

# Assessment of the level of intercultural competence in a group of public health students: A multicenter cross-sectional study in Poland – preliminary report

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## ABSTRACT

**Introduction:** Intercultural competence (IC) is a set of knowledge, skills, and attitudes necessary to work effectively in diverse cultural settings. Public health students need to develop IC to work with and promote the health of various populations. The aim of this study was to assess IC in a group of public health students from Polish universities.

**Materials and methods:** A nationwide, cross-sectional, online survey was conducted among 106 public health students from Poland, of whom 83% were female. The participants were students from 4 universities: 48.1% in first-cycle studies and 51.9% in second-cycle studies. The study used the Cross-Cultural Competence Inventory and an original questionnaire developed for the purpose of this study; a p-value <0.05 was considered significant.

**Results:** Participants had an overall mean IC score of 234. Most had never attended classes with foreign students (n = 56, 52.8%), nor had they been exposed to topics related to the role and importance of cultural diversity during their academic education (n = 45, 42.5%). Significantly higher levels of IC were found among students who self-rated themselves as having the knowledge and skills to interact with people from other cultures and who believed that IC can be learned (p < 0.001 and p = 0.021, respectively).

**Conclusions:** Intercultural competence may be influenced by both students' cross-cultural experiences and their positive attitudes towards IC. This study demonstrated the need for further research on IC in public health students.

**Keywords:** intercultural competence; public health students; cross-cultural competence inventory.

## INTRODUCTION

There are numerous definitions of intercultural competence (IC), which commonly describe it as a set of knowledge, skills, attitudes, and abilities that allow a person to function effectively in culturally diverse settings, i.e., to communicate and cooperate with people from various cultural backgrounds [1]. This definition encompasses the ability to understand and respect cultural differences, adapt to cultural norms, values, and customs, and communicate and manage situations of cross-cultural conflict [2].

Intercultural competence is an important tool in health services, especially with an increasingly ethnically and culturally diverse patient population [3]. The correct understanding and use of IC by healthcare professionals can significantly contribute to improving the quality of healthcare and the efficiency of treatment processes. The ability to communicate with patients in ways that are sensitive to their cultural practices and values can increase patient trust and cooperation, ultimately leading to better health outcomes [4]. High IC also enables healthcare professionals to better recognize and understand cultural differences in how people view health and illness, allowing for a more personalized approach to medical care that takes into account patients' specific needs and preferences [5]. Additionally, high IC can lead to more equitable and equal access to healthcare for all patients, regardless of their cultural background, by helping to prevent prejudice and discrimination in healthcare [6].

It is essential for public health students to develop positive attitudes towards people from other cultures, as they will influence health policy and be involved in designing, implementing, and evaluating prevention programs targeting diverse communities [7]. Future public health professionals will often work with culturally diverse populations, including ethnic minorities and migrants. High IC will enable them to better understand the specific health needs of these groups and adapt intervention and health promotion strategies to their cultural contexts [8]. In increasingly global and diverse societies, working across cultures is crucial. Thus, developing IC in public health students can help them collaborate more effectively with other professionals and participate in global and local health initiatives to promote equitable access to healthcare [2]. It reduces cultural barriers and prejudice and is key to building trust and relationships with patients, improving quality of care and patient satisfaction [9].

From a personal perspective, it is also important for public health students to develop a positive attitude towards people from other cultures. Working in multicultural settings can present many challenges but can also be very rewarding. Readiness to work in multicultural environments, along with openness to cultural diversity, is likely to help students develop interpersonal skills that will also be valuable in their personal lives.

However, in the absence of educational standards and legal regulations defining specific learning outcomes for public health studies in Poland, each university offering these programs has autonomy in determining the study profile, curriculum, and learning outcomes [10]. Consequently, the inclusion of cultural competence content in the study program depends on internal university regulations.

Currently, one of the most important challenges for the Polish healthcare system is addressing the growing number of migrants and refugees and providing them with healthcare that caters to their specific cultural needs. The traditional one-culture system must transform into one that embraces multiculturalism. Until 2014, Poland had a low proportion of foreigners in its population. Since 2014, there has been a systematic increase in the number of foreigners, exceeding 2 million by 2019. Recent data show that there are approx. 3.5–4 million foreigners in Poland, about 10% of the total population [11]. This increasing number of migrants brings cultural, linguistic, and social diversity, which may affect how health services are delivered and received [12]. Public health students will need to learn how to navigate this diversity during their studies and in their future professional practice.

It is also important to emphasize the impact of globalization on Poland's public health system. Demographic changes, migration, and knowledge and technology transfers from other countries are all shaping Polish healthcare. Public health students must be aware of these global trends and be prepared to adapt to the changing professional environment.

The aim of this study was to assess the IC of a group of public health students at Polish universities.

