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Self-perceived moral competence among healthcare students in Slovakia: a cross-sectional study

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Abstract

Background The ability to provide ethical and effective care depends on healthcare professionals possessing certain moral competence level. Moral development captures the progressive enhancement of one's moral competence, enabling informed and principled decision-making, while ethical development focuses on the acquisition and implementation of ethical knowledge and standards. The Moral Competence Test measure including ethical proficiency, moral reasoning, and the ability to navigate ethical decisions make sound moral judgments, and act in accordance with established ethical principles. The assessment and development of these attributes are imperative for optimizing healthcare outcomes and mitigating ethical conflicts.

Aim This study aimed to examine the relationship between moral competence levels and selected variables - namely gender, field of study, and year of study – among healthcare students in Slovakia.

Methods A cross-sectional, descriptive, and comparative design was used to investigate moral competence involving healthcare students, Faculty of Medicine in Slovakia. The study adhered to the STROBE checklist, and data were collected using the Moral Competence Test. Descriptive and inductive statistics were conducted using the Mann-Whitney U test and the Kruskal-Wallis test to examine differences between variables. To assess the distribution of the C-score and guide statistical analysis, both the Shapiro-Wilk and Kolmogorov-Smirnov tests for normality were applied. A significance level of $p < 0.05$ was used for all analyses. IBM SPSS Statistics version 25.0 was used for data processing.

Results The primary outcome of moral competence is the C-score, which was at a medium level (16.72 ± 12.54) for all students enrolled in this study.
The analysis revealed no statistically significant differences in moral competence based on study program. Of particular interest, a gradual decline in average C-scores was observed with increasing years of study: first-year students scored 17.71 ± 14.76, second-year students 16.67 ± 11.94, and third-year students 16.42 ± 13.27. A statistically significant difference ($p = 0.020$*) was identified between medical and healthcare students and those

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international medical students studying in English, with the latter group exhibiting higher, albeit still moderate, C-scores.

Conclusions These findings highlight the need for further research to explore the factors underlying higher moral competence scores among international students and the declining scores observed in Slovak students throughout their studies. We recommend revisiting academic curricula for two key reasons: first, to explore why first-year students demonstrate higher moral competence than those in their final year; and second, to promote the overall development of moral competence in future Slovak healthcare professionals.

Keywords Healthcare students, Medical education, Moral Competence, Professionalism

Background

Moral competence in healthcare is widely recognized as complex and multidimensional construct. In the context of healthcare education, the term ethical competence is often used synonymously with moral competence and is described as the ability to recognize ethically problematic situations, engage in reflective moral reasoning, and make appropriate ethical decisions in complex clinical contexts. This conceptualization is supported by literature indicating that moral competence includes the recognition of moral dilemmas, the capacity to reflect on one's values, sound moral judgment, and ethical decision-making aligned with professional standards. Furthermore, several studies emphasize that addressing ethical challenges in healthcare requires a broader set of ethical competencies, including sensitivity, ethical knowledge, reflection, decision-making skills, and ability to translate ethical reasoning into practice [1–3].

This competence is essential for delivering high-quality patient care, upholding professional standards, and preserving the integrity of the healthcare system. Its development and application are shaped by various factors, including education, clinical experience, organizational culture, and personal values [1, 4]. Although some studies suggest an association between moral competence and academic performance, the extent of their relationship appears to vary depending on contextual factors such as the level of education, socioeconomic status, access to resources, and personal values orientation [2, 3].

To effectively manage the ethical complexities encountered in clinical practice, healthcare professionals must possess a well-developed capacity for moral competence. Principle-based ethics has traditionally guided ethical decision-making in healthcare, emphasizing the four core principles of beneficence, non-maleficence, autonomy, and justice [5, 6].

However, care ethics emerged as a reaction to the perceived one-sided focus of principles, highlighting the importance of relationships, contextual understanding, and patient-centered care [7]. Contemporary literature suggests that these approaches are complementary rather than mutually exclusive and jointly support ethical behavior in healthcare settings.

A solid foundation for moral competence therefore includes knowledge of ethical principles, respect for patient preferences, sensitivity to contextual factors and consideration of the patient's quality of life [5]. Care and virtue ethics are increasingly incorporated into health professions education and are closely associated with the development of humanistic patient care [8].

