



Nursing Students' Perceptions of Health Literacy: A Cross-Country Comparative Study

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Abstract

This study examines nursing students' perceptions of health literacy and explores the impact of educational and cultural differences across Slovakia, the Czech Republic, and Poland. Health literacy is a critical component of effective healthcare, particularly for nurses, who serve as key sources of health information for patients. Understanding nursing students' views on health literacy can provide valuable insights for improving educational curricula. A cross-sectional survey was conducted among 140 second-year nursing students from the three countries using a custom-designed questionnaire. The data were analysed using the Kruskal–Wallis test and Dunn's post hoc test to identify differences in perceptions and understanding. The findings revealed that Polish students demonstrated the highest familiarity with health literacy, followed by Czech and Slovak students. Notable differences emerged in the perceived public health literacy across the three countries. Czech students rated public comprehension the highest, which may reflect the effectiveness of national health literacy initiatives. In contrast, Slovak and Polish students highlighted several areas needing improvement, particularly in managing chronic conditions and understanding treatment side effects. These results underscore the importance of integrating tailored health literacy education into nursing curricula to address regional disparities. Strengthening nursing students' competencies in this area can contribute to improved patient outcomes and overall public health.

Keywords Cross-country comparison · Health literacy · Nursing education · Nursing students · Patients outcomes · Public health

1 Introduction

Health literacy is the ability to acquire, read, understand, and use health information to make informed decisions about one's health [1]. Healthcare professionals should contribute to the development of health literacy and effectively utilize the health literacy of the individuals to whom they provide care, whether in prevention or therapy, so that these

individuals can acquire, understanding, and using health information to make informed decisions about their health [2]. When patients have a higher level of health literacy, they are better equipped to manage chronic conditions, follow treatment plans, and engage in preventive behaviors, leading to better health outcomes and reduced healthcare costs [3, 4]. Moreover, improved health literacy helps minimize medical errors by ensuring patients understand their care instructions [5].

In a narrower sense, health literacy emphasizes medical information, understanding prescription leaflets, the ability to participate personally in treatment, the ability to care for family members, and basic knowledge of a healthy lifestyle. In a broader sense, it includes access to all information related to health that can positively influence health outcomes, enhancing people's ability to navigate life situations and make decisions that lead to the protection and improvement of health [6].

Nurses hold a particularly significant position in supporting health literacy, as they represent one of the largest

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groups of healthcare professionals, and their impact in the field of health literacy can be strong and markedly positive [7]. Given their crucial role, it is imperative that nurses are adequately prepared to support health literacy from the very beginning of their careers. This preparation must start during their undergraduate studies, where nursing students should be systematically educated on the importance of health literacy. They need to acquire not only theoretical knowledge but also practical skills that can be applied in various healthcare settings. This includes learning how to assess the health literacy levels of patients, adapting communication strategies to meet individual needs, and utilizing tools such as plain language, visual aids, and teach-back methods to ensure comprehension [8]. Recent studies emphasize the importance of integrating health literacy education into nursing curricula. For example, some authors highlight the growing emphasis on this integration and discuss strategies to improve nursing students' competencies in health literacy [9].

To effectively prepare nurses for their role in promoting health literacy, it is essential to assess the current levels of health literacy among nursing students. This assessment helps identify gaps in knowledge and skills, enabling educators to tailor curricula accordingly. By comparing results from different countries, valuable insights are gained into regional educational differences, which can guide improvements in nursing education and enhance health literacy globally.

The aim of the study was to assess the knowledge, experiences, and perspectives of nursing students regarding health literacy and to compare these findings across three countries.

2 Methods

Data collection took place during the summer semester of the 2022/2023 academic year using a custom-designed, non-standardized questionnaire divided into two main sections. The first section focused on assessing the respondents' knowledge, interest in health literacy issues, and their experiences with health literacy in the context of nursing practice. The second section of the questionnaire utilized a 5-point scale to gather the respondents' opinions and experiences regarding 21 thematic areas related to health literacy among the adult general public. Respondents were asked to rate each thematic area on a scale from 1 to 5, based on their personal experiences with the general public, where 1 indicated "not at all understandable" and 5 indicated "completely understandable." The respondents evaluated how understandable these areas were for the general public, based on their interactions with laypeople (e.g., the importance of preventive check-ups, medication usage, etc.).

