

# Assessment of dietary supplement consumption in Republic of North Macedonia during the COVID 19 pandemic

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## INTRODUCTION

The COVID-19 pandemic has caused an unprecedented health crisis worldwide, challenging the capacity of the healthcare systems as well as the societies in general. In the wake of COVID-19, dietary supplements have gained a critical role in nutrition, which has crucial influence on the prevention and treatment of the disease. The supplementation with vitamins D and C, zinc, and selenium in patients with deficiencies of those nutrients was shown beneficial, but there are no convincing studies that support the intake of dietary supplements in COVID-19 prevention and treatment in healthy and well-nourished individuals. In addition, the guidelines for the treatment of COVID-19 do not provide apparent support on the use of dietary supplements. However, the sales of dietary supplements have had dynamical increase all over the world. In the USA dramatically elevated sales was registered up to 415% since the beginning of March 2020 and sales of multivitamins and vitamin C supplements in UK have significantly increased by 93% and 110%, respectively.

## AIM OF STUDY

Analysis of the dietary supplement intake changes in the Republic of North Macedonia during the COVID-19 pandemic.

## MATERIALS AND METHODS

An online questionnaire composed of 12 structured questions to gather objective information about people's knowledge, belief, attitude, and behavior associated with the use of dietary supplements during the COVID-19 pandemic was created. The survey included 426 participants, each allowed to complete the questionnaire only once. For the assessment of specific features of the consumption of dietary supplements in a population in the Republic of North Macedonia, a descriptive approach was applied. Herein, the respondents were required to answer voluntary and anonymous following questions: frequency of dietary supplement use during the pandemic, continuous or intermittent consumption, preventive or therapeutic usage, where the dietary supplements were supplied from, category of the supplement due to the composition, belief in their quality and safety and sufficiency of data provided to people, getting professional advice before consumption, notification of side effects during the use or afterwards.

## RESULTS AND DISCUSSION

The majority of the participants were male, mainly 35-54 years old. A very high percentage of respondents (88.5%) declared consumption of dietary supplements that was not surprisingly toward global trend of their enormous intake during the coronavirus pandemic.

