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QUALIFICATION WORK

on the topic: **«ANALYSIS OF THE AWARENESS OF PHARMACY VISITORS ABOUT THE CORRECT USE OF VITAMIN-CONTAINING REMEDIES»**

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ANNOTATION

In the presented study, the results of an anonymous questionnaire survey are given and the level of awareness of the population regarding general information about the properties of the vitamin-containing products and the criteria for their correct use and selection is determined.

The scientific work is presented on 45 typewritten pages, consists of a summary in English and Ukrainian, an introduction, the main part, conclusions, a list of references, appendices and contains 27 figures and 46 references, including 40 sources written with Latin letters.

Key words: vitamin products, correct choice, public awareness, questionnaire survey, rational use.

АНОТАЦІЯ

У представленому дослідженні наведено результати анонімного анкетного опитування та визначено рівень інформованості населення стосовно загальної інформації про властивості вітамінних засобів та критерії їх коректного застосування та вибору.

Наукова робота викладена на 45 сторінках машинопису, складається з анотації англійською та українською мовами, вступу, основної частини, висновків, списку використаних джерел, додатків і містить 27 рисунків та 46 посилань, у тому числі на 40 джерел інформації, написаних латиницею.

Ключові слова: вітамінні засоби, коректний вибір, обізнаність населення, анкетне опитування, раціональне застосування.

LIST OF CONTENTS

ABBREVIATION LIST

INTRODUCTION	5
CHAPTER 1 VITAMIN-CONTAINING PRODUCTS: PROPERTIES, ADVANTAGES, DISADVANTAGES, CHOICE ASPECTS (LITERATURE REVIEW).....	8
1.1. General description of vitamins and vitamin products	8
1.2. Aspects of choice and rational use of vitamin products	11
CHAPTER 2 MATERIALS AND METHODS.....	17
CHAPTER 3 STUDY RESULTS AND DISCUSSION	23
3.1. Analysis of the contingent of respondents of the survey about vitamin products	23
3.2. Analysis of the results of the survey regarding the awareness about the choice and use of vitamin products.....	25
CONCLUSIONS	45
REFERENCES	46
APPENDICES	50

ABBREVIATION LIST

- BAS - Biologically active supplement (Food supplement)
- CVS - Cardio-vascular system
- DV - Daily value
- GIT - Gastro-intestinal tract
- RDA - Recommended dietary allowance
- WHO - World Health Organization

INTRODUCTION

Relevance of the topic. Vitamins are organic compounds that mainly are not synthesized in the body, most must be obtained from outside through foods used daily. Vitamins exist in the body in small amounts but play an important role in maintaining life as well as the body's vital activities [20, 28, 41, 46].

Today it is known that vitamins are nutrients that are vitally necessary for the human body. The lack or deficiency of vitamins in the body develops under the complex influence of different adverse factors [15, 32, 41]. As a result, hypo- or avitaminosis occurs in approximately 1/3 of the residents of Eastern Europe. The population of many developing countries has frequency of vitamin deficiency about 60-80%. The main micronutrient (both vitamin and mineral) deficiencies in the Arab Middle East countries are iron, iodine and zinc deficiencies and vitamins A and D deficiencies. In Morocco there is a similar problem as well [23, 24, 25, 44].

Generally, deficiencies of micronutrients are a major global health problem. According to the WHO data more than 2 billion people in the world today are estimated to be deficient in key vitamins and minerals, particularly vitamin A, iodine, iron and zinc [22].

Such a situation is facilitated by irrational nutrition (excess energy value of the diet and the content of animal fat, added sugar and salt in it against the background of insufficient intake of vitamins with food), acute or chronic diseases, especially, of the gastrointestinal tract (GIT), bad habits, unfavorable environmental conditions area of residence [8, 18, 41, 44].

In addition, there is a steady trend of year-round hypovitaminosis formation, while the lack of vitamins is determined not only in winter and spring, but also in the most favorable summer-autumn period of the year. As a rule, vitamin deficiency has a combined nature, that is, it is polyhypovitaminosis, and in a number of regions, insufficient supply of calcium, iodine, selenium, fluorine and other macro- and microelements is simultaneously detected [41, 42, 44].

It is also known that the so-called subnormal (preclinical) form of vitamin deficiency often occurs. In conditions of insufficient production of vitamin-enriched food products, the main way to eliminate vitamin deficiency is the use of vitamin-mineral complexes. The existence of intervitamin interactions, as well as the high frequency of polyhypovitaminosis cases among the population, serve as the basis for the use of multivitamin and mineral complexes [11, 18, 42, 44].

Currently, the world pharmaceutical market has a wide range of vitamin and multivitamin (both medicines and food supplements) products developed by different manufacturing companies. These remedies differ in their qualitative and quantitative composition, source of vitamins, dosage form, etc. [29, 36].

It has been established that many of these products can be used preventively by practically healthy people [28, 29, 36], which raises the question of the need for optimal individual choice and correct use of the remedy in each specific case.

The aim of the study. Assessment of the population's awareness of vitamin remedies and the principles of their rational use and choice for individual pharmacotherapy.

Objectives of the study:

- 1) study of literature and internet resources regarding pharmacological properties, possible complications when using vitamin products;
- 2) analysis of scientific data regarding approaches to the rational use and choice of vitamin products;
- 3) development of an anonymous questionnaire for surveying pharmacy visitors;
- 4) conducting an anonymous survey among visitors to pharmacies in the different countries;
- 5) processing of responses to an anonymous questionnaire and analysis of public awareness of vitamin-containing products;
- 6) formulation of conclusions regarding the possibilities of increasing public awareness of the principles of the correct choice and use of vitamin-containing products.

The subject of the study is the level of public awareness of vitamin-containing remedies.

The object of the study is vitamin-containing remedies.

Research methods: sociological, system-analytical.

Scientific novelty. For the first time, an anonymous original (developed by the authors of this study) questionnaire survey was conducted to assess the population's awareness of the pharmacological properties and principles of rational use and choice of vitamin-containing products in Morocco.

Practical significance of the obtained results. According to the results of the work, the level of awareness of the population regarding the approaches to the rational choice and correct use of vitamin-containing products that are dispensed without a doctor's prescription was studied, and it was established that quite a number of aspects in this regard require additional information of the population, in particular, general information about vitamins, hypo- and avitaminosis development and types of vitamin therapy as well as approaches to the correct choice of vitamin-containing remedies. This requires the development of recommendations from the studied aspect.

Approbation of the results and publications. Based on the materials of the work, the abstracts of the report were published and participation in the conference was accepted (Mohammed El Hamdi, Bondarev Ye.V., Kutsenko T.O. Study of awareness of the population about the use and correct choice of vitamin products // Актуальні питання створення нових лікарських засобів: матеріали XXIX міжнародної науково-практичної конференції молодих вчених та студентів (19-21 квітня 2023 р., м. Харків). – Харків: НФаУ, 2023. – С. 373-374).

Structure and scope of work. The master's thesis is presented on 45 typewritten pages, consists of a summary in English and Ukrainian, an introduction, the main part (literature review, description of research methods, presentation and analysis of the results of own research), conclusions, a list of references, appendices and contains 27 figures and 46 references, including 40 sources written with Latin letters.

CHAPTER 1
VITAMIN-CONTAINING PRODUCTS: PROPERTIES, ADVANTAGES,
DISADVANTAGES, CHOICE ASPECTS
(LITERATURE REVIEW)

1.1. General description of vitamins and vitamin products.

The vitamins are a group of organic compounds required in small quantities by the body for the maintenance of good health. The doctrine of vitamins, their physiological role and importance in the development of a number of diseases has a history of more than 250 years [8, 41, 46].

Casimir Funk, a Warsaw-born biochemist was the first to coin the word "vitamin" in 1911. While working on effect of poor diet on nerve inflammation in chickens the scientist concluded that chickens raised on diet deficient in a particular compound developed nerve inflammation, and when that particular compound was replaced the chickens were normal. He isolated and named that substance "vitamine" as this substance was vital for life and it was an amine. Later it was discovered that all vitamins are not amines and the letter "e" was removed from the ending and finally the name "Vitamin" was given [32, 46].

All the vitamins are named by the Latin letters (sometimes with numbers). For example, vitamin K was assigned its name "K" from the term "Koagulation" by Henrik Dam. There are 13 different vitamins in the human body. By the way, only vitamin K and D are produced by the human body [8, 15, 28, 32].

Unlike other groups of nutrients the vitamins are not chemically similar to each other. Each vitamin has a specific chemical structure and a specific function in the living system. Most of the vitamins act as coenzymes in the body. Normally a well-balanced diet will supply all the necessary vitamins in sufficient quantity [8, 16, 28, 32].

Vitamins are classified according to the time of discovery, biological or therapeutic value, but most often - depending on their solubility in water and fats [4]: fat-soluble (calciferols - vitamin D, carotenoids - provitamins A, retinol -

vitamin A, tocopherols - vitamin E, phylloquinones — vitamin K); water-soluble (ascorbic acid — vitamin C, biotin — vitamin H, nicotinic acid — vitamin PP, pantothenic acid — vitamin B5, pyridoxine — vitamin B6, riboflavin — vitamin B2, folic acid — B9, cyanocobalamin — vitamin B12) [8, 13, 16, 28].

Fat-soluble vitamins are soluble in fat and oils but are completely insoluble in water. They are stored in the liver and fat-storing adipose tissues. Water-Soluble vitamins are the vitamins that are soluble in water but are insoluble in oils and fat. These vitamins must be supplied regularly in the diet as they get excreted through urine. Except for Vitamin B₁₂, water-soluble vitamins cannot be stored in our bodies. But it is known that Vitamin H or biotin is neither soluble in water nor in fat [6, 8, 16].

Vitamins are organic compounds that are essential for maintaining normal physiological functions. Pharmacological properties and functions of vitamins in the body are different [8, 16, 17, 19, 28, 30, 32].

Generally, they may be one of the essential components that make up cells, necessary for the growth and maintenance of cells. Also vitamins are involved in the metabolism of substances. They strengthen the body's immune system, participate in the regulation of the heart's activity with the nervous system. Vitamins in the body act as a catalyst to help assimilate and transform food, creating energy for the body's activities. Vitamins have the ability to protect cells from the attack of infectious agents thanks to their properties against oxidation, detoxification and repair of damaged structures. All of this helps in participating in supporting the treatment of diseases of the body, strengthening the body's health [15, 28, 32].

Most vitamins enter the body with food - vegetables, fruits, fish, meat. At the same time, the vast majority of vitamins are quickly destroyed in the body, so their constant supply with food products is necessary. Although it should be noted that a number of vitamins are also able to be synthesized in the human body itself, in particular in the intestine thanks to the saprophytic microflora living in it [5, 8, 12, 16, 32, 41].

Vitamins are necessary in small doses for normal human activity. It is also known that with a normal diet and a healthy lifestyle, in most cases, the need for vitamins is met naturally. But there are conditions accompanied by increased needs or consumption of vitamins by the body, which can lead to a lack of certain vitamins. It can also be caused by nutritional deficiencies, bad habits, etc. These changes, together with the rest, can lead to the development of pathological conditions and even serious diseases, which are caused by an insufficient amount of vitamins in the body [18, 21, 32, 33, 41].

Disease that occurs in the absence of vitamins in the body is called avitaminosis. Avitaminoses are serious diseases that, if not treated, can lead to fatal consequences. Each vitamin deficiency can be prevented or cured only by taking the appropriate vitamin. Diseases or conditions arising from insufficient intake of certain vitamins in the body are called hypovitaminosis [28, 46]. Taking into account the definitely important role of vitamins in the human body and the possibility of their insufficient intake, assimilation or synthesis in the body, the modern pharmaceutical industry produces medicinal vitamin-containing products. Medicines containing several or many vitamins are called multivitamin medicines. Besides, there are food supplements (biologically active supplements – BAS) containing multivitamin complexes. They may contain only vitamins or vitamins and other BAS such as macro- and microelements, aminoacids, etc. [14, 33, 36, 40, 41].

Different types of vitamin therapy exist and are used in pharmacology, depending on the dosage regimen, dose value, purpose of use [28, 46].

So, of course, the use of vitamins in increased doses, as well as in the composition of large complexes, can be accompanied by the development of certain undesirable effects and lead to complications, which is very important to take into account when choosing/prescribing a certain remedy [1, 8, 9, 11, 20].

Like other medicines, vitamin preparations can have various side effects, including toxic ones. Vitamin preparations can cause severe acute poisoning, as

well as chronic intoxication, which can occur with long-term administration of large doses [11, 16, 29, 35, 36, 45].

Vitamin products vary in their safety profile. For example, fat-soluble vitamins are more toxic than water-soluble vitamins. This is proven by clinical and experimental studies [8, 36, 38].

Low toxicity and their belonging to food factors, on the one hand, and satisfactory results of vitamin therapy, on the other hand, gave rise to an uncontrolled attitude to this group of drugs. As a result, cases of side effects of vitamin therapy have increased, especially from fat-soluble vitamins [1, 41].

So, several vitamins are proven to be toxic if taken incorrectly: in excess (overdose) or without real need [34, 35, 38].

1.2. Aspects of choice and rational use of vitamin products

Vitamin is an important substance for the body, but it does not mean that vitamin-containing supplements are to be used as much as possible. Excess or deficiency of vitamins both cause diseases of the body that affect health [2, 36].

Nowadays taking into account a great number of vitamin products (both medicines and BAS, mono- and multivitamins) the main task for the person is how to choose and use it correctly [3, 4, 29, 36].

Finding the best vitamin brands means looking at third-party testing, certifications, ingredients, and brand integrity. For example, for now it is found that one of the most popular and high quality vitamin brand is Thorne which includes a range of different vitamin products [4, 37].

Some popular vitamin drugs available in the market [29, 36, 37] are follows:

- containing vitamin A - Retinoids (Tretinoin, Isotretinoin), Carotenoids (Beta-carotene);
- containing vitamin B complex: B-50 Complex, B-100 Complex, Super B-Complex;
- containing vitamin C: Ascorbic Acid, Sodium Ascorbate, Vitamin C with Rose Hips;

- containing vitamin D: Vitamin D3 (Cholecalciferol), Vitamin D2 (Ergocalciferol);
- containing vitamin E: D-Alpha-Tocopherol, Mixed Tocopherols, Vitamin E with Selenium;
- containing vitamin K: Phytonadione, Menaquinone, Menadione.

It is important to note that some vitamins can interact with medications, and that excessive intake can lead to adverse effects. It is always recommended [7, 29, 39] to consult a healthcare professional before starting any vitamin supplements.

Today in Morocco “Cooper Pharma” is the leading Moroccan pharmaceutical company, proposing more than 100 pharmaceutical specialties of its branded generics portfolio in the major therapeutic areas. In addition to its own brand, “Cooper Pharma” manufactures, imports, markets and promotes a hundred of drugs under license from more than 20 international companies. “Cooper Pharma” is a producer, distributor and exporter of pharmaceutical specialties. From a leader in Morocco, “Cooper Pharma” is today a key player in Africa and in the Middle East [26].

In the same time in Ukraine “Darnitsa”, “Farmak”, “Arterium”, and “Zdorovye Group” are some of the biggest local pharmaceutical companies. In 2019, the well-known European company “Stada Group” acquired “Biopharma”, one of the major pharmaceutical manufacturers in Ukraine [27].

There are several pharmaceutical companies that produce vitamins in the world. Some of the top producers of vitamins [26, 27, 36] include such companies as:

- Pfizer Inc. - produces a range of vitamin and mineral supplements;
- GlaxoSmithKline – produces vitamins such as Berocca, a popular multivitamin brand;
- DSM Nutritional Products - a global leader in vitamin manufacturing, producing a wide range of vitamins and other nutritional ingredients;
- Amway - produces Nutrilite, a line of plant-based vitamins and supplements;

- Abbott Laboratories - produces nutritional supplements, including the popular Ensure and Glucerna brands;

- Nature's Bounty - produces a wide range of vitamin and mineral supplements, including brands such as Solgar and Sundown Naturals.

Other major producers of vitamins include Nestle, Bayer AG, Sanofi, and Johnson & Johnson.

