HEALTH, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: INTERDISCIPLINARY APPROACH, 2025 No. 1, p. 66-74
eISSN 3030-2323; DOI: https://doi.org/10.59476/hesdia.v0i1.698 / https://ojs.kaunokolegija.lt/index.php/HESDIA

KNOWLEDGE OF DIETARY SUPPLEMENTS AND THEIR USE AMONG CARDIOVASCULAR DISEASE PATIENTS

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Abstract. As the incidence of cardiovascular disease (CVD) rises and life expectancy increases, the importance of physical activity, a balanced diet, and the elimination of harmful habits is becoming increasingly important. The use of dietary supplements to improve well-being and health is also gaining popularity. The aim of this study was to assess the use and knowledge of dietary supplements among patients with cardiovascular disease using an anonymous survey method. 162 people with cardiovascular disease who use food supplements participated in the study. The study divided the respondents into 2 groups: 1st group consisted of people with cardiovascular disease under 10 years of illness, while 2nd group consisted of people with cardiovascular disease over 10 years of illness. The study showed that people with cardiovascular disease most often consume fish oil and vitamin D, and least often take iron supplements. Those with more than 10 years of illness were statistically significantly more likely to take B vitamins and more likely to be aware of the potential effects of fish oil on pulse regulation. Cardiovascular disease patients with less than 10 years of illness are statistically significantly more likely to be aware of the possible cardiovascular effects of vitamin D. Before taking dietary supplements about one third of the respondents read the instructions for use of the supplements and least often consult a nurse. Cardiovascular disease patients do not have sufficient knowledge of the possible cardiovascular effects of dietary supplements, even though all respondents in the study take them.
Keywords: cardiovascular disease, food supplements, knowledge

Introduction

Cardiovascular disease (CVD) remains the leading cause of death worldwide. In 2021, more than 20 million people were estimated to have died from them, but mortality rates are expected to continue to rise (Murray, 2022). The most common causes of morbidity and mortality in Europe are ischaemic heart disease, stroke, atherosclerosis, heart rhythm disturbances and myocardial infarction (Timmis et al., 2022). According to statistical data, one in three people in Lithuania suffered from cardiovascular disease in 2021. In Lithuania, the incidence of cardiovascular disease is increasing year by year, and less than one in two people in the target screening group participate in the prevention programme (State Patient Fund under the Ministry of Health, 2023).

It is recommended to follow the principles of a healthy lifestyle for the prevention or management of cardiovascular disease, such as regular physical activity, quitting harmful habits and changing dietary habits. Recently, the use of dietary supplements to improve well-being for better health outcomes has become particularly popular and their availability has become more extensive and convenient. A survey conducted in Lithuania in 2019 shows that more than half (66.5%) of the adult population in the country take food supplements (Stukas et al., 2019). Researchers believe that the consumption of dietary supplements will continue to rise in the future due to rising healthcare costs, an elderly population, sedentary work, and busy work schedules, which may lead to an increase in fast food consumption (Aliyu et al., 2020). It is important to note that dietary supplements are categorised as foods and are therefore not subject to the same stringent requirements as medicines. However, some dietary supplements may react with cardiovascular medicines by enhancing or impairing their effects, and excessive doses of supplements may have adverse health effects and side effects (Djuricic, Calder, 2021). Studies have shown that the use of dietary supplements in interaction with cardiovascular medications taken by individuals can cause significant side effects (Gröber, 2019). Thus, it becomes extremely important for cardiovascular disease patients to have the correct information about the dietary supplements they are taking, the specifics of their use and their potential impact on the body.

Chronic diseases not only have a direct impact on a person's health, but can also affect their daily life. Schneider and others (2023) found that individuals with a long-term diagnosis of a chronic disease have a better understanding and management of their condition, thus contributing to the prevention of the development of certain symptoms or complications. Furthermore, acceptance of the illness helps to cope with its challenges, which may be influenced by factors such as psychological state, age and, of course, duration of illness (Schneider et al., 2023). Patients' knowledge of the disease increases significantly due to their intense interest in the disease, sharing their experiences with others, and after ten years of living with the disease, most patients have a full understanding of their condition, mainly due to their experience, continuous learning, and communication with the medical staff caring for them (Peters, Brown, 2022).

Despite the increasing number of patients with cardiovascular disease and the increasing use of dietary supplements, there is a lack of more detailed studies examining the patients' knowledge about the potential impact and the specificities of dietary supplements use in the management of cardiovascular disease depending on the illness duration.