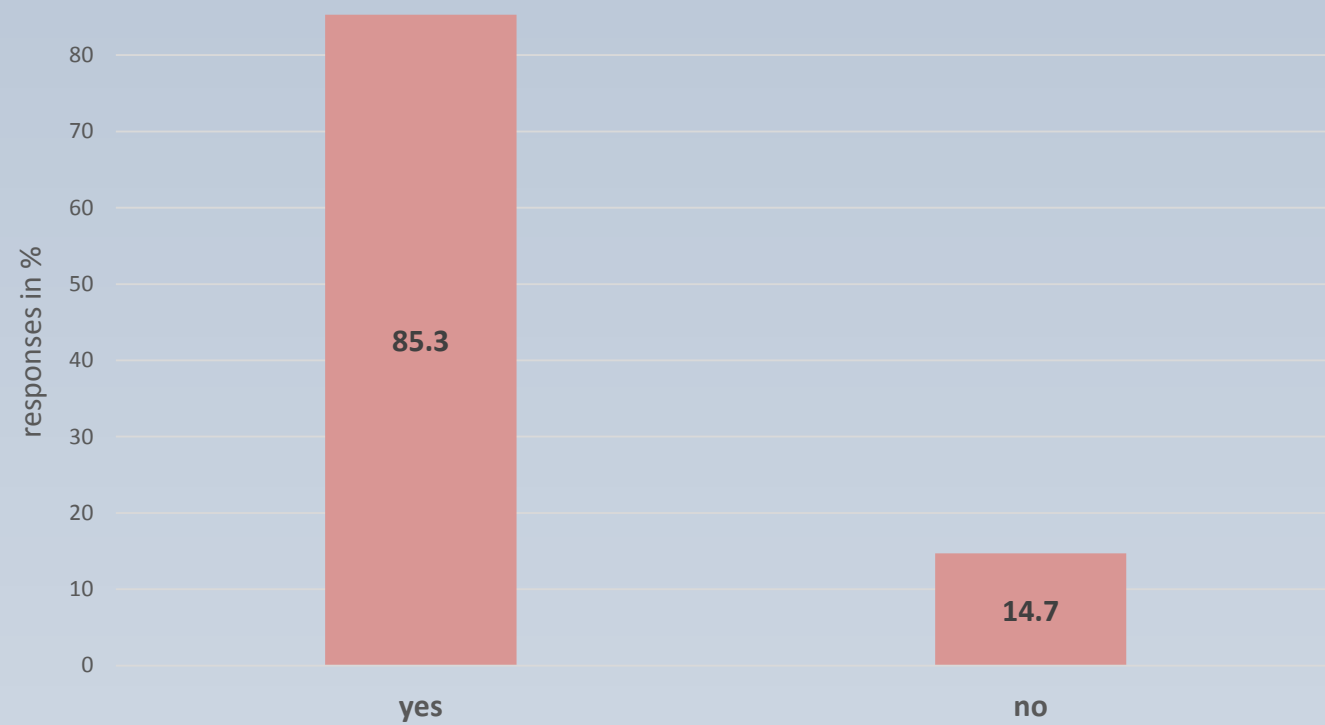


Figure 1. Graphic display of the obtained results regarding the use of nutritional supplements during the COVID-19 pandemic in the Republic of North Macedonia.

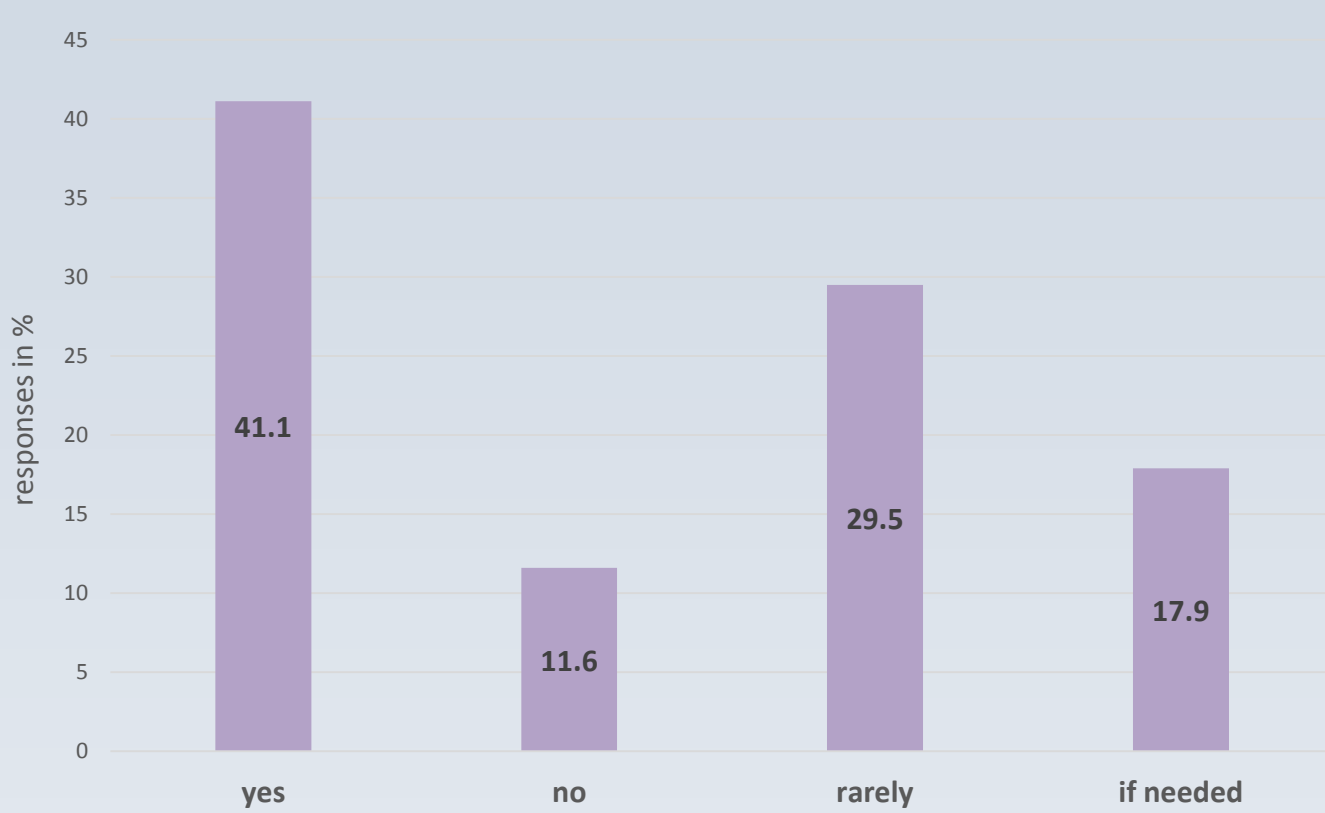


Figure 2. Graphic display of the obtained results in relation to the use of nutritional supplements before the start of the COVID-19 pandemic in the Republic of North Macedonia.