According to Brytting [9] moral competence entails the integration of knowledge, actions, and reflection into a coherent whole, as well as the ability to understand one's own choices and actions as an autonomous individual. Jormsri et al. [10] further emphasize that moral competence involves a deep understanding of values, a commitment to them, and the awareness that emotions influence what we perceive as right or wrong. Recognizing and managing these emotional responses is essential when making ethical decisions and taking action.

While moral competence has a cognitive basis shaped by evolutionary processes, it varies among individuals and can be enhanced through social and educational influences. A well-developed moral competence enables individuals to address moral and social issues through principled, deliberate reasoning, avoiding instinctive judgments, oversimplified opinions, coercion, or blind submission to authority [11].

Lind [12] defines moral competence as the ability to resolve problems based on moral principles through dialogue and thoughtful deliberation rather than through manipulation or violence. To assess moral competence and apply the concept in research, Lind developed the Moral Competence Test (MCT) [13]. This test presents participants with a series of moral dilemmas and asks them to evaluate the validity of various arguments related to each scenario [14]. Moral competence also encompasses an emotional inclination toward altruistic behavior and the ability to apply logical reasoning to moral issues [15]. Since the practice of healthcare is inherently moral in nature, understanding and evaluating moral competence is particularly important in the fields of medicine and nursing. Ethical proficiency is a central focus of the test, reflecting the ability to navigate ethical dilemmas. The MCT evaluates ethical reasoning, moral

empathy, and the ability to make ethical decisions, which are critical for healthcare professionals.

Although moral competence has been extensively examined internationally, empirical evidence from Central and Eastern Europe remains scarce. Existing studies suggest that moral competence may vary by demographic and educational characteristics and could change over the course of study [2, 3, 16–18]. However, to date, no national-level research has systematically assessed moral competence among healthcare students in Slovakia using standardized tools such as the MCT. Prior Slovak research employing the MCT has focused primarily on pedagogical disciplines rather than healthcare education [17].

Some studies [17, 18] suggest a potential decline in moral competence among students. These findings highlight the importance of monitoring and understanding the moral development of future healthcare professionals.

Methods

Aim

The aim of this study was to investigate the relationship between the level of moral competence and selected variables - including gender, field of study, and year of study – among healthcare students in Slovakia.

Design

A cross-sectional, descriptive, and comparative design was used to investigate moral competence among healthcare students in Slovakia.

Participants and setting of the study

The participants were 361 healthcare science students enrolled at the Faculty of Medicine, Pavol Jozef Šafárik University in Košice, Slovakia, during the 2022/2023 academic year. The study was conducted at a Slovak university offering accredited higher education programs.

The Faculty of Medicine offers university education in two medical (General Medicine and Dental Medicine), as well as bachelor's and master's degree programs in Nursing, Physiotherapy, and Public Health. The bachelor's programs last three years of full-time study, Mater´s two years, while the General Medicine and Dental Medicine programs take six years to complete.

This study was reported in accordance with the STROBE checklist [19].

Research instrument

The Moral Competence Test (MTC) was used in this study. The measures psychometric properties as ethical reasoning, moral empathy, and the ability to apply ethical standards in complex situations.

In the case of the sample of international students, data were collected using the Moral Competence Test developed by Lind [14]. For the sample of Slovak students, we used the validated Slovak version of the MTC by Kaliská and Kaliský [20], which is identical to the English version of the MCT. These tools, English and Slovak versions, used in this study was made available by the corresponding authors upon reasonable request and agreement for its use. The authors created five demographic questions.

The instrument consists of 28 items rated on a 9-point Likert scale ranging from −4 (strongly reject) to +4 (strongly accept). It is designed to assess an individual's ability to make moral judgments based on ethical principles rather than personal preferences or social conformity.

Participants are presented with two hypothetical moral dilemmas - one involving a "worker" and the other a "doctor." For each scenario, they evaluate the acceptability of twelve moral arguments (six supporting and six opposing a particular course of action). In the present study, Cronbach's alpha value was found to be 0.84.

The primary outcome measure is the C-index (or C-score), which reflects the extent to which respondents assess arguments based on their moral quality rather than their agreement with the conclusion. This index is calculated by analyzing the overall pattern of responses and represents an individual's level of moral competence.

The C-score ranges from 0 to 100 and is interpreted as follows: low (1–9 points), medium (10–29 points), high (30–49 points), and very high (50 points and above). A higher C-score indicates that the respondent consistently evaluates arguments based on moral reasoning rather than emotional bias or external pressure.

In addition to the MCT items, the questionnaire also included demographic questions about participants' age, gender, program of study, year of study, and country of origin.