The aim of this study - to assess the use and knowledge of dietary supplements in patients with cardiovascular disease. The research method chosen for the study was an anonymous questionnaire survey. The subject of the study - the knowledge and use of dietary supplements among patients with cardiovascular disease.

Theory

There are many diseases that fall under the umbrella of cardiovascular disease, some of which can lead to other diseases. *Atherosclerosis* is one of the most commonly diagnosed chronic diseases in this group and is characterised by the accumulation of lipids in the artery wall. The formation of such a lesion can reduce the amount of blood flow in a blood vessel by 50% or more, and the resulting lipid clot can break up and block blood vessels. This can lead to myocardial infarction or stroke (Björkegren, Lusis, 2022).

Ischaemia lasting several seconds prevents myocardium from contracting and relaxing, and insufficient nutrient supply to the myocardium for 45-60 minutes promotes cell necrosis and can lead to myocardial infarction (Björkegren, Lusis, 2022). According to statistics, ischaemic heart disease caused more than 9 million deaths worldwide in 2019 (Murray, 2022).

In Europe, *stroke* is more common in men than in women, and overall the disease affected more than 2 million Europeans in 2019. Stroke is often a result of atherosclerotic disease, which causes bleeding in the brain or blocks blood flow to it. Embolic obstruction is also a common cause of stroke, especially in people with atrial fibrillation (Timmis et al., 2022).

Heart failure is diagnosed when the heart is no longer able to meet the blood volume needs of the body. The mechanism of development of the disease is attributed to a weakened heart muscle, impaired ventricular filling, or the ejection of blood into the systemic circulation. Heart failure affects around 26 million people worldwide (Murray, 2022).

Initially, symptoms of *high blood pressure (BP)* are usually absent, but over time hypertension can be an important risk factor for the development of various cardiovascular disease. Arterial hypertension is the leading cause of premature death worldwide (Latic, Erben, 2020).

Dietary supplements have been on the market for several decades, but the increase in advertising and the widening of access to them show that dietary supplements have recently become more popular. According to Cloud and others (2020), the main ingredients of food supplements can include minerals, vitamins, herbs, enzymes, amino acids and many others. According to the definition given in the Order of the Minister of Health of the Republic of Lithuania, a food supplement is a product which is made from one or more concentrated nutrients, which has a nutritional or physiological effect, and is intended to supplement the daily diet (Regarding the Lithuanian Hygienic Standard HN 17:2016, 2010). Recently, food supplements have become available in a wide range of sales outlets. Dietary supplements are classified as foodstuffs and are therefore not subject to the same strict requirements as medicinal products. Although there is a public perception that dietary supplementation can prevent diseases, improve physical and emotional health, sports performance and replenish nutrient deficiencies, the potential effects of dietary supplements on the body have not been fully investigated (Aliyu et al., 2020).

A study in Lithuania found that vitamins, fish oil and complex food supplements are the most widely consumed by the population (Stukas et al., 2019). In the same study, respondents reported that they use dietary supplements to strengthen the body (27.5%), as a preventive measure (18.8%), or for cardiovascular disease (16.1%). There is a wide range of cardiovascular supplements available, and the most commonly used are fish oil, garlic, vitamin D, B vitamins, magnesium, iron, hawthorn and coenzyme Q10 supplements (Rabanal-Ruiz et al., 2021; Sukas et al., 2019).

Garlic can protect the heart against possible heart attacks and has blood-thinning properties. Aged garlic extract has been shown to lower systolic blood pressure by 8.6 mm/Hg and diastolic blood pressure by 6.1 mm/Hg. However, these results were only obtained in people with arterial hypertension, whereas in participants with normal arterial blood pressure, garlic extract had no effect on blood pressure (Sánchez-Gloria et al., 2022).

Fish oil lowers blood triglyceride levels, has anti-inflammatory and antiarrhythmic effects, lowers blood pressure, and improves arterial and endothelial function (Elagizi et al., 2021). Maintaining fish oil at maximum levels in healthy people has been shown to reduce coronary deaths by 23% (Djuricic, Calder, 2021). Omega-3

intake can help relieve anxiety and provide a calming effect, which has a positive effect on heart rhythm (Djuricic, Calder, 2021).