## MATERIALS AND METHODS

### Ethics committee

The study protocol was approved by the University Ethics Committee (IRB approval number AKBE/101/2023). Prior to the study, participants were informed about the principles of anonymity and confidentiality in data collection. No personal data, including computer IP addresses, were collected.

### Design and setting

A nationwide cross-sectional multicenter online survey was conducted between February and April 2023. Public health students from Polish universities offering public health programs were invited to participate in the study. The number of potential respondents meeting the inclusion criteria was approx. 3,440 (data taken from the Statistics Poland statement for the academic year 2022/2023) [13].

### Sampling

This study used judgment sampling. In this type of purposive sampling, units are selected for inclusion in the study based on the professional judgment of the researcher. This contrasts with probability sampling, where units are drawn with some probability (e.g., randomly) from the population of interest.

### Participants

Public health students enrolled in 3-year undergraduate and 2-year postgraduate public health programs were eligible for the study. Data were received from 107 students; however, 106 students met the inclusion criteria. The reason for exclusion was the lack of complete data, as noted by the authors.

### Instruments

The study used the Cross-Cultural Competence Inventory (CCCI) [14] in its Polish language version, developed in 2019 by Barzykowski et al. [15]. The CCCI consists of 63 statements and includes 6 subscales: cultural adaptability (18 items), self-presentation (4 items), tolerance of uncertainty (11 items), determination (7 items), engagement (11 items), and mission focus (7 items), along with a lie and social desirability scale, treated as a control scale. Respondents rate each statement on a 6-point Likert scale (from 1 – 'strongly disagree' to 6 – 'strongly agree'). Scores range 63–378 points. In the study by Barzykowski et al., the CCCI demonstrated satisfactory psychometric properties, with Cronbach's  $\alpha$  coefficient values ranging 0.83–0.86, depending on the subscale [15].

The study also used an additional questionnaire, originally developed for this research. The first 5 items in the survey covered demographic information, including year of study, sex, age, name of university, and job seniority. The following 7 items assessed different aspects of IC:

1. Have you ever attended classes with students of other nationalities?
2. Have you ever attended classes on intercultural communication (e.g., lectures, training, workshops, practicals, seminars)?
3. Has there been any discussion of the role and importance of cultural diversity in the context of your profession during your university or vocational training?
4. Are you open to learning about new cultures?
5. Do you think you have sufficient knowledge and skills necessary to interact with people from other cultures?
6. Do you think that IC can be learned?
7. Would you like to increase your level of IC by taking part in relevant workshops and training?
8. The questionnaire employed the following types of questions: Likert scale, closed-ended, and semi-open.

### Data collection

The questionnaire was distributed via the LimeSurvey web platform. Participating university coordinators received the survey link, with the online method chosen due to time and resource constraints. The coordinators shared the link with students, and to optimize response rates, the survey link was emailed 3 times at 1-week intervals.

### Data analysis

Descriptive statistics were used to present the data collected for all dependent and independent variables. Number (n) and frequency (%) were used for categorical variables, while mean,

standard deviation (SD), and range (min.–max.) were used for quantitative variables. An independent samples Student's t-test and a one-way ANOVA were employed to analyze the correlation between the independent variables and the level of IC.

All calculations were performed using Statistica™ 13.3 software (TIBCO Software, Palo Alto, CA, USA). For all analyses, a p-value of less than 0.05 was considered statistically significant.

## RESULTS

### Study group

The sample comprised 106 public health students from Poland, 83% of whom were female ( $n = 88$ ). Participants were drawn from 4 Polish universities, with 48.1% in undergraduate studies and 51.9% in postgraduate studies. The mean age was 23.7 years ( $SD = 4.82$ ), ranging 20–50 years. For detailed characteristics of the respondents, see Table 1.

TABLE 1. Characteristics of the study sample ( $n = 106$ )

University	n (%)
Jagiellonian University Medical College	5 (4.7%)
Medical University of Warsaw	21 (19.8%)
Medical University of Silesia	9 (8.5%)
Wrocław Medical University	71 (67.0%)
<b>Degree</b>	
Undergraduate	51 (48.1%)
Postgraduate	55 (51.9%)
<b>Year of study</b>	
1st (undergraduate)	22 (20.7%)
2nd (undergraduate)	18 (17.0%)
3rd (undergraduate)	11 (10.4%)
1st (postgraduate)	34 (32.1%)
2nd (postgraduate)	21 (19.8%)
<b>Sex</b>	
Female	88 (83.0%)
Male	18 (17.0%)
<b>Job experience (<math>n = 29</math>; 27.4%)</b>	
0–6 months	10 (34.5%)
7–12 months	6 (20.7%)
1–2 years	4 (13.8%)
Over 2 years	9 (31.0%)

### Intercultural competence

The respondents had a global mean IC score of 234 points ( $SD: 26.29$ ; min.: 168; max.: 298). The distribution of IC in the study group is shown in Figure 1.