Data collection

Data were collected through an online survey distributed via a web link, which was made available through a web-based research participation pool. This link directed participants to the LimeSurvey platform, a digital tool designed for administering online questionnaires.

The first page of the survey provided detailed information about the study's objectives, potential benefits and risks, participants' rights, and the option to withdraw at any time. This information was included to ensure that participants were fully informed before proceeding. Completion of the survey was considered as implied consent to participate voluntary. Participants retained the right to withdraw their responses both during and after data submission.

All data were securely stored on a password-protected Google Drive, accessible only to the principal investigator.

Data analysis

Descriptive statistical analyses were performed to examine the distribution of key variables, including means (M) and standard deviations (SD). Inductive statistics included the Mann-Whitney U test and the Kruskal-Wallis test, which were used to explore differences in moral competence across selected demographic variables.

Moral competence was assessed using the C-score, which was reported along with its mean and standard deviation. The distribution of the C-score variable was tested for normality using the Shapiro-Wilk and Kolmogorov-Smirnov tests. All statistical analyses were conducted in alignment with the study's research objectives and the nature of the data. A significant level of $p < 0.05$ was applied throughout.

Data coding and statistical analysis were conducted using IBM SPSS Statistics, version 25.0 (IBM Corp., Armonk, NY, USA).

Results

A total of 361 participants were included in the study. The mean age of participants was 21.86 years (SD ± 2.79), with ages ranging from 18 to 40 years. The study sample consisted predominantly of women, who made up 70.6% ($n = 255$) of the total, while men represented 29.4% ($n = 106$). In terms of nationality, the majority of students were from Slovakia (60.4%, $n = 218$), studying in study fields, while 39.6% ($n = 143$) were foreign students studying in English language. The sample of students from Slovakia consisted of medical and healthcare students (60.4%; $n = 218$) and the group of international students consisted of medical students (39.6%; $n = 143$). The study followed a census sampling approach, inviting all eligible students enrolled in the selected healthcare programs to participate. This approach was chosen to maximize representativeness of the target population and ensure sufficient statistical power for group comparisons. Therefore, no a priori power calculation was conducted. The final sample of 361 students substantially exceeds commonly recommended minimum sample sizes for non-parametric group comparison analyses and is considered sufficient to detect effect of practical relevance. The demographic characteristics of the participants is also shown in Table 1.

Results of the moral competence C-score

Table 1 presents the C-scores for each subgroup within the sample, along with the results of statistical tests examining the differences between selected variables and moral competence.

The mean C-score for the entire sample was 16.72 (SD ± 12.54), which falls within the medium range of moral competence (10–29 points). C-scores also did not differ by gender, indicating that moral competence is similar between male and female healthcare students.

Although most comparisons did not yield statistically significant differences, some notable patterns were observed. For instance, first-year students had a slightly higher mean C-score (17.71; SD ± 14.76) compared to third-year students (16.42; SD ± 13.27), although this difference was not statistically significant.

A more distinct finding emerged when comparing Slovak students and international students studying in English. Slovak participants had a mean C-score of 15.80

Table 1 Demographic characteristics, the values C-score and statistics analyses

Characteristics	n	%	C-score Mean (± SD)	Mean Rank	Statistic Values
Gender					U Mann-Withney11901.000 Z -1.787 p=0.074
Male	106	29.5	16.10 ± 2.54	196.23	
Female	255	70.6	18.21 ± 12.47	174.67	
Study program					
Dental medicine	141	39.1	17.26 ± 11.42	191.76	Kruskal-Wallis test 0.442df = 4 p=0.778
General medicine	126	34.9	16.24 ± 12.96	173.84	
Nursing	55	15.2	15.35 ± 12.75	165.70	
Physiotherapy	28	7.8	18.64 ± 14.03	194.64	
Public health	11	3.0	17.33 ± 17.21	166.86	
Years of study					
First	37	10.3	17.71 ± 14.76	180.38	Kruskal-Wallis test 0.400df = 2 p=0.819
Second	241	66.8	16.67 ± 11.94	183.22	
Third	83	22.9	16.42 ± 13.27	174.83	
Nationality					
Students from Slovakia	218	60.4	15.80 ± 12.66	170.61	U Mann-Withney 13322.500Z – 2.335 p = 0.020*
International students studying in English	143	39.6	18.12 ± 12.24	196.84	

note $p < .05$ *SD* Standard Deviation

Table 2 Moral competence scores with respect to field of study medical and non-medical programs