Vitamin D deficiency is highly prevalent worldwide. In recent years, vitamin D has been cited as having beneficial effects in autoimmune diseases, cancer, cardiovascular disease and diabetes. At the same time, the supplement is known to have a positive effect on mood, which can help with anxiety and regulate pulse rate (Latic, Erben, 2020). Although there is no consensus, some researchers have found that vitamin D supplementation may have a beneficial effect on blood pressure. Studies have shown that those with optimal vitamin D levels had a 30% reduction in the risk of having an elevated blood pressure, and a reduction in diastolic blood pressure was observed among those with arterial hypertension (Latic, Erben, 2020).

Coenzyme Q10 (CoQ10) is an antioxidant used to improve cardiac performance, physical endurance and neuromuscular function (Latic, Erben, 2020). In addition to lowering BP, coenzyme Q10 supplementation also reduces triglyceride and low-density lipoprotein levels (Rabanal-Ruiz et al., 2021). Clinical data show that long-term use of CoQ10 is safe and well tolerated (Rabanal-Ruiz et al., 2021).

The two main sources of *iron* in the human body are food (most of this mineral is obtained from meat and legumes) and the recycling of old erythrocytes (Aliyu et al., 2020). It has been shown that about half of all patients with heart failure have a concomitant diagnosis of iron deficiency without anaemia. This is associated with a poor prognosis, poorer physical well-being, exercise intolerance, repeated hospitalisations and increased mortality (Aliyu et al., 2020). It has been suggested that iron supplementation may also contribute to reducing some of the symptoms of cardiovascular disease such as weakness and shortness of breath (Savarese, 2022).

B vitamin complex such as vitamins B6, B9 and B12 have been shown to have the greatest potential beneficial effects on the heart and blood vessels. A deficiency of any of these B vitamins can lead to elevated levels of total homocysteine in the blood, which is associated with the development of cardiovascular disease. The B vitamins have a protective function on the endothelium of blood vessels, which also reduces the development of atherosclerosis or even thrombosis. In addition, supplementation with these vitamins may be a preventive measure against stroke (Yuan et al., 2021).

Maintaining sufficient *magnesium* in the body reduces the risk of cardiovascular disease by about 20% (Gröber, 2019). Magnesium supplementation has been shown to reduce the incidence of arrhythmias, the risk of heart failure, anxiety levels, and has blood pressure-regulating properties. Supplementation at levels ranging from 500mg/d to 1000mg/d can reduce systolic blood pressure by 5.6mm/Hg and diastolic blood pressure by 2.8mm/Hg. Studies by other authors have confirmed that magnesium intake of 100mg/d reduces the risk of hypertension by 5% and reduces the risk of stroke by up to 20%, while magnesium intake of 80mg/d may contribute to the management of atherosclerosis (Gröber, 2019).

The use of *hawthorn* reduces arterial blood pressure in patients with first-degree hypertension (Cloud et al., 2020). In patients with heart failure, hawthorn supplementation has been shown to improve quality of life, physical endurance, and relieve symptoms associated with heart failure (Cloud et al., 2020). According to studies by Nazhand and others (2020), hawthorn extracts reduce atherosclerosis by inhibiting inflammation and factors associated with cell death, maintaining endothelial integrity and normal function, thereby protecting the cardiovascular system. As anxiety is associated with adverse effects on cardiac function, hawthorn can be used to provide a calming effect (Nazhand et al., 2020).

Methodologies

The method chosen for the study is a quantitative survey. The survey sample was based on the principle of focus group design. The criteria used for the survey were age, the use of dietary supplements and cardiovascular disease diagnosis. Respondents had to be aged 18 years or older, consume dietary supplements and have at least one diagnosis of cardiovascular disease. A 15-question questionnaire was developed on the basis of the analysed evidence. In this study we examined the results to 6 closed-ended questions regarding the respondents' awareness of dietary supplements use in the management of cardiovascular disease. Respondents had the opportunity to answer the predefined statements and write their own version. Each respondent in a questionnaire confirmed their consent to participate in the study. In order to collect as many responses as possible, a printed and an electronic forms of the questionnaire were distributed. The electronic version of questionnaire was created using Google Forms and distributed in the Facebook group ‘Heart Disease and Cardiology’. The printed form was distributed in the primary health care facility ‘X’ in Vilnius. With the written permission of the administrator of the social networking group and the permissions of the administration of the primary health care facility, the questionnaire was distributed between November 2023 and February 2024.