To compare the medians of ordinal scale responses across the three countries, the Kruskal–Wallis (KW) H test was applied, along with Dunn's post hoc test for multiple comparisons (MC) of the mean ranks of responses between logically paired geographic groups. The results of these comparative methods are interpreted using p-values.

The study sample consisted of 140 second-year undergraduate nursing students enrolled in full-time programs across three countries: Slovakia, the Czech Republic, and Poland. These countries were chosen due to their comparable educational systems and shared historical and cultural contexts, providing a relevant basis for comparing health literacy levels among nursing students. Participation in the study was voluntary. The invitation to participate was sent to all second-year nursing students. The questionnaire was distributed via a QR code and an anonymous link, allowing students to access and complete it independently. Before filling out the questionnaire, participants provided informed consent. They could withdraw from the survey at any time without their data being used. No identifying information was collected, ensuring full anonymity. The number of participants reflects the total number of second-year students in the respective programs and their voluntary engagement in the survey.

3 Results

A total of 140 second-year undergraduate nursing students participated in the study. Of these, 53 students (37.86%) were from the Faculty of Health at the Catholic University in Ružomberok, Slovakia; 48 students (34.29%) were from the Faculty of Health Care Studies at the University of West Bohemia in Pilsen, Czech Republic; and 39 students (27.86%) were from the Faculty of Medicine and Health Sciences at the Andrzej Frycz Modrzewski Krakow University in Poland.

The results are presented in Supplementary Table 1 that categorize respondents' answers by country and enhanced with the p values from multiple group comparisons for each quantitative item of questionnaire. All highlighted values ($p < 0.05$) indicate significant differences between the groups, meaning the group means of answers cannot be considered equivalent.

The analysis highlights significant differences in the familiarity with the term "health literacy" among students from Slovakia, the Czech Republic, and Poland, with the most significant difference observed between Slovak and Polish students ($p = 0.0000$). In Slovakia, a relatively low proportion of students reported knowing the term, indicating a significant need to enhance awareness and education in this area. Additionally, many students expressed uncertainty about the term's meaning. In the Czech Republic, students

exhibited a better understanding than in Slovakia but in Poland, virtually all students who completed the survey were familiar with the term, reflecting their very high level of awareness and education in health literacy.

Students were also asked to describe what "health literacy" means to them in their own words. The thematic analysis of these open-ended responses shows that students generally view health literacy as a multifaceted concept, encompassing both theoretical knowledge and practical skills necessary for navigating the healthcare system and making informed health decisions. Key themes identified include the importance of knowledge and understanding of health information, the practical application of this knowledge, the role of prevention and personal responsibility, and a holistic perspective that includes both physical and mental well-being. While there is a consistent focus on these areas, the analysis also reveals varying levels of understanding and some inconsistencies in how students define health literacy, suggesting a need for a more unified educational approach.

When comparing responses across the Czech Republic, Slovakia, and Poland, distinct differences in the understanding and focus on health literacy were evident, reflecting the educational and cultural contexts of each country. In Slovakia, student responses tended to focus on basic health knowledge, disease prevention, and general health care. However, many students provided broad and general information. This aligns with the earlier findings that indicated a lower overall awareness of health literacy among Slovak students. The responses suggest that health literacy in Slovakia may be perceived in a more superficial manner, which could be linked to less comprehensive educational exposure to the topic. In contrast, Czech students often emphasized the importance of navigating the healthcare system, understanding medical terminology, and applying health information in practical ways. Their responses were more specific and focused on the practical applications of health literacy, reflecting a more applied understanding of the concept. This suggests that educational programs in the Czech Republic might place a stronger emphasis on the practical aspects of health literacy, equipping students with the skills needed to effectively use healthcare resources and make informed health decisions. Polish students demonstrated a more comprehensive understanding of health literacy, highlighting a broad range of skills and knowledge. Their responses frequently mentioned preventive measures, a healthy lifestyle, and the ability to seek out and utilize health information. This indicates a more complex view of health literacy that encompasses both physical and mental health. The Polish students' responses suggest a high level of education and awareness regarding health literacy, potentially indicating an effective educational program that address a wide array of health care and prevention aspects. These differences illustrate how health literacy is understood and prioritized

differently across the three countries. In Slovakia, there is a tendency towards a more surface-level understanding, potentially due to lower overall awareness. In the Czech Republic, the focus is more on practical application and system navigation, indicating a more applied educational approach. Meanwhile, in Poland, students exhibit a deeper, more holistic understanding of health literacy, reflecting the success of comprehensive educational initiatives in this area.