Surely you have heard the saying, “too much of a good thing can become a bad thing.” The same applies to vitamin supplements, as taking an excess of vitamins can be harmful to your health. This may seem contradictory because vitamins are often encouraged to supplement nutrients that may be lacking in our diets. Physicians or nutritionists may suggest vitamins once it is confirmed that you have a nutrient deficiency and highly advise that the daily recommended doses are followed. The Institute of Medicine has established guidelines such as the RDA (Recommended Dietary Allowance) and DV (Daily Value) to help people understand the daily suggested dose of vitamins. Vitamin overdose occurs when a person ingests far more than the daily recommendation, for an extended period of time. Although the body can excrete excessive amounts of water-soluble vitamins such as vitamin C, it can retain fat-soluble vitamins such as vitamin A, which can be toxic [3, 9, 10, 11, 14, 16].

Overall, it's important to follow the recommended daily intake for vitamins and to check with a healthcare professional before taking supplements or making any significant changes to your diet [18, 20].

Not everyone needs a supplement — a lot of people get the nutrients they need from a healthy, balanced diet. So the first step is to understand if you need to take one. The most common reasons someone might take a supplement include age (for example, your risk of vitamin D deficiency increases as you age), medications (for example, proton pump inhibitors, can inhibit the absorption of vitamin B₁₂), medical conditions (for example, celiac disease can cause nutrient deficiencies because of damage to the part of your gut that’s involved in absorption), food allergies (some people with allergies have a limited diet so they

can't get all the nutrients they need from food), type of diet (for example, it can be hard to get enough vitamin B₁₂ from a vegan diet), pregnancy (it's recommended that all women who are trying to get pregnant take a folic acid supplement) [28, 29, 31, 32, 33].

A vitamins blood test can also help you understand whether your diet is providing you with all the nutrients you need. Based on this, you can make an informed decision about whether you need a supplement or not. If you're on any medications or have a medical condition, you should always speak with your doctor before taking any kind of supplement [15, 21, 29, 35, 39, 45].

Once you've decided that a supplement is what you need, the next step is finding one that's high quality. Watch out for any supplements that make bold claims — for example, a supplement that helps to build muscle or burn fat. If it sounds too good to be true, it probably is! Always make sure to read the ingredients. If it lists any ingredient you don't recognize or understand, research them to ensure it's not an unnecessary additive. Low-quality supplements can contain additives that block your body from absorbing the active ingredient (the nutrient you want) [3, 4, 20, 40].

Often, you can get an indication of the quality of a supplement by checking the “free from” information. This might include “free from” gluten, wheat, lactose, eggs, soy, shellfish, tree nuts, peanuts, artificial preservatives, artificial colorings, GMOs. It's particularly important to read the label if you have an allergy. It's really important to choose a supplement that has the right dose for you. There can be a fine balance between getting enough and over supplementing. More is not always better! [3, 4, 40].

Taking too much of a food supplement can potentially cause health problems - for example, too much vitamin D can lead to a condition called vitamin D toxicity. This is rare, but it's still worth paying close attention to the doses in your supplements [9, 20, 36, 45].

On top of this, the dose only makes up part of the picture. You also need to consider the bioavailability of the active ingredient [8, 29, 36].

Bioavailability refers to the amount of nutrients that your body is able to absorb. There are many different forms of nutrients and some are much easier to absorb than others. For example, magnesium is available in many different forms, citrate. Some of these are easier to absorb but they can also have different benefits. So it's worth doing your research or working with a health professional to find the right form for you. Supplements can be really expensive – so look for a price that works for you and, if needed, a price you can afford long-term. There can be a trade-off between the cost and quality of the supplement, so you need to get the balance right [8, 13, 18, 33].

Considering the above, it can be concluded that even vitamin-containing products can have a certain negative effect on the human body, and when combined in high doses, their side effects can increase. Therefore, it is very important to rationally and expediently prescribe vitamin supplements, taking into account the "risk/benefit" ratio.

Many drugs can be used for preventive purposes by practically healthy people, in connection with which the question arises about the need for optimal individual selection of the drug in each specific case. Analysis of the criteria for choosing multivitamin preparations by the consumer arouses interest [7, 12, 29, 33, 36, 41, 43, 44, 46].

An important role in the choice of the drug is played by the factor of which category of the population it will be used. For example, for children or the elderly, or a person with an illness [3, 4, 36].

Currently, modern technologies make it possible to produce vitamins in the form of capsules, tablets, dragees, powders, syrups, and gels. That is, you need to choose those forms that are most convenient for you to take.

The effectiveness and digestibility of the drug does not depend 100% on the dosage form. It is also important to consider, for example, that if you have problems with digestion, it is better not to buy effervescent tablets for making drinks [8, 15, 16, 28].

Nowadays, people increasingly use different approaches in choosing multivitamin preparations. Part of the population relies on their vision of the problem, using their personal knowledge and life experience when choosing drugs. Someone turns to a pharmacy for information, and someone turns to a doctor or consultant for advice. Some people use information from the Internet and mass media [43, 44].

Therefore, different strata of the population solve the issue in their own way according to age indicators. At first glance, this may seem like a simple task, because there are many representative drugs of this pharmacological group on the pharmaceutical market, the majority of which are over-the-counter products or even nutritional supplements. But for the correct choice, first of all, it is necessary to have a certain amount of knowledge about the biological properties of vitamins and the pharmacological properties of multivitamin preparations, as well as the main criteria for choosing a preparation for yourself [41, 42, 44, 46].

Conclusion for chapter 1.

That is why it is of interest to determine the level of awareness of the population regarding the mentioned issue in order to improve the quality of the use and choice of vitamin-containing products in each specific case, which was done in this work.

This chapter discusses the main properties and classification of vitamins, possible complications and approaches to the correct use and selection of the vitamin-containing products.

CHAPTER 2

MATERIALS AND METHODS

To solve the research goal, it was necessary to develop a questionnaire for visitors to pharmacies. All willing adult visitors to the pharmacy were involved in the survey.

Therefore, an anonymous survey was conducted among visitors to pharmacies located in Morocco.

To conduct the survey, a questionnaire "Evaluation of the awareness of pharmacy visitors regarding the correct use and choice of vitamin products" was developed, consisting of three parts and containing 43 questions.

The first part of the questionnaire ("General data") contained questions with bibliographic data (age, gender, place of residence and whether the respondent had a medical or pharmaceutical education).

The second part of the questionnaire ("General information about vitamins and vitamin therapy") contained questions about general concepts about vitamins and vitamin therapy, namely the definition, classification and nomenclature of vitamins, as well as other aspects of their pharmacological characteristics.

The third part of the questionnaire ("Approaches to choosing a vitamin product") contained questions about approaches to drug selection, which mostly related to the priorities of choosing a source of information about a vitamin product and the way to determine the real need and feasibility of its use.

Our originally developed questionnaire is presented below.

QUESTIONNAIRE

"Evaluation of the awareness of pharmacy visitors regarding the correct use and choice of vitamin products"

I. General data.

1. Please indicate your age.

Choose: 18-25 years, 26-35 years, 36-45 years, 46-55 years, 56+ years.

2. Specify the gender. Choose: female, male.
3. Specify the country of your permanent residence.

Write: _____

4. Do you have a medical/pharmaceutical education? Choose: yes, no.

II. General information about vitamins and vitamin therapy

5. Can you define the concept of "vitamins"? Choose: yes, no.
6. What are the main functions of vitamins in the human body do you know?

Write an explanation: _____

7. Do you know any classification of vitamins? Choose: yes, no.

8. Name the vitamins you know. Write: _____

9. Do you consider it is necessary to take vitamins preventively?

Choose: yes, no, difficult to answer.

10. In what periods of life does human body need for vitamins increase?

Write an explanation: _____

11. Do you know anything about side effects of vitamins? Choose: yes, no.

12. Do you agree with the statement that vitamin products can cause side effects?

Choose: yes, no, don't know.

13. Please give examples of side effects of vitamins.

Write an explanation: _____

14. Is overdose and poisoning with vitamin products possible?

Choose: yes, no, don't know.

15. What type of overdose is more dangerous complication of taking vitamins: overdose caused by fat- or water-soluble vitamins?

Choose: water-soluble, fat-soluble, difficult to answer.

16. Are there phenomena of incompatibility of vitamins with each other within the product? Choose: yes, no, don't know.

17. Do you know about different types of vitamin therapy? Choose: yes, no.

18. What is the difference between different types of vitamin therapy?

Choose the aspect of difference: in dosage, route of administration, composition of the drug, side effects, other _____

19. What type of vitamin therapy uses doses equal to or slightly higher (1.5-2 times) for the daily requirement?

Write: _____

20. What vitamin products are more acceptable for prophylactic use in case of hypovitaminosis?

Choose: multivitamins, products containing few vitamins (1-3 vitamins), difficult to answer.

21. Is it enough to have a balanced and vitamin-enriched diet (without special vitamin supplements) to prevent hypovitaminosis?

Choose: yes, no, difficult to answer.

22. Is the cause of vitamin deficiency always a reduced supply of vitamins with food products?

Choose: yes, no, difficult to answer.

23. Is it correct to say that food is the only way for the body to obtain vitamins?

Choose: yes, no, difficult to answer.

24. What diseases or pathological conditions of a person assist the development of vitamin deficiency?

Write: _____

25. Do products containing natural vitamins differ in effectiveness and safety from those containing synthetic vitamins?

Choose: yes, no, difficult to answer.

26. Rate your knowledge about vitamin products.

Choose your rating: good, satisfactory, superficial, none.

III. Approaches to choosing a vitamin product.

27. In your opinion, how should a person's need for vitamin preparations be determined? Write: _____

28. Who should decide on the body's need for vitamins?

Choose: only a doctor, pharmacist, the patient, depends on the situation, difficult to answer.

29. Is it necessary to dispense all vitamin preparations according to a doctor's prescription?

Choose: yes, no, difficult to answer.

30. Is it possible to self-prescribe a vitamin product?

Choose: yes, no, difficult to answer.

31. Have you personally ever used a vitamin product, chosen and/or prescribed for yourself? Choose: yes, no.

32. *What do you think people are usually guided by when choosing a multivitamin? Choose:

- information from the Internet;
- advertising on television or in other mass media;
- personal experience of using the drug by friends and/or relatives;
- general personal knowledge;
- data from medical and/or pharmaceutical literature;
- other.

33. How would you choose a multivitamin for yourself?

Write: _____

34. Does the source of vitamins matter in determining their effectiveness/safety?

Choose: yes, no, difficult to answer.

35. Where can person get information about the daily need for vitamins for the human body?

Write: _____

36. Does the daily need for vitamins depend on gender, age, physiological state of the body, etc.?

Choose: yes, no, don't know.

37. In your opinion, who (which segments of the population) really need multivitamins?

Write: _____

38. *In your opinion, what should determine the choice of a drug? Choose:

- information from the Internet;

- advertising on television or in other mass media;
- personal experience of using the drug by friends and/or relatives;
- general personal knowledge;
- data from medical and/or pharmaceutical literature;
- other.

39. In your opinion, what result can the wrong choice of the drug lead to?

Write: _____

40. Does the fact that multivitamins are a biologically active supplement or a drug affect your choice? Choose: yes, no.

41. Do you know the difference between a biologically active food supplement and a medicine, if both are sold in a pharmacy? Choose: yes, no.

42. *What criteria or properties of a vitamin product are important to you when choosing it? Choose: composition, source of obtaining, features of action, safety, medicinal form, contraindications, price, manufacturing company, other _____

43. Write the names of vitamin (multivitamin) products known to you.

Write: _____

I agree to the processing and use for scientific purposes of the anonymous answers received from me. Choose: yes, no.

Thank you very much for your answer!

In total, 83 respondents who are residents of different countries took part in the survey, but 81 questionnaires were selected for work, as 2 were not filled in very well (they contained many unanswered questions).

When processing the questionnaires (designed as a Google form), the absolute number and, accordingly, the percentage of respondents' votes were calculated for each item and question of the questionnaire, except for questions marked with an asterisk (*). In the mentioned questions, the number of votes of respondents who chose not a single answer option, but several at once, was taken into account, which made it impossible to determine the number of votes in

percentage. Therefore, in such questions, information was indicated only in absolute numbers, and it was in this way that the rating of the points among the options was determined.

Besides this, all respondents were informed about the collection and processing of their answers and use it only for scientific purposes anonymously.

Conclusion for chapter 2.

Sociological, system-analytic research methods were used in the qualification work.

CHAPTER 3

STUDY RESULTS AND DISCUSSION

3.1. Analysis of the contingent of respondents of the survey about vitamin products.

From the survey, there were 81 respondents with different levels of knowledge about vitamins. The questions covered respondents` age, gender, country of permanent residence, kind of education etc. Below is a summary of the findings.

The respondents who took part in the questionnaire were representatives of different age groups. The table appears to show the age distribution of the survey respondents, with 47 respondents (58.02%) in the 18-25 age group, 19 respondents (23.46%) in the 26-35 age group, 4 respondents (4.94%) in the 36-45 age group, 7 respondents (8.64%) in the 46-55 age group, and 4 respondents (4.94%) in the 56+ age group (Fig. 3.1).

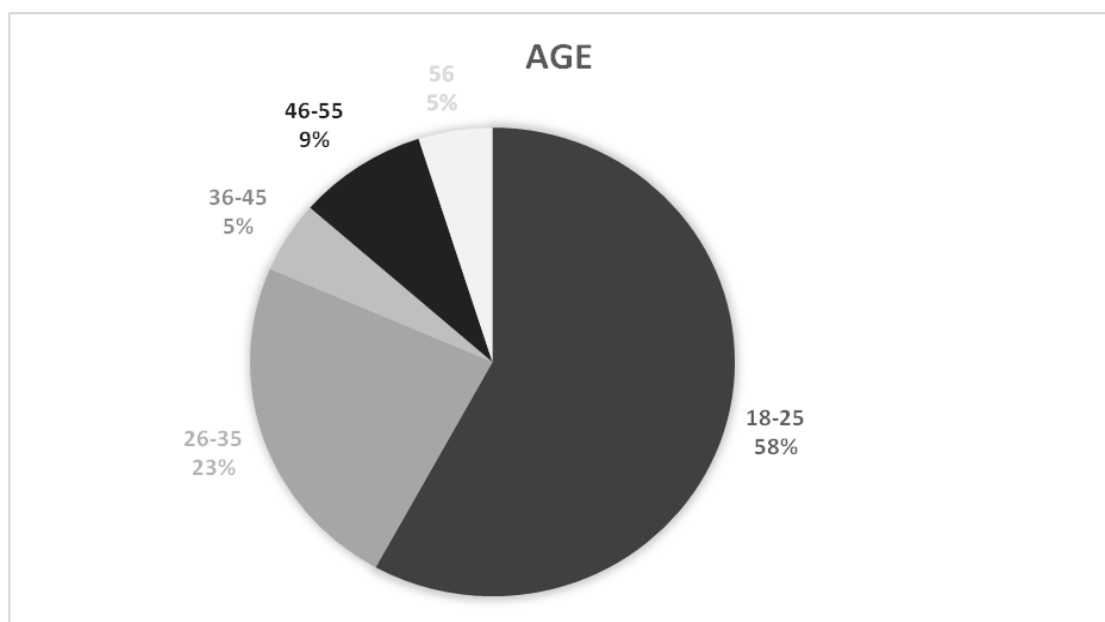


Fig. 3.1. Indication of the respondents` age.

The next question concerned the respondents` gender with two options to choose from Female and Male.

Out of the 81 responses, 30 people (37,04%) chose Female and 50 people (61,73%) chose Male, 1 person did not answer this question (Fig. 3.2).

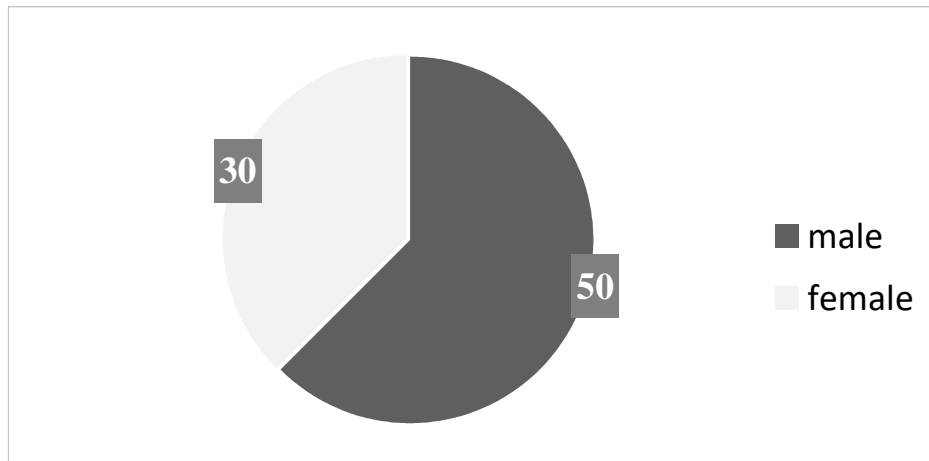


Fig. 3.2. Description of respondents` gender.