A total of 162 respondents took part in the study (3 questionnaires were discarded due to unconfirmed cardiovascular morbidity). For a more detailed analysis, based on the results of a study conducted by the

researchers (Peters, Brown, 2022), the subjects were divided into 2 groups according to the duration of the disease: the first group (1st group) consisted of 121 individuals with duration of cardiovascular disease for up to 10 years, the second group (2nd group) consisted of 41 individuals with duration of cardiovascular disease for more than 10 years. To determine the research participants' characteristics, they were asked to indicate their age, education, gender and the duration of cardiovascular disease. The largest number of participants was aged 45-60 years and 61-75 years (Figure 1). The largest number of subjects in 1st group was aged 45-60 years (49.6%), and the smallest number was aged 18-24 years (1.7%). The largest number of respondents in 2nd group were aged 61-75 years (53.7%) and there were no respondents under 44 years. The average age of the participants was 58.3 years. All participants indicated their gender. The majority of the respondents were women (77.8%). 67.1% of the research participants indicated that they had a university degree.

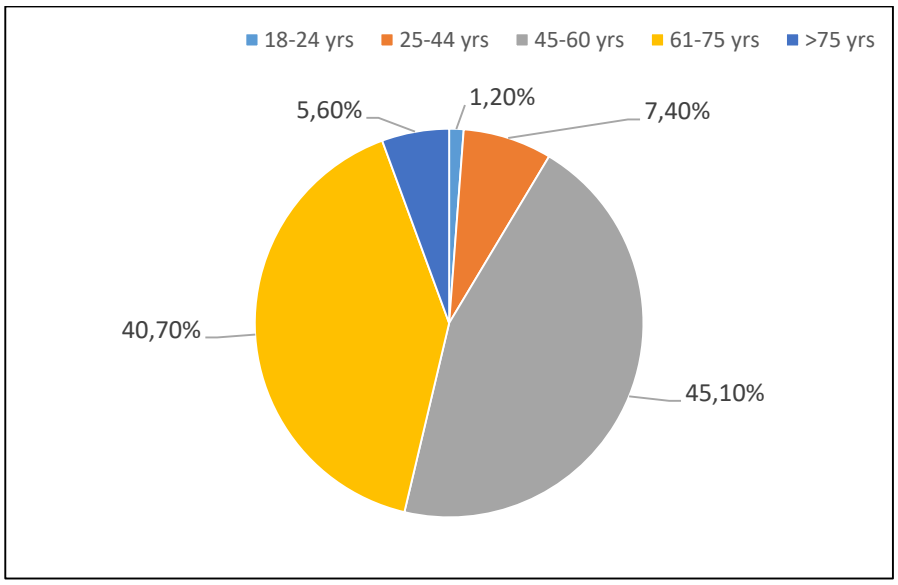

Fig. 1. Distribution of respondents by age groups

Descriptive statistics were used to assess the distribution of the attributes considered in the selected sample, i.e. frequencies (n) and their percentage (%). The chi-square (χ^2) criterion (significance level $p < 0.05$) was used to assess differences in the distribution of respondents across groups. The information collected was processed and analysed using SPSS 22.0 (Statistical Package for Social Science) software.

Due to the sample design, the results should not be generalised to all patients with cardiovascular disease, but can be used to foresee general trends.

Results and their discussion

The survey aimed to find out which cardiovascular food supplements the respondents were taking. The most commonly used cardiovascular supplements, whose properties have already been discussed in this article, were selected as response options.

There is a trend that most research participants (58.0%) take fish oil (58.0%), vitamin D (37.7%) supplements while iron is taken least frequently (Table 1). In a study conducted in Lithuania, it was found that one-third of the Lithuanian population prefers fish oil to supplement their diet (Stukas et al., 2019). However, this difference in the results may be due to the fact that in the study by Stukas and others (2019), the respondents did not have a cardiovascular disease diagnosis criterion, and the results were applied to the general population of Lithuania. Given that fish oil is probably the most widely and commonly studied dietary supplement on the market, it is likely that for these reasons this supplement is the most common choice among those with cardiovascular disease.

