health services to underserved communities (Weber, 2019; McWilliams et al., 2022; McCollum et al., 2017; Modi et al., 2017). As health professionals become involved in volunteering, their commitment to such activities appears to persist for an extended period, often extending into their retirement years (Strkljevic et al., 2024).

It is the responsibility of training institutions to cultivate a future willingness to volunteer. The voluntary activism of nursing students plays an instrumental role in advancing social responsibility (Warshawski, 2024). Training has the capacity to provide positive role models that will motivate graduates to care for disadvantaged groups and individuals. The absence of academic support, however, has been demonstrated to result in a diminished level of volunteer activity (Dyson et al., 2017). Educational institutions should ensure that nursing students are adequately prepared for their future roles by familiarizing them with the concepts of health inequalities and the characteristics of disadvantaged social groups. Furthermore, institutions should facilitate the development of students' empathy and motivation to volunteer. A variety of methods have been identified in the literature that facilitate the development of empathy, influence student attitudes towards poverty and social justice (e.g., through courses, poverty simulations, community service), and thus promote adequate healthcare for those living on the margins of society and action for social justice (Doyle, 2023; Scheffer et al., 2019; Jarrell et al., 2014; Juliá-Sanchis et al., 2020; Kuehn et al., 2020; Patterson and Hulton, 2012).

Based on the findings of the literature review, we employ Clary's VFI to forecast nursing students' intention to volunteer, alongside an examination of the role of social justice and an investigation of variables that may influence the willingness to engage in voluntary care for disadvantaged populations. These include attitudes towards poverty, helping attitudes, and beliefs concerning the relationship between poverty and health. We present the measurement model in Fig. 1.

In summary, as access to healthcare is becoming constrained on a global scale, the challenge for educational institutions to establish incentives and motivations for student volunteering are of broader significance. Nevertheless, a review of the existing literature revealed that a number of studies that have examined student nurses' propensity to volunteer have exclusively focused on volunteering in the context of emergencies and epidemics, including the Coronavirus disease 2019 (Covid-19) epidemic (Al Gharash et al., 2021, Ben Natan et al., 2025, He et al., 2024, Hj Abdul Aziz et al., 2021, Magdas et al., 2022, Susanti et al., 2023). However, these studies can only be interpreted as a response to a specific emergency. Other studies have also focused on specific areas of volunteering, such as palliative care (Jin and Kang, 2024; Wu et al., 2019). However, palliative care is not representative of the problem of access to basic or primary healthcare, which is a different global challenge. In addition, research that has sought to explore the motivations of students to volunteer has only clarified the role of social support as a factor influencing motivation (Liu et al., 2024). Another study measured students' tendency to altruism, but did not link this to volunteering motivations (Çiftçi et al., 2022). Only one study linking student motivation to training has been reported in the literature (Stewart et al., 2024). Although this research has successfully documented the experiences of nursing students with disadvantaged children and young people, it has not yet addressed health access for marginalized groups in a comprehensive way. In a subsequent study, Finkelstein and Orr (2021) reported a favorable shift in the attitudes of nursing students when caring for individuals with disabilities. However, the

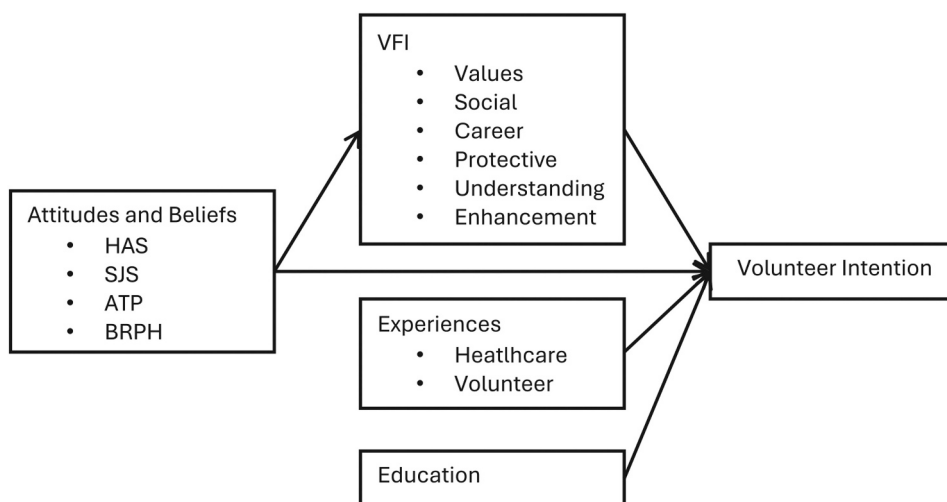


Fig. 1. Measurement model for predicting volunteer intention.