The first part of the questionnaire also contains question about the country of the permanent residence: the highest number of respondents came from Morocco (44.44%), followed by Ukraine (3.70%), then Senegal, Mozambique, Algeria, Portugal, Tunisia, Germany, Congo and Somalia have the same percentage of answers (1.24%). Finally the Term “No answer” has 34 responses, but taking into account the fact that the questionnaire was distributed in Morocco it is possible to assume that the rest of respondents are also the Morocco residents (Fig. 3.3).

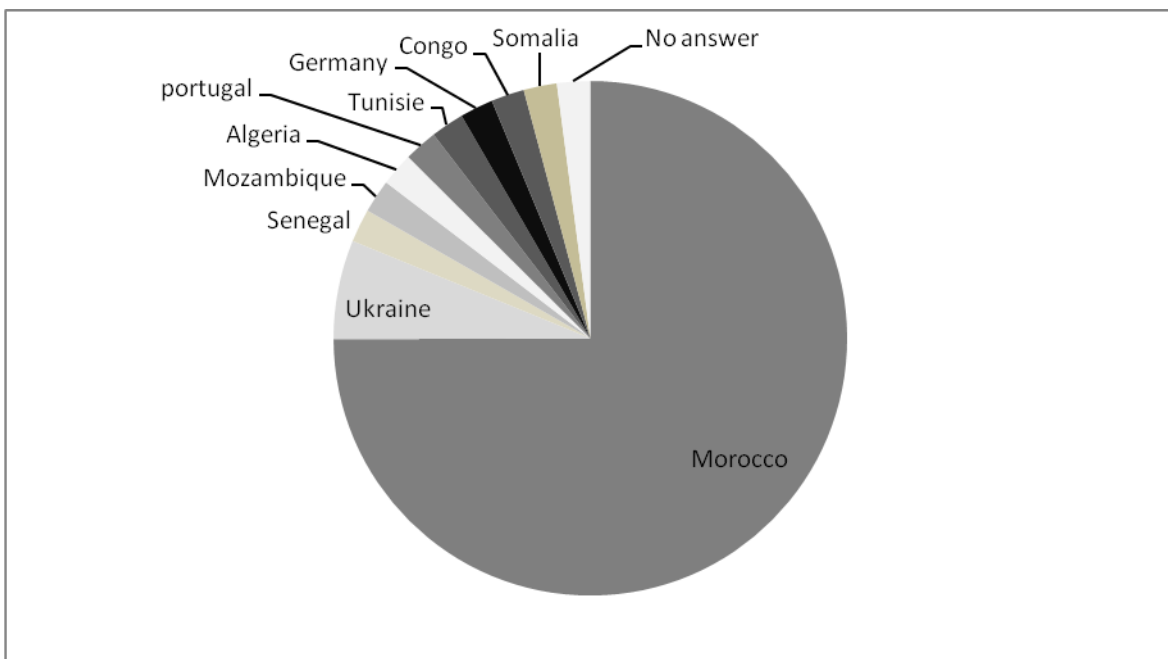


Fig. 3.3. Permanent residence of population in the anonymous survey.

The next question concerned whether the respondent had a medical or pharmaceutical education, it appears that 56 individuals (69.14%) have a medical or pharmaceutical education, 25 individuals (30.86%) do not have such an education (Fig. 3.4).

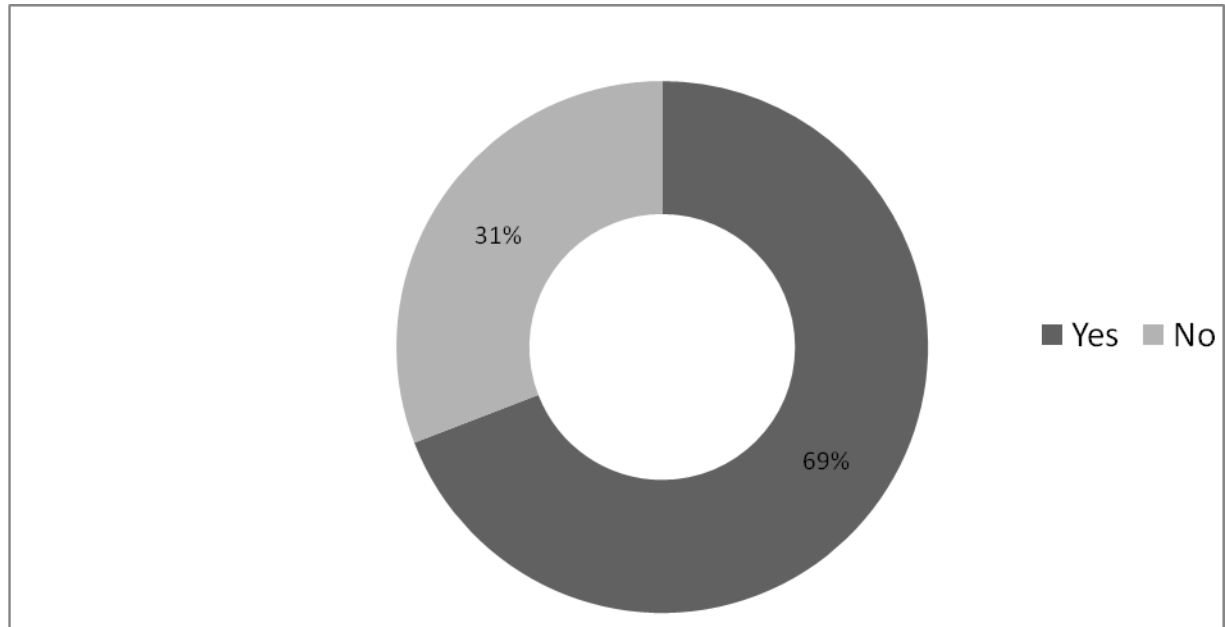


Fig. 3.4. Description of education.

3.2. Analysis of the results of the survey regarding the awareness about the choice and use of vitamin products.

The second part of the questionnaire includes a question about the definition of the concept of “vitamins”. Based on the provided information, it appears that 63 individuals (77.78%) can define the concepts of “vitamins”, while 18 (22.22%) cannot (Fig. 3.5).

When the respondents were asked "What are the main functions of vitamins in the human body do you know?" while its presented that 17 people (20.99%) answered by “Yes”, indicating that they have knowledge about the main function of vitamins in the human body, while 64 people (79.01%) answered “No”, indicating that they have not information about this aspect. Among explanations respondents pointed out “help the body”, “support the immune system”, “fight to infections”, “stimulates the body”, “energy activation” etc. (Fig. 3.6).

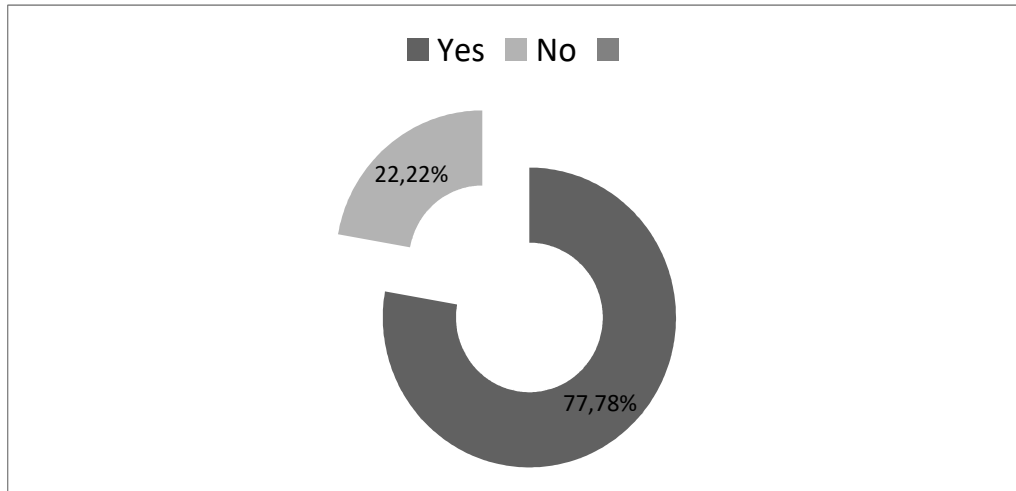


Fig. 3.5. Definition of the concept of vitamins.

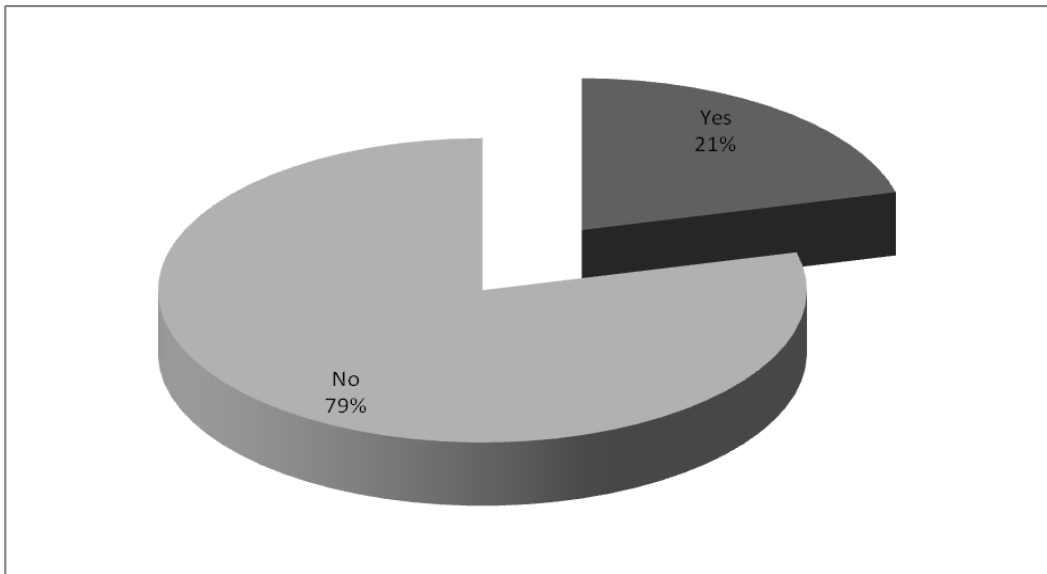


Fig. 3.6. Awareness of the main functions of vitamins.

In the next question the respondents were asked “Do you know any classification of vitamins?”. The total respondents 63 (77.78%) answered “Yes” while 18 answered by “No” (22.22%).

The respondents who took part in the survey were also asked by “Name the vitamins you know?” It was found that 34 people (42%) answered “Yes”, in contrast to 47 people (58%) answered by “No”. Respondents indicated mostly vitamins A, B, C, D, E.

The question is asking whether the respondent thinks it's necessary to take vitamins preventively. The data presented shows that out of the total respondents 59 people (72.84%) answered "Yes", indicating that they believe it is necessary to take vitamins preventively, 15 people (18.52%) answered "No", indicating that they do not believe it is necessary, and 7 people (8.64%) answered "Difficult to answer" (Fig. 3.7).

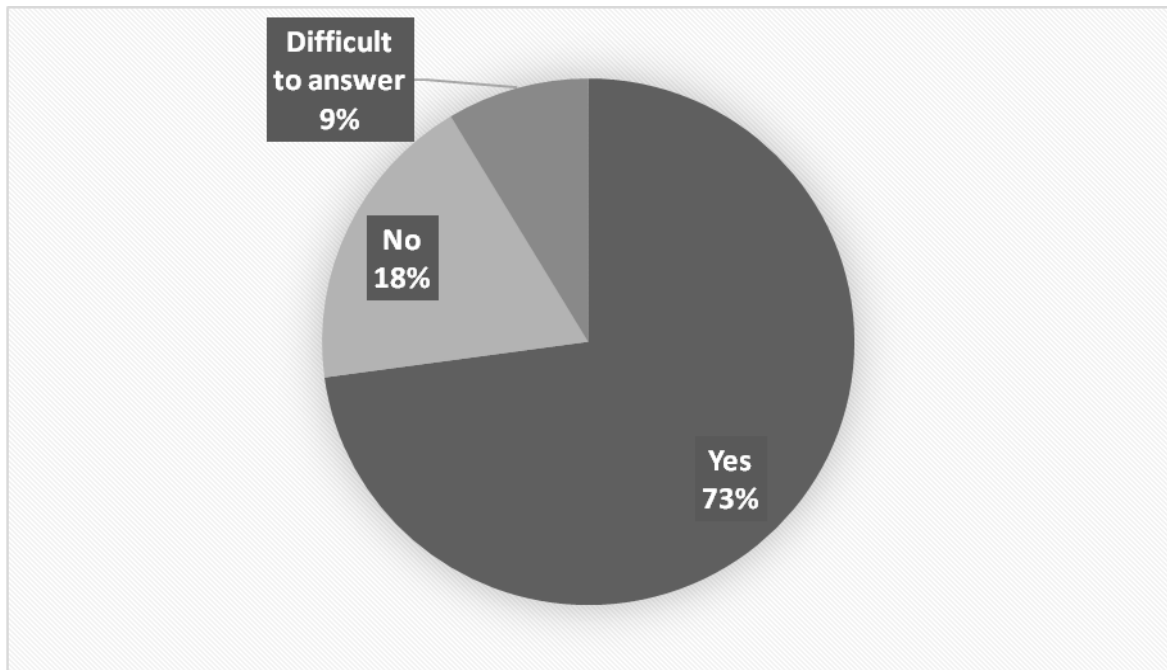


Fig. 3.7. The necessity of taking vitamins preventively.

The analysis of the question "In what periods of life does human body need for vitamins increase?" the answer is about 19 (23.46%) with "Answered" indicating that people know about the answer of the question, while 62 (76.54%) persons answered with "do not know". As answers "childhood", "adolescence", "aged persons", "pregnancy", "all ages", "in case of diseases" etc. were indicated.

The next question concerned whether the respondent know something about the side effects of vitamins, while I see that 64 (79.01%) answered with "Yes", therefore 17 (20.99%) answered "No".

The question was about the statement that vitamin products can cause side effects, the table presented that out of the total respondents, 48 people (59.26%)

answered “Yes”, 16 (19.75%) answered “No” indicating that they do not agree with the statement, and 17 (20.99%) they have difficult to answer (Fig. 3.8).

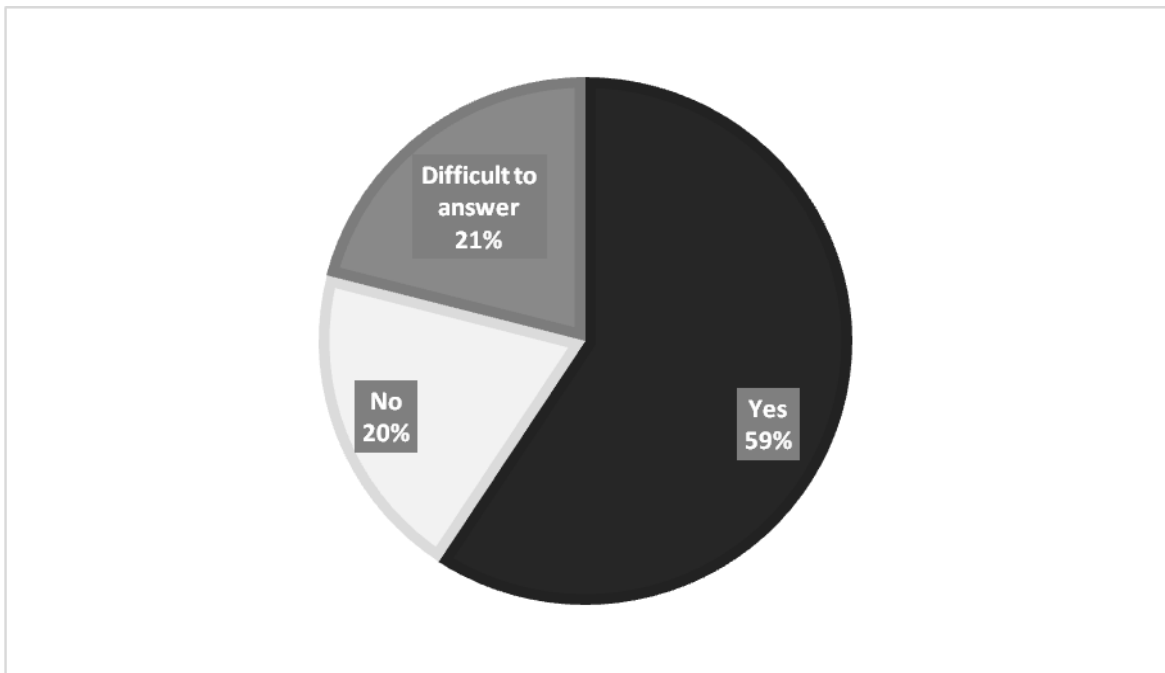


Fig. 3.8. The statement of vitamins if can cause side effects.