When comparing the research participants' responses according to disease duration, only one statistically significant difference in dietary supplements use was found: those with more than 10 years of disease (2nd group) were more likely to take B vitamins than those with less than 10 years of disease (χ 2= 6.267, d=1, p=0.012). B vitamins are available in a complex form, so that a single tablet may have multiple effects on the body simultaneously. It can be assumed that, knowing the cardiovascular benefits of B vitamins, participants with more than 10 years of illness duration choose to take these supplements to reduce the number of tablets they take, while maintaining the potential benefits to the body. It showed that those with less than 10 years of illness often also take vitamin D, while those with more than 10 years of illness are more likely to take vitamin

B supplements. Iron supplements were the least frequent in both groups, and garlic supplements were the least frequent in 1st group. There is also a tendency for magnesium supplementation to decrease with increasing disease duration, although studies have shown the benefits of magnesium supplementation in cardiovascular disease. It reduces the incidence of arrhythmias, the risk of heart failure, anxiety levels, and has blood pressure-regulating properties (Gröber, 2019).

Table 1. Breakdown by type of dietary supplements used for cardiovascular disease management

Breakdown by the length of illness	**Food supplement**							
	Fish oil	Coenzyme Q10	B vitamins*	Vitamin D	Iron	Magnesium	Hawthorn	Garlic
1st group, n=121	65 (53.7%)	26 (21.5%)	26 (21.5%)	49 (40.5%)	13 (10.7%)	40 (33.1%)	24 (19.8%)	13 (10.7%)
2nd group, n=41	29 (70.7%)	12 (29.3%)	17 (41.5%)	12 (29.3%)	1 (2.4%)	11 (26.8%)	7 (17.1%)	7 (17.1%)
Total, n=162	94 (58.0%)	38 (23.5%)	43 (26.5%)	61 (37.7%)	14 (8.6%)	51 (31.5%)	31 (19.1%)	20 (12.3%)

*$p < 0.05$

In order to assess the knowledge of cardiovascular disease patients about dietary supplementation, respondents were asked to identify the steps they take before starting to take a dietary supplement (Table 2). It was found that the majority, i.e. one-third of all research participants, read the supplement leaflet before taking it. This is arguably the easiest way to familiarise oneself with the possible cardiovascular and other effects of the supplement. Despite the convenience, it is worth noting that the information provided in the leaflet is intended for all users, and the use of certain supplement should therefore be discussed individually with a healthcare professional. A quarter of the participants ask their doctors for a blood test or have a blood test done without an appointment.

When comparing the results by disease duration, there was only one statistically significant difference in actions taken by respondents before supplement use: participants with more than 10 years of illness (2nd group) were more likely to consult a nurse than those with less than 10 years of illness (χ 2=7.417, d=1, p=0.028). Incidentally, consulting a nurse was identified as the least frequent action among all research participants. Nurses have sufficient knowledge and capacity to advise patients on these issues, as shown in the study by Stanojević-Ristić et al. (2022). Given that nurses in Lithuania often work in the same office as doctors, we can assume that this is the reason why respondents are more likely to ask for advice from a doctor, while those who cannot get advice are more likely to turn to a pharmacist. There is a tendency that respondents in 1st group are slightly less likely to ask doctors for blood tests or to have blood tests done without a doctor's prescription, while those in 2nd group are less likely to consult a pharmacist. These results can be correlated with the findings of a study by Stukas and others (2019), which found that almost 40% of the Lithuanian population consult a pharmacist for advice on dietary supplement use. It can be assumed that this is because pharmacies are easily accessible and a consultation with a doctor may have to wait several weeks. However, according to scientific advice, it is safest to start taking dietary supplements only after consulting a doctor. During the consultation, the physician should assess the need for dietary supplements through blood or other instrumental tests, and consider the list of medications being taken and their possible reactions with the supplements (Djuricic, Calder, 2021). As shown in our study, this is done by about a quarter of the study participants.

Table 2. Actions taken by respondents before taking food supplements

Breakdown by the length of illness	**Actions**						
	Blood tests	Consults a doctor regarding the interaction between DS[1] and medications used	Finds information about possible DS side effects	Consults a pharmacist to find the best type of DS	Looks for information about DS in the media	Consults a nurse*	Reads a leaflet of a DS
1st group, n=121	33 (27.3%)	25 (20.7%)	28 (23.1%)	22 (18.2%)	16 (13.2%)	6 (5.0%)	41 (33.9%)
2nd group, n=41	9 (22.0%)	13 (31.7%)	11 (26.8%)	14 (34.1%)	11 (26.8%)	6 (14.6%)	17 (41.5%)
Total, n=162	42 (25.9%)	38 (23.5%)	39 (24.1%)	36 (22.2%)	27 (16.7%)	12 (7.4%)	58 (35.8%)

