

Nursing Program Students' Knowledge about the Cardiovascular Disease Prevention Program in Lithuania

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Summary

The study examines the knowledge of nursing program students in Lithuania about the cardiovascular disease (CVD) prevention program. It highlights the crucial role nurses play in reducing CVDs and the gaps in knowledge nursing students have regarding cardiovascular risk factors and prevention strategies. The survey, conducted with 191 nursing undergraduates, reveals that third- and fourth-year students are more knowledgeable than first- and second-year students about CVDs and prevention programs. However, overall knowledge, particularly about CVD complications and prevention strategies, is still insufficient. The study calls for better education and training to ensure future nurses can effectively contribute to CVD prevention and risk reduction.

Keywords: Students' Knowledge, Cardiovascular Disease Prevention Program, Cardiovascular Diseases, Risk Factors

1. Introduction

Nurses are the largest part of the healthcare sector managing cardiovascular disease (CVD) risk factors and chronic diseases worldwide. The American Heart Association (AHA) and the World Health Organization recognize that nurses are key team members playing a primary role in achieving the goal of reducing mortality and disability from CVD by 25% by 2025. Nurses, as team leaders, have proven their ability to reduce CVD risk factors, morbidity, and mortality for those diagnosed with the disease [1]. Studies on the role of nurses in implementing cardiovascular disease prevention programs (PP) have shown that nurses play a significant role in the implementation of CVD PP. According to research conducted in Lithuania, nurses reported that they did not lack knowledge but had to learn independently how to implement the CVD PP, as they had not been trained [2]. Studies conducted in Turkey, Croatia, and Beijing suggest that nursing students still lack knowledge about CVD and its risk factors. The knowledge and practice of medical nursing students are vital as this may influence their intent to recommend disease prevention measures in the future, thus reducing mortality from CVD [3,4,5]. Cardiovascular diseases (CVD) are the biggest and one of the main global problems, accounting for 31% of all deaths worldwide, claiming approximately 17.9 million lives annually [6]. According to the latest statistics from the Lithuanian Health Information Center of the Hygiene Institute,

4,288 people died in Lithuania in 2022, which is 4,862 fewer than in 2021. In Lithuania, circulatory system diseases account for the majority of deaths, comprising 52.5% of all deaths [7]. Two-thirds of CVD-related deaths are due to risk factors such as smoking, overweight (body mass index), high blood pressure (BP), elevated glucose and cholesterol levels, excessive alcohol consumption, low physical activity, and others [8]. Evidence underscores the importance of prevention in combating the widespread occurrence of CVD globally, emphasizing the impact of both modifiable and non-modifiable factors.

Objective - to assess nursing program students' knowledge about the cardiovascular disease prevention program in Lithuania.

2. Research Methodology

A quantitative study was conducted using an anonymous closed-type questionnaire in an interactive format. The questionnaire was based on the scales developed by Reiner Ž, Sonicki Z, Tedeschi-Reiner E., and Arıkan I, Metintaş S., Kalyoncu C. et al. Responses were received from 191 nursing undergraduate students from Vilnius University, Faculty of Medicine, across years 1 to 4. The data analysis was performed using the SPSS 27.0.0 statistical software package.

3. Results and Discussion

There are five preventive programs currently implemented in Lithuania: colorectal cancer, cardiovascular diseases (CVD), cervical cancer, breast cancer, and prostate cancer. The study results showed that only slightly more than a third (34.6%) of the students knew exactly which and how many programs exist. Among those aware of how many preventive programs are being implemented in Lithuania, statistically significantly more were from third- and fourth-year students compared to first- and second-year students (see Figure 1).