### Cross-cultural experience

More than half of the respondents had never attended classes with students of other nationalities ( $n = 56$ , 52.8%), while over 49% had participated in some form of intercultural communication training. The majority also reported that they had not discussed topics related to the role and importance of cultural

differences during their university education ( $n = 45$ , 42.5%). Detailed results of the other descriptive statistics are presented in Table 2.

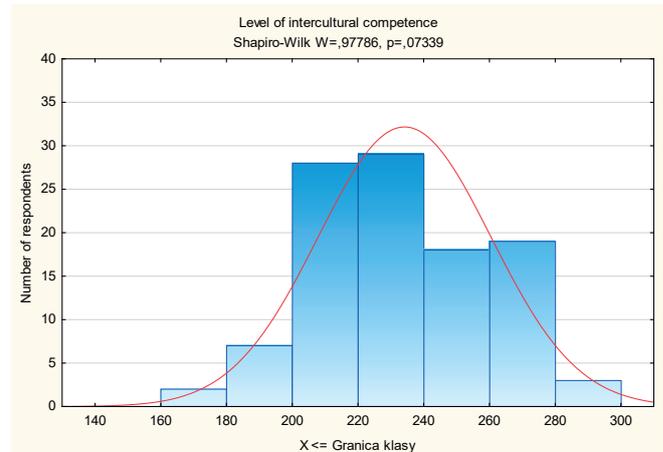


FIGURE 1. Level of intercultural competence in the group of public health students studied

### Attitudes towards intercultural competence

The vast majority of the respondents displayed positive attitudes towards IC. Students rated themselves as open to learning about new cultures (82.1%) and as having the knowledge and skills necessary to interact with people from other cultures (54.7%). They also believed that IC could be learned (79.2%) and expressed a willingness to develop intercultural skills (65.1%). Detailed information on the other descriptive statistics is presented in Table 3.

### The impact of cross-cultural experiences and attitudes towards intercultural competence on the level of intercultural competence

To test the correlation between respondents' participation in classes with students of other nationalities (Q1) and their IC, a Student's t-test for independent samples was conducted. As expected, respondents who had contact with people of other nationalities in class had a slightly higher mean IC; however, the difference was not statistically significant ( $t = 0.958532$ ;  $df = 104$ ;  $p = 0.34$ ).

A one-way ANOVA was used to assess the correlation between other cross-cultural experience variables and attitudes towards IC. The results showed that IC was significantly higher ( $p < 0.001$  and  $p = 0.021$ , respectively) among students who believed they had the knowledge and skills for interacting with people from other cultures and those who believed that IC could be learned. Significantly higher IC was also observed among students who reported not being open to new cultures. However, since only 1 person provided this response, the result cannot be considered conclusive. The other variables analyzed were not statistically significant in relation to IC. Detailed results of the ANOVA analysis are presented in Table 4.

**TABLE 2. Distribution of responses to statements about cross-cultural experience**

Question	Yes		No		I don't know / I don't remember	
	n	%	n	%	n	%
Attending classes with students of other nationalities (Q1)	50	47.2	56	52.8	–	–
Attending classes on intercultural communication, e.g.: lectures, training courses, workshops, practicals, seminars (Q2)	52	49.1	35	33.0	19	17.9
Topics related to the role and importance of cultural diversity in university/vocational training (Q3)	38	35.8	45	42.5	23	21.7

**TABLE 3. Distribution of responses to statements about attitudes towards intercultural competence**

Question	Yes		No		I don't know / I don't remember		I have never thought about it	
	n	%	n	%	n	%	n	%
Openness to learn about new cultures (Q4)	87	82.1	1	0.94	–	–	18	17.0
Self-assessment of knowledge and skills needed to interact with people from other cultures (Q5)	58	54.7	20	18.9	–	–	28	26.4
Respondents' view that intercultural competence can be learnt (Q6)	84	79.2	8	7.5	14	13.2	–	–
Willingness to develop intercultural competence through participation in relevant workshops and training (Q7)	69	65.1	16	15.1	21	19.8	–	–

## DISCUSSION

This study was the first to assess IC in a group of public health students in Poland. Additionally, the study aimed to identify correlations between students' cross-cultural experiences and attitudes towards IC, and their levels of IC.

In the present study, public health students demonstrated moderate IC. This is particularly significant given the increasing social and cultural diversity in healthcare. Healthcare professionals are increasingly required to communicate effectively, understand the diverse needs of patients, and adapt to different cultural contexts due to migration, globalization, and demographic shifts [16]. According to Curtis et al., low IC among public health students can negatively impact the quality of healthcare by limiting access for individuals from different ethnic, cultural, or social groups [17]. It is therefore important not only to identify the determinants of IC but also to develop effective educational strategies to ensure that future healthcare professionals are prepared to work in multicultural settings. As demonstrated by Fleckman et al., investing in the development of IC in public health students can benefit both the quality of healthcare and the adaptation of healthcare systems to the changing socio-cultural reality [7].