VFI = Volunteer Functions Inventory; HAS = Helping Attitude Scale; SJS = Social Justice Scale Behavioral Intention; ATP = Attitude to Poverty Short Form; BRPH = Beliefs Related to Poverty and Health.

applicability of this study to disadvantaged populations is limited, particularly when the root cause is poverty. Ultimately, no research was found that examined nursing student volunteerism in relation to the adult deprived population or as a function of attitudes towards poverty. The present research adds to our existing knowledge by examining student volunteering motivation in the context of socioeconomic determinants of health status, specifically attitudes towards poverty as factor predicting student motivation. Additionally, we also assessed student understanding of the underlying relationship between socioeconomic determinants and personal health and nursing student expectations concerning enrolling in courses that inform about and prepare for the challenges of providing care to marginalized populations. These questions also represented a new approach to clarifying students' expectations of the role of educational institutions in terms of the nature of the sensitizing courses available.

Therefore, the aim of this study was to predict the willingness of nursing students to engage in voluntary care for disadvantaged populations in a Hungarian sample. The current state of knowledge does not permit a clear understanding of the extent to which nursing students are willing to engage in voluntary care for those on the brink of society, the degree to which the education system fosters the development of a volunteering culture, and the factors that can be identified as predictors of student willingness to volunteer.

## 2. Methods

A cross-sectional study design was utilized. The data were collected between February and May 2024. The data were collected from nursing students via an online questionnaire. Some of the instruments were not available in Hungarian; consequently, they were translated by professional translators. To obtain permission to use the instruments, we attempted to establish communication with the authors by utilizing the email addresses that had been provided; however, in the case of two of the authors, we received no response to our repeated requests for correspondence. We used those tools with reference to the original publication. Prior to the study, the reliability of the questionnaire was evaluated in a pilot study involving 30 participants.

### 2.1. Procedure

The questionnaires were distributed to students enrolled in the faculties via a centralized process, and students were encouraged to complete them through a personal invitation. The students were able to

access the questionnaire, which had been created using Google Forms, by either scanning a QR code or following a link that had been sent to them in an email. No financial compensation, in cash or in kind, or other benefits were offered for participation.

### 2.2. Measurements

The dependent variable was volunteer intention, which was measured by the question, “All things considered, to what extent are you likely to engage in volunteer activities aimed at providing care to underserved individuals in the next year?” Participants were invited to indicate their responses on a scale of 1 to 10, with 1 indicating a definitive negative response and 10 indicating a definitive positive response.

#### 2.2.1. Volunteer Functions Inventory (VFI)

Clary et al. (1998) developed a 30-item instrument to measure volunteer motivation. This instrument employs a 7-point Likert scale to ascertain the importance of each factor in volunteering (1 = not at all important, 7 = very important). The authors identify six motivational factors: protective (protecting the ego from the challenges of life, e.g.: “Volunteering is a good escape from my own troubles.”), values (exhibiting altruistic and humanitarian values, e.g.: “I am concerned about those less fortunate than myself.”), career (seeking career advancement, e.g.: “Volunteering can help me to get my foot in the door at a place where I would like to work.”), understanding (acquiring knowledge, skills, and abilities, e.g.: “Volunteering allows me to gain a new perspective on things.”), social (cultivating and fortifying social relationships, e.g.: “People I know share an interest in community service.”), and enhancement (cultivating self-awareness and self-development, e.g.: “Volunteering increases my self-esteem.”). Scoring is interpreted at the factor level, with scores for each factor ranging from 5 to 35 when the item scores are added together. A higher score indicates that the factor in question would be more important for the individual when volunteering. In our questionnaire we used the version translated into English by Dorner with the author's permission (Gazsó et al., 2022). In the present study, the Cronbach's alpha coefficients for each factor were 0.87, 0.84, 0.88, 0.91, 0.82, and 0.87, which are above 0.8, as in previous studies (Jiranek et al., 2013; Saha and Chandra, 2018). However, Martins et al. (2024) obtained values of 0.69 and 0.77 for two factors (values and enhancement).

### 2.2.2. Helping Attitudes Scale (HAS)

Nickell (1998) developed the 20-item instrument to assess feelings, beliefs, and behaviors associated with helping. We have received email correspondence from the creator of the tool, granting permission to utilise it for the purposes of this study. The scale comprises items such as the following: “When given the opportunity, I enjoy aiding others who are in need”, “I would avoid aiding someone in a medical emergency if I could”, “Doing volunteer work makes me feel happy” and “Giving aid to the poor is the right thing to do”. The respondents indicated their level of agreement with each statement on a 5-point Likert scale, where 1 indicated a strong disagreement and 5 indicated a strong agreement. The item scores were aggregated after appropriate recoding (items 1, 5, 8, 11, 18, 19 are reverse scored), resulting in a total score between 20 and 100. Higher overall scores indicate a more favorable helping attitude. In this study, the Cronbach's alpha coefficient for the scale was found to be  $\alpha = 0.88$ , similar to previous studies ( $\alpha = 0.86$  Nickell, 1998;  $\alpha = 0.86$  Yao and Enright, 2020).