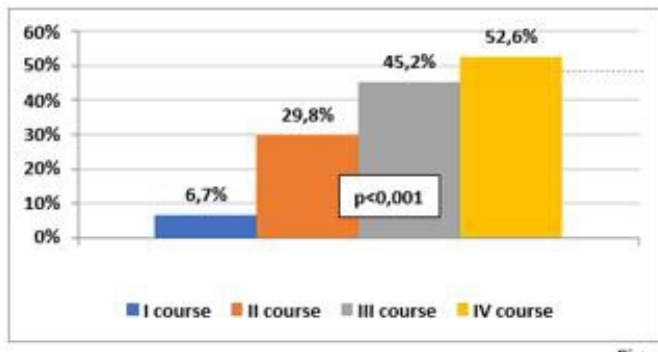


Figure 1

Analyzing statements related to knowledge about the content and activities of the cardiovascular disease prevention program in Lithuania, it was found that the vast majority of students knew that this program is free of charge in Lithuania (91.1%), and that to participate, one needs to contact a family doctor (90.6%). Most students also knew that an extended cardiology program is being implemented in Lithuania (74.3%) and how often patients are recommended to check depending on their identified risk (63.9%). However, only about half of the students knew that the cardiovascular disease prevention program is intended for men and women aged 40 to 60 (55.0%) and what tests are conducted during the program (48.2%) (see Figure 2).

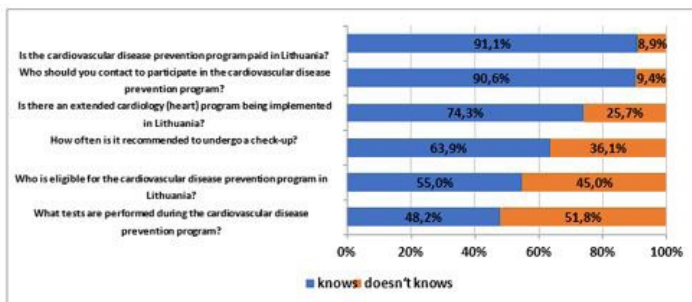


Figure 2

The survey data suggest that third- and fourth-year students were significantly more likely to know than first- and second-year students how often to check within the cardiovascular disease prevention program and what tests are performed during it.

Evaluating all statements related to the cardiovascular disease

prevention program implemented in Lithuania, it was found that the average knowledge score about this program (out of a possible 10 points) was 5.76 ± 2.32 across the entire student group. It can be concluded that third- and fourth-year students' knowledge about the cardiovascular disease prevention program was significantly better than that of first- and second-year students.

Overall, knowledge about cardiovascular diseases and complications among the student group was generally insufficient, with the average score (out of a possible 13 points) being 4.81 ± 2.43 . The results indicate that third- and fourth-year students had significantly better knowledge in this area compared to first- and second-year students. Analyzing the scale statements regarding knowledge about cardiovascular diseases and complications, it was found that students' knowledge was poor for most of the statements – the vast majority did not know the recommended level of HDL cholesterol for men (94.2%), how to increase HDL cholesterol levels (84.8%), the LDL cholesterol level for patients with diabetes (81.2%), the recommended total cholesterol level in plasma for individuals without coronary heart disease (77.0%), all types of cardiovascular diseases (75.9%), the recommended level of HDL cholesterol for women (75.9%), the recommended blood pressure for individuals with a high risk of cardiovascular diseases (72.3%), and the impact of metabolic syndrome on cardiovascular diseases (67.0%). The students most often knew the main cause of death in Lithuania (89.5%), the "bad" atherogenic cholesterol, whose increase raises the risk of cardiovascular diseases (68.1%), and the "protective" anti-atherogenic cholesterol, which, if elevated, does not increase cardiovascular risk (66.0%).