*$p < 0.05$
[1]DS - dietary supplement

Respondents' knowledge of the performance characteristics of dietary supplements was also assessed. Fish oil has been widely studied by scientists and, according to statistical data, is the most commonly consumed food supplement in Lithuania (Stukas et al., 2019). Participants in our study are also the most frequent users of this supplement and the most aware of its potential cardiovascular protective outcome. The most frequent, i.e. 56.2% of the respondents, agreed with its potential effect on lowering blood lipid levels (Table 3). The only statistically significant difference in knowledge of dietary supplement by cardiovascular disease duration was this: a greater part of respondents in 2nd group (43.9%) than in 1st group (27.3%) were aware that fish oil regulates pulse (χ^2= 3.926, d=1, p=0.048).

Table 3. Respondents' knowledge of the possible effects of fish oil on the body

Breakdown by the length of illness	**Respondents' knowledge**						
	Regulates blood pressure	Regulates pulse*	Lowers the lipid levels	Helps with CVD[1] symptoms	Used as prevention against CVD	Improves physical health	Has a calming effect
1st group, n=121	48 (39.7%)	33 (27.3%)	66 (54.5%)	42 (34.7%)	56 (46.3%)	52 (43.0%)	18 (14.9%)
2nd group, n=41	22 (53.7%)	18 (43.9%)	25 (61.0%)	20 (48.8%)	22 (53.7%)	23 (56.1%)	7 (17.1%)
Total, n=162	70 (43.2%)	51 (31.5%)	91 (56.2%)	62 (38.3%)	78 (48.1%)	75 (46.3%)	25 (15.4%)

*$p < 0.05$
[1]CVD - cardiovascular disease

Magnesium has blood pressure and pulse-regulating and calming properties (Savarese, 2022). In our study, no statistically significant differences were found between groups in terms of duration of illness on this supplement ($p>0.05$). There was a trend towards the highest awareness of magnesium's calming (28.4%) and physical health-enhancing (30.2%) properties, while the lowest awareness of magnesium's blood pressure and pulse-regulating properties was found in the study population (26.5% and 23.5% respectively). There is also a trend towards lower knowledge of magnesium supplementation among respondents with a disease duration of more than 10 years. This could be due to the decreasing use of the supplement with increasing disease duration (Table 1).

Hawthorn has arterial blood pressure-regulating and calming properties (Nazhand et al., 2022). In our study, no statistically significant differences were found between groups in terms of duration of illness for this supplement ($p>0.05$). There was a trend towards awareness of this information among study participants, but respondents in 2nd group were more aware of the blood pressure-lowering effect (28.1%) and those in 1st group were more aware of the calming effect of hawthorn (28.1%). Although Cloud and others (2020), in their study suggested that hawthorn may improve physical endurance and alleviate the symptoms of cardiovascular disease, the results of our study show that less than a quarter of the participants (11.7% and 18.5%,

respectively) were aware of these potential effects on the body. The low popularity of this supplement may be a contributing factor.

Data from a study in Savarese (2022) showed that improvements in physical health and overall quality of life were observed after taking iron supplements, and it is suggested that supplementation may also contribute to reducing some of the cardiovascular disease symptoms, such as weakness and shortness of breath. In our study, no statistically significant differences were found in terms of duration of illness on this supplement ($p>0.05$). When investigating the respondents' knowledge about the potential benefits of this supplement on the body, it was found that the participants of the 1st group (20.7%) were more aware of the physical health benefits than those in 2nd group (14.6%), while only one tenth of the total number of research participants were aware of the cardiovascular disease preventive properties. This response could be due to the fact that the study participants use iron supplements less frequently (Table 1).

Studies have shown that garlic supplementation can help regulate blood pressure, manage atherosclerosis, protect the heart from possible heart attacks and has blood-thinning properties (Sánchez-Gloria et al., 2022). There is a slight trend towards greater awareness of this supplement among those with more than 10 years of illness: 29.3% of 2nd group participants believe that garlic supplements can help regulate blood lipid levels (27.3% in 1st group), with a slightly lower percentage (19.5%) agreeing that garlic supplements can also help regulate pulse rate (13.2% in 1st group). The only statistically significant difference in knowledge of this supplement by disease duration was found in this case: more patients in 2nd than in 1st group knew that garlic regulates blood pressure (χ 2=4.204, d=1, p=0.04). 14.9% of the 1st group respondents and 29.3% of the 2nd group respondents chose this answer option. The highest proportion of participants, 27.8%, agree that garlic supplements can help lower blood lipids.