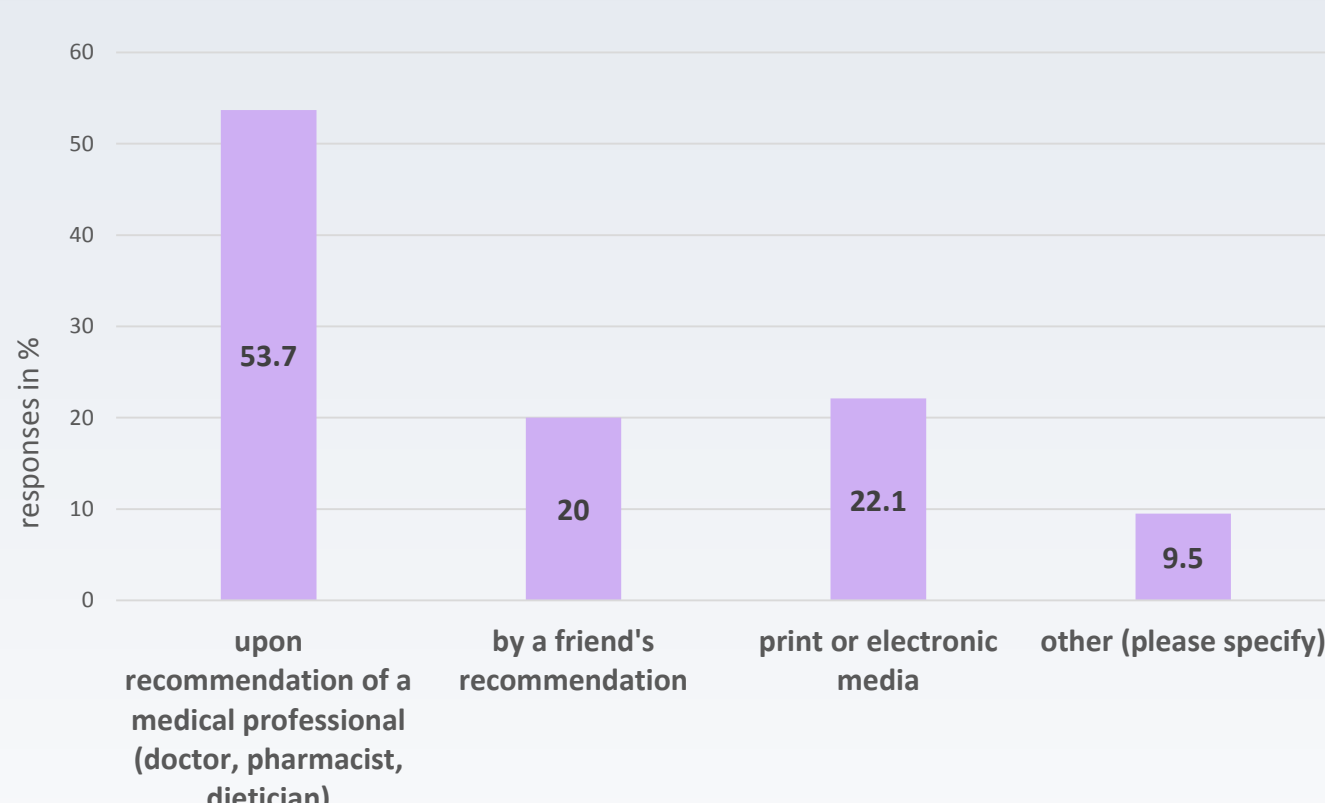


Figure 3. Graphic display of the obtained results regarding the recommendations for the use of nutritional supplements during the COVID-19 pandemic in the Republic of North Macedonia.

