












Nursing students' attitudes towards persons with physical disabilities. Cross-sectional study

Dorota Tomczyszyn¹ , Anna Pańczuk² , Anna Ławnik² , Adam Szepeluk² ,
Katarzyna Łaskarzewska³ , Ewa Kobos⁴ , Zofia Sienkiewicz⁴ , Ludmiła Marcinowicz⁵ ,
Elżbieta Szlenk-Czyczerska⁶ , Elżbieta Krupińska⁷ , Krystyna Jaracz⁸ 

¹Faculty of Social Sciences and Humanities, John Paul II University in Biala Podlaska, Poland

²Faculty of Health Sciences, John Paul II University in Biala Podlaska, Poland

³Department of Foreign Languages, John Paul II University in Biala Podlaska, Poland

⁴Faculty of Health Sciences, Social and Medical Sciences, Medical University of Warsaw, Poland

⁵Faculty of Health Sciences, Medical University of Białystok, Poland

⁶Institute of Health Sciences, University of Opole, Poland

⁷Faculty of Health Sciences, Jan Długosz University in Częstochowa, Poland

⁸Faculty of Health Sciences, Poznan University of Medical Sciences, Poland

ABSTRACT

Introduction: Disability does not concern the life of an individual, but it refers to interpersonal relationships, interactions between people with disabilities and the surrounding physical and social environment. The social inclusion of people with disabilities is possible when the barriers that hinder their everyday life are removed. Among them there are negative social attitudes and marginalization of people with disabilities which can become particularly acute.

Material and methods: The aim of the research was ascertain nursing students' attitudes towards persons with physical disabilities. The research comprised 7 universities educating in the field of nursing in Poland. In total, 1323 nursing students of undergraduate and graduate studies were surveyed. The research was conducted online in the period from October 2021 to March 2022. The study used the Polish adaptation of the scale used to assess attitudes towards persons with disabilities; namely, the Multidimensional Attitudes Scale Towards Persons with Disabilities (MAS-PL).

Results: Globally, the average score obtained by students on the MAS-PL scale was 82.69. The greatest differentiation of responses was shown in the emotions and cognitive subscale, while the smallest one was seen in the behavioural subscale. There was no significant relationship between the results of the MAS-PL scale and gender and the age of respondents. More positive attitudes were declared by graduate students than by undergraduate students. Statistically, there is a significantly higher global score on the scale and subscale of emotions shown by students living in a city with over 100,000 inhabitants compared to students living in the countryside.

Conclusions: Place of residence and the level of study are factors related to the attitudes of nursing students towards people with physical disabilities. The attitudes of students majoring in nursing should be shaped during the implementation of the curriculum and the creation of projects enabling mutual relationships between students and persons with disabilities.

KEY WORDS: students, nurses, attitudes, disability, MAS-PL.

ADDRESS FOR CORRESPONDENCE: Dorota Tomczyszyn, John Paul II University of Applied Sciences in Biala Podlaska, Poland, phone: +48 602 319 890, e-mail: tomczyszyn@o2.pl

INTRODUCTION

Over a billion people are estimated to experience disability. This corresponds to about 16% of the world's population. At the same time, the number of persons with disabilities is constantly increasing, which results from, among others, demographic trends, an increase in chronic diseases, or progress in medicine that facilitates a longer life [1].

The broad conceptual scope of the term of disability results in the multiplicity and heterogeneity of the proposed definitions. In 2001, the World Health Organization implemented the International Classification of Functioning, Disability, and Health (ICF), which presented the concept of disability in broad terms covering 3 perspectives: physical, individual, and social. The proposed biopsychosocial model of disability is a compromise between medical and social models [2]. According to the ICF, disability is defined as "...an umbrella term for impairments, activity limitations, and participation restrictions". It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors) [2]. Defining disability as an interaction means that "disability" is not an attribute of a person; at the same time, social inclusion of people with disabilities can be achieved by removing barriers that hinder their daily lives [2].

The attitudes of society towards disability are of great importance both for able-bodied people and those with deficits in everyday functioning. A positive attitude facilitates building favourable bilateral relations and frequent interactions. The humanistic approach to modern society emphasises that the place of every person, regardless of their abilities, deficits, or disabilities, should be in their natural environment, not in social, educational, and professional isolation. Particularly unfavourable are the attitudes of marginalization of people with disabilities in the group of nursing students because a nurse is a person appointed to care for the sick and disabled. The confirmation of this statement may be the analysis of research works on the attitudes of nursing students and other medical professions towards people with disabilities, presented by A.P. Edwards and B.E. Hekel [3].