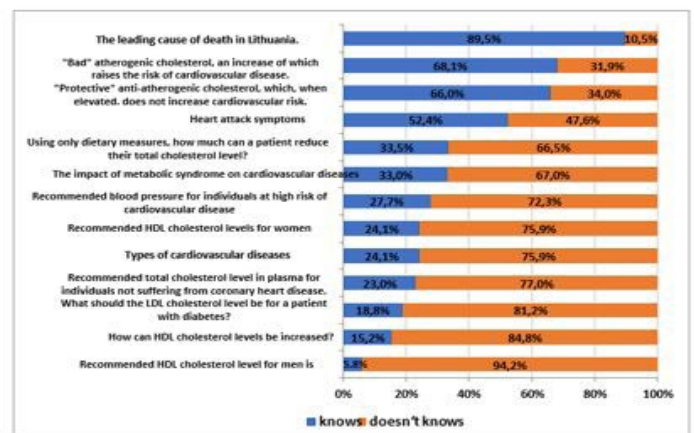


Figure 3

The research results suggest that there are trends among the courses, with third- and fourth-year students significantly more knowledgeable than first- and second-year students about types of cardiovascular diseases, the impact of metabolic syndrome on cardiovascular diseases, and the recommended level of HDL cholesterol. Third-year students had better knowledge than students from other years on how to increase HDL cholesterol levels. Meanwhile, second-year students were more likely to know the LDL cholesterol level for patients with diabetes.

In the overall student group, knowledge about cardiovascular disease (CVD) risk factors was generally satisfactory, with the average score out of a possible 25 points being 18.16±4.36. Comparing this score across different study years, the survey data revealed a statistically significant result showing that third- and fourth-year students had significantly better knowledge than first- and second-year students.

When analyzing the statements related to knowledge about CVD risk factors, it was found that most students provided correct answers to the majority of the statements. The vast majority of students knew that blood pressure increases under stressful conditions (95.3%), that overweight individuals have a higher risk of heart disease (94.8%), that regular exercise reduces the risk of these diseases (94.8%), that older people have a higher risk of developing heart diseases (94.2%), that smoking (94.2%) and high blood pressure (93.7%) are heart disease risk factors, and that stress, grief, and burdens increase the risk of heart disease (90.1%). However, only a small portion of students knew that slow walking and strolling are not considered exercise (11.0%) and that a person does not always realize whether they have heart disease (12.0%) (see Table 1).

Statements	CA	Knows	Doesn't know
Blood pressure increases under stressful conditions	T	9(4.7%)	182(95.3%)
Overweight individuals have higher risk of heart diseases	T	10(5.2%)	181(94.8%)
Regular exercise reduces the risk of heart disease	T	10(5.2%)	181(94.8%)
Elderly people are at a higher risk for heart disease	T	11(5.8%)	180(94.2%)
Smoking is a risk factor for heart disease	T	11(5.8%)	180(94.2%)
High blood pressure is a risk factor for heart disease	T	12(6.3%)	179(93.7%)
Stress, sorrow, and burden increase the risk of heart disease	T	19(9.9%)	172(90.1%)
The risk of developing heart disease is reduced when smoking is stopped	T	21(11.0%)	170(89.0%)
High cholesterol is a risk factor for heart disease	T	24(12.6%)	167(87.4%)
A family history of CVD increases your risk of having heart disease	T	25(13.1%)	166(86.9%)
Blood pressure control reduces the risk of heart disease	T	28(14.7%)	163(85.3%)
Risk can be reduced by exercising only in the gym	F	33(17.3%)	158(82.7%)
Fatty meals do not increase the cholesterol level in blood	F	42(22.0%)	149(78.0%)
Eating salty lead to increases blood pressure	T	44(23.0%)	147(77.0%)
There is a risk of heart disease risk if bad (LDL) cholesterol is high	T	44(23.0%)	147(77.0%)
The risk can be reduced in diabetic patients with glucose control	T	49(25.7%)	142(74.3%)
Diabetes is a risk factor for heart disease	T	50(26.2%)	141(73.8%)
Coronary heart disease can be prevented	T	60(31.4%)	131(68.6%)
A low carbohydrate and low fat diet is beneficial for heart health	T	68(35.6%)	123(64.4%)
There is a risk of heart disease if good (HDL) cholesterol is high	F	84(44.0%)	107(56.0%)
Every person with high cholesterol level is given medicine	F	101(52.9%)	90(47.1%)
Hypertension medications should be used for a lifetime	T	104(54.5%)	87(45.5%)
Fats that are solid at room temperature are beneficial for heart health	F	110(57.6%)	81(42.4%)
A person always realizes if he/she has a heart disease	T	168(88.0%)	23(12.0%)
Slow walking and wandering are also considered as exercise	F	170(89.0%)	21(11.0%)