The interest of students in gaining a deeper understanding of health literacy is approximately the same in all participating countries ($p=0.1896$), with the strongest interest observed among students in Slovakia. Students from the Czech Republic and Poland also show significant interest, although the slightly lower interest among Czech and Polish students may reflect greater confidence in their existing knowledge. The minimal differences between countries suggest a similar level of motivation for further education in this area, highlighting the importance of systematically improving health literacy within educational programs.

The perception of nurses' role in supporting health literacy relatively varies among nursing students depending on the country ($p=0.0252$). Polish students clearly view nurses as key players in this area, likely due to educational programs that emphasize this role. In Slovakia, there is also strong confidence in nurses' ability to contribute to improving health literacy, even though awareness of the concept itself may be lower. In the Czech Republic, this view is less prevalent, which could reflect either lower confidence in nurses' abilities or less awareness of their potential.

Respondents who believe that nurses can significantly contribute to improving health literacy among the general public suggested various interventions, with distinct differences between countries. In the Czech Republic, the focus was on targeted patient education through individual consultations, public lectures, workshops, and digital platforms. Slovak students emphasized the importance of public events and community interventions, such as lectures, informational campaigns, and school programs, to improve overall health literacy. Polish students highlighted systematic education for both patients and their families, advocating for the use of social media and public campaigns to promote preventive measures and healthy lifestyles.

Although the results of respondents perceived nurses' paying attention to health literacy suggest agreement between student groups across the compared countries ($p=0.6698$), a more detailed analysis reveals that Slovak students are relatively less convinced that nurses are actively engaged in this area. In contrast, students from the Czech Republic and Poland have a more positive view, with Polish students showing the highest confidence in nurses' roles in promoting health literacy.

The next part of the survey focused on 21 thematic areas related to health literacy, which respondents rated on a

scale from 1 to 5 (1—not understandable at all, 2—barely understandable, 3—moderately understandable, 4—mostly understandable, 5—completely understandable) based on their personal experiences with the adult general public. This allowed respondents to express their views on how understandable each area is for the general public.

In the evaluation of health literacy across 21 thematic areas (prevention of diseases and injuries, importance of preventive check-ups, principles of safe behaviour in relation to health, recognition of symptoms of health disorders, knowledge of typical symptoms of common serious diseases, response to warning signs of diseases—seeking professional help, self-care in the event of illness, differentiating when to seek professional help, seeking professional help when sick, understanding treatment regimens during illness, managing chronic conditions when they worsen, medication usage, evaluation of treatment effects and response to side effects, contents of a home first aid kit, recognition of life-threatening conditions, distinguishing the need to call for professional help, need to call the emergency line, calling for professional help via the emergency line, providing first aid, contacting a general practitioner, and patient rights), the results show significant differences between the Czech Republic, Slovakia, and Poland. Czech respondents generally rated the public's understanding in all areas the highest on a five-point scale. Students across countries identified disease and injury prevention, medication use, calling for professional help via the emergency service, and contacting a general practitioner as the mostly understood areas by the public. Areas such as importance of preventive check-ups, seeking professional help when sick, need to call the emergency service, and distinguishing the need to call for professional help were rated by all student groups as a relatively well understood by the public, highlighting strong awareness of these key aspects of health.

On the other hand, Polish respondents mostly rated the comprehensibility of medication usage, and contacting a general practitioner lower on the same scale and Slovak students rated public understanding slightly lower in the diseases, and injuries prevention and calling for professional help via the emergency service, which may point to potential shortcomings in public health education in both countries. The most problematic areas for respondents across the countries was evaluation of treatment effects and response to side effects, where Polish and Slovak respondents perceived significant gaps in public understanding. Slovak ratings generally fell between these two extremes, with some areas, such as importance of preventive check-ups, medication usage and contacting a general practitioner, being perceived as relatively better understood, while others, such as managing chronic conditions and providing first aid, indicate a need for improvement.

Overall, it appears that the least problematic areas in the Czech Republic are diseases and injuries, medication usage, calling for professional help via the emergency line and contacting a general practitioner, while in Poland, the greatest challenges are in areas related to evaluation of treatment effects and response to side effects and first aid providing. Slovakia lies somewhere in the middle, but there is also a clear need for targeted educational interventions, particularly in areas such as managing chronic conditions when they worsen and just as in Poland, evaluation of treatment effects and response to side effects and providing the first aid. These findings emphasize the importance of focusing on the specific needs of each country when planning health education campaigns.