### 2.2.3. Attitude to Poverty Scale Short Form (ATP)

The instrument was developed by Yun and Weaver (2010) based on the 37-item Attitudes toward Poverty Scale previously published by Atherton et al. (1993). We have received email correspondence from Yun, granting permission to utilise it for the purposes of this study. The scale comprises items such as the following: “Poor people are different from the rest of society”, “Unemployed poor people could find jobs if they tried harder”, “Benefits for poor people consume a major part of the federal budget” and “People who are poor should not be blamed for their misfortune”. This version comprises 21 items that assess attitudes towards poverty and the poor on a 5-point Likert scale, where 1 indicates a strong disagreement and 5 represents a strong agreement. Subsequently, the responses to each item were summed after the requisite recoding (items 16, 17, 18, 19, 20, 21 are reverse scored), thereby yielding a score within the range of 21 to 105. A higher score on the questionnaire is indicative of a less positive attitude towards the poor. The instrument demonstrated satisfactory reliability, with an alpha coefficient of 0.86, just as in the original publication ( $\alpha = 0.87$ ; Yun and Weaver, 2010).

### 2.2.4. Beliefs Related to Poverty and Health (BRPH)

Reutter et al. (1999) developed a nine-item instrument to investigate views and beliefs about the relationship between poverty and health. The instrument focuses on four explanations of the poverty-health relationship: drift into poverty due to poor health (drift: “People become poor after they get sick and are unable to work”), living conditions as the cause of poor health (structural, e.g.: “Poor people are unhealthy because they get inadequate health care”), poor people's unhealthy behavior as a cause of their health status (behavioral, e.g.: Poor people are unhealthy because they aren't motivated to look after their health), and the lack of a real link between poverty and health (myth: “Poverty leads to poor health”). The initial eight questions required respondents to indicate their level of agreement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The structural and behavioral explanations comprised 3–3 items, which were then summed up to create a Structural Explanation Index and a Behavioral Explanation Index. Higher scores indicate that the respondent considers the given explanation to be the reason for the poor's health status. Cronbach's alpha coefficient for Structural Explanation Index was 0.68 ( $\alpha = 0.71$  Reutter et al., 1999) and 0.65 for Behavioral Explanation Index ( $\alpha = 0.73$  Reutter et al., 1999). The final item required respondents to select the explanation they deemed most appropriate in describing the relationship between poverty and health.

### 2.2.5. Social Justice Scale (SJS)

In the present study, we employed a single specific factor derived from the instrument developed by Torres-Harding et al. (2012). This factor was behavioral intention for social action, which was measured by four items (e.g.: “In the future, I will do my best to ensure that all

individuals and groups have a chance to speak and be heard.”) and had an alpha coefficient of 0.89 as in previous studies ( $\alpha = 0.88$  Doyle, 2023;  $\alpha = 0.87$  Hales et al., 2023;  $\alpha = 0.86$  Torres-Harding et al., 2012). The respondents were requested to indicate their level of agreement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), with the resulting scores then being added together to provide a total score in the range of 4 to 28. Higher scores indicate that the student intends to take action for social justice in the future.

The questionnaire included a series of questions addressing socio-demographic variables, including age, gender, and the highest level of education attained by the respondents' parents. The extent to which the educational experience equips students to engage in volunteer work was evaluated through the question, “During the program, I was adequately prepared to perform voluntary community service as a nurse.” The respondents indicated their level of agreement on a 4-point Likert scale, with 1 representing strong disagreement and 4 representing strong agreement. In the remainder of this paper, the variable in question will be referred to as ‘education’. Additional questions in the survey are available on request.

## 2.3. Sample

A convenient, stratified sampling procedure was utilized to enhance the representativeness of the sample. Responses were collected from all potential students enrolled in the particular semester, from three of the total four universities in Hungary that offer graduate nursing education. Universities were selected according to the affiliation of the authors. The sample consisted of nursing students enrolled in either a bachelor's or master's degree program, either full-time or part-time, who consented to participate in the research. Students whose native language was not Hungarian, as well as those pursuing their studies at a training center abroad, were excluded from the sample. A preliminary sample size calculation was performed by G\*Power to meet the statistical power requirements of the regression model (Buchner et al., 2020). The calculation was based on a 5 % significance level, a statistical power of 0.8, and a medium effect size (0.15). The total minimum number of subjects required for the regression with thirteen independent variables to be used as independent predictors was determined to be a total of 131 participants.

## 2.4. Statistical analysis

Descriptive statistical methods were utilized to provide a description of sample characteristics. Reliability of measures were assessed through the use of Cronbach's alpha coefficients. A one-sample Kolmogorov-Smirnov test was employed to ascertain the normality of data distribution. In the absence of a normal distribution, Spearman's rank correlation was employed to analyze the statistical relationships between variables. Following the determination of the pertinent groups and the standard distribution of the data, the data within each group was found to be normally distributed, thereby enabling the utilization of the ANOVA test to investigate the disparities between groups. Given the clustered nature of the data collection, an examination was conducted to determine the independence of the residual errors and to determine if there were any institutional correlations in the data. The sample was found to be independent of residual errors (ICC = 0.018), thus rendering the use of a linear mixed model unnecessary. A multivariate linear regression model was constructed for the purpose of predicting willingness to volunteer. Outliers with standard residuals  $\geq -2$  and  $\leq 2$  were identified and removed from subsequent analyses. All statistical tests were performed with a significance level of 5 % ( $p < .05$ ). The statistical analyses were performed by using IBM SPSS software, Windows version 29.0, while the mediation analysis was performed with JASP, Windows version 0.19.0.