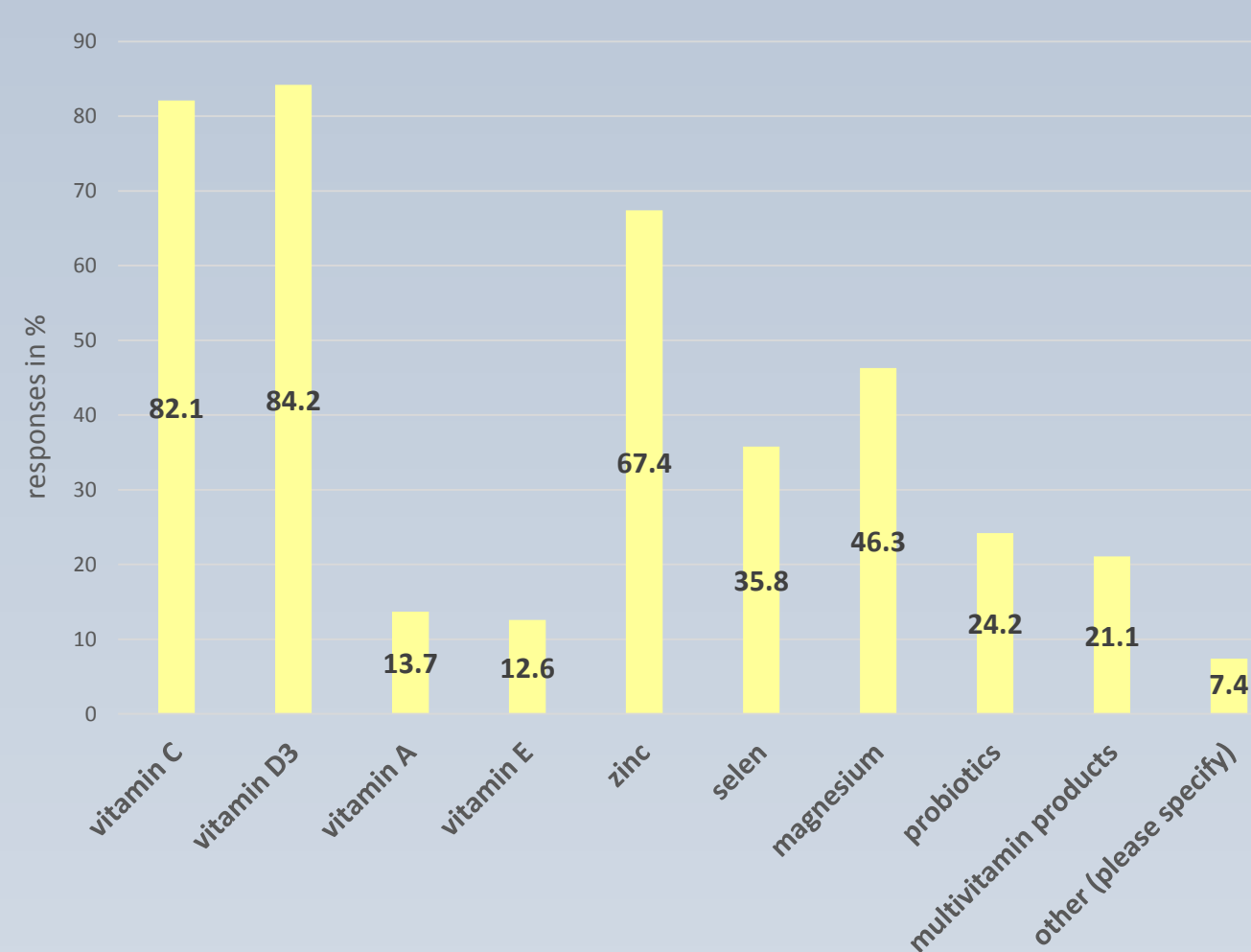


Figure 4. Graphic display of the obtained results for the most commonly used nutritional supplements during the COVID-19 pandemic in the Republic of North Macedonia.

The driving effect of COVID-19 on dietary supplement-related behavior of consumers is probably due to the experience with other viral infections or a quest for an effective prevention/treatment alternative.



Figure 5. Graphic display of the obtained results in relation to the frequency of use of nutritional supplements during the COVID-19 pandemic in the Republic of North Macedonia.

