

Community Pharmacists' Perspectives on Supplying Dietary Supplements to Patients with Chronic Illnesses: A Preliminary Survey in Bulgaria

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ABSTRACT

In recent years, there has been a notable increase in the use of food supplements for the prevention and management of various chronic diseases. To better regulate the market, usage, and safety of these products, the European Commission has implemented harmonized regulations to ensure that food supplements provide accurate information and are not misleading. Nevertheless, excessive consumption, unsupervised use by patients, intake above recommended levels, and potential interactions with certain medications can lead to toxicity and significant health risks. This study aims to evaluate pharmacists' practices in appropriately recommending food supplements to chronically ill patients to enhance pharmaceutical care and minimize adverse effects. An anonymous survey was conducted using a structured questionnaire targeting licensed pharmacists and assistant pharmacists working in community pharmacies across Bulgaria. Findings indicate that most pharmacists are willing to advise patients on food supplements and are capable of participating in the monitoring of chronically ill patients' supplement use. The survey also revealed that patients frequently seek food supplements and actively request professional guidance. Pharmacists, as readily accessible healthcare providers, have the potential to offer comprehensive guidance on food supplement use to prevent adverse outcomes in chronically ill patients, particularly when supported by additional training in this area.

Keywords: Risk, Pharmacists, Food supplements, Knowledge, Interactions

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Introduction

Food supplements (FS) marketed in any European Union (EU) Member State are required to adhere to EU Food Law, ISO certification standards, and applicable national legislation regarding their composition, production, and quality control [1, 2]. In recent years, there has been a notable rise in the use of food supplements for the prevention and management of various chronic diseases. To strengthen oversight of the market, consumption, and safety of FS, the European Commission has implemented significant regulatory measures to harmonize standards and ensure that information provided is not misleading. Directives 2002/46/EC and 2006/37/EC introduced a harmonized list of vitamins and minerals allowed for nutritional purposes in FS, including permissible doses, while Regulation (EC) No 1924/2006 established requirements for clear, scientifically supported health claims [3].

Despite these regulations, excessive intake, unsupervised consumption, or doses exceeding recommended limits, along with potential interactions with certain medications, may result in toxicity and serious health risks [4]. As the most accessible healthcare professionals, pharmacists frequently encounter patients seeking guidance on food supplements in their daily practice [5]. Pharmacists can provide reliable, independent information on the efficacy and safety of FS for various health conditions; however, numerous studies indicate that additional training is necessary [6, 7].

Research also shows that pharmacists desire more detailed knowledge regarding supplement quality, potential drug interactions, and adverse effects. Enhanced training is particularly needed to provide specific pharmaceutical insights, and the development of national and regional policies in this area remains limited [8]. This context motivated our investigation into the attitudes of community pharmacists in Bulgaria toward dispensing and monitoring food supplements in patients with chronic illnesses.

Materials and Methods

A national, anonymous survey was conducted using a structured questionnaire among licensed pharmacists and assistant pharmacists working in community pharmacies across Bulgaria to evaluate their perspectives on dispensing and monitoring food supplements in patients with chronic conditions. The questionnaire was designed by a PhD student under the supervision of Maria Dimitrova. Participants were recruited from 13 major cities between June 2020 and June 2021 to capture regional variations in practice. Initially, the questionnaire was distributed in person, but during the COVID-19 pandemic, it was provided online via Google Forms. Pharmacists from both chain and independent pharmacies were included to obtain a comprehensive overview.

The survey included 8 closed-ended and 2 open-ended questions, gathering demographic data (age, gender, workplace location) and information on pharmacists' perceived role, knowledge needs, awareness of risks, and experience with adverse event reporting related to FS. Data were analyzed using descriptive statistics in XLSTAT, and correlations were assessed with Chi-Square tests and cross-tabulations.

Results – demographic characteristics

The 12-month survey (June 2020–June 2021) included 151 pharmacists, comprising 135 licensed pharmacists and 16 assistant pharmacists, from 13 regional cities