CA – correct answer, T (truth) and F (false), data in the table are presented as the number of cases (percentages)

Table 1

The survey results indicate that third- and fourth-year students were significantly more likely than first- and second-year students to know that a family history of cardiovascular diseases increases the risk of developing them, that coronary heart disease is preventable, that diabetes is a heart disease risk factor, that consuming salty foods raises blood pressure, that fatty foods increase cholesterol levels, and that a low-carbohydrate and low-fat diet is beneficial for heart health. They also knew that if LDL levels are high, the risk of heart disease increases, but if HDL levels are high, there is no risk of heart disease, and that not every person with high cholesterol is prescribed medication.

In this study, third- and fourth-year nursing students had more knowledge about the prevention program, its content, and

activities in Lithuania than first- and second-year students. This can be expected, considering that senior students have already had theoretical lessons and more practical experience. Only slightly more than a third of all nursing bachelor's students knew the exact details about the five preventive programs being implemented in Lithuania (colorectal cancer, cardiovascular diseases (CVD), cervical cancer, breast cancer, and prostate cancer). The results showed that students were familiar with the cardiovascular disease prevention program, with most of the knowledge coming from fourth-year students (75.4%). Most of the students obtained their knowledge about the prevention program from the internet and medical institutions.

The study results indicate that most students know that the cardiovascular disease prevention program in Lithuania is free of charge and that one must first contact a family doctor to participate. Unfortunately, half of the respondents did not know the eligible age range for the prevention program (aimed at men and women aged 40 to 60) or that the program includes electrocardiograms, blood tests (glucose, C-reactive protein, cholesterol, HDL cholesterol, LDL cholesterol, etc.), and anthropometric measurements. However, more than half (63.9%) of the students knew how often a patient is recommended to check depending on their risk level—if the family doctor identifies a very high risk, after 1 year; if a high risk, after 2 years; and if a low or medium risk, after 4 years.

In this study, knowledge about cardiovascular diseases and complications was generally insufficient across the student group. Comparing the scores across different years of study, it was found that third- and fourth-year students had significantly better knowledge than first- and second-year students, but this knowledge was still insufficient. In Croatia, a study by Željko Reiner, Zdenko Sonicki, and Eugenia Tedeschi-Reiner found that medical students' knowledge about CVD was also insufficient [7]. In Beijing, China, a study by Ying Wu, Ying Deng, and Ying Zhang also found that nursing professionals and students lacked the necessary knowledge to provide advice to individuals with or at risk for CVD [8]. Meanwhile, in Nigeria, a study by Nse A. Odunaiya, Temilade B. Adesanya, et al. found that students at the University of Ibadan had sufficient knowledge, but a poor understanding of CVD and its risk factors [9].

Most students, as in the study conducted in Croatia, faced poor knowledge regarding cholesterol norms [4]. The students did not know the recommended HDL cholesterol levels for men (more than 1.0 mmol/L) and women (more than 1.2 mmol/L), nor did they know that moderate alcohol consumption and regular physical activity can increase HDL cholesterol levels. However, among all the students, third-year students had the highest rate of correct answers, with 26.2% answering correctly. In our study, 75.9% of the students did not know all types of cardiovascular diseases, similar to the results from a study conducted in Nigeria, where most students were also unaware of the diseases included under CVD. The respondents correctly identified the leading cause of death in Lithuania (89.5%) as myocardial infarction and similar cardiovascular diseases. Additionally, the respondents knew and