4 Discussion

Health literacy involves providing health information in a way that is understandable to others [10]. For nursing students, understanding health literacy is crucial, as it enables them to effectively support and enhance it in their future roles. In our study, all respondents from Poland were familiar with the term, while a substantial number from the Czech Republic and fewer from Slovakia recognized it. These differences may be linked to national initiatives, such as the Action Plan for the Development of Health Literacy and the establishment of the Institute for Health Literacy in the Czech Republic. In Poland, the role of the health coordinator nurse, who works directly with the community to assist in health management, likely contributes to the broader recognition of the term. These findings emphasize the importance of national strategies and dedicated healthcare roles in promoting health literacy [4, 11]. Countries with established frameworks are better positioned to ensure that both healthcare professionals and the public are equipped with the knowledge needed to navigate the healthcare system effectively [12]. Integrating health literacy into nursing education is essential for preparing future healthcare providers to communicate complex health information clearly, ultimately improving patient outcomes and fostering a more informed population [8, 9].

The positive finding in our study was the notable interest among respondents in gaining a deeper understanding of health literacy. This interest was highest among students from Slovakia, followed by those from the Czech Republic and Poland. Given that these students were midway through their undergraduate studies, it is expected that they will encounter more content related to health literacy as they progress, which will allow them to enhance their knowledge before entering the nursing profession. It's crucial for nursing students to recognize the significant role nurses play in promoting health literacy. When asked if nurses, as

healthcare professionals, can contribute to improving health literacy among the general public, a majority of respondents, particularly from Poland and Slovakia, acknowledged this potential. However, the reality, as perceived by the respondents, was less optimistic, with fewer students believing that nurses currently pay adequate attention to health literacy in their practice with both sick and healthy individuals. Many students expressed concerns that, in practice, nurses may not be dedicating sufficient attention to health literacy, especially in their interactions with both sick and healthy individuals. This gap between perception and practice can be attributed to several factors highlighted in the study. In Slovakia, while students recognize the importance of health literacy, the actual integration of these concepts into nursing practice appears to be limited. This could be due to insufficient emphasis on health literacy in nursing education or a lack of resources and support within healthcare institutions that would enable nurses to effectively prioritize this aspect of care. Similarly, in Poland, although there is strong recognition of the importance of health literacy, the implementation in everyday nursing practice may be hindered by systemic challenges, such as high patient loads and time constraints, which limit the opportunity for nurses to engage in comprehensive health education. The situation in the Czech Republic presents a slightly different picture. Here, students seem less convinced of the role of nurses in promoting health literacy, which might reflect either a lower confidence in nurses' abilities or a lack of awareness of the potential impact nurses can have in this area. This could be indicative of a need for more targeted education and training programs that emphasize the practical application of health literacy in nursing roles, as well as greater institutional support to empower nurses to take on this responsibility.

Wilandika et al. [13] highlight that nurses play a crucial role in supporting health literacy by providing relevant information. Nurses enhance patients' health literacy by improving their ability to find, understand, evaluate, and use information related to their health and illness. This active role in promoting health literacy is essential not only for patient outcomes but also for reducing overall healthcare costs, as well-informed patients are better equipped to manage their health, leading to fewer medical errors and improved adherence to treatment plans. By fostering health literacy, nurses empower patients to take an active role in their care, which is particularly important in managing chronic conditions. This empowerment leads to better disease management, reduced hospital readmissions, and ultimately, a more efficient healthcare system. Furthermore, enhanced health literacy supports preventive health behaviors, reducing the incidence of complications and the need for intensive medical interventions. Consequently, the integration of health literacy into nursing practice is not only a critical component of patient care but also a key strategy in promoting public

health and optimizing healthcare resource utilization [3, 5, 8, 14].

In addition to focusing on health literacy in the context of the nursing profession, the survey also examined respondents' perceptions of the level of health literacy among the general adult public. Health literacy is crucial at all stages of the continuum of care—from well-being and health, through disease prevention and detection, to diagnosis and decision-making, as well as treatment and self-care [10]. Therefore, our survey targeted areas related to both prevention and therapy, as well as first aid.