2.5. Ethics

The study was approved by the Scientific and Research Ethics Committee of the Medical Research Council of Hungary (BM/2174-1/2024). The participants were informed about the study and gave their consent to participate in the research by completing the questionnaire. Completion of the questionnaire was voluntary and anonymous. It is essential to acknowledge that students had the option of not completing the questionnaire, with no repercussions for those who chose not to participate.

3. Results

The response rate varied between 25 and 60 % across the three universities. The sample consisted of 240 nursing students, with a minimum age of 18 and a maximum age of 54, resulting in an average age of 29.7 years (SD = 10.5). Table 1 presents a summary of the socio-demographic characteristics of the respondents, along with their distribution by grade. A total of 59.2 % of respondents indicated that they had no prior experience with volunteering, or that their involvement had been limited to the mandatory community service requirement (Hungarian secondary school students are required to do community service as a condition of their school-leaving exam). The descriptive statistics of the secondary measurements are presented in Table 2 and summarized here. With regard to beliefs related to poverty and health, 12.1 % of respondents indicated that there is no link between poverty and health, while an additional 7.5 % identified illness as a foundational cause of poverty. A total of 63.7 % of respondents identified structural factors as the primary cause of poor health among individuals living in poverty, while 16.7 % attributed this primarily to behavioral factors. A majority (57 %) of nursing students indicated that providing care for patients without health insurance is outside the scope of their responsibility. An elective course on the care of disadvantaged social groups was not a favored choice by 76.3 % of respondents. A total of 35.4 % of respondents indicated that learning about disadvantaged social groups was 'not important' or 'might be worthwhile'. Despite their concerns, 38.8 % of students indicated they would be willing to volunteer once in a shelter for individuals with poor health conditions, with an additional 35 % expressing willingness to do so with a colleague. Table 3 represents the main measurements. The correlation matrix of the dependent and independent variables is presented in Table 4.

One-way ANOVA was employed to examine the effect of volunteer experience on volunteer intention. The mean value for volunteer

**Table 1**  
Sociodemographic characteristics of the respondents (N = 240).

Variable	Category	Frequency	Valid percent (%)	Cumulative percent (%)
Gender	Male	24	10	10.8
	Female	214	89.2	100
Mother's highest level of education	8 class or less	26	10.8	10.8
	Vocational school	93	38.8	49.6
	High school	78	32.5	82.1
	Higher education	43	17.9	100
Father's highest level of education	8 class or less	23	9.6	10.8
	Vocational school	122	50.8	61.7
	High school	55	22.9	84.6
	Higher education	37	15.4	100
Level of nursing education	BSc I	103	42.9	42.9
	BSc II	49	20.4	63.3
	BSc III	47	19.6	82.9
	BSc IV	23	9.6	92.5
	MSc I-II	18	7.5	100

**Table 2**  
Descriptive statistics for secondary measures.

Variable	Category	Frequency	Valid percent (%)	Cumulative percent (%)
BRPH	Drift	18	7.5	7.5
	Structural	153	63.7	71.3
	Behavioral	40	16.7	87.9
	Myth	29	12.1	100
Care for a patient without health insurance if the doctor refuses the patient	Responsibility of the doctor	116	48.3	48.3
	Not the nurse's problem	22	9.2	57.5
	The nurse still has a duty	102	42.5	100
If an elective course was available on the care of disadvantaged populations	I would not choose	22	9.2	9.2
	If there was no other way, I would take the subject	13	5.4	14.6
	I might be interested	148	61.7	76.3
	It is close to me	47	19.6	95.8
	This would definitely be the first, I would choose	10	4.2	100
	Learning about disadvantaged populations	Not important, because their care is the same as for others	10	4.2
Less important, although we may deal with a few of these patients		4	1.7	5.8
It might be worth		71	29.6	35.4
Important as their number grows		155	64.6	100
If a shelter where people with poor health gather asks you to volunteer	Very risky, I won't do it	8	3.3	3.3
	I would be afraid of it, but I would do it once	93	38.8	42.1
	I have no time for this	47	19.6	61.7
	This is not why I studied	1	0.4	62.1
	If another colleague goes, I would do it too	84	35	97.1
	I would quit my current job and dedicate my time to this	7	2.9	100

BRPH = Beliefs Related to Poverty and Health.

intention was 3.98 for students who had no prior experience in volunteering, 4.62 for those who performed mandatory community service, and 5.76 for those who had some experience of volunteering. Volunteer experience had a significant effect on volunteer intention ( $F = 12.807$   $p < .001$ ). The Bonferroni post hoc test yielded statistically significant differences in volunteer intention between the group with volunteer experience and both the group without volunteer experience ( $p < .001$ ) and the group with mandatory community service experience ( $p = .024$ ). No significant difference was found between students with no volunteer experience and those with mandatory community service experience. The results of the post hoc test are presented in Table 5.