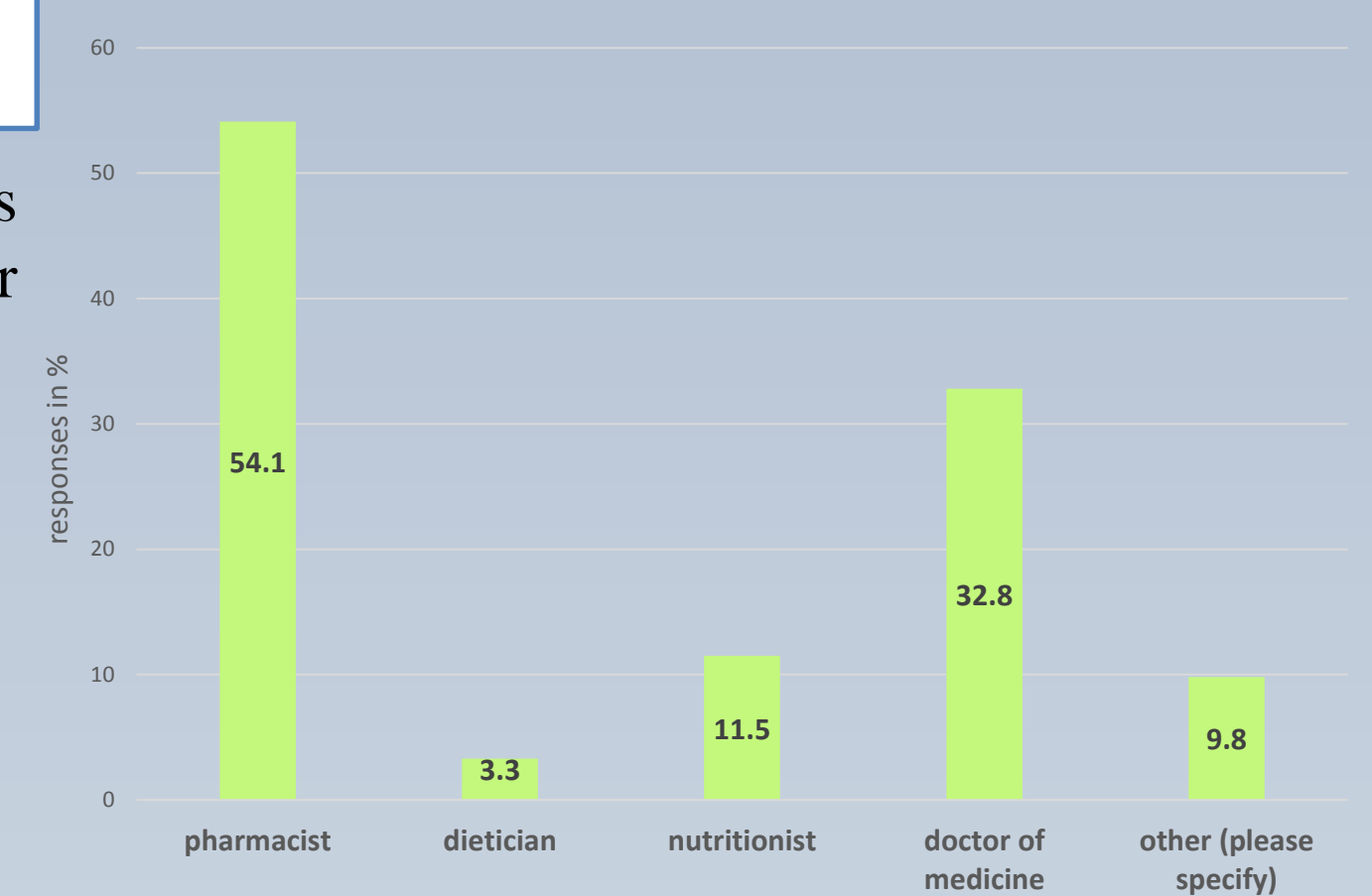


Figure 6. Graphic display of the results obtained in relation to the consultation with an expert before starting the use of nutritional supplements during the COVID-19 pandemic in the Republic of North Macedonia; if the answer is YES, indicate whether the professional is one of the listed.