The survey results indicate significant differences in how nursing students from the Czech Republic, Slovakia, and Poland perceive the public's understanding of various health literacy topics. Respondents rated 21 thematic areas on a scale from 1 to 5, with the Czech students consistently giving the highest ratings across all areas. This suggests that health literacy initiatives and educational campaigns in the Czech Republic are particularly effective, leading to a higher perceived level of public understanding. The areas of disease and injury prevention, the importance of preventive check-ups, and the recognition of health disorder symptoms were rated as relatively well understood by the Czech public, indicating strong awareness of these critical health aspects. This outcome can be attributed to the structured national efforts in the Czech Republic to enhance health literacy, making health information more accessible and understandable to the general population. In contrast, Polish respondents generally provided lower ratings, pointing to potential deficiencies in public health education in Poland. The most challenging areas were identified as disease and injury prevention, where significant gaps in public understanding were perceived. Slovak students' ratings fell between those of their Czech and Polish counterparts, with certain areas, like medication usage and seeking professional help, being seen as relatively well understood. However, other areas, such as managing chronic conditions and providing first aid, were identified as needing improvement. These findings underscore the importance of tailoring health education campaigns to address the specific needs and challenges of each country, particularly by focusing on areas that are perceived as most problematic, such as emergency preparedness and medication usage in Slovakia, and preventive care and first aid in Poland.

The respondents provided subjective perceptions of the public's health literacy by evaluating the comprehensibility of various thematic areas that are integral to this concept. However, it is crucial that nursing students are equipped to objectively assess the level of health literacy in the individuals they will care for, a skill that must be developed during their studies. As noted by Štefková et al. [15], health literacy content is partially integrated into undergraduate healthcare programs, yet there is a need for it to become a central focus

in curriculum planning. Health literacy has emerged as a priority in the twenty-first century, being vital for individuals' ability to manage their health and navigate the healthcare system [12]. Despite this, current healthcare education often lacks sufficient preparation aimed at mitigating the effects of limited health literacy in at-risk patients [16]. As Bastable [17] highlights, a patient who does not understand healthcare instructions cannot receive high-quality care, and challenges in clinical management of patients with low health literacy are likely to result in significant costs to the healthcare system.

The choice to conduct this research in the Czech Republic, Slovakia, and Poland was intentional, as it allowed for a comparative analysis of how varying educational approaches and cultural contexts impact nursing students' understanding of health literacy. Each country presents unique strengths and challenges, offering insights into how nursing education can be optimized to better support public health literacy. The differences identified in this study highlight the need for tailored educational strategies that address the specific needs of each region, ultimately aiming to enhance the effectiveness of health literacy initiatives across these nations.

5 Conclusion

Nurses play a crucial role in promoting health literacy among patients, as they serve as primary points of contact across various healthcare settings [18]. This pivotal role has gained significant recognition in recent years, particularly within the Czech Republic, Slovakia, and Poland, where national strategies and educational initiatives increasingly focus on health literacy. The findings from this study underscore the importance of integrating health literacy into nursing curricula, ensuring that nursing students not only comprehend the concept but are also prepared to apply it effectively in their practice. The study revealed varying levels of familiarity and understanding of health literacy among nursing students in these countries, which likely reflects differences in educational approaches. For example, Czech students demonstrated a more practical understanding, likely due to structured national efforts, while Polish students showed a more comprehensive grasp, possibly due to more holistic educational initiatives.

A person with adequate health literacy is better equipped to navigate the healthcare system, comprehend and adhere to medical instructions, and engage in preventive measures, which are all crucial for achieving optimal health outcomes [19]. In contrast, inadequate health literacy is associated with adverse health outcomes, such as increased hospitalizations, emergency visits, prolonged hospital stays, and extended recovery periods. These challenges are directly linked to higher healthcare costs [20]. Furthermore, an optimal level

of health literacy is essential for the prevention of diseases and injuries, which significantly impacts the quality of life. The study highlights the need for tailored educational strategies that address the specific needs of each country. Enhancing the focus on health literacy within nursing education is vital for preparing future healthcare providers to better support their patients, thereby leading to improved health outcomes and a more efficient healthcare system.

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Author Contribution M.M. prepared the study proposal and study draft. M.M., A.L., and G.D. developed the methodology and collected the data. D.M. performed the statistical analysis. D.M. and A.L. interpreted the data. M.M. and A.L. drafted the manuscript. All authors reviewed the manuscript.

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Data Availability The dataset supporting the findings of this study is available from the corresponding author upon reasonable request.

Declarations

Conflict of interest The authors declare no conflicts of interest related to this study.

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