In the classical understanding, attitude is defined as a relatively permanent disposition manifested in behaviours whose characteristic is a positive or negative human attitude to a subject matter, e.g. an object, a person, or a situation [4]. Social attitudes are opinions and assessments reinforced by emotions and directed activity (intentional or real). Their theoretical reflection is a three-component concept of attitudes. The emotional component is a collection of information and belief about the object of attitude. It determines the direction of the attitude, and it is determined by feelings, i.e. emotions of positive or negative tinge. The behavioural component is the predisposition to react in a certain

way or to behave realistically towards the object of attitude [5, 6]. Social attitudes are conditioned by the process of socialization in which well-established cultural patterns of a given society play an important role. Most often, they are formed during the interactions when partners communicate, emit certain behaviours, or perceive one another. There are 2 opposing groups of attitudes: positive ones (understood as acceptance) or negative ones (i.e. rejection) [7].

People with physical disabilities are the group characterized by lower physical ability, which affects the emergence of a special kind of difficulties in everyday functioning and social life. The results from different studies indicate an increased emotional sensitivity of people with physical disabilities [8, 9], a sense of loneliness [10, 11], depressive states [12], and suicidal thoughts [13]. Social attitude studies emphasize a negative perception of this group of people featuring prejudice, stigmatization, and stereotypes [14-16].

People with disabilities are exposed to numerous violations of their rights, including acts of violence, abuse, prejudice, and disrespect due to their disability. Such people also face barriers, stigma, and discrimination in access to health and health-related services and strategies. Health care access barriers include physical, communication, and financial ones, as well as barriers related to attitudes [1, 17].

Due to the differences resulting from impairments, people with disabilities are perceived as "others", or in social sciences terminology as "strangers". As a result, negative attitudes towards them are on the increase. Accordingly, they are perceived as aggressive, unpredictable, helpless, demanding, or unhappy. Owing to such rejection attitudes, people with disabilities may feel inadequate and isolate themselves from their immediate surroundings [18]. Negative attitudes give rise to marginalization and exclusion of the persons with disabilities from social life, including education and professional activity. The result of these processes are discriminatory practices which is reflected in the employment and education statistics of persons with disabilities in relation to the rest of society [18].

Kindness, sympathy, acceptance, and willingness to maintain relationships are examples of positive attitudes that stimulate people with disabilities to be active and involved in various dimensions of everyday functioning [19]. As noted by A. Sękowski, the importance of attitudes towards persons with disabilities goes beyond the field of science because it concerns their life situations and their social, professional, and psychological rehabilitation, dependent, among others, on social perception. He writes: "the man as a social being draws strength or loses it as a result of specific experiences in communicating with other people" [19].

At the 74th World Health Assembly in May 2021, Member States adopted resolution WHA74.8 on the

highest attainable standard of health for persons with disabilities. Among the numerous provisions of the resolution, it calls on Member States to “identify and eliminate attitudinal, environmental, and institutional barriers and barriers that prevent persons with disabilities from accessing health” [20].

Among the health care access barriers based on attitudes, people with disabilities often report experiencing bias, stigma, and discrimination from healthcare providers and other healthcare professionals [21, 22]. Negative attitudes of healthcare workers towards the patients with disabilities may affect the quality of care received by the patient [23]. People with disabilities are rarely asked for their opinion or are involved in decision making about the health services they are offered. Women with disabilities face obstacles to accessing services or information concerning sexual and reproductive health [23]. Healthcare workers often mistakenly assume that women with disabilities are asexual or unfit for motherhood. At the same time, many service providers have limited knowledge and understanding of the rights of people with disabilities and their health needs, as well as inadequate training and professional development. Nursing, as an integral part of the healthcare system, provides care for sick and disabled people of all ages, in all healthcare institutions and other social environments [24].

Nurses are often involved in the treatment and care of people with intellectual or physical disabilities; hence, it is important that nursing students develop a positive attitude towards people with disabilities from an early stage of professional education. It has been shown that developing competences among the students of medical professions in terms of tending to people with disabilities is important in shaping positive attitudes towards disability [3]. In Poland, studies in the field of nursing are carried out in accordance with the standards of education. Undergraduate nursing studies last not less than 6 semesters, and the number of hours of classes, including internship, cannot be fewer than 4720, including 420 hours of classes in the social sciences and humanities. Graduate degree studies last at least 4 semesters, and the number of hours of classes, including internship, may not be fewer than 1300, including at least 270 hours of social sciences and humanities. The standard of education in the field of nursing in Poland includes learning outcomes related to the care of a disabled person. In terms of knowledge, a graduate knows and understands models of nursing care for a person with a disability. In terms of skills, they are able to independently organize, plan, and provide comprehensive and individualized nursing care for a person with a disability making use of the indications of current medical knowledge. In terms of social competences, a graduate should be focused on the patient's well-being, respect the dignity and autonomy of people entrusted with the care, show understanding for their worldview, cultural differences,

and empathy in relationship with the patient and their family. The standard also assumes the implementation of a learning effect drawing attention to the understanding of the phenomenon of social, cultural, ethnic, and gender discrimination [25].

The implementation of curricula in the field of nursing often places great emphasis on diagnosing and treating diseases (medical care model). A review of the literature shows that education about disability must be included in the nursing curricula to be able to shape students' attitudes, increase their knowledge and skills in this field, and thus eliminate barriers to the transformation of care [3]. Therefore, it is important to acquire knowledge both about the current attitudes of nursing students and factors affecting them. It could facilitate to a greater extent the inclusion in the course of education the knowledge and skills related to the care of a disabled person as well as shaping attitudes towards disability [26].