No statistically significant differences were found between the comparison groups ($p>0.05$) when examining respondents' knowledge of coenzyme Q10. There is a trend for similar percentages of respondents in 1st and 2nd group to express their opinion on the potential cardiovascular benefits of this supplement. Also, only a slightly higher proportion of respondents in 2nd group than in 1st group expressed the opinion that coenzyme Q10 supplementation could be a preventive measure for cardiovascular disease (29.3% and 23.1%, respectively).

Researchers have found that vitamin D can have a positive effect on arterial blood pressure, while it is also known to have a positive effect on mood, which can help with anxiety and pulse regulation (Latic, Erben, 2020). In our study, there is a trend that the smallest proportion of respondents (6.8%) are aware of the potential calming effects of vitamin D. When comparing the knowledge of vitamin D among research participants by duration of illness, the most statistically significant differences were found in the use of dietary supplements among all study participants. Patients under 10 years of illness duration (1st group) were statistically significantly more likely to know that vitamin D regulates blood pressure (χ 2= 5.766, d=1, p=0.016), lowers lipid levels (χ 2= 5.766, d=1, p=0.016), and relieves symptoms of cardiovascular disease (χ 2= 5.332, d=1, p=0.021) (Table 4).

Table 4. Respondents' knowledge of the possible effects of vitamin D on the body

Breakdown by the length of illness	**Respondents' knowledge**						
	Regulates blood pressure	Regulates pulse*	Lowers the lipid levels	Helps with CVD[1] symptoms	Used as prevention against CVD	Improves physical health	Has a calming effect
1st group, n=121	30 (24.8%)	23 (19.0%)	30 (24.8%)	33 (27.3%)	29 (24.0%)	32 (26.4%)	8 (6.6%)
2nd group, n=41	3 (7.3%)	3 (7.3%)	3 (7.3%)	4 (9.8%)	6 (14.6%)	10 (24.4%)	3 (7.3%)
Total, n=162	33 (20.4%)	26 (16.0%)	33 (20.4%)	37 (22.8%)	35 (21.6%)	42 (25.9%)	11 (6.8%)

*$p < 0.05$

[1]CVD - cardiovascular disease

There were no statistically significant differences ($p>0.05$) in the respondents' knowledge of B vitamins. There is a tendency that the highest percentage (26.8%) of 2nd group representatives believe that taking these supplements may have a calming effect. However, the groups of respondents differed in their opinions regarding the effect of B vitamins on physical health, with 24.8% in 1st group and 19.5% in 2nd group agreeing with this statement. Nevertheless, a more pronounced divergence of opinions was observed when assessing

the respondents' opinion on the possible effect of B vitamins on blood pressure. 10% of respondents in 1st group agreed with this idea, while 22% in 2nd group. A study by Yuan (2021) showed that B vitamin supplementation may be a preventive measure for stroke, as B vitamins have a protective function on the vascular endothelium, which also reduces the development of atherosclerosis or even thrombosis and may indirectly contribute to the lowering of blood pressure. As mentioned earlier (Table 1), those with over 10 years of illness are more likely to prefer B supplements than others, suggesting that this may be the reason why this group is more likely to believe that these supplements may have multiple benefits in cardiovascular disease.

Conclusions

1. People with cardiovascular disease are most likely to take fish oil and vitamin D, and less likely to take iron supplements. Those with more than 10 years of disease duration are statistically significantly more likely to take B vitamins.

2. Those with cardiovascular disease for less than 10 years of illness are statistically significantly more likely to be aware of the possible effects of vitamin D on the regulation of arterial blood pressure, blood lipid levels and the reduction of cardiovascular disease symptoms. Those with more than 10 years of illness duration are statistically significantly more likely to be aware of the potential effects of fish oil on pulse control.

3. Before taking dietary supplements, most, about one third of the respondents, familiarize themselves with a dietary supplements leaflet and least often consult a nurse. Cardiovascular disease patients do not have sufficient knowledge of the possible cardiovascular effects of dietary supplements, even though they are taken by all the respondents.

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