distinguished between the "bad" atherogenic cholesterol, whose increase raises the risk of cardiovascular diseases (68.1%), and the "protective" anti-atherogenic cholesterol, which, if elevated, does not increase cardiovascular risk (66.0%). Unfortunately, most of the respondents did not know the LDL cholesterol level for patients with diabetes and the recommended total cholesterol level in plasma for individuals without coronary heart disease. The study results highlight the students' poor knowledge about recommended blood pressure norms for individuals with high cardiovascular disease risk, and 67.0% of respondents did not know what metabolic syndrome is or how it affects cardiovascular diseases.

The results of this study showed that third- and fourth-year students were significantly more knowledgeable than first- and second-year students about cardiovascular diseases and complications. A study conducted in Croatia also indicated that senior students had significantly better knowledge than first-year students [4].

In the overall student group, knowledge about cardiovascular disease risk factors was generally satisfactory. A large portion of the respondents correctly identified that cholesterol and hypertension are among the main risk factors for CVD. In a study conducted in China, more than 70% of the respondents knew most of the risk factors for CVD. However, fewer respondents correctly identified cholesterol and hypertension as CVD risk factors [8].

The results of this study are similar to the findings of a study conducted in Turkey by Aysel Badir, Kader Tekkas, and Serpil Topcu. Turkish nursing students had a broad general knowledge, but significant gaps in their knowledge about modifiable risk factors, disease prevention, exercise, and common signs and symptoms of CVD. In our study, only a small portion of the respondents knew that slow walking and strolling are not considered exercise (11.0%) and that a person does not always realize whether they have heart disease (12.0%).

Most of the fourth-year students correctly noted that coronary heart disease is preventable, that eating salty foods raises blood pressure, and that controlling blood pressure reduces the risk of heart disease. In the Turkish study, about half of the students answered incorrectly when asked if "slow walking is also considered exercise." This indicates that the students were unable to properly distinguish between exercise and daily activities. It also shows that nursing students do not fully understand the management of hypertension, one of the most common risk factors. About two-thirds of the students gave incorrect answers to questions about modifiable risk factors and CVD prevention, indicating that their knowledge in these areas was insufficient [6].

4. Summary of the Study Results

We can conclude that students are aware that overweight individuals have a higher risk of developing heart disease (94.8%) and that regular exercise reduces the risk of these diseases. A study conducted in Croatia indicates that the risk factors for cardiovascular diseases (CVD) are insufficiently known. It is

emphasized that students have a limited understanding of obesity as an important risk factor for CVD [7]. The results of this study showed that third- and fourth-year students were significantly more knowledgeable than first- and second-year students about the fact that a family history of cardiovascular diseases increases the risk of developing CVD. In the United Arab Emirates, study results revealed that more than 50% of respondents were unaware of non-modifiable risk factors such as increasing age (60.0%) and a positive family history of CVD (50.9%) [10].

Analyzing the statements related to knowledge about CVD risk factors, it was found that most students gave correct answers to the majority of the statements. The vast majority of students knew that blood pressure increases under stressful conditions (95.3%) and that stress, grief, and burdens increase the risk of heart disease. A study conducted in the United Arab Emirates by Rizwana B. Shaikh, Elsheba Mathew et al. showed that more than 70% of participants were aware that stress, high cholesterol levels, and obesity are risk factors for hypertension, which is one of the main risk factors for CVD. More than 60% knew that high salt intake and a high-calorie diet are also risk factors [10].

5. Conclusions

Nursing bachelor's students lack knowledge about the goals, content, and activities of the cardiovascular disease prevention program implemented in Lithuania. Students' knowledge about cardiovascular diseases and complications is generally insufficient. Their knowledge about CVD risk factors is generally satisfactory.