The aim of the research was to identify nursing students' attitudes towards persons with physical disabilities, indicating the determining factors.

Research questions:

- What are nursing students' attitudes towards persons with physical disabilities?
- Is there any relationship between students' attitudes towards persons with physical disabilities depending on age, place of residence, and level of study?

MATERIAL AND METHODS

The study was carried out among 1323 nursing students majoring at universities in 7 Polish cities (Warsaw, Białystok, Białą Podlaska, Opole, Ciechanów, Poznań, Częstochowa).

In the academic year 2021/2022 there were 31,358 first- and second-degree nursing students registered in the POLON system, both in full-time and extramural studies. The surveyed group constitutes 4.22% of all nursing students.

The on-line survey was conducted from October 2021 to March 2022. Students received a link to the survey on the e-learning platform of the university. The survey participation was voluntary and anonymous, and the respondents did not receive any remuneration for participating in the study. After getting acquainted with the organization of the research, the Bioethics Committee stated that no consent was required for its conduct.

The study made use of the Polish adaptation of the scale used to assess attitudes towards persons with disabilities, the Multidimensional Attitudes Scale Towards Persons with Disabilities (MAS-PL), by Radlińska *et al.* [27], which, in terms of structure, corresponds to the original MASS scale developed by Findler, Vilchynski, and Werner [28]. The MAS-PL scale begins with a vignette and a description of a random and circumstances-forced encounter in a café of a non-disabled person with a dis-

TABLE 1. Characteristics of respondents ($N = 1323$)

Variable	<i>n</i>	%	Age	
			Men	SD
Gender				
Female	1248	94.3	24.2	7.2
Men	75	5.7	24.9	8.0
Place of residence				
Countryside	441	33.3	24.5	8.3
City up to 100,000 residents	393	29.7	25.0	7.8
City over 100,000 residents	489	37.0	23.5	5.5
Level of studies				
Undergraduate studies (1 st degree)	811	61.3	22.3	5.4
Graduate studies (2 nd degree)	512	38.7	27.4	8.6

abled person in a wheelchair. The respondent is expected to imagine this situation and indicate the emotions, thoughts, and potential behaviours that may be elicited in non-disabled persons. The respondent participates in the presented situation as a narrator and is asked to guess the attitude of the “main character”. The questions are not addressed directly to the respondent; instead, they are based on a projection mechanism that ensures a higher degree of honesty of answers. The use of the social scenario vignette is aimed at helping the respondents to project their own emotions, thoughts, and behaviours regarding a given situation.

The applied MAS-PL scale is based on a 3-component concept of attitudes, which includes 3 subscales, each corresponding to one of the attitude components: emotional (the list of emotions – 10 positions), cognitive (the list of beliefs – 10 positions), and behavioural (the list of behaviours – 8 positions). The 5-point Likert scale of answers is used, where 1 means “not at all” and 5 means “very much” (reverse scoring is used in positive statements). Obtaining a higher score on the scale and individual subscales means a more negative attitude towards persons with disabilities [27].

Internal consistency for a 3-factor MAS structure in the Polish version (408 Polish medical university students) was as follows: global $\alpha = 0.869$; affects subscale $\alpha = 0.870$; cognitions subscale $\alpha = 0.853$; and behaviours subscale $\alpha = 0.810$ [27]. In this study, Cronbach’s alpha coefficient for individual subscales was exceeding or was close to the value of $\alpha = 0.8$, and for the entire tool $\alpha = 0.897$. The obtained results prove the high reliability of the MAS-PL questionnaire.

Information on sociodemographic data such as gender, place of residence, age, and level of studies was also obtained from the participants of the study.

The statistical study was carried out with the use of STATISTICA v. 13.0 PL and Microsoft Office 2010. Descriptive statistics (arithmetic averages, standard devia-

tions, minimum, maximum, skewness, kurtosis) were presented for each questionnaire subscale, and the comparison regarding the selected socio-demographic variables was carried out using the non-parametric Mann-Whitney test and the Kruskal-Wallis U test with post hoc procedures. To analyse the correlation between ordinal and quantitative variables, Spearman’s rank-order correlation was applied. In all analysed cases, the significance level of $p < 0.05$ was assumed.

RESULTS

The general characteristics of the study group are presented in Table 1. In the surveyed group of students, the majority were women (94.3%) and undergraduate students (61.3%). A similar group of respondents lived in the countryside (33.3%), in cities of up to 100,000 residents (29.7%), and cities with over 100,000 residents (37.0%). The respondents’ average age was 24.3 ± 7.2 years, the youngest student was 18 years old, and the oldest one was 58. Undergraduate students constituted 61.3% of the respondents, while graduate students comprised 38.7%. The average age of undergraduate students was 22.3 ± 5.4 years, which was significantly lower ($p < 0.0001$) than the average age of graduate students (27.4 ± 8.6 years) (Table 1).