The influence of the independent variables on volunteer intention was examined through the use of multiple linear regression. The tolerance values were found to be adequate, with a value exceeding 0.25, thus satisfying the requisite criteria. A histogram was employed to ascertain the normality of the standardized residual errors. The Durbin-Watson value (2.002) was employed to ascertain the presence of any

**Table 3**  
Descriptive statistics for main measures.

	N	Minimum	Maximum	Mean	SD	Kolmogorov-Smirnov
Volunteer intention	240	1	10	4.84	2.560	0.000
VFI — protective	240	5	35	16.48	7.347	0.001
VFI — values	240	7	35	26.92	5.959	0.000
VFI — career	240	5	35	20.47	7.660	0.003
VFI — social	240	5	35	16.81	6.662	0.015
VFI — understanding	240	5	35	25.37	7.368	0.000
VFI — enhancement	240	5	35	22.51	7.405	0.000
HAS	240	37	98	80.31	11.688	0.000
SJS	240	4	28	18.77	5.829	0.002
ATP	240	27	100	55.13	12.438	0.019
BRPH structural index	240	3	21	12.46	3.942	0.000
BRPH behavioral index	240	3	21	10.75	3.858	0.000
Education	238	1	4	2.15	1.023	0.000

VFI = Volunteer Functions Inventory; HAS = Helping Attitude Scale; SJS = Social Justice Scale Behavioral Intention; ATP = Attitude to Poverty Short Form; BRPH = Beliefs Related to Poverty and Health.

potential autocorrelation between the residual errors. The Breusch-Pagan test ( $p = .373$ ) was employed to assess the homoscedasticity assumption. The inclusion of all VFI factors in the model introduced a multicollinearity problem, which precludes the interpretation of the variance explained by the predictor variables. A partial correlation analysis was conducted to examine the relationship between volunteer intention and the VFI factors separately, with the remaining factors serving as control variables. It was thus established that two factors, namely ‘values’ ( $r = 0.145, p = .013$ ) and ‘social’ ( $r = 0.215, p < .001$ ), exhibited a statistically significant positive correlation with volunteer intention.

A hierarchical model of multiple linear regression was employed to ascertain the extent to which ‘values’ and ‘social’ motivational factors, education, experience in healthcare, ATP, BRPH behavioral and structural index, SJS, and HAS predicted volunteer intention (Table 6). The initial model demonstrated a 42.7 % explanatory power, with VFI ‘values’ and social motivational factors identified as the primary contributors. In the second model, the explained variance increased to 50.8 %, with significant contributions from VFI ‘values’ and social motivational factors, education, experience in healthcare, and the BRPH behavioral index. The third model, which included the SJS, did not alter the explained variance or the contribution of the predictors to the explained variance. However, it did reduce the tolerance value of VFI ‘values’ from 0.638 to 0.515, indicating shared variance between the two variables. The hypothesis that behavioral intentions for social justice influenced volunteer intentions was not supported by the findings. In the final step, the incorporation of HAS into the model resulted in an increase in the explained variance to 51.7 %, with statistically significant contributions from the VFI social factor, education, healthcare experience, BRPH behavioral index, and HAS. In any further analysis, VFI ‘values’ were no longer found to make a significant contribution to the prediction of volunteer intention. The tolerance values clearly indicated that this was due to shared variance between SJS, HAS, and VFI ‘values’. The hypothesized effect of ATP on volunteer intention could not be demonstrated.

Finally, a mediation analysis was conducted. As illustrated in Fig. 2, the motivation of ‘values’ is increased by HAS ( $\beta_a = 0.752; p < .001$ ), which exerts a positive influence on volunteer intention ( $\beta_b = 0.373; p < .001$ ). The effect of HAS on volunteer intention was primarily indirect ( $\beta_{ab} = 0.280; p < .001$ ), with the direct pathway being statistically insignificant ( $\beta_c' = 0.148; p = .082$ ).

#### 4. Discussion

The objective of the research was to examine the willingness of nursing students to engage in volunteer activity and to identify the factors that predict intentions to volunteer. The research findings indicated that the intention to volunteer among nursing students was found

to be significantly higher in those who (1) placed a high value on social relationships, (2) had fewer years of professional experience, (3) were better prepared by the training for community service as volunteer nurses (4) perceived behavioral factors as less of a cause of unfavorable health among the poor, and (5) had higher helping attitudes. Despite the fact that VFI ‘values’ and understanding were the most important volunteer motivations, social function showed the strongest correlation with volunteer intentions. Moreover, the significance of fostering and strengthening social connections is evidenced by the fact that over one-third of respondents indicated a willingness to volunteer in a shelter if they were accompanied by another colleague. Consistent with these findings, several studies have shown the importance of social connections in volunteering (Greenslade and White, 2005; Jiranek et al., 2013; Saha and Chandra, 2018; Warburton and Terry, 2000). The lack of academic support is considered to be a contributing factor to the low rates of volunteering among nursing students (Dyson et al., 2017). This underscores the significance of social support, which in turn highlights the importance of strengthening social relationships in the nursing education program, even though the development of a mentoring program that provides opportunities and support for volunteering. The VFI ‘values’ have been demonstrated to serve as a valuable predictor of volunteer intention, as evidenced by previous studies (Jiranek et al., 2013; Saha and Chandra, 2018). Despite the transformation of motivations underlying volunteer activity and the rise of self-serving motivations, traditional value-based motivation remained the primary driver of volunteer activity among students in health and medical science courses during the COVID-19 pandemic (Domaradzki and Walkowiak, 2021; Hj Abdul Aziz et al., 2021; Lazarus et al., 2021).