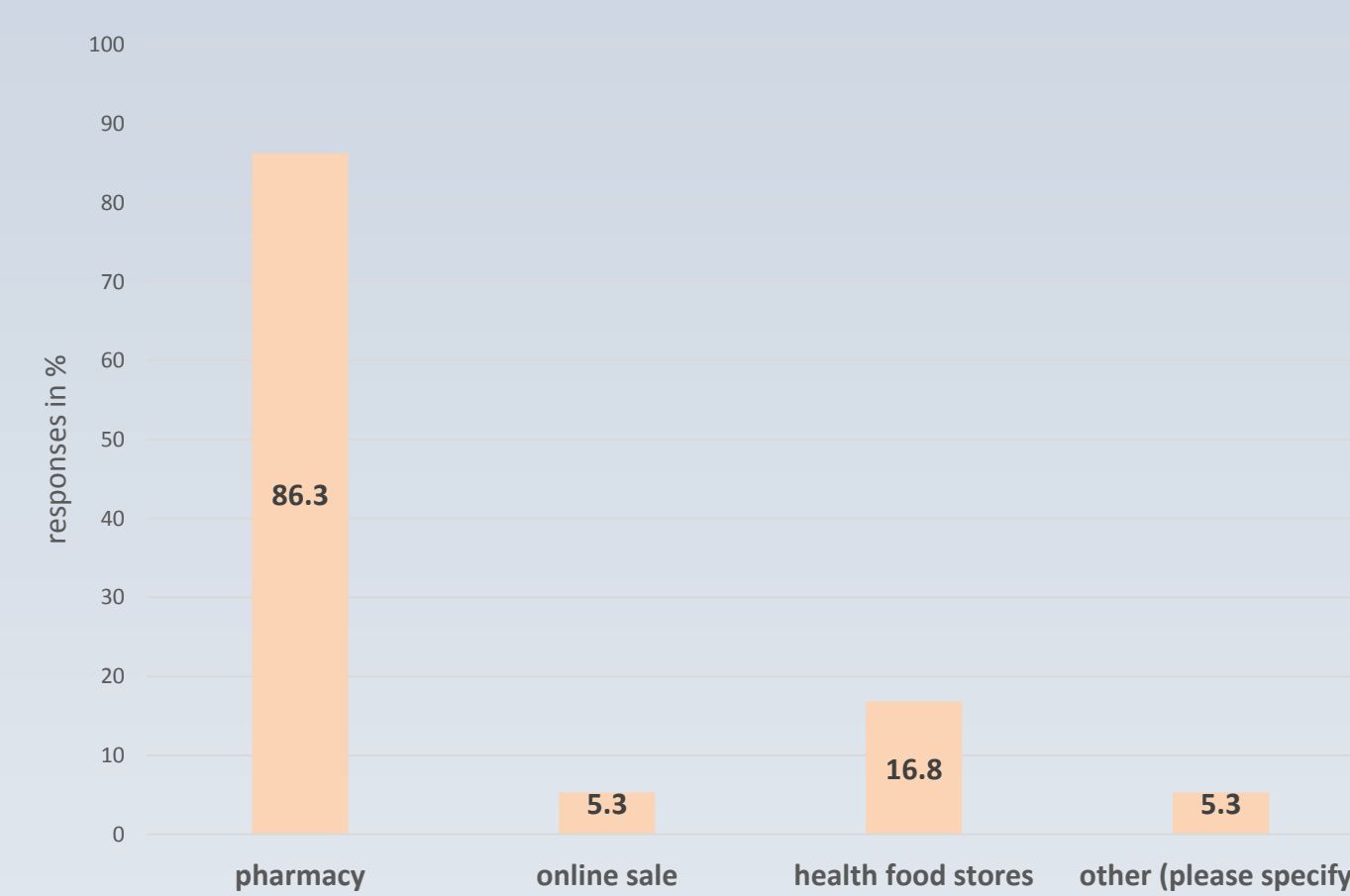


Figure 7. Graphic display of the obtained results in relation to the place of purchase of nutritional supplements.

Figure 6 and 7 show that the largest percentage of respondents supplied nutritional supplements from pharmacies and consulted a pharmacist or doctor of medicine before starting consumption, which is an indicator of the awareness of people to look for proper information regarding the supplement beneficial effects as well as their interactions with medications.

## CONCLUSION

The popularity of dietary supplements during the COVID-19 pandemic was more than a twofold increased. High percentage of supplements supplied from pharmacy stores and considerable number of people seeking a professional opinion indicated the increased awareness in consumers when supplementation is appropriate. Undoubtedly, until firm evidence to support the use of supplements is lacking, health-protecting behavior against COVID-19 should be based on balanced nutrition and healthy lifestyle.