ATTITUDES OF THE SURVEYED NURSING STUDENTS TOWARDS PERSONS WITH PHYSICAL DISABILITIES

The average number of points scored by the surveyed students in the global score of the MAS-PL scale was $82.69 (\pm 17.16, \text{range } 37\text{-}156)$. The range of possible points varies from 34 to 170. The distributions of scores of 3 subscales and global score differed slightly from a Gaussian distribution ($p < 0.05$). The skewness analysis indicated the existence of values below the average in all tested subscales. Kurtosis, on the other hand, indicated the existence of the weakest concentration of scores around

TABLE 2. Basic distribution of MAS-PL scores in the survey ($N = 1323$)

MAS-PL	Possible range	Min Max	M	Median	SD	Skewness	Kurtosis	S-W test
Global score	34-170	37-156	82.69	83.00	17.16	0.003	-0.138	0.0109
Affective subscale	16-80	16-77	40.74	39.00	11.03	0.357	-0.345	< 0.0001
Cognitive subscale	10-50	10-50	23.89	24.00	7.83	0.177	-0.267	< 0.0001
Behavioural subscale	8-40	8-36	18.06	18.00	5.17	0.441	-0.075	< 0.0001

Min – minimum, Max – maximum, M – mean, SD – standard deviation, S-W test – Shapiro-Wilk test of normality

TABLE 3. Relationships between the results of individual subscales and the global MAS-PL scale

MAS-PL	Global score		Affective subscale		Cognitive subscale		Behavioural subscale	
	r_s	p	r_s	p	r_s	p	r_s	p
Global score	–	–	0.79	< 0.0001*	0.58	< 0.0001*	0.73	< 0.0001*
Affective subscale	0.79	< 0.0001*	–	–	0.07	0.0135*	0.45	< 0.0001*
Cognitive subscale	0.58	< 0.0001*	0.07	0.0135*	–	–	0.31	< 0.0001*
Behavioural subscale	0.73	< 0.0001*	0.45	< 0.0001*	0.31	< 0.0001*	–	–

r_s – correlation of Spearman rank-order

*Significant relationship at $p < 0.05$.

TABLE 4. Scores of the MAS-PL in relation to women and the surveyed students

MAS-PL	Woman ($n = 1248$)		Total ($N = 1323$)		Student's t -test	
	M	SD	M	SD	t	p
Global score	82.57	17.22	82.69	17.16	0.25	0.7989
Affective subscale	40.74	11.07	40.74	11.02	0.01	0.9989
Cognitive subscale	23.82	7.85	23.89	7.83	0.30	0.7655
Behavioural subscale	18.00	5.20	18.06	5.17	0.39	0.6954

M – mean, SD – standard deviation, Z – single-sample Student's t -test value

the means and the greatest differentiation of responses in the affective and cognitive subscales, whereas the strongest concentration of scores were around the means and the lowest differentiation of responses in the behavioural subscale. However, the values of means and medians did not deviate (Table 2).

The statistical analysis showed a weak positive correlation between the scores obtained by the respondents in the affective subscale and the cognitive subscale ($r_s = 0.07$), a moderate positive correlation between the global score and the result obtained in the cognitive subscale ($r_s = 0.58$) and the result in the affective subscale and the behavioural subscale ($r_s = 0.45$), and a high positive correlation between the global and the affective subscale score ($r_s = 0.79$) and the global and the behavioural subscale score ($r_s = 0.73$) (Table 3).

This means that the increase in individual subscales significantly influenced the increase in the global score and other subscales, i.e. if the respondent achieved a high score in the emotional subscale, they also had a high score in the behavioural and cognitive subscale and a higher global score.

ATTITUDES OF THE SURVEYED STUDENTS TOWARDS PERSONS WITH PHYSICAL DISABILITIES DEPENDING ON SOCIODEMOGRAPHIC VARIABLES

Due to the low percentage of men (5.7%), which is characteristic of the surveyed occupational group, the analysis of the significance of gender differences was abandoned. Also, statistical analysis did not show a significant difference in the level of students' attitudes towards people with physical disabilities (both for the total score of the scale and the scores of individual subscales) among the surveyed women and the results obtained for the entire surveyed group (Table 4). Therefore, the further part of the analysis applies to all respondents (women and men).

The statistical analysis shows that students' attitude towards persons with physical disabilities, globally and in the behavioural component, was not significantly related to age. Additionally, it is indicated that with age the respondents' scores slightly increased in the cognitive subscale ($r_s = 0.0960$) and decreased in the affective subscale ($r_s = -0.0579$). The statistically significant

correlations are characterized by very weak strength of the relationship ($r_s < 0.2$) (Table 5).