For the examples of side effects of vitamins the table presented shows that out of the total respondents only 15 (18.52%) provided an answer, while the majority of 66 (81.48%) did not answer.

As mentioned earlier, taking excessive amounts of certain vitamins can lead to side effects and even toxicity. As answers hypervitaminosis, dyspepsia, allergy, headache etc. were found.

The next question concerned **thinks that overdose and poisoning with vitamin products is possible.**

The data presented shows that out of the total respondents, 57 people (or 70.37%) answered "Yes", indicating that they believe it is possible to overdose or poison oneself with vitamin products. Meanwhile, 13 people (or 16.05%) answered "No", indicating that they do not believe it is possible, while 11 people (or 13.58%) answered "Difficult to answer", indicating uncertainty or lack of knowledge on the subject (Fig. 3.9).

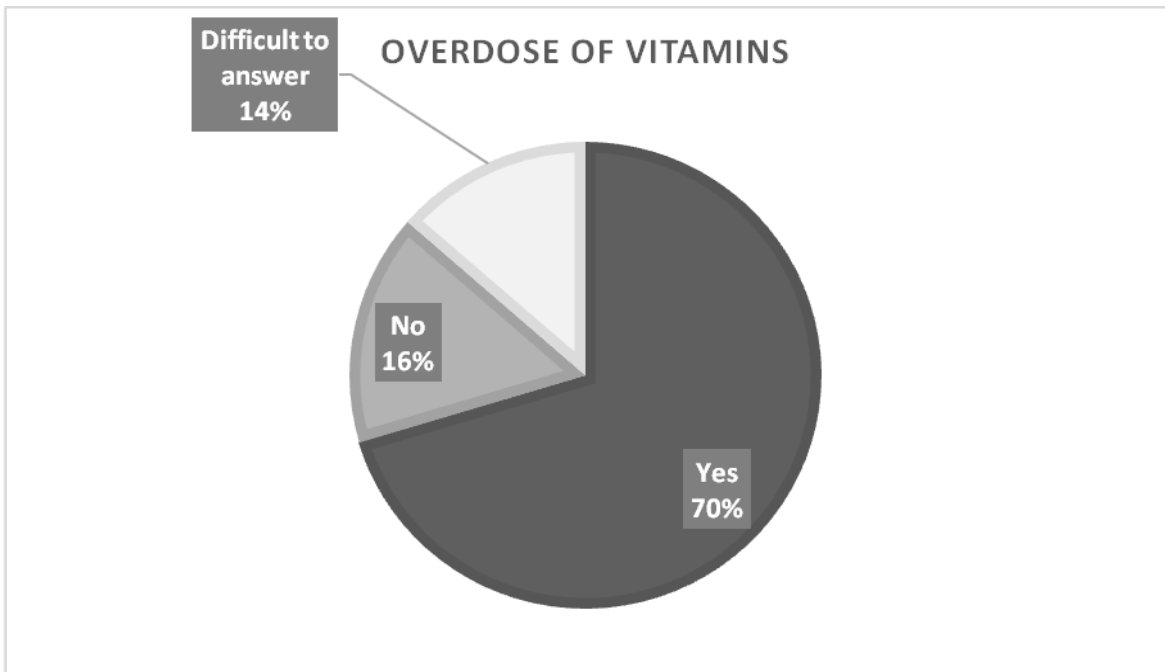


Fig. 3.9. The awareness of overdose of vitamins.

This question is asking the respondents which type of vitamin overdose is more dangerous: overdose caused by fat-soluble or water-soluble vitamins. The obtained table shows that out of the total respondents, 31 people (or 38.27%) chose "Water-soluble", 35 people (or 43.21%) chose "Fat-soluble", and 15 people (or 18.52%) chose "Do not know" (Fig. 3.10).

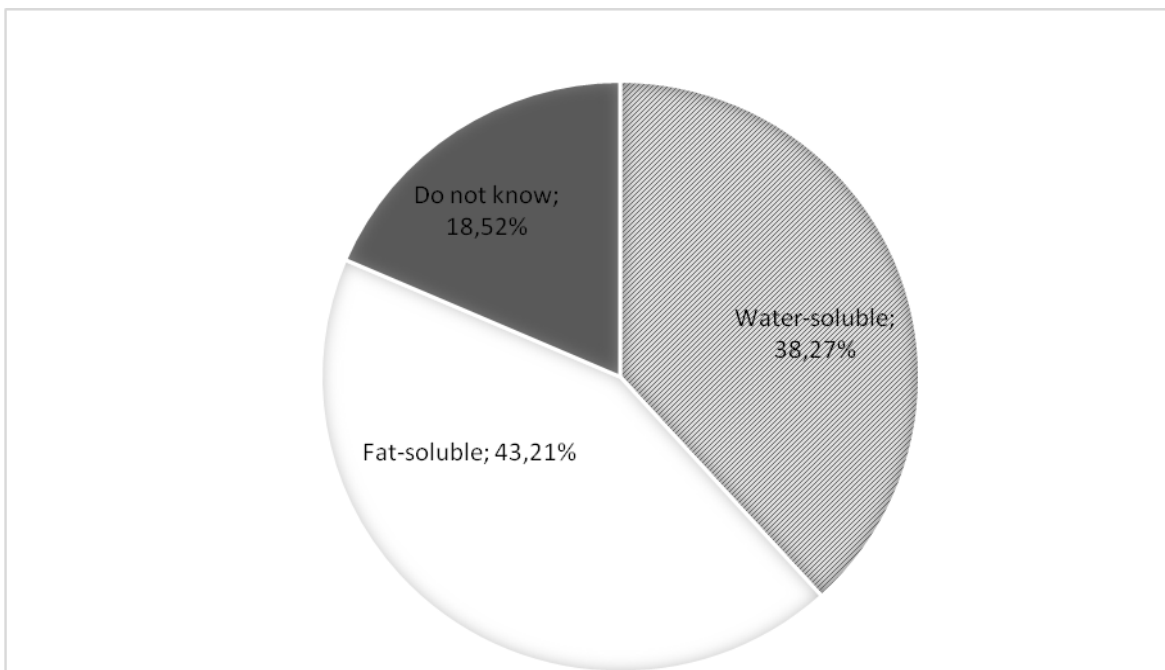


Fig. 3.10. Answer about the type of vitamin overdose.

The analysis of the question concerning the phenomena of incompatibility of vitamins within the product is presented as next.

The table presented shows that out of the total respondents, 42 people (or 51.85%) chose "Yes", 13 people (or 16.05%) chose "No", and 26 people (or 32.10%) chose "Difficult to answer" (Fig. 3.11).

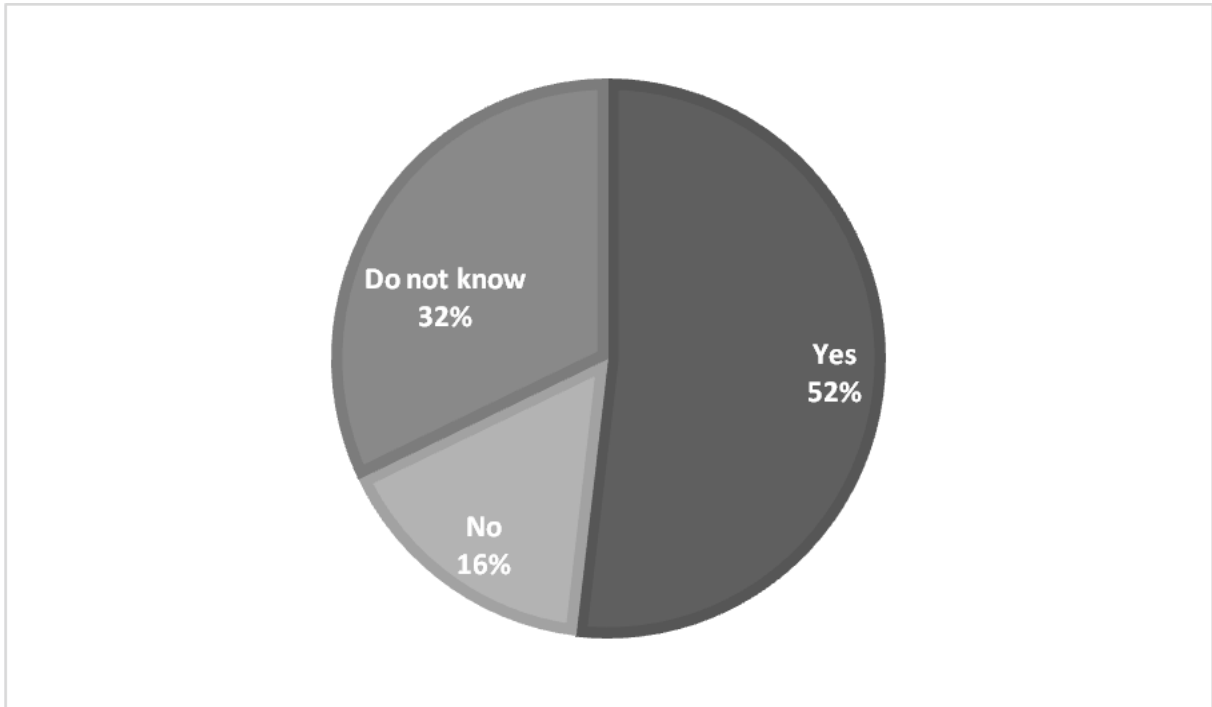


Fig. 3.11. The incompatibility of vitamins.

In the question if the respondents know about different types of vitamin therapy there is a ratio between "Yes" and "No" as 57/24. So, majority of respondents answered "Yes".

Based on the provided options, the respondents chose the aspect of difference between types of vitamin therapy. Therefore, the following information pertains to the differences in dosage between various types of vitamin therapy, the respondents show that the "Dosage" is the aspect of difference with the highest percentage of responses, at 44.44%; the "Route of administration" received 16.05% of responses, indicating that the way in which vitamins are administered, the "Composition" received 23.46% of responses, which suggests that different types of vitamin, the "Side effects" received 11.11% of responses. Finally, other aspects of difference received 4.94% of responses (Fig. 3.12).

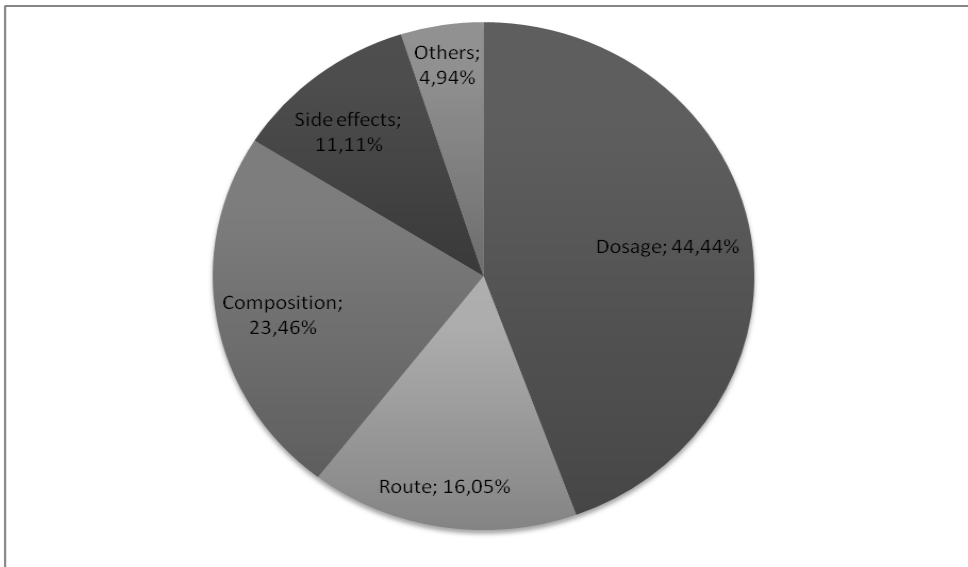


Fig. 3.12. The difference between different types of vitamin therapy.

The survey question asks about the types of vitamin products that are more acceptable for prophylactic use in case of hypovitaminosis, with the options of multivitamins, products containing few vitamins (1-3 vitamins), or a difficult-to-answer option. Out of the responses, the majority of 57 (70.37%) chose multivitamins as the more acceptable option for prophylactic use in case of hypovitaminosis. 18 respondents (22.22%) chose products containing few vitamins (1-3 vitamins) as the more acceptable option, 6 respondents (7.41%) found the question is difficult to answer (Fig. 3.13).

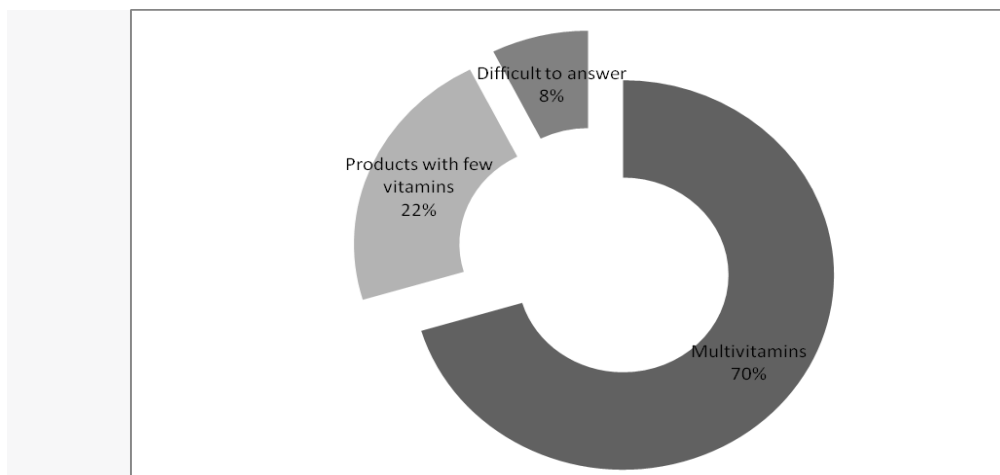


Fig. 3.13. Products that are acceptable for prophylactic use in case of hypovitaminosis.

The survey question asks about a type of vitamin therapy that uses doses equal to or slightly higher (1.5-2 times) than the daily requirement for vitamins. Out of the responses, only 2 (2.45%) provided an answer, while the majority of 79 (97.53%) did not provide any answer.

The provided shows the responses to the survey question regarding whether having a balanced and vitamin-enriched diet without special vitamin supplements is enough to prevent hypovitaminosis, with the options of "yes," "no," or "difficult to answer." Out of the responses, 44 (54.32%) answered "yes," indicating that they believe a balanced and vitamin-enriched diet is sufficient to prevent hypovitaminosis. 19 respondents (23.46%) answered "no," suggesting that they believe special vitamin supplements are necessary to prevent hypovitaminosis. 18 respondents (22.22%) found the question difficult to answer (Fig. 3.14).