The significance of HAS as a prosocial attitude in predicting volunteer intention aligns with the findings of Yao and Enright (2020), who, employing the TBJ model, illustrated a serial mediation model of prosocial behavior, whereby prosocial attitude (HAS) influenced behavior through prosocial self-efficacy.

Our findings contradict those of Jiranek et al. (2013), who found the effect of social justice to be significant in predicting volunteer intention. The discrepancy may be attributed to the utilization of different instruments. We specifically measured behavioral intention to engage in social justice, whereas the aforementioned study measured attitudes towards social justice more generally. It is also possible that the differences are due to variations in the composition of the sample. Jiranek et al. (2013) conducted their research on subjects engaged in activities within the social services sector. Further investigation is required to elucidate the effect of SJS on volunteer intention.

As the number of years spent in the healthcare sector increased, there was a corresponding decline in the willingness to engage in voluntary activity. One potential explanation for the observed decline is the physical and emotional demands inherent to the nursing profession. These include the lengthy, frequently rotating shifts and the burnout

**Table 4**  
Correlation matrix of main measures.

	Volunteer intention	VFI protective	VFI values	VFI career	VFI social	VFI understanding	VFI enhancement	SJS	HAS	ATP	BRPH behavioral index	BRPH structural index	Education
Volunteer intention	1.000												
VFI protective	0.445**	1.000											
VFI values	0.460**	0.415**	1.000										
VFI career	0.456**	0.639**	0.459**	1.000									
VFI social	0.460**	0.663**	0.686**	1.000	1.000								
VFI understanding	0.475**	0.524**	0.629**	0.766**	1.000	1.000							
VFI enhancement	0.475**	0.524**	0.629**	0.766**	1.000	1.000	1.000						
SJS	0.446**	0.456**	0.626**	0.536**	1.000	1.000	1.000	1.000					
HAS	0.418**	0.456**	0.565**	0.477**	1.000	1.000	1.000	1.000	1.000				
ATP	-0.209**	-0.130*	-0.154**	-0.157**	-0.303**	-0.119*	-0.157**	-0.303**	-0.119*	1.000			
BRPH behavioral index	-0.130*	0.124*	0.004	0.048	0.048	0.048	0.048	0.048	0.048	0.103	1.000		
BRPH structural index	0.159**	0.275**	0.259**	0.260**	0.260**	0.260**	0.260**	0.260**	0.260**	0.103	0.103	1.000	
Education	0.369**	0.284**	0.177**	0.199**	0.283**	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	1.000
	0.284**	0.177**	0.199**	0.283**	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	0.177**	0.199**	0.283**	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	0.199**	0.283**	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	0.283**	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	0.165**	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	0.242**	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	0.179**	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	0.183**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	1.000
	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	-0.153**	0.059

VFI = Volunteer Functions Inventory; HAS = Helping Attitude Scale; SJS = Social Justice Scale Behavioral Intention; ATP = Attitude to Poverty Short Form; BRPH = Beliefs Related to Poverty and Health.

\*\* Correlation is significant at the 0.01 level (1-tailed).

\* Correlation is significant at the 0.05 level (1-tailed).

**Table 5**

Post hoc test of volunteer intention by volunteer experience.

Volunteer experience		Mean difference	SE
No	Mandatory community service	-0.642	0.429
	Yes	-1.777*	0.355
Mandatory community service	No	0.642	0.429
	Yes	-1.135*	0.424
Yes	No	1.777*	0.355
	Mandatory community service	1.135*	0.424

Dependent variable: Volunteer intention.

\* The mean difference is significant at the 0.05 level.

that is frequently observed among nurses (American Nurses Association, 2024). A substantial proportion of health professional volunteers were found to be either early in their careers, with 1–5 years of experience, or professionals with over 20 years of experience (Strkljevic et al., 2024). Conversely, the changes in the life cycle that accompany years in the profession may also contribute to the decline in willingness to volunteer, with private factors such as starting a family. When a new baby comes into a family, parents tend to spend less time volunteering (Nesbit, 2012; Selbee and Reed, 2001). However, the presence of a school-aged child has been demonstrated to be associated with an increased likelihood of parents engaging in volunteer activities (Einolf, 2018).

The present findings provide further evidence in support of the observations of earlier studies, which have demonstrated that volunteer experience is positively correlated with future participation (Kim et al., 2019; Lazarus et al., 2021). It is notable that our findings indicate that mandatory community service is an ineffective strategy for encouraging students to engage in volunteer activities. However, equipping students with the requisite knowledge and skills to engage in voluntary community service during their academic training and facilitating opportunities and support to reinforce the development of social relationships can serve as an invaluable catalyst for fostering proclivity towards volunteerism. WHO (1999) has identified poverty as a priority issue since the 1990s. Nevertheless, the findings indicated that 12.1 % of Hungarian nursing students had lacked awareness of the relationship between poverty and health. Of these students, 25 % were in their second or third year, and 20 % were in their fourth year or pursuing a master's degree. In a Canadian study, this proportion was found to be only 1 % among nursing students (Reutter et al., 1999). This prompts the question of whether the Hungarian nursing education system places sufficient emphasis on addressing this issue. In examining the question of nursing responsibility, we found that over half of the respondents had indicated that providing care for patients lacking health insurance fell outside the scope of their responsibility. This may represent a significant area for intervention in the context of educational initiatives.