6. Recommendations

1. Enhance Curriculum with Focus on CVD Prevention Programs: The study shows that students' knowledge of CVD prevention is insufficient, especially among first- and second-year students. Introducing more comprehensive modules on cardiovascular disease prevention, risk factors, and practical implementation of prevention programs could significantly improve their understanding and readiness for clinical practice.
2. Implement Practical Workshops and Simulations: To bridge the gap between theory and practice, it would be beneficial to organize hands-on workshops or simulations that allow students to apply their knowledge about CVD prevention programs. These could involve case studies, patient consultations, or role-playing exercises focusing on preventive measures and risk factor management.
3. Continuous Assessment and Support for Early-Year Students: The findings indicate that first- and second-year students have significantly lower knowledge about CVD prevention than their senior counterparts. Providing ongoing assessments, targeted tutorials, or mentorship programs for younger students could help them catch up and ensure a more uniform knowledge base across all academic years.

References

1. Hayman LL, Berra K, Fletcher BJ, Houston Miller N. The Role of Nurses in Promoting Cardiovascular Health Worldwide: The Global Cardiovascular Nursing Leadership Forum. *J Am Coll Cardiol.* 2015;66(7):864-866. doi:10.1016/j.jacc.2015.06.1319
2. Petraškevič B, Greičienė S. The Role of Nurses in the Implementation of the Cardiovascular Disease Prevention Program. *Nursing. Science and Practice.* 2018;No.6(258): p.4-8. Internet access: <https://www.zurnalai.vu.lt/slauga/article/view/19928/19063>
3. Badir A, Tekkas K, Topcu S. Knowledge of Cardiovascular Disease in Turkish Undergraduate Nursing Students. *Eur J Cardiovasc Nurs.* 2015;14(5):441-449. doi:10.1177/1474515114540554
4. Reiner Ž, Sonicki Z, Tedeschi-Reiner E. The Perception and Knowledge of Cardiovascular Risk Factors Among Medical Students. *Croat Med J.* 2012;53(3):278-284. doi:10.3325/cmj.2012.53.278
5. Wu Y, Deng Y, Zhang Y. Knowledge, Attitudes, and Behaviors of Nursing Professionals and Students in Beijing Toward Cardiovascular Disease Risk Reduction. *Res Nurs Health.* 2011;34(3):228-240. doi:10.1002/nur.20431
6. World Health Organization. WHO MORTALITY DATABASE Interactive Platform Visualizing Mortality Data. 2024. Internet access: <https://www.who.int/data/mortality/country-profile>
7. Lithuanian Health Information Center of the Hygiene Institute. Causes of Death 2022. Vilnius; 2023. Internet access: [https://www.hi.lt/uploads/Institutas/leidiniai/Statistikos/Mirties_priezastys/Mirties_priezastys_2022\(3\).pdf](https://www.hi.lt/uploads/Institutas/leidiniai/Statistikos/Mirties_priezastys/Mirties_priezastys_2022(3).pdf)
8. Alageel S, Gulliford MC. Health Checks and Cardiovascular Risk Factor Values Over Six Years' Follow-Up: Matched Cohort Study Using Electronic Health Records in England. *PLoS Med.* 2019;16(7). Published 2019 Jul 30. doi:10.1371/journal.pmed.1002863
9. Odunaiya NA, Adesanya T, Okoye EC, Oguntibeju OO. Towards Cardiovascular Disease Prevention in Nigeria: A Mixed Method Study of How Adolescents and Young Adults in a University Setting Perceive Cardiovascular Disease and Risk Factors. *Afr J Prim Health Care Fam Med.* 2021;13(1). Published 2021 Apr 7. doi:10.4102/phcfm.v13i1.2200
10. Shaikh RB, Mathew E, Sreedharan J, Muttappallymyalil J, Sharbatti SA, Basha SA. Knowledge Regarding Risk Factors of Hypertension Among Entry Year Students of a Medical University. *J Family Community Med.* 2011;18(3):124-129. doi:10.4103/2230-8229.90011

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