	Study program	n	C-score Mean ± SD	Mean Rank	U Mann-Withney	Z	p
Workers´dilemma	Non-medical study programs	94	41.86 ± 19.14	187.83	11455.00	-0.959	0.337
	Medical study programs	267	39.83 ± 20.30	175.89	46435.00		
Doctors´ dilemma	Non-medical study programs	94	24.95 ± 18.65	181.30	1179.500	-0.358	46510.500
	Medical study programs	267	24.60 ± 19.64	176.85	0.720		

(SD ± 12.66), whereas international students studying in English scored higher, with a mean of 18.12 (SD ± 12.24). This difference was found to be statistically significant, as confirmed by the Mann-Whitney U test ($p = 0.020$), indicating that international students studying in English demonstrated higher levels of moral competence in this sample. Despite this difference, the overall level of moral competence in both groups remained within the medium category, as defined by the C-score classification (10–29 points).

Differences in C-score by field of study

Participants were divided into two groups based on their field of study. The first group included 267 students (both Slovak and international students studying in English) enrolled in medical study programs, specifically General Medicine and Dental Medicine. The second group consisted of 94 students enrolled in non-medical healthcare programs, including Nursing, Physiotherapy, and Public Health.

The comparison of moral competence between students enrolled in medical and non-medical study programs revealed differences in mean C-scores.

Students from medical programs (General Medicine and Dental Medicine) achieved a mean C-score of 17.22 (SD ± 12.42), while students from non-medical programs (Nursing, Physiotherapy, Public Health) had a slightly lower mean C-score of 15.21 (SD ± 12.87).

To assess the statistical significance of this difference, the Mann-Whitney U test was applied. The results did not show a statistically significant difference between the two groups ($p = 0.231$), indicating that the field of study was not a determining factor in the level of moral competence in this sample.

Despite the lack of statistical significance, both groups' mean scores fall within the medium range on the C-score scale, suggesting a comparable level of moral reasoning competence among students across different healthcare disciplines.

Moral competence scores by type of moral dilemma and study program

Table 2 presents the moral competence scores for students enrolled in medical and non-medical study programs, based on their responses to two different moral dilemmas presented in the MCT questionnaire "Workers" and "Doctor".

The results showed no statistically significant differences in the level of moral competence between the two groups for either dilemma. Students from medical programs scored slightly higher in both scenarios compared to those from non-medical programs, but the differences were not significant.

When examining performance by type of dilemma, students scored within the medium range of moral competence for the "Doctor" dilemma. In contrast, for the "Workers" dilemma, students achieved scores in the high to very high range (C-score is 30–49; >50), suggesting a stronger ability to evaluate arguments on moral grounds in this particular context.

Discussion

Moral competence is a key component of professionalism in healthcare, as it plays a vital role in ethical decision-making and patient care. This study aimed to examine the level of moral competence among Slovak and international students preparing for careers in healthcare.

The overall mean C-score observed in our sample was 16.72, which falls within the medium range (10–29 points), according to Lind [14]. These results are comparable to other studies reported by Martins et al. [21] found medium range among nursing students and medical students; Serodio et al. [22] reported a score of 19.0 in medical students, while Friedrich et al. [23] recorded a higher average of 29.1. In contrast, Abbasi et al. [24] conducted a lower C-score of 13.4. Although medical students achieved slightly higher C-scores than students in other healthcare programs, the difference was not statistically significant. Together with similar results from previous research, these findings indicate that while students possess a moderate level of moral reasoning, there remains room for further development during their studies.

International medical students in our study scored higher than domestic students. Previous research suggests that exposure to culturally diverse environments, along with characteristics such as openness and cross-cultural sensitivity, may support moral reasoning [11, 25–27]. However, studies have also reported contrasting results [24, 28], indicating that the relationship between nationality and moral competence is not uniform and may depend on contextual factors such as curriculum design, pedagogical approaches, and institutional climate. Evidence from multiple studies, including ours,

shows no statistically significant gender differences in moral competence [25, 27, 29–31].

A recurring finding across the literature is that progression through healthcare programs alone does not consistently enhance moral competence [11, 31, 32]. While increased clinical exposure may offer opportunities for ethical reflection, it can also shift the focus toward performance-oriented learning, potentially limiting ethical development. Previous research has emphasized that moral competence is insufficiently integrated into Slovak healthcare education [33], highlighting the need for structured curricular support, positive role modelling, and opportunities for guided reflection.