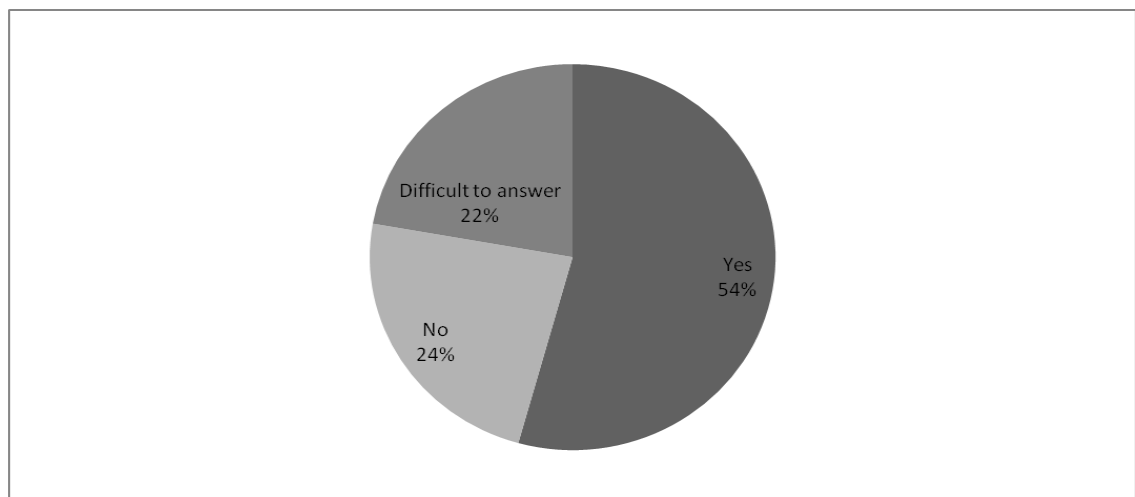


Fig. 3.14. Indication of balanced and vitamin-enriched diet to prevent from hypovitaminosis.

The responses to the survey question about whether the cause of vitamin deficiency is always a reduced supply of vitamins from food products, with the options of "yes," "no," or "difficult to answer" were presented. Out of the responses, 50 (61.73%) answered "yes," indicating that they believe a reduced supply of vitamins from food products is always the cause of vitamin deficiency. 14 respondents (17.28%) answered "no," suggesting that they believe there may be

other causes of vitamin deficiency beyond just reduced supply from food products. 17 respondents (20.99%) found the question difficult to answer (Fig. 3.15).

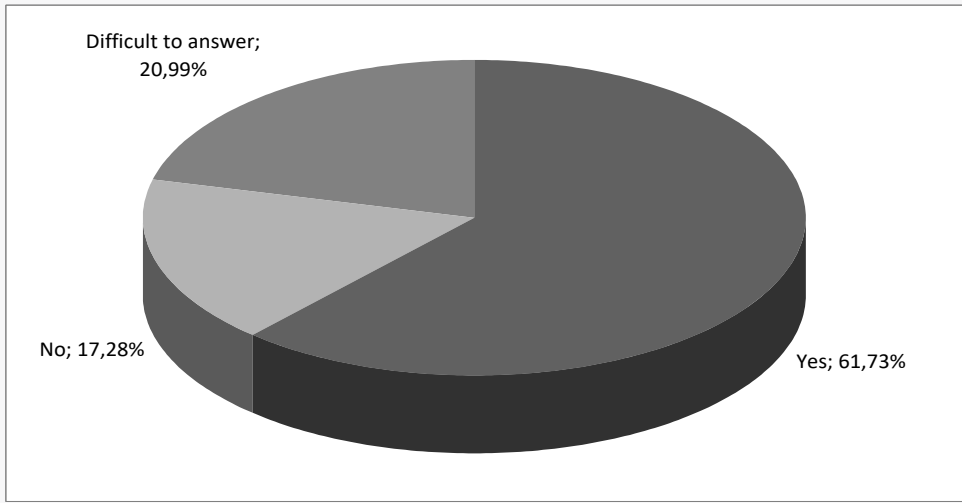


Fig. 3.15. If the cause of vitamin deficiency always a reduced supply of vitamins with food products.

Out of the responses, 43 (53.09%) answered "yes," indicating that they believe food is the only way for the body to obtain vitamins. 24 respondents (29.63%) answered "no," suggesting that they believe there may be other ways for the body to obtain vitamins beyond just food. 14 respondents (17.28%) found the question difficult to answer (Fig. 3.16).

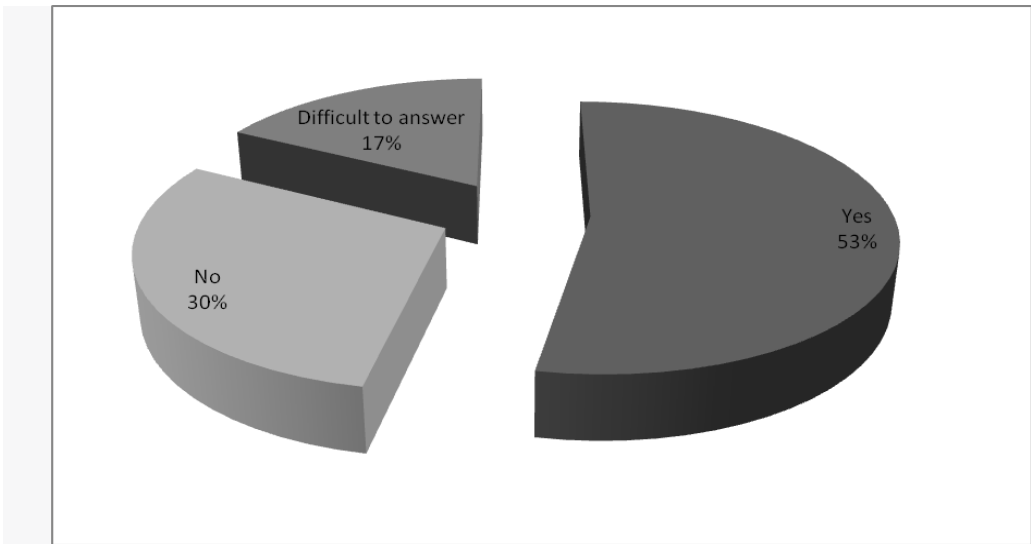


Fig. 3.16. Description of is the food the only way for the body to obtain vitamins.

The survey question asks about the diseases or pathological conditions of a person that can contribute to the development of vitamin deficiency. Out of the responses, only a partial answer was given by 9 respondents (11.11%). 2 respondents (2.47%) provided an incorrect answer. The majority of 70 respondents (86.42%) did not provide any answer. Without further information, it is not possible to determine what the partial answer or incorrect answer was. Among partially correct answers malabsorption, hypovitaminosis, stress, anxiety, different diseases (CVS disorders, pancreatic insufficiency, osteoporosis) were mentioned.

The provided shows the responses to the survey question about whether products containing natural vitamins differ in effectiveness and safety from those containing synthetic vitamins, with the options of "yes," "no," or "difficult to answer." Out of the responses, 50 (61.73%) answered "yes," indicating that they believe products containing natural vitamins differ in effectiveness and safety from those containing synthetic vitamins. 18 respondents (22.22%) answered "no," suggesting that they believe there is no difference in effectiveness and safety between natural and synthetic vitamins. 13 respondents (16.05%) found the question difficult to answer (Fig. 3.17).

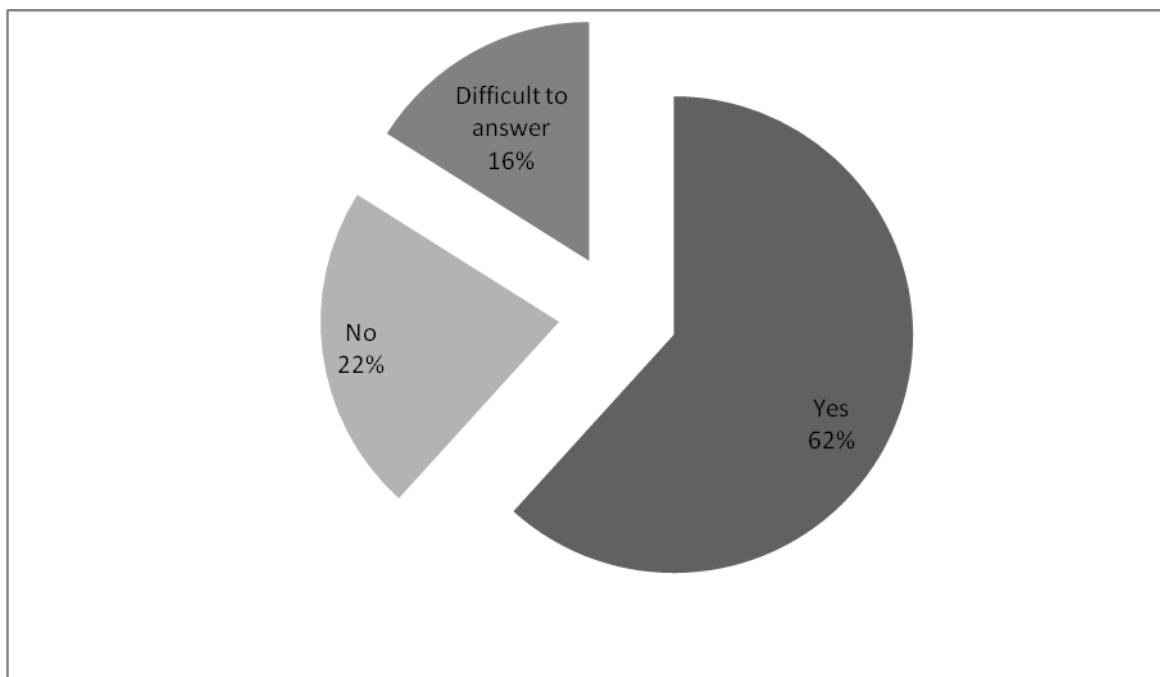


Fig. 3.17. The difference in effectiveness and safety from vitamins depending on the origin.

The survey question asking respondents to rate their knowledge about vitamin-containing products, with the options of "good," "satisfactory," "superficial," or "none" showed that 33 respondents (40.74%) rated their knowledge as "good," indicating they have a solid understanding of vitamin products. 23 respondents (28.40%) rated their knowledge as "satisfactory," suggesting they have a decent understanding but could benefit from more education. 22 respondents (27.16%) rated their knowledge as "superficial," indicating they have a basic understanding but lack depth or nuance in their knowledge. Only 3 respondents (3.70%) indicated they have no knowledge about vitamin products (Fig. 3.18).

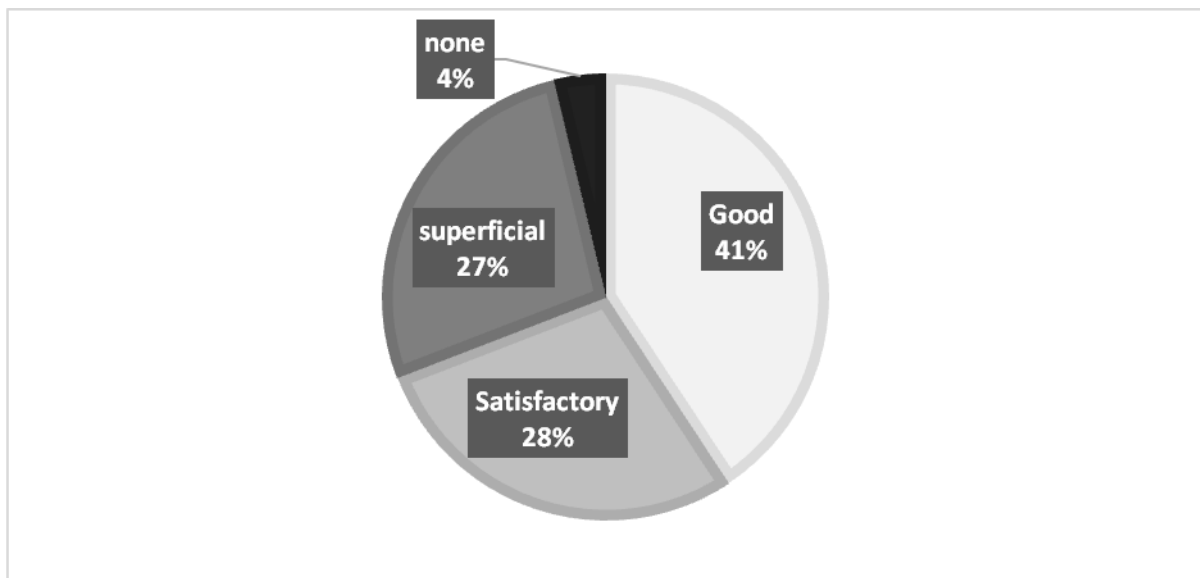


Fig. 3.18. Respondents` rating about vitamin products.

The analysis of the question asking respondents how they believe a person's need for vitamin preparations should be determined proved that only 5 respondents (6.17%) provided an answer to this question. The majority of respondents (76 persons - 93.83%) did not provide any answer. Without further information, it is not possible to determine what the answers were. Among answers "according the symptoms", "depending on the situation", "consult a doctor" were mentioned.

The question asking respondents who they believe should decide on the body's need for vitamins indicated that the majority of 39 respondents (48.15%) believe that only a doctor should decide on the body's need for vitamins. 19

respondents (23.46%) believe that a pharmacist should make this decision. Only 4 respondents (4.94%) believe that the patient should be the one to decide on their own vitamin needs. 15 respondents (18.52%) believe that it depends on the situation. Finally, 4 respondents (4.94%) did not provide any answer (Fig. 3.19).

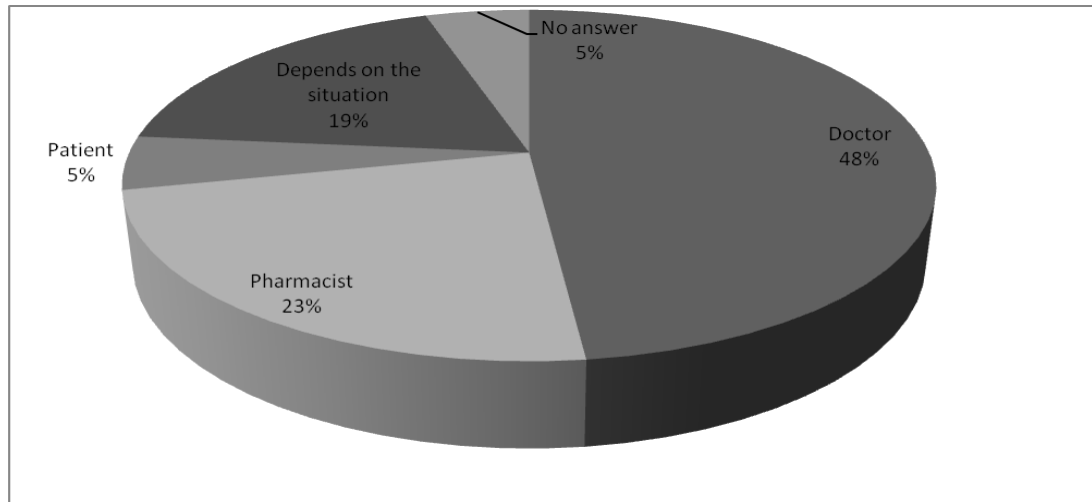


Fig. 3.19. Indication of deciding on the body's need for vitamin.

The respondents who took part in the survey were divided by “all vitamin preparations should be dispensed according to a doctor's prescription”. The majority of 51 respondents (62.96%) believe that all vitamin preparations should be dispensed according to a doctor's prescription. 24 respondents (29.63%) believe that it is not necessary to dispense all vitamin preparations according to a doctor's prescription. Finally, 6 respondents (7.41%) found the question is difficult to answer (Fig. 3.20).