A statistically significantly higher global score on the MAS-PL scale and on the affective subscale was found in students living in a city with over 100,000 residents (85.31 and 42.47, respectively) in relation to students living in the countryside (80.10 and 38.96, respectively) and in a city with up to 100,000 residents (82.34 and 40.59, respectively). In the behavioural subscale, a significantly lower score was obtained for students living in the countryside (17.39) compared to students living in a city with up to 100,000 residents (18.22) and in a city with over 100,000 residents (18.53). The scores obtained by students in the cognitive subscale were not significantly differentiated in relation to the respondents' place of residence of (Figure 1).

Undergraduate students, in comparison to graduate students, showed statistically much higher scores on the scale both in terms of global score and in individual subscales (Figure 2).

TABLE 5. Scores of the MAS-PL scale in relation to age of the surveyed students

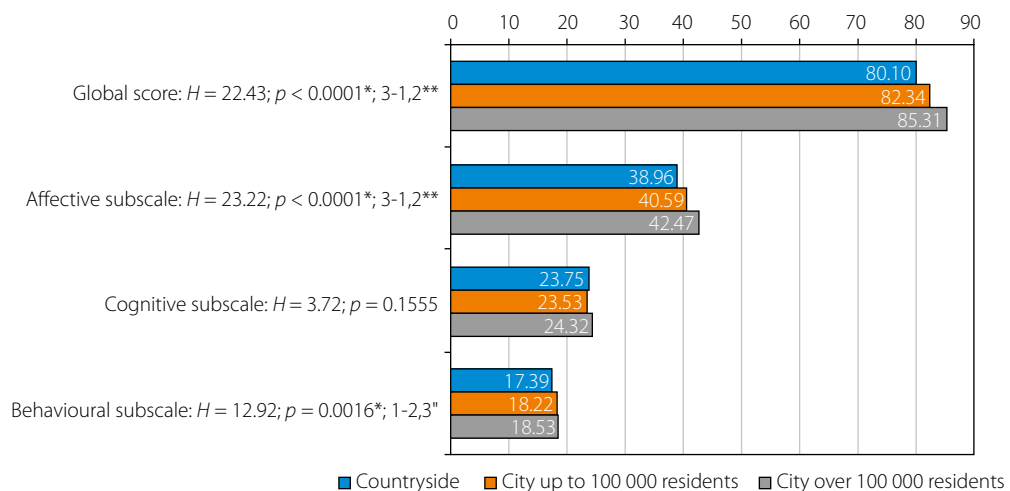
MAS-PL	Age	
	r_s	p
Global score	0.0044	0.8742
Affective subscale	-0.0579	0.0353*
Cognitive subscale	0.0960	0.0005*
Behavioural subscale	-0.0218	0.4276

r_s – correlation of Spearman rank order

*Significant relationship at $p < 0.05$.

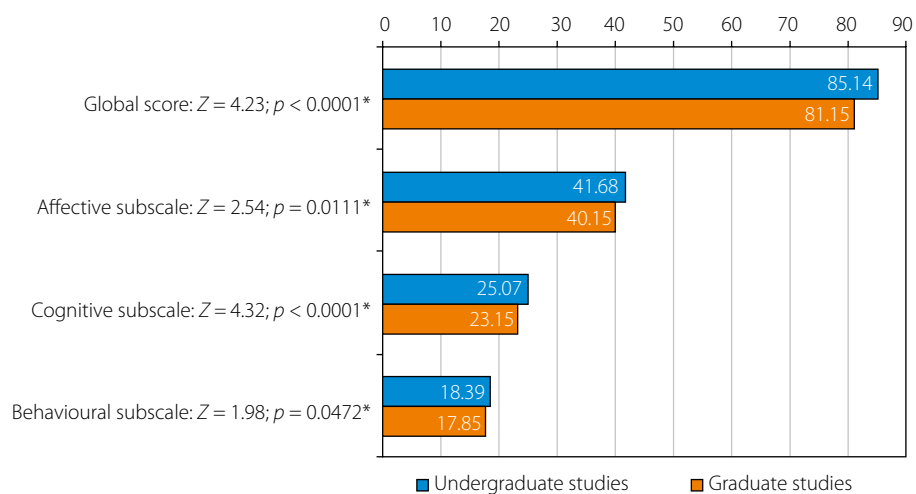
DISCUSSION

This study was aimed at ascertaining the attitudes of nursing students towards persons with physical disabilities and demographic variables that may be relevant to their attitudes, such as gender, age, place of residence, and level of education. The average measurement score on the MAS scale of the Polish nursing students was 82.69 (the maximum possible score is 170). Due to an



H-value of the Kruskal-Wallis test *significant differentiation at $p < 0.05$; **dependence in the post hoc test

FIGURE 1. Scores of the MAS-PL scale in relation to the place of residence



Z-value of Mann-Whitney U test. *Significant differentiation at $p < 0.05$

FIGURE 2. Scores of the MAS-PL scale in relation to the level of studies

insufficient number of studies using the MAS scale to learn about attitudes towards persons with physical disabilities, it is difficult to compare the results in real terms.