An interesting observation in our study is the higher performance on the "Worker" dilemma compared to the "Doctor" dilemma of the MCT. This suggests that students may reason more confidently in dilemmas less directly connected to their future profession, whereas professionally relevant dilemmas could evoke greater ambiguity or emotional engagement. Strengthening moral competence during training may therefore contribute not only to ethical clinical decision-making but also to communication quality, empathy, patient trust, and the ethical climate within healthcare institutions. Moreover, moral competence is associated with cooperative and prosocial behaviour beyond the clinical setting [34], underscoring its broader societal relevance.

Our findings point to the importance of strengthening ethics education to support students' moral development. Rather than relying solely on theoretical instruction, educational strategies should include longitudinal ethics training, reflective seminars, facilitated discussions of clinical dilemmas, simulation-based ethical decision-making, and interprofessional learning. Embedding structured reflection into clinical experiences may help prevent the stagnation or decline in moral competence observed elsewhere and contribute to more ethically grounded professional practice.

Finally, further research should explore the determinants of moral competence development in greater depth. Longitudinal studies could clarify how curriculum structure, teaching strategies, clinical exposure, institutional ethical climate, and personal characteristics interact over time. Identifying key periods for intervention would support the design of educational approaches that more effectively foster moral competence among future healthcare professionals.

Limitation

The authors acknowledge several limitations in this study. The research was conducted at a single Slovak university, which may limit the generalizability of the findings. The cross-sectional design limits the ability to infer causal relationships between moral competence and the variables studied (gender, field of study, year of study). Longitudinal studies would be more appropriate to capture developmental trajectories and changes in moral competence over time. The study relied on data collected through an online survey. Although the Moral Competence Test (MCT) is a validated instrument, participants' interpretations of moral dilemmas may differ depending on cultural, linguistic factors that may influence C-score results. The sample was unevenly distributed between medical and non-medical health programs, as well as between domestic and international students, which may have affected the comparison of groups. The observed differences in C-scores between Slovak and international students may be influenced by variables we did not observe, such as prior ethical education, cultural norms, or personal experiences. While the total sample was relatively large, no a priori power calculation was conducted, which should be acknowledge as a methodological limitation and may have reduced the ability to detect smaller effect size. Despite these limitations, the study contributes valuable national-level evidence on moral competence among healthcare domestic students and provides an empirical basis for future educational and policy consideration. Future studies should examine additional influencing variables such as curriculum structure, clinical exposure, teaching strategies, ethical climate, and personal characteristics. Longitudinal research would be particularly valuable to monitor changes over time and identify critical periods for intervention.

Conclusions

This study explored the level of moral competence among healthcare students in Slovakia using the Moral Competence Test (MCT). In our results, no statistically significant differences were identified based on gender or field of study, however the results indicate a decline in moral competence over the course of education. The higher scores among international students also suggest that cultural context may play an important role in ethical development.

The findings indicate that although moral competence is present among healthcare students, it is not static and may vary throughout the course of academic training and across diverse cultural backgrounds. These results underscore the importance of integrating of ethics education within health curricula to support students' moral development effectively.

Further findings from our study clarified the relationship between terms by explaining that moral development reflects changes in moral competence over time, whereas ethical development relates more to the knowledge-based and applied dimension of ethical practice. These highlight the need for longitudinal research to monitor changes in moral development and to identify

evidence-based strategies that support the ongoing ethical development of healthcare students.

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Authors' contributions
Conception or design of the work: GŠ, LD, PWData collection: JK, RK, GŠ, SMAnalysis or interpretation of data: JK, RK, LD, Drafting the work: LD, GŠ, KRReviewing it critically for important intellectual content: KR, PW, DBFinal approval of the version to be published: All authorsAgreement to be accountable for all aspects of the work: All authors.

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Data availability
The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The study protocol was reviewed and approved by the Ethics Review Committee of the local university (Approval number: XXX-ERC-2021–32, approval date: October 17, 2021). The study was conducted in accordance with the principles of the Declaration of Helsinki, ensuring the protection of participants' identities and the confidentiality of their data. During the recruitment process, potential participants were provided with comprehensive information about the study to ensure informed decision-making. In the online questionnaire administered via the LimeSurvey platform, students were required to provide informed consent by selecting the "I agree" option before gaining access to and completing the survey. They were informed that their participation was voluntary. Participant privacy and data confidentiality were maintained throughout the study. Completed online surveys were securely stored, and the data were analyzed and reported in aggregate form to protect individual identities.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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