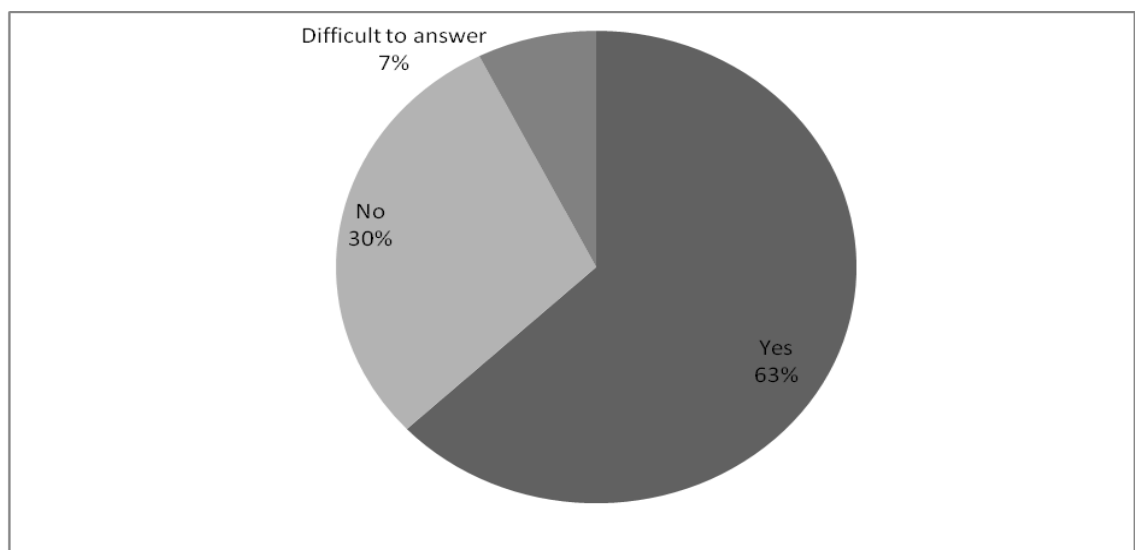


Fig. 3.20. Dispensing of all vitamins according to a doctor's prescription.

The next question concerned whether the respondent had it is possible to self-prescribe a vitamin product, 42 respondents (51.85%) believe that it is possible to self-prescribe a vitamin product. 21 respondents (25.93%) believe that it is not possible to self-prescribe a vitamin product. Finally, 18 respondents (22.22%) found the question difficult to answer (Fig. 3.21).

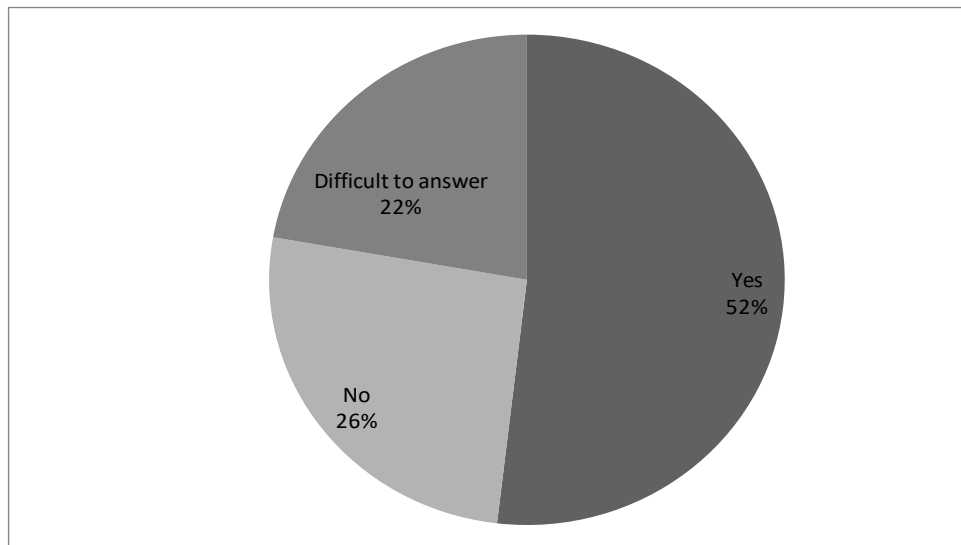


Fig. 3.21. Possibility of self-prescribing a vitamin-containing product.

This question asks whether the respondents have ever used a vitamin product that they chose or prescribed for themselves, without the advice or recommendation of a doctor or a pharmacist. The possible answers are "yes", "no", or "difficult to answer". Out of the total respondents, 64 (79.01%) answered "yes", indicating that they have used a self-prescribed vitamin product before, while 13 (16.05%) answered "no", and 4 (4.94%) found it difficult to answer (Fig. 3.22).

The next question asks respondents to indicate what they believe people are guided by when choosing a multivitamin. The possible options to choose include information from the internet, advertising on television or in other mass media, personal experience of using the drug by friends and/or relatives, general personal knowledge, data from medical and/or pharmaceutical literature, and other.

According to the results, the most common factors that people believe others are guided by when choosing a multivitamin are information from the internet (40), personal experience of using the drug by friends and/or relatives (27), and advertising on television or in other mass media (25). Data from medical and/or

pharmaceutical literature (19) and general personal knowledge (13) were also mentioned as factors. It is worth noting that "other" was not provided as an option in the table, so there is no information on how many respondents chose that option (Fig. 3.23).

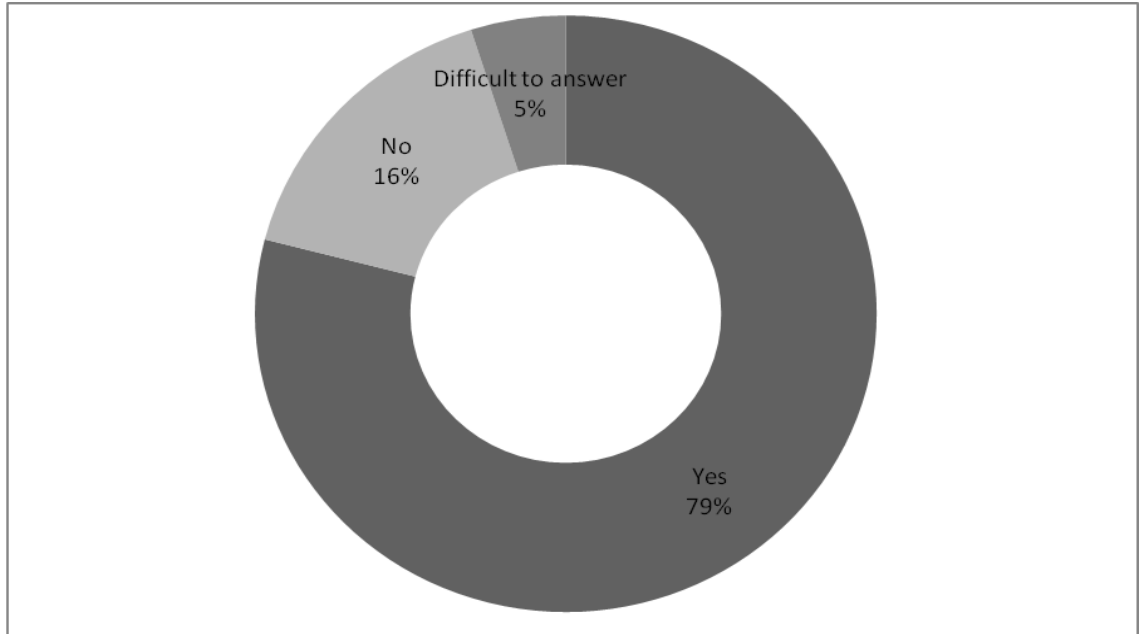


Fig. 3.22. Taking of self-prescribed vitamin.

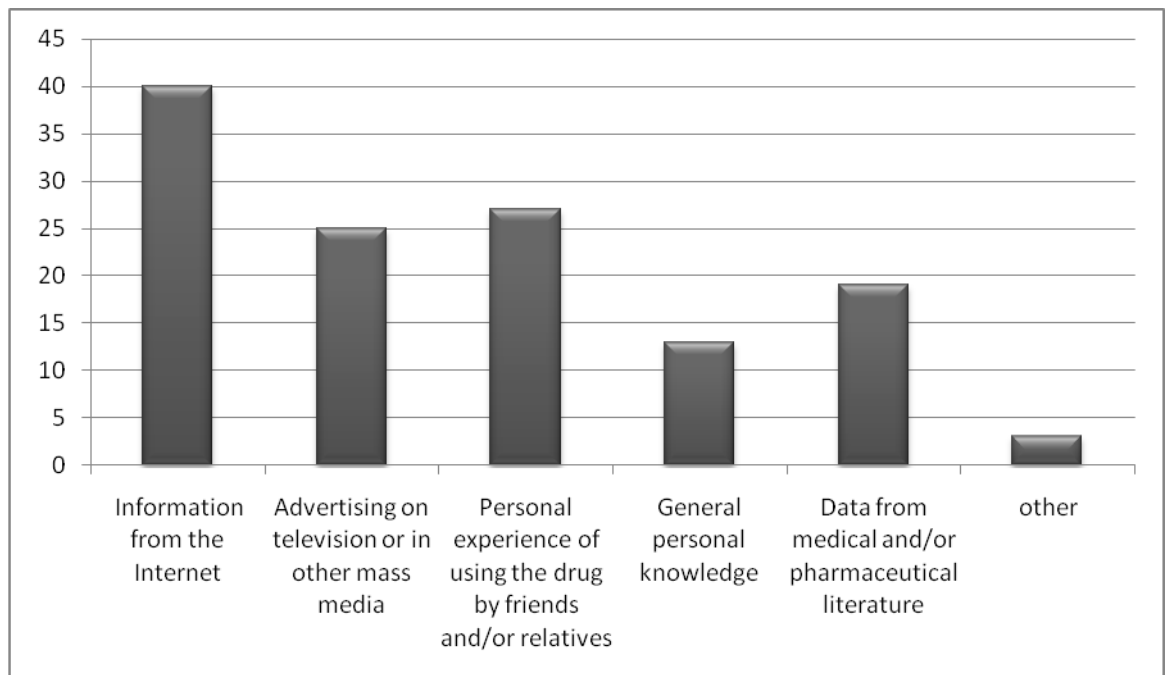


Fig. 3.23. From where people guided for choosing vitamins.

From the survey question “How would you choose a multivitamin for yourself?” out of the respondents, 14 chose to answer the question about how they would choose a multivitamin for themselves, while 67 did not provide an answer.

As answers such statements as “by symptoms”, “vitamin C”, “doctor’s advise”, “depending on the individual need”, “from internet, friends”, “personal knowledge” were found.

The question is asking whether the source of vitamins affects their effectiveness and safety.

So, 70.37% of respondents answered "yes," indicating that they believe the source of vitamins does matter. 17.28% of respondents answered "no," indicating that they do not believe the source of vitamins matters, and 12.35% answered "difficult to answer" (Fig. 3.24).

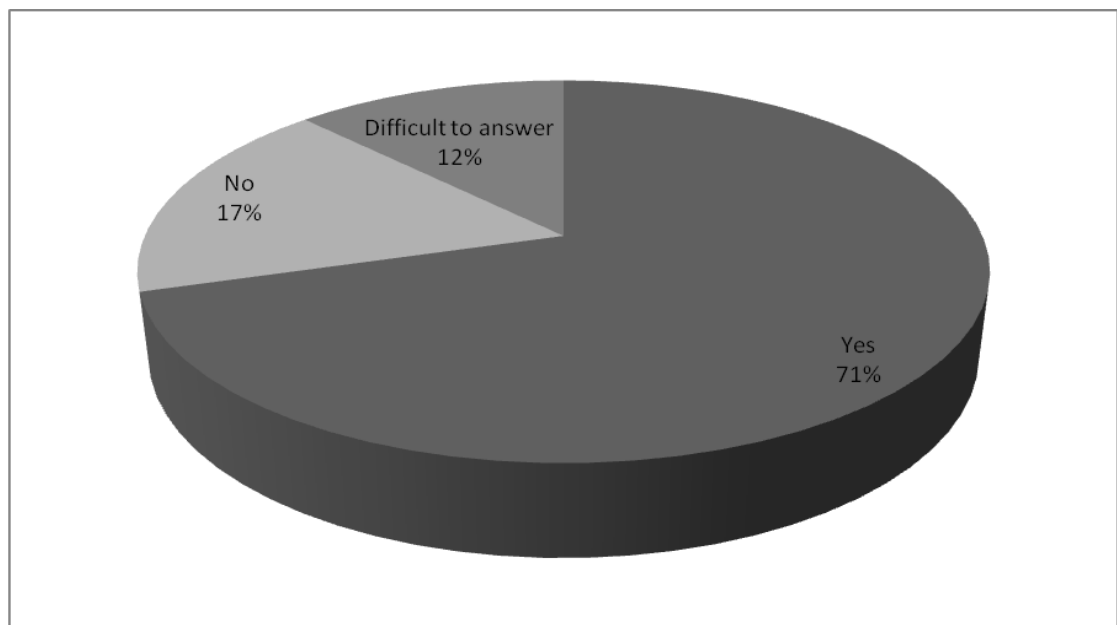


Fig. 3.24. The source of vitamins affects their effectiveness and safety.

The response of where can person get information about the daily need for vitamins for the human body only a few respondents (10 persons) provided an answer to this question. Therefore, it seems that the majority of the respondents (71 persons did not answer) did not feel confident enough to provide an answer. As sources of information doctor, pharmacist, internet, books were named.

Based on current scientific understanding, in this question the answer “yes” got 59 (72.84%) - the daily need for vitamins can vary depending on factors such as gender, age, physiological state of the body, and lifestyle habits; while 9 people (11.11%) answered “no”, therefore 13 (16.05%) had difficult to answer (Fig. 3.25).

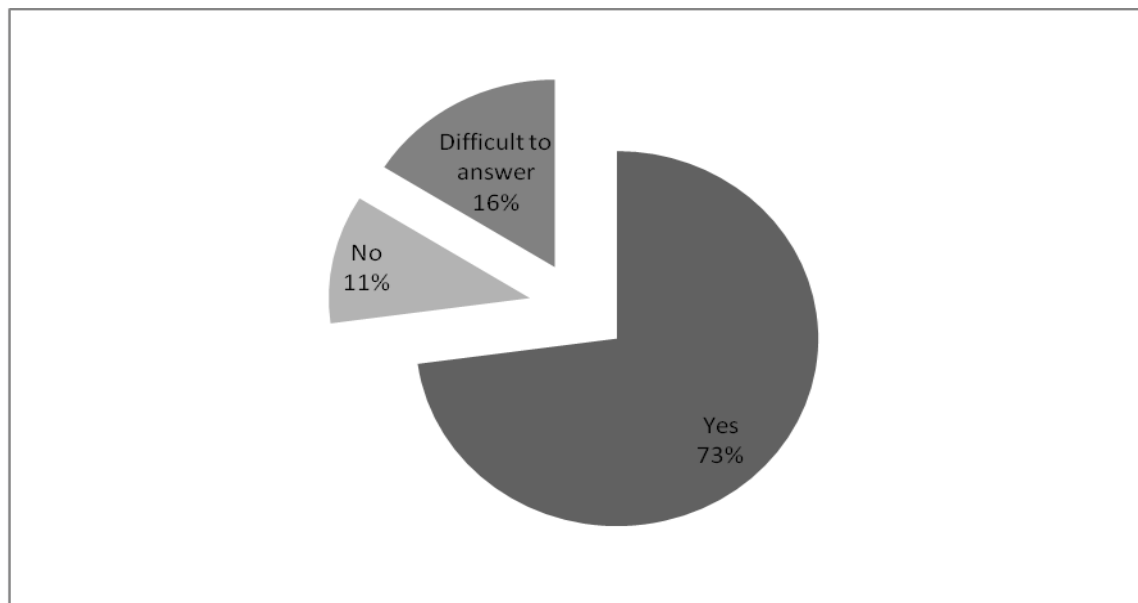


Fig. 3.25. The daily need for vitamins depends on gender, age etc.

Based on the survey results, it seems that most respondents did not provide an answer to the question “In your opinion, who (which segments of the population) really need multivitamins”. Out of the 81 responses, 8 respondents provided an answer while 73 did not. “People in certain medical conditions”, “children”, “old people” were mentioned as answers.

The response of the question “What result can the wrong choice of the drug lead to?” showed that 7 (8.64%) of respondents gave an answer to this question while 74 (91.36%) did not provide an answer. According to the obtained answers wrong choice of the drug may lead to hypervitaminosis, poisoning, overdose, negative effects, renal insufficiency.

The question explores whether people consider the classification of multivitamins as a biologically active supplement (BAS) or a drug when making their choice. The possible answers were "yes", "no", or "difficult to answer". 65 respondents (80.25%) answered "yes", indicating that this classification is a factor

in their choice, while 10 (12.35%) answered "no" and 6 (7.41%) found it difficult to answer (Fig. 3.26).