As evidenced in numerous studies, learning about disadvantaged social groups through courses, simulations, and personal experiences contributed to the development of empathy and more positive attitudes (Doyle, 2023; Scheffer et al., 2019; Jarrell et al., 2014; Kuehn et al., 2020; Patterson and Hulton, 2012; Zrínyi and Balogh, 2004). Although there was no evidence found in the current research that positive attitudes towards poverty increased the willingness of individuals to engage in community service, there is a clear and pressing need for nurses who are culturally competent to provide quality care to those who are marginalized and living in poverty. It is of the utmost importance that nursing students receive sufficient preparation to ensure the provision of appropriate care to disadvantaged social groups. Concurrently, it is essential to cultivate and reinforce their willingness to volunteer by elucidating the interconnection between poverty and health, fostering prosocial attitudes, providing opportunities to learn about volunteering, preparing them for voluntary community service, and maintaining a focus on social support and relationships throughout the process.

**Table 6**  
Multiple linear regression analysis predicting intention to volunteer.

Model		B	SE (B)	$\beta$	t	Tolerance	
1	(Constant)	-1.138	0.564		-2.016 (p = .045)		
	VFI values	0.123	0.025	0.304	4.936 (p < .001)	0.685	
	VFI social	0.158	0.022	0.432	7.012 (p < .001)	0.685	
2	(Constant)	-0.314	1.010		-0.311 (p = .756)		
	VFI values	0.104	0.024	0.256	4.278 (p < .001)	0.638	
	VFI social	0.127	0.022	0.350	5.722 (p < .001)	0.613	
	Education	0.610	0.122	0.256	5.008 (p < .001)	0.874	
	Experience in healthcare	-0.187	0.080	-0.118	-2.339 (p = .020)	0.901	
	ATP	0.003	0.010	0.014	0.279 (p = .780)	0.873	
	BRPH behavioral index	-0.081	0.034	-0.128	-2.428 (p = .016)	0.828	
	BRPH structural index	0.016	0.033	0.025	0.468 (p = .640)	0.786	
3	(Constant)	-0.360	1.015		-0.355 (p = .723)		
	VFI values	0.097	0.027	0.239	3.584 (p < .001)	0.515	
	VFI social	0.124	0.023	0.341	5.416 (p < .001)	0.579	
	Education	0.605	0.122	0.254	4.951 (p < .001)	0.870	
	Experience in healthcare	-0.174	0.083	-0.110	-2.086 (p = .038)	0.833	
	ATP	0.002	0.010	0.013	0.251 (p = .802)	0.871	
	BRPH behavioral index	-0.083	0.034	-0.130	-2.467 (p = .014)	0.821	
	BRPH structural index	0.014	0.033	0.023	0.434 (p = .665)	0.784	
	SJS	0.016	0.028	0.039	0.583 (p = .561)	0.520	
	4	(Constant)	-1.622	1.193		-1.360 (p = .175)	
		VFI values	0.057	0.033	0.142	1.724 (p = .086)	0.333
VFI social		0.125	0.023	0.344	5.496 (p < .001)	0.579	
Education		0.593	0.122	0.249	4.880 (p < .001)	0.868	
Experience in healthcare		-0.204	0.084	-0.128	-2.420 (p = .016)	0.807	
ATP		0.005	0.010	0.024	0.471 (p = .638)	0.860	
BRPH behavioral index		-0.083	0.034	-0.131	-2.485 (p = .014)	0.821	
BRPH structural index		0.015	0.033	0.025	0.465 (p = .643)	0.784	
SJS		0.006	0.028	0.013	0.199 (p = .843)	0.501	
HAS		0.031	0.016	0.148	1.980 (p = .049)	0.404	

Dependent variable: Volunteer intention; N = 223.

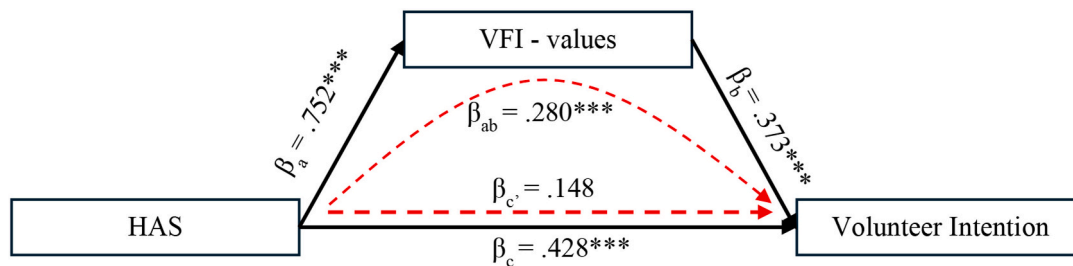
Model 1: R<sup>2</sup> = 0.427; F(2,220) = 82.102; p < .01.