An important aspect to consider is the cross-cultural experience of the study participants. Although more than half of the respondents had never attended classes with students of other nationalities, it is necessary to assess how direct interaction with representatives of different cultures could influence the development of IC. The study showed that while contact with people from other cultures in class could potentially strengthen IC, the difference was not statistically significant. Therefore,

it is worth reflecting on the effectiveness of current forms of intercultural education in public health programs and the need for developing more engaging teaching methods. Research indicates that IC training based on modern and interactive teaching methods is more effective in developing IC among public health students [18].

Students' attitudes towards IC are also an important area to analyze, as they influence the way students seek to develop their intercultural skills and their willingness to adapt to different professional environments. Positive attitudes, such as openness to new cultures or the belief that IC can be learned, are key to building the foundations of IC. Openness and willingness to learn can motivate students to actively seek the knowledge and skills needed to work effectively in multicultural environments [19]. However, it is important to recognize the difference between attitudes and actual skills. Although students may have positive views about IC, they could face challenges in implementing it in the workplace, such as difficulty in interpreting cultural differences, handling intercultural conflicts, or communicating effectively in various cultural contexts [20]. Thus, further research is needed to explore the relationship between students' attitudes and their actual IC. This could help to understand the mechanisms that translate positive attitudes into practical skills [21], as well as identify factors that either inhibit or promote the development of IC in public health students.

The analysis of variance revealed a significant relationship between cross-cultural experiences, attitudes towards IC, and the level of IC. Specifically, the results suggest a positive relationship between students' belief that they have the knowledge and skills to interact with people from other cultures and their actual IC. Furthermore, students who believed that IC could be

**TABLE 4. Correlation analysis between the independent variables regarding cross-cultural experience and attitudes towards intercultural competence, and the level of intercultural competence within the study group**

Questions	Answers	Mean	SD	F	p-value*
Q2	yes	238.25	24.92	1.234	0.295
	no	229.89	29.04		
	I don't know / I don't remember	231.00	24.20		
Q3	yes	235.84	23.13	2.081	0.130
	no	237.73	29.23		
	I don't know / I don't remember	224.52	23.70		
Q4	yes	237.07	27.07	3.513	0.033
	no	245.00	–		
	I have never thought about it	217.67	16.99		
Q5	yes	247.16	23.45	21.760	<0.001
	no	219.30	18.03		
	I have never thought about it	217.96	22.37		
Q6	yes	237.70	25.41	4.031	0.021
	no	216.13	15.57		
	I have never thought about it	223.43	30.45		
Q7	yes	235.84	26.14	0.511	0.601
	no	228.63	25.99		
	I have never thought about it	233.00	27.64		

SD – standard deviation; F – one-way ANOVA result

\* statistical significance

learned also displayed a higher level of IC. These findings underscore the importance of fostering openness and acceptance towards cultural diversity, while also providing practical tools and skills to communicate and work effectively in multicultural environments. To effectively prepare future health professionals to work in increasingly diverse communities, education in IC should address both theoretical and practical aspects [22].

It should also be noted that the small number of respondents who reported a lack of openness to learning about new cultures made it impossible to draw firm conclusions about the impact of this attitude on IC. Further research is needed to better understand this mechanism and its effect on the development of IC. An in-depth analysis of the motivations and reasons behind a lack of openness to new cultures, as well as how this behavior may affect cross-cultural interactions and adaptability in diverse environments, is necessary.

The topic of cultural competence among public health students remains under-explored in the literature, as evidenced by the small number of cross-sectional publications. Authors have highlighted the need to introduce cultural training into public health curricula [23, 24] and emphasize the importance of student travel (e.g., Erasmus) in improving cultural competence [25].

### Limitations

The main limitation of this study is the lack of current standards for IC levels among public health students. Another limitation is the size of the study group, which may affect its

representativeness. However, it should be noted that this was a pilot study conducted among a group of public health students from 4 Polish universities, and therefore the results should be interpreted with caution and a degree of distance regarding their generalizability.

### CONCLUSIONS

This pilot study found moderate levels of IC among the public health students studied, suggesting the need to intensify educational efforts related to developing IC. Both students' cross-cultural experiences and their positive attitudes towards IC may influence IC levels, though further research is needed to better understand this relationship. The study underscores the importance of further research into IC among public health students and emphasizes the need to provide both theoretical and practical educational tools to effectively prepare future health professionals to work in culturally diverse communities.

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