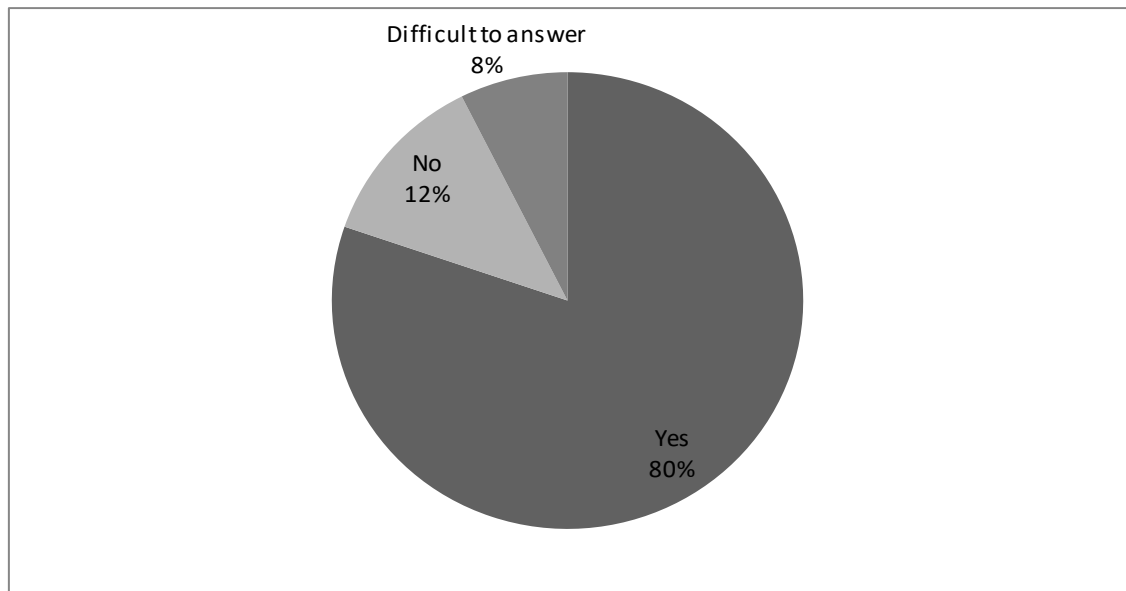


Fig. 3.26. The fact that multivitamins are a biologically active supplement or a drug affect the respondents` choice.

The question was "Do you know the difference between a BAS and a medicine, if both are sold in a pharmacy?". Out of the respondents, 56 answered "Yes" and 25 answered "No".

The analysis of the question "What criteria or properties of a vitamin product are important to you when choosing it?" proposing to choose composition, source of obtaining, features of action, safety, medicinal form, contraindications, price, manufacturing company, other options indicated the results that the most commonly selected criteria were composition (32 responses) and safety (26 responses), followed by source of obtaining (23 responses) and medicinal form (20 responses).

Price and manufacturing company were less commonly selected, with only 11 and 4 responses respectively.

A small number of participants selected "other" (3 responses) and provided their own criteria or properties that were important to them when choosing a vitamin-containing product (Fig. 3.27).

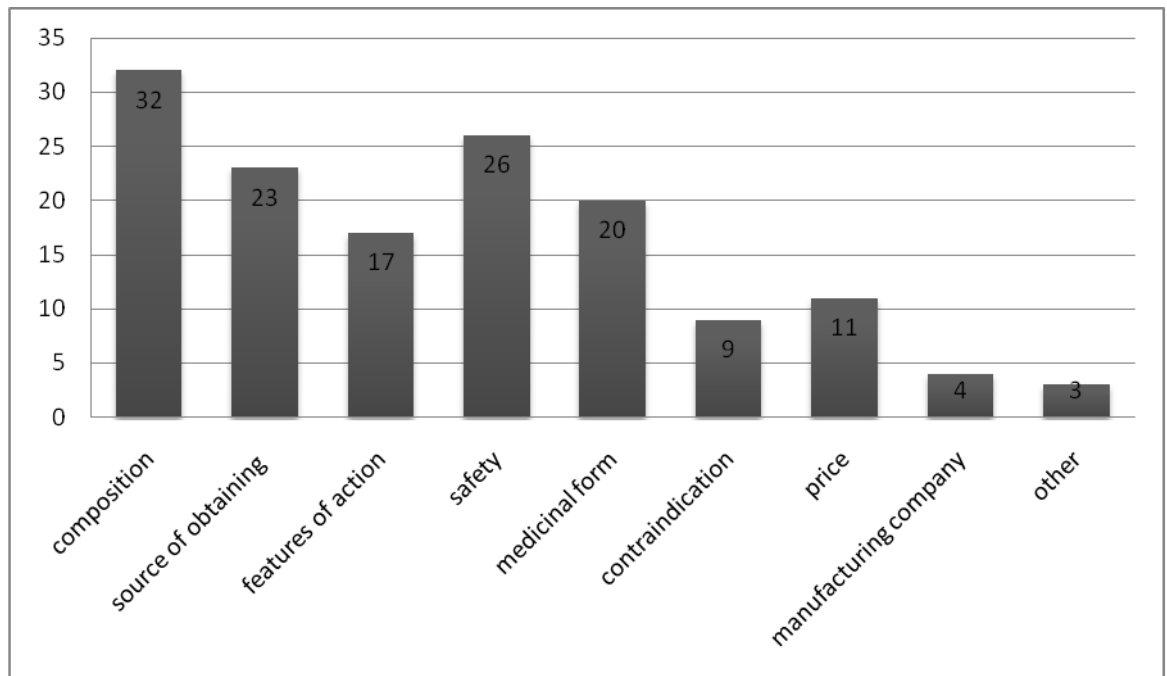


Fig. 3.27. The criteria of a vitamin-containing product choice.

In the question about the persons' opinion concerning choice ("What should determine the choice of a drug?") respondents answered in such a way: information from the Internet, advertising on television or in other mass media, personal experience of using the drug by friends and/or relatives, general personal knowledge, data from medical and/or pharmaceutical literature, other aspects were chosen 38, 22, 17, 12, 17, 6 times, correspondently.

The question asks respondents to write down the names of vitamin (multivitamin) products that the people know, the total number of respondents, 26 (32.10%) provided an answer, while 55 (67.90%) did not provide an answer. Among vitamin products known by patients Supradin (most of all), Manef, Relaxium, vitamins C and B₆, Additiva (also often) were named.

Analyzing the results of the questionnaire survey, we can conclude that the majority of respondents are young people under 25 years of age, mostly male residents of Morocco, although the geography of the survey also includes the countries of the Near and Middle East, Europe and Africa. The majority of respondents indicated that they have a medical or pharmaceutical education.

Most of the respondents believe that they can formulate the definition of the concept of "vitamins", their classification, but at the same time, only 1/5 of the survey participants can name the functions of vitamins.

In addition, the vast majority of respondents indicated that they knew the classification and other aspects of vitamins and vitamin therapy, especially when it came to statements in the form of "know" or "don't know".

However, when analyzing more specific questions, where it was necessary to give certain examples (indicate examples of the side effects of vitamins, name vitamins and vitamin-containing products; indicate the features of vitamin therapy, including replacement; exchange of vitamins in the body, etc.), the level of awareness of the interviewees sharply and significantly decreased. Also, questions No. 10, 19, 24, 27, 33, 35, 37, 39 caused serious complications for the respondents.

By the way, almost 88% of surveyed pharmacy visitors do not know where to find out the daily physiological need for vitamins for a certain category of the population.

At the same time, it should be noted that the respondents' self-assessment of knowledge regarding the subject of the survey according to their answers was quite objective. Thus, it was established that in most cases, at least 40% of the respondents gave the correct answer, while 41% of the respondents rated their knowledge as "good". This also somewhat correlates with the data that only 42% of respondents were able to name examples of vitamins.

In addition, in the question about the difference in the types of vitamin therapy, only 44% indicated that the main difference is in the doses, as well as the fact that fat-soluble vitamins are more dangerous in overdose than water-soluble vitamins, only 35 respondents (43%) gave the correct answer.

It is pleasant to note that the majority of respondents know the difference between a medicinal product and dietary supplements, as well as the fact that the price of vitamins is not for most respondents a determining criterion when choosing a product (among the most significant criteria were the composition, source of production, pharmacological properties, safety, medicinal form).

In addition, it was determined that only 32% of respondents were able to provide the nomenclature (examples of names) of vitamin-containing products (both drugs and nutritional supplements). More than half (approximately 62%) believe that the cause of vitamin deficiency is a lack of vitamins in the diet, although there are a number of other reasons that can objectively lead to this.

At the same time, it is worth noting that according to the results of the survey, almost 70% of respondents have a medical or pharmaceutical education, and taking into account the data on the answers to a whole series of questions, it should be concluded that special professional knowledge is lacking, of course, for both ordinary citizens and people with special education, which justifies the feasibility of additional informing the population about the correct choice and use of vitamin-containing preparations.

Question No. 29, in which 63% of respondents believe that all vitamin products should be sold by prescription, speaks of the respondents' responsibility and concern. But at the same time, 52% of respondents answered that self-prescription of vitamins is also possible (almost 80% of respondents already had such experience), which somewhat contradicts the above.

In addition, the fact that quite a lot of respondents believe that when choosing a vitamin preparation can be guided by information from the Internet, advertising in the mass media, personal experience of using the drug by family and friends, and only then can mention be found among the preferences of visitors to pharmacies on the application of data from special medical and pharmaceutical literature (reference books, textbooks, etc.) and personal knowledge.

Conclusion to chapter 3.

Thus, the conducted study made it possible to reveal the level of awareness of the population regarding the choice and use of vitamin products and to conclude that a certain number of aspects in this regard require additional awareness raising among pharmacy visitors. In this regard, it is planned to create a scientific publication based on the materials of the work, where recommendations for improving the state of this issue will be offered.

CONCLUSIONS

1. When performing the work, data from various sources of information regarding pharmacological properties, nomenclature, principles of rational choice of vitamin products were studied, a questionnaire with questions was developed and an anonymous survey of pharmacy visitors was conducted.
2. In the course of the survey, the level of awareness of the population regarding general information about the pharmacology of vitamins and the criteria for their correct choice was determined.
3. From the obtained data, it can be concluded that on many issues the respondents showed a satisfactory level of knowledge. But the number of aspects indicated that pharmacy visitors have an insufficient level of knowledge, which justifies the need for their additional information about vitamin-containing products.
4. For example, it was established that 88% of the surveyed pharmacy visitors could not indicate where they can find out the daily physiological need for vitamins for a certain category of the population, and 62% of respondents believe that the cause of vitamin deficiency is only vitamin-poor food (which, of course, not true).
5. It was also determined that quite a lot of respondents believe that when choosing a vitamin drug, you can be guided by information from the Internet, advertising in the mass media, personal experience of using drugs by relatives and friends, which can sometimes lead to the wrong choice and use of the drug, since in many situations the best and professional help to decide on the choice of a vitamin remedy is a specialist with appropriate education (a pharmacist or a doctor).

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APPENDICES

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

**АКТУАЛЬНІ ПИТАННЯ СТВОРЕННЯ
НОВИХ ЛІКАРСЬКИХ ЗАСОБІВ**

МАТЕРІАЛИ
XXIX МІЖНАРОДНОЇ НАУКОВО-ПРАКТИЧНОЇ
КОНФЕРЕНЦІЇ МОЛОДИХ ВЧЕНИХ ТА СТУДЕНТІВ

19-21 квітня 2023 року
м. Харків

Харків
НФаУ
2023

Appendix A (continuation)

XXIX Міжнародна науково-практична конференція молодих вчених та студентів
«АКТУАЛЬНІ ПИТАННЯ СТВОРЕННЯ НОВИХ ЛІКАРСЬКИХ ЗАСОБІВ»

PHARMACY STUDENTS' AWARENESS OF PHARMACEUTICAL CARE OF PATIENTS WITH HYPERURICEMIA AND GOUT

Mellouki Hamza

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Introduction. Hyperuricemia (HU) is an elevated uric acid level in the blood serum of $360 \mu\text{mol/l}$ in women and above $420 \mu\text{mol/l}$ in men due to purine metabolism disorders. This elevated level is the result of increased production, decreased excretion of uric acid, or a combination of both processes. Hyperuricemia is the leading cause of gout and is also related to diabetes, chronic kidney disease, metabolic syndrome, hypertension, stroke, and atherosclerosis. Several recent epidemiological surveys have indicated that the prevalence rates of hyperuricemia among adults in the United States, Australia, and South Korea are 20.1%, 16.6%, and 11.4%, respectively. Moreover, the prevalence of hyperuricemia has increased in recent decades. Asymptomatic HU occurs in 5-8% of the population, while only in 5-20% of them develop gout. Therefore, hyperuricemia has become an important public health problem. The role of the pharmacist is very important for the interprofessional management of gout.

Aim of our study is to assess the awareness of pharmacy students on pharmaceutical care of patients with hyperuricemia and gout.

Materials and methods. To study the awareness of pharmacy students of the National university of pharmacy we conducted the survey using a questionnaire developed by us.

Results and discussion. The questionnaire includes: an explanatory part, which provides information about the objectives of the survey, and an evaluation part, consisting of 33 questions on the socio-demographic characteristics of the respondents and questions to assess the general knowledge necessary to advise pharmacy visitors.

As the survey has showed, the pharmacy students know the general issues of managing patients with gout or asymptomatic HU. Respondents associate the elevated level of blood uric acid not only with gout but also with health conditions such as heart disease, diabetes, and kidney disease. Most students know that the dietary strategy for hyperuricemia is to reduce the intake of purine-rich foods.

Conclusions. There is evidence that pharmacists can play a significant role in optimizing gout care. Through patient education and collaboration with prescribers, pharmacists can help reduce the overall burden of gout-related disease. A concerted effort is needed to improve the quality of care and quality of life in patients with gout. Interventions targeting quality of care have the potential to not only improve standard of care, but also improve the health-related quality of life in patients with gout.

STUDY OF AWARENESS OF THE POPULATION ABOUT THE USE AND CORRECT CHOICE OF VITAMIN PRODUCTS

Mohammed El Hamdi¹, Bondarev Ye.V.²

Scientific supervisor: Kutsenko T.O.¹

¹National University of Pharmacy, Kharkiv, Ukraine

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Introduction. It is known that vitamins are nutrients that are vitally necessary for the human body. In conditions of insufficient intake of vitamin-enriched food products, the main way to eliminate vitamin

deficiency is the use of vitamin-containing products, where both drugs and biologically active food supplements can be found. There are a lot of such products in the world today. For example, in Ukraine there are about 200 names of multivitamins, including more than 50 names of medicines and 150 names of food supplements. Most of them can be purchased at a pharmacy without a doctor's prescription. Therefore, visitors to pharmacies can independently choose a certain product. Considering the above, it is of interest to study and analyze the public's awareness of the use and choice of vitamins by the consumer in order to determine the need to increase the awareness of pharmacy visitors on this issue.

Aim. Study and analysis of the population's awareness about the use and choice of vitamin products.

Materials and methods. Our original research was carried out by processing the answers of the respondents, received during the implementation of an anonymous survey according to a previously developed questionnaire, which consisted of three parts and contained 44 questions.

Results and discussion. Summarizing the information obtained during the processing of questionnaires with answers from visitors to pharmacies, it was established that the level of awareness of the interviewed group of respondents differed depending on the proposed aspects of the survey. Rather low awareness of people was noted on questions related to general information about vitamins, properties of vitamin products (especially side effects, overdose and poisoning by them) and types of vitamin therapy.

Conclusions. Therefore, during the survey, insufficient awareness of the population concerning some aspects of the correct use and choice of vitamin products was revealed. In this regard, it can be concluded that increasing public awareness of these issues is relevant and appropriate.

MODERN APPROACHES TO PHARMACOTHERAPY OF THE DIGESTIVE ORGANS

Saidov Khushbaktjon, Yarnykh T.H., Oliinyk S.V., Buryak M.V.