Model 2: R<sup>2</sup> = 0.508; F(7, 215) = 31.665; p < .01.

Model 3: R<sup>2</sup> = 0.508; F(8, 214) = 27.664; p < .01.

Model 4: R<sup>2</sup> = 0.517; F(9, 213) = 25.362; p < .01.

VFI = Volunteer Functions Inventory; HAS = Helping Attitude Scale; SJS = Social Justice Scale Behavioral Intention; ATP = Attitude to Poverty Short Form; BRPH = Beliefs Related to Poverty and Health.



**Fig. 2.** Mediation analysis of HAS, VFI values and volunteer intention.

VFI = Volunteer Functions Inventory; HAS = Helping Attitude Scale.

To change student attitudes, it is imperative to underscore the pivotal role of educational institutions and educators in this context. Our findings indicated that the majority of respondents would not have selected an elective course focused on enhancing the health of marginalized populations. Moreover, a significant proportion of them (approximately one-third) perceived learning about such topic to be either unimportant or even unnecessary.

#### 4.1. Recommendations

Based on the results of the research, we make the following recommendations. Considering that the variable 'education' had the greatest influence on volunteer intentions in the regression model (each increase in the score by which students demonstrated that the training adequately prepared them for volunteer community care activities

increased the respondent's willingness to volunteer by 0.59 points), it would be critical to introduce dedicated courses into the educational curriculum that specifically prepare nursing students for participation in community volunteer care.

However, the regression model revealed that behavior was significantly influenced by two variables; helpfulness, which increased willingness to volunteer by 0.31 points for each score, and students' beliefs related to poverty and health, specifically behavioral factors, which decreased willingness to volunteer by 0.083 points. This means that the aforementioned course should be designed to clarify students' knowledge in the context of socio-economic factors affecting health while increasing their belief in helping others. This type of successful approach has also been seen in literature, for example in the development of empathy (Barker et al., 2022). There are also positive experiences of early participation in healthcare, especially when it is implemented with

strong mentoring, in the literature (Dussán et al., 2017; So et al., 2020). This is also important because in our own regression model, healthcare experiences had a negative effect on student volunteering (each year reduced willingness by 0.020 points). Therefore, we support clinical practice aimed at serving marginalized patients that is organized by training institutions in the right setting and with professional mentoring for students. Finally, these real-life clinical placements may also have a positive impact on the development of students' social relationships, which was the second most influential variable for increased volunteering in our regression model.

#### 4.2. Limitations

The study employed cross-sectional data collection, which restricts the capacity to examine cause-and-effect relationships. Behavioral intention is the most powerful predictor of subsequent action, yet there are instances when the intention to act expressed by an individual differs from their actual behavior. It would be beneficial for future research to consider employing a longitudinal design in order to gain insight into the translation of intent into action.

Despite our best efforts to recruit a large number of subjects from as many universities as possible, the sample selection remained convenience-based. Convenience samples have a tendency to under represent the population and therefore restrict generalizability. It is recommended that future studies employ a more representative sample in order to ensure the generalizability of the results. As nursing education internationally is based on almost identical structure and content, the results of the present study may, with obvious reservations, be transferable to other cultural contexts.

In the context of this study, we did not undertake the validation of the measurement tools. However, the selection of these instruments was based on their prior validation, as had been demonstrated by other researchers. Nonetheless, the high coefficients of reliability indicated the presumed validity of the instruments.

#### 5. Conclusion

We established that education, social motivation, and prosocial attitudes were key factors supporting volunteering. The evidence suggested that attitudes towards those in poverty however had no impact on the intention to volunteer in our research. However, the very high proportion of nursing students indicating their disapproval of courses addressing the care for marginalized populations was alarming.

It is therefore essential to integrate knowledge about the care of disadvantaged social groups and to cultivate positive attitudes towards them in training, with the objective of guaranteeing that those residing on the margins of society also receive appropriate quality care. Moreover, educational programs should provide students with the requisite skills and knowledge to assume responsibility as caregivers, engage in volunteer activities, and cultivate a desire to volunteer. The findings illustrated that the reinforcement of helping attitudes and the clarification of the interconnection between poverty and health are pivotal elements in this process. The present study posits that the guidance provided by mentors can serve as a catalyst for enhancing the voluntary engagement of nursing students. We suggest organizing a future longitudinal study to follow nursing students after graduation and observe their volunteer ratios to help disadvantaged populations.

#### CRedit authorship contribution statement

**Judit Németh:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Conceptualization. **Angelika Szatmári:** Writing – review & editing, Investigation. **Adrienn Siket Újváriné:** Writing – review & editing, Investigation. **Gabriella Hideg-Fehér:** Writing – review & editing, Investigation. **Miklós Zrinyi:** Writing – review & editing, Supervision, Methodology, Formal analysis,

Conceptualization.

#### Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used DeepL Translate and Write in order to improve the language of the manuscript. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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