In this study, students majoring in nursing in the global score of the MAS-PL scale obtained a similar average result to the result obtained by the Polish students of medical faculties and health sciences (82.69 and 80.15, respectively), which involved the participation of 44 nursing students ($M = 84.55$) [17] and 540 students of social sciences and humanities ($M = 82.79$) [29]. In the conducted study and the study by Radlińska *et al.*, the greatest differentiation of answers provided by students occurred in the affective subscale. The difference between the studies was shown in relation to the score of subscales characterized by the lowest differentiation of responses. In our own research it was a behavioural subscale, while among the students of medical and health sciences a particularly strong concentration of results around the mean was observed in the cognitive subscale [16].

In the literature review described by Wang *et al.* concerning the identification of factors related to social attitudes towards persons with various disabilities, it appears that the most frequently analysed demographic factors that influenced attitudes towards persons with disabilities were gender, age, and education. The authors analysed the publications included in 3 databases (Medline, EMBASE, and Cochrane). In their analysis, they included the period from 1950 up to the present. The conducted study analysed only quantitative studies using valid measurements, and the methodological quality of included studies was appraised based on 3 criteria (sample, measurement, and analysis) [30]. The analysis of the relationship between age and attitudes towards disability showed a lack of consistency in the observed results. Wang *et al.* noted significant differences in attitudes towards persons with disabilities in relation to age in 9 out of 11 studies included in the analysis. In 5 studies, older people showed a less positive attitude towards persons with disabilities than younger people. The opposite trend was found in 4 other studies. In the review of publications presented by Wang *et al.* most of the analysed studies indicated a positive relationship between the level of education and attitudes, or the lack of such a relationship [30]. The lack of coherence in the discussed results might have been influenced by the group characteristics and other unknown factors, e.g. contact with disabled persons or greater knowledge about them.

In this study, the influence of gender on the attitudes of people with disabilities was not analysed due to the fact that 94.3% of the respondents were women. Some researchers point to the lack of influence of gender on attitudes [31-34]. There are also research results in which gender differentiated the presented attitudes [30, 35-40].

This study did not confirm that age was significantly related to attitudes towards persons with physical dis-

ability. The results of the study by Radlińska *et al.*, in a group of Polish students of medical and health sciences, also did not confirm the relationship between age and students' attitudes towards persons with disabilities [16]. It should be noted that both groups of respondents were students, i.e. mainly young people, characterized by small differences in terms of age. In this study, the average age of students was 24.3 years. In most studies that used the MAS scale to assess attitudes towards persons with disabilities, the respondents were mainly students [14-16, 27, 28]. Statistically significant correlations between age and attitudes towards persons with disabilities were not found in the study using the MAS scale among the general population, aged 18-70 years ($N = 2331$), in Serbia [41].

In this study, in the global and in individual subscales, more positive attitudes towards persons with physical disabilities were presented by graduate students compared to undergraduate students. This may involve a longer period of education and acquisition of practical experience regarding relations with persons with disabilities in the course of studies. In Poland, the predominant number of graduate students were professionally active, which may have generated more positive attitudes due to greater professional experience, more frequent experience of working with persons with disabilities, as well as wider social contacts. However, confirmation of this issue requires additional analysis. According to Wang *et al.*, people with higher education may present more liberal and open attitudes. They can also better understand persons with disabilities and thus express a more positive attitude towards them [30].

Students living in rural areas and in cities with up to 100,000 inhabitants demonstrated more positive attitudes towards people with physical disabilities, compared to students living in cities with more than 100,000 inhabitants. The analysis of individual subscales showed the same relationship in the emotional subscale. Significant differences in relation to the declared place of residence were not observed in the cognitive subscale whereas in the behavioural subscale students from rural areas presented more positive attitudes in comparison to students living in the cities with more and less than 100,000 inhabitants. In research, Polish medical and health sciences students showed no statistically significant differences between the place of residence and the MAS-PL score (total and subscales) [16]. Researchers of students at Turkish universities ($N = 1766$ students of the education and health faculty) showed that male students living in rural areas presented more positive attitudes towards disability than other students [42].

This study has several limitations. The respondents participating in the study were students; therefore, they were a homogeneous group, which was reflected in relatively small deviations from the obtained average results. Furthermore, the surveyed group is not representative

of the entire population of students studying nursing in Poland due to the size and selection of the sample. The declarative nature of students' answers may also have a different dimension in the actual activities of the respondents. Another limitation of the research may be the fact that no information was obtained on respondents' direct contact and experience in relationships with people with disabilities.

CONCLUSIONS

Nursing education plays an important role in shaping nurses' attitudes towards persons with physical disabilities. Preparing nursing students in Poland to care for persons with disabilities is not currently a separate education module in the standard of education at undergraduate and graduate level. Graduate students presented more positive attitudes than undergraduate students.

Age does not differentiate the attitudes of the surveyed nursing students. Students living in the countryside and in cities with up to 100,000 residents showed more positive attitudes towards persons with disabilities. A similar differentiation was observed in relation to the affective subscale. In the behavioural subscale, more positive attitudes were shown by students living in the countryside, but there was no significant differentiation in the cognitive subscale with respect to the place of residence.

The attitudes of nursing students should be shaped not only in the education process as part of their studies, but also during the implementation of additional projects enabling relationships between students and persons with disabilities. As a result, cooperation could contribute to building attitudes of openness and tolerance, shaping reliable knowledge about people with disabilities, as well as manifesting positive emotions characterized by acceptance of people with disabilities. The implementation of such social inclusion projects and the study of their effects are interesting undertakings and the subject of scientific projects.

DISCLOSURE

The authors report no conflict of interest.

References

- World Health Organization. Global report on health equity for persons with disabilities. WHO, Geneva 2022. Available from: <https://www.who.int/publications/i/item/9789240063600> (accessed: 21 March 2023).
- World Health Organization. International Classification of Functioning, Disability and Health (ICF). WHO, Geneva 2001. Available from: <http://apps.who.int/iris/bitstream/handle/10665/42407/9241545429.pdf;jsessionid=4300A27ED-92305BC205801C1664CDF06?sequence=1> (accessed: 21 March 2023).
- Edwards AP, Hekel BE. Appraisal of disability attitudes and curriculum of nursing students: a literature review. *Int J Nurs Educ Scholarsh* 2021; 18(1): 20210029.
- Aronson E, Wilson T, Akert RM. *Psychologia społeczna: serce i umysł*. [Social psychology: heart and mind.] Zyski S-ka, Poznań 1997.
- Reykowski J. Osobowość jako centralny system regulacji i integracji działań. [Personality as a central system of regulation and integration of activities.] In: *Psychology*. Tomaszewski T (ed.). PWN, Warszawa 1975; 762-825.
- Tuczyński K, Walat W. Trójczynnikowa koncepcja podejścia człowieka do wykorzystania e-learningu w procesie edukacyjnym. [Three-factor concept of human attitude towards the use of e-learning in the educational process.] *Edukacja-Technika-Informatyka* 2019; 29(3): 209-214.
- Larkowa H. Człowiek niepełnosprawny – problemy psychologiczne. [Man with disabilities: psychological problems.] PWN, Warszawa 1987.
- Alschuler KN, Kratz AL, Ehde DM. Resilience and vulnerability in individuals with chronic pain and physical disability. *Rehabil Psychol* 2016; 61(1): 7-18.
- Schembri Lia E, Abela A. Not broken but strengthened: stories of resilience by persons with acquired physical disability and their families. *Aust NZ J Fam Ther* 2016; 37(3): 400-417.
- Russell D. Living arrangements, social integration, and loneliness in later life: the case of physical disability. *J Health Soc Behav* 2009; 50(4): 460-475.
- Emerson E, Fortune N, Llewellyn G, Stancliffe R. Loneliness, social support, social isolation and wellbeing among working age adults with and without disability: cross-sectional study. *Disabil Health J* 2021; 14(1): 100965.
- Emerson E, Stancliffe R, Fortune N, Llewellyn G. Disability, loneliness and health in the UK: cross-sectional survey. *Eur J Public Health* 2021; 31(3): 533-538.
- Khazem LR, Jahn DR, Cukrowicz KC, Anestis MD. Physical disability and the interpersonal theory of suicide. *Death Stud* 2015; 39(10): 641-646.
- Vilchinsky N, Werner S, Findler L. Gender and attitudes towards people using wheelchairs: a multidimensional perspective. *Rehabil Counsel Bull* 2010; 53(3): 163-174.
- Polikandrioti M, Govina O, Vasilopoulos G, et al. Nursing students' attitudes towards people with disabilities. *Int J Caring Sci* 2020; 13(1): 480-488.
- Radlińska I, Kozybska M, Karakiewicz B. Attitudes of Polish medical and health sciences students towards persons with physical disabilities using the MAS-PL scale. *Int J Environ Res Public Health* 2021; 18(15): 7787.
- Matin BK, Williamson HJ, Karyani AK, et al. Barriers in access to healthcare for women with disabilities: a systematic review in qualitative studies. *BMC Womens Health* 2021; 21(1): 44.
- Chodkowska M. Stereotypes and prejudices and professional activity of people with disabilities. In: *Professional activity of people with disabilities*. Tomczyszyn D, Romanowicz W (ed.). Pope John Paul II University in Białą Podlaska, Białą Podlaska 2012; 429-446.
- Sękowski A. Psychological mechanisms of shaping attitudes towards people with disabilities. In: *Professional activity of people with disabilities*. Tomczyszyn D, Romanowicz W (ed.). Pope John Paul II University in Białą Podlaska, Białą Podlaska 2012; 447-454.

20. World Health Assembly. The highest attainable standard of health for persons with disabilities. Seventy-fourth World Health Assembly. Agenda item 26.4. 31 May 2021. Available from: https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_R8-en.pdf (accessed: 21 March 2023).
21. Alhusen JL, Bloom T, Laughon K, et al. Perceptions of barriers to effective family planning services among women with disabilities. *Disabil Health J* 2021; 14(3): 101055.
22. Lezzoni LI, Rao SR, Ressalam J, et al. Physicians' perceptions of people with disability and their health care. *Health Aff (Millwood)* 2021; 40(2): 297-306.
23. Horner-Johnson W, Klein KA, Campbell J, Guise JM. Experiences of women with disabilities in accessing and receiving contraceptive care. *J Obstet Gynecol Neonatal Nurs* 2021; 50(6): 732-741.
24. International Council of Nurses. Nursing definitions. Available from: <https://www.icn.ch/nursing-policy/nursing-definitions> (accessed: 21 March 2023).
25. Dz. U. 2019 poz. 1573, Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 26 lipca 2019 r. w sprawie standardów kształcenia przygotowującego do zawodu lekarza, dentystry, farmaceuty, pielęgniarki, położnej, diagnosty laboratoryjnego, fizjoterapeuty i ratownika medycznego. [Journal of Laws 2019 item 1573, Regulation of the Minister of Science and Higher Education of 26 July 2019 on standards of education preparing for the profession of doctor, dentist, pharmacist, nurse, midwife, laboratory diagnostician, physiotherapist and paramedic.] Available from: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20190001573> (accessed: 21 March 2023).
26. Chardavoyne PC, Henry AM, Sprow Forté K. Understanding medical students' attitudes towards and experiences with persons with disabilities and disability education. *Disabil Health J* 2022; 15(2): 101267.
27. Radlińska I, Starkowska A, Kozybska M, et al. The multidimensional attitudes scale towards persons with disabilities (MAS) – a Polish adaptation (MAS-PL). *Ann Agric Environ Med* 2020; 27(4): 613-620.
28. Findler L, Vilchinsky N, Werner S. The multidimensional attitudes scale towards persons with disabilities (MAS): construction and validation. *Rehabil Counsel Bull* 2007; 50(3): 166-176.
29. Tomczyszyn D, Pańczuk A, Szepeluk A. Attitudes of students of social sciences and humanities towards people with physical disabilities (MAS-PL). *Int J Environ Res Public Health* 2022; 19(3): 1544.
30. Wang Z, Xu X, Han Q, et al. Factors associated with public attitudes towards persons with disabilities: a systematic review. *BMC Public Health* 2021; 21(1): 1058.
31. Kritsotakis G, Galanis P, Papastefanakis E, et al. Attitudes towards people with physical or intellectual disabilities among nursing, social work and medical students. *J Clin Nurs* 2017; 26(23-24): 4951-4963.
32. Shiloh S, Heruti I, Berkovitz T. Attitudes towards people with disabilities caused by illness or injury: beyond physical impairment. *Int J Rehabil Res* 2011; 34(4): 321-329.
33. Vincent-Onabajo GO, Malgwi WS. Attitude of physiotherapy students in Nigeria towards persons with disability. *Disabil Health J* 2015; 8(1): 102-108.
34. Ruiz PO, Gonzalez-Medina G, Couso AS, et al. Attitude towards people with disability of nursing and physiotherapy students. *Children (Basel)* 2020; 7(10): 191.
35. Laws G, Kelly E. The attitudes and friendship intentions of children in the United Kingdom mainstream schools towards peers with physical or intellectual disabilities. *Int J Disabil Devel Educ* 2005; 52(2): 79-99.
36. Siperstein GN, Parker RC, Bardon JN, et al. A national study of youth attitudes towards the inclusion of students with intellectual disabilities. *Except Child* 2007; 73: 435-455.
37. Panek PE, Jungers MK. Effects of age, gender, and causality on perceptions of persons with mental retardation. *Res Dev Disabil* 2008; 29(2): 125-132.
38. Sahin H, Akyol AD. Evaluation of nursing and medical students' attitudes towards people with disabilities. *J Clin Nurs* 2010; 19(15-16): 2271-2279.
39. Bossaert G, Colpin H, Pijl SJ, Petry K. The attitudes of Belgian adolescents towards peers with disabilities. *Res Dev Disabil* 2011; 32(2): 504-509.
40. Goreczny AJ, Bender EE, Caruso G, Feinstein CS. Attitudes towards individuals with disabilities: results of a recent survey and implications of these results. *Res Dev Disabil* 2011; 32(5): 1596-1609.
41. Dragojević N, Milačić-Vidojević I, Hanak N. Attitudes towards people with physical disabilities, their structure and correlating variables. *Spec Educ Rehab Science Practice* 2010: 29-51.
42. Girli A, Sari HY, Kirk G, Narin S. University students' attitudes towards disability and their views on discrimination. *Int J Dev Disabil* 2016; 62(2): 98-107.

AUTHORS' CONTRIBUTIONS

DT, AP, AŁ, ASZ prepared research concept and design of the publication. All authors took part in data collection. DT, AP, AŁ, ASZ analysed and interpreted the data. DT, AP, AŁ, ASZ, KŁ prepared the first draft of the article. EK, ZS, LM, ESZ-CZ, EK, KJ critically revised it. All authors approved the final text of the publication.