National University of Pharmacy, Kharkiv, Ukraine

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Introduction. Pathology of the digestive system takes the second place in the structure of diseases. Among the diseases of the gastroduodenal zone, the leading position is occupied by superficial non-erosive gastroduodenitis. However, recently, the number of cases of ulcerative lesions is rapidly increasing, which is one of the important medical and social problems.

Aim. To analyze modern directions of pharmacotherapy of gastroduodenal pathology.

Materials and methods. Analysis of literary sources on modern treatment of diseases of the digestive organs.

Results and discussion. The most common pathological conditions of the digestive system are functional dyspepsia, gastroesophageal reflux disease, gastritis, gastroduodenitis, peptic ulcer disease of the stomach and duodenum. The complexity and diversity of the pathogenic mechanisms of gastroduodenitis, as well as the involvement of other organs and systems in the pathological process, determines the simultaneous appointment of several groups of drugs, which sometimes has a negative effect.

The pharmaceutical market of Ukraine is characterized by a constant expansion of the range of gastroenterological products. The rational appointment of these drugs is the most important issue of pharmacotherapy of gastroduodenal pathology.

The prevalence of chronic gastroduodenitis is 58–74% in the structure of diseases of the stomach and duodenum. In the structure of the pathology of the digestive organs, peptic ulcer disease



СЕРТИФІКАТ УЧАСНИКА

Цим засвідчується, що

Mohammed El Hamdi, Bondarev Ye.V.
Scientific supervisor: Kutsenko T.O.

брав(ла) участь у роботі

XXIX Міжнародної науково-практичної конференції молодих вчених та студентів
«АКТУАЛЬНІ ПИТАННЯ СТВОРЕННЯ НОВИХ ЛІКАРСЬКИХ ЗАСОБІВ»

В.о. ректора
Національного фармацевтичного
університету



Алла КОТВИЦЬКА

19-21 квітня 2023 р. м. Харків



National University of Pharmacy

Faculty for foreign citizens' education
Department of Pharmacology and Pharmacotherapy
Level of higher education master
Specialty 226 Pharmacy, industrial pharmacy
Educational program Pharmacy

APPROVED
The Head of Department
of Pharmacology and
Pharmacotherapy

Sergey Shtrygol'
«21» of September 2022

ASSIGNMENT
FOR QUALIFICATION WORK
OF AN APPLICANT FOR HIGHER EDUCATION

Mohammed EL HAMDI

1. Topic of qualification work: «Analysis of the awareness of pharmacy visitors about the correct use of vitamin-containing remedies», supervisor of qualification work: Tetyana KUTSENKO, PhD, assoc. prof. approved by order of NUPh from “06” of February 2023 № 35.
 2. Deadline for submission of qualification work by the applicant for higher education: april 2023.
 3. Outgoing data for qualification work: the qualification work is devoted to the analysis of people awareness (using the results of an anonymous questionnaire survey) about the main aspects regarding the pharmacological characteristics and principles of rational use and selection of vitamin-containing products. It proves the expediency of further improvement the people awareness of named aspects. The work consists of an introduction, the main part (literature review, materials and methods, own research), conclusions, a list of references and appendices).
 4. Contents of the settlement and explanatory note (list of questions that need to be developed): analysis of scientific data regarding pharmacological properties, possible complications when using vitamin products and approaches to the rational use and choice of them; development of an anonymous questionnaire for surveying pharmacy visitors; conducting an anonymous survey among visitors to pharmacies in the different countries, processing of obtained responses and analysis of public awareness of vitamin-containing products; formulation of conclusions regarding the possibilities of increasing public awareness about the principles of correct choice and use of vitamin-containing products.
 5. List of graphic material (with exact indication of the required drawings):
tables – 0 , figures – 27.
-

6. Consultants of chapters of qualification work

Chapters	Name, SURNAME, position of consultant	Signature, date	
		assignment was issued	assignment was received
1	Tetyana KUTSENKO, associate professor of higher education institution of pharmacology and pharmacotherapy department	Tetyana KUTSENKO, 21.09.2022	Mohammed EL HAMDI, 21.09.2022
2	Tetyana KUTSENKO, associate professor of higher education institution of pharmacology and pharmacotherapy department	Tetyana KUTSENKO, 01.11.2022	Mohammed EL HAMDI, 01.11.2022
3	Tetyana KUTSENKO, associate professor of higher education institution of pharmacology and pharmacotherapy department	Tetyana KUTSENKO, 08.12.2022	Mohammed EL HAMDI, 08.12.2022

7. Date of issue of the assignment: “21” of September 2022

CALENDAR PLAN

№ з/п	Name of stages of qualification work	Deadline for the stages of qualification work	Notes
1.	Issuance of a task for qualification work; definition of the topic of the work, the goal and task of the research; establishing the object and subject of research; drawing up a calendar plan of the qualification work	September-October 2022	done
2.	Search, analytical processing and accumulation of information sources, practical materials in traditional bibliographic systems and on the Internet; selection of research methods	October-November 2022	done
3.	Development of a questionnaire and conducting a survey	November-December 2022	done
4.	Evaluation of answers to an anonymous questionnaire among pharmacy visitors regarding the awareness of vitamin-containing products	January 2023	done
5.	Analysis, generalization and systematization of acquired knowledge, skills and information; assessment of scientific novelty and practical significance of the work	February-March 2023	done
6.	Preparation of the manuscript, editing and formatting of the qualification work; preparation of the accompanying documents and submission of work to the Examination Committee of the NUPh.	March-April 2023	done

An applicant of higher education _____ Mohammed EL HAMDI

Supervisor of qualification work _____ Tetyana KUTSENKO

ВИТЯГ З НАКАЗУ № 35
По Національному фармацевтичному університету
від 06 лютого 2023 року

нижченаведеним студентам 5-го курсу 2022-2023 навчального року, навчання за освітнім ступенем «магістр», галузь знань 22 охорона здоров'я, спеціальності 226 – фармація, промислова фармація, освітня програма – фармація, денна форма здобуття освіти (термін навчання 4 роки 10 місяців та 3 роки 10 місяців), які навчаються за контрактом, затвердити теми кваліфікаційних робіт:

Прізвище студента	Тема кваліфікаційної роботи	Посада, прізвище та ініціали керівника	Рецензент кваліфікаційної роботи	
• по кафедрі фармакології та фармакотерапії				
Ель Хамді Мохаммед	Аналіз обізнаності відвідувачів аптек щодо коректного застосування вітамінних засобів	Analysis of the awareness of pharmacy visitors about the correct use of vitamin-containing remedies	Доц. Куценко Т.О.	Доц. Бондарев Є.В.

Підстава: подання декана, згода ректора

Ректор

Вірно. Секретар



ВИСНОВОК

**Комісії з академічної доброчесності про проведену експертизу
щодо академічного плагіату у кваліфікаційній роботі
здобувача вищої освіти**

№ 112974 від «3 » травня 2023 р.

Проаналізувавши випускню кваліфікаційну роботу за магістерським рівнем здобувача вищої освіти денної форми навчання Ель Хамді Мохаммед, 5 курсу, _____ групи, спеціальності 226 Фармація, промислова фармація, на тему: «Аналіз обізнаності відвідувачів аптек щодо коректного застосування вітамінних засобів / Analysis of the awareness of pharmacy visitors about the correct use of vitamin-containing remedies», Комісія з академічної доброчесності дійшла висновку, що робота, представлена до Екзаменаційної комісії для захисту, виконана самостійно і не містить елементів академічного плагіату (компіляції).

**Голова комісії,
професор**



Інна ВЛАДИМИРОВА

3%

26%

REVIEW

of the scientific supervisor for the qualification work for the master's level of higher education, specialty 226 Pharmacy, industrial pharmacy

Mohammed EL HAMDI

on the topic: «Analysis of the awareness of pharmacy visitors about the correct use of vitamin-containing remedies»

Relevance of the topic. Today it is known that the vitamin deficiency is a widespread problem all over the world. For example, hypo- or avitaminosis occurs in approximately 1/3 of the residents of Eastern Europe. The population of many developing countries has frequency of vitamin deficiency about 60-80%. Besides, there is a steady trend of year-round hypovitaminosis formation, while the lack of vitamins is determined not only in winter and spring, but also in the most favorable summer-autumn period of the year. As a rule, vitamin deficiency has a combined nature, that is, it is polyhypovitaminosis requiring the use of multivitamins. Currently, the world pharmaceutical market has a wide range of vitamin and multivitamin (both medicines and food supplements) products developed by different manufacturing companies. These remedies differ in their qualitative and quantitative composition, source of vitamins, dosage form, etc. It is also known that many of these products can be used for purposes of treatment or even preventively by practically healthy people, which raises the question of the need for optimal individual choice and correct use of the remedy in each specific case.

Practical value of conclusions, recommendations, and their validity. The conclusions proposed by the applicant are based on sufficient data obtained in the process of the research, thorough analysis and systematization of results. According to the results of the work, the level of awareness of the population regarding the approaches to the rational choice and correct use of vitamin-containing products was studied, and it was established that quite a number of aspects concerning this require additional information of the population, in

particular, general information about properties of vitamins, hypo- and avitaminosis development and types of vitamin therapy as well as approaches to the correct choice of vitamin-containing remedies. This substantiates the expediency of creating recommendations for improving public awareness, which will contribute to increasing the effectiveness of the correct and safe use of drugs of this group. The results of the research are presented by the author in 1 abstracts of the scientific and practical conference.

Assessment of work. The work was done using a sufficient amount of primary material. The applicant has processed a sufficient amount of scientific information sources. The work is relevant and has practical and theoretical value.

General conclusion and recommendations on admission to defend. The qualification work is performed in full, designed in accordance with the current requirements for the qualification works at the National University of Pharmacy, and can be recommended for submission to the Examination Commission for further defense.

Scientific supervisor _____Tetyana KUTSENKO

«3» of April 2023

REVIEW

**for the qualification work for the master's level of higher education, specialty
226 Pharmacy, industrial pharmacy**

Mohammed EL HAMDI

**on the topic: «Analysis of the awareness of pharmacy visitors about the
correct use of vitamin-containing remedies»**

Relevance of the topic. As commonly known, deficiency of vitamins and micronutrients is one of the major global health problem. According to the WHO data more than 2 billion people in the world today are estimated to be deficient in key vitamins and minerals. It is also known that the so-called subnormal (preclinical) form of vitamin deficiency often occurs. In conditions of insufficient production of vitamin-enriched food products, the main way to eliminate vitamin deficiency is the use of multivitamin or vitamin-mineral complexes. Today it is known that multivitamins are not always prescribed by consultation with a doctor or even a pharmacist - the choice very often is made independently. At the same time, there are a lot of vitamin-containing products in the modern pharmaceutical market. All of this explains the interest to study and analyze the principles for the use and choice of vitamin-containing products by the consumer in order to determine the need to increase the public's awareness of the named group of preparations.

Theoretical level of work. In the scientific work submitted for review, the author has worked out a large amount of scientific sources on the relevant topics and completely described the topicality of the topic. The systematization of data was carried out and the assessment of the population's awareness of vitamin remedies and the principles of their rational use and choice for individual pharmacotherapy was conducted. For the first time, an anonymous original questionnaire was developed to assess the population's awareness of the pharmacological properties and principles of rational use and choice of vitamin-containing products.

Author's suggestions on the research topic. Based on the obtained results, the author substantiated the expediency of increasing the public's awareness of vitamin-containing products and suggested developing practical recommendations on this issue that will be described in planned scientific publication based on the materials of conducted survey.

Practical value of conclusions, recommendations, and their validity. The conclusions formulated in the qualification work correspond to the objectives of the research. The conclusions proposed by the applicant are based on the sufficient data obtained in the course of the conducted research, thorough analysis and generalization of results. Based on the results obtained, the conducted study made it possible to reveal the level of awareness of the population regarding the choice and use of vitamin products and to conclude that a certain number of aspects in this regard require awareness improvement among pharmacy visitors. All of this may contribute to increasing the effectiveness and safety of therapy by vitamin-containing products.

Disadvantages of work. The qualification work is oversaturated with graphic material, in particular drawings, and contains a few typographical errors, although this does not reduce the scientific value of the conducted research.

General conclusion and assessment of the work. The qualification work is done according the current requirements for qualification works at the National University of Pharmacy, and can be recommended for submission to the Examination Commission for further defense.

Reviewer _____ assoc. prof. Yevhen BONDARIEV

«10» of April 2023

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ**

Витяг з протоколу № 14

від 11 квітня 2023 року

м. Харків

засідання кафедри фармакології та фармакотерапії

ПРИСУТНІ: зав. каф.проф. Штриголь С.Ю., проф. Кіресв І.В., проф. Деримедвідь Л.В, проф. Бутко Я.О., доц. Белік Г.В., доц. Рябова О.О., доц. Жаботинська Н.В., доц. Куценко Т.О., доц. Таран А.В., доц. Матвійчук А.В., доц. Степанова С.І.,ас. Кононенко А.В., ас. Толмачова К.С., ас. Цеменко К.В., Адлер Б.А., Чубар`ян Ю.І., Барзак Д.Т., Краснораменська О.В., Шульга Ю.М., Рубан Я.В., Суровцева Д.О., Леонова Я.І., Заворотько Д.І., Вороніна А.О., Давидов Е.М., Шостенко К.В., Дібт Шараф Еддін, Жудат Ікрам, Алауі Абдаллауі Яссін, Буррус Ахлам, Ель Хамді Мохаммед, Меллоукі Хамза, Іфтахі Яссін, Карім Ашраф, Айнау Умайма, Елбадауі Хажар, Ель Хайель Хаджар, Толбі Ель Мехді, Беналлал Зінеб, Бенсаїд Мохаммед, Ел-Жамаї Сальма, Ельбахаджі Раїхана, Бензід Ясіне, Кадді Каутар.

ПОРЯДОК ДЕННИЙ:

Розгляд кваліфікаційних робіт здобувачів вищої освіти для подання робіт до Екзаменаційної комісії.

СЛУХАЛИ:

Здобувача вищої освіти Ель Хамді Мохаммеда зі звітом про проведену наукову діяльність за темою кваліфікаційної роботи: «Аналіз обізнаності відвідувачів аптек щодо коректного застосування вітамінних засобів».

УХВАЛИЛИ:

Кваліфікаційну роботу розглянуто. Здобувач вищої освіти Ель Хамді Мохаммед допускається до захисту даної кваліфікаційної роботи в Екзаменаційній комісії.

Завідувач кафедри фармакології
та фармакотерапії, проф. _____

Штриголь С.Ю.

Секретар кафедри фармакології
та фармакотерапії, ас. _____

Кононенко А.В.

НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

ПОДАННЯ ГОЛОВІ ЕКЗАМЕНАЦІЙНОЇ КОМІСІЇ ЩОДО ЗАХИСТУ КВАЛІФІКАЦІЙНОЇ РОБОТИ

Направляється здобувач вищої освіти Мохаммед ЕЛЬ ХАМДІ до захисту кваліфікаційної роботи за галуззю знань 22 Охорона здоров'я спеціальністю 226 Фармація, промислова фармація освітньою програмою Фармація на тему: «Аналіз обізнаності відвідувачів аптек щодо коректного застосування вітамінних засобів».

Кваліфікаційна робота і рецензія додаються.

Декан факультету _____ / Світлана КАЛАЙЧЕВА /

Висновок керівника кваліфікаційної роботи

Здобувач вищої освіти Мохаммед ЕЛЬ ХАМДІ у повному обсязі виконав кваліфікаційну роботу. За актуальністю, методичним рівнем, теоретичним та практичним значенням, об'ємом виконаних досліджень кваліфікаційна робота відповідає вимогам і допускається до захисту в Екзаменаційній комісії.

Керівник кваліфікаційної роботи

Тетяна КУЦЕНКО

«03» квітня 2023 р.

Висновок кафедри про кваліфікаційну роботу

Кваліфікаційну роботу розглянуто. Здобувач вищої освіти Мохаммед ЕЛЬ ХАМДІ допускається до захисту даної кваліфікаційної роботи в Екзаменаційній комісії.

Завідувач кафедри
фармакології та фармакотерапії

Сергій ШТРИГОЛЬ

«11» квітня 2023 року

Qualification work was defended
of Examination commission on the
« ____ » of June 2023

with the grade _____

Head of the State Examination commission,
DPharmSc, Professor

_____ / Oleh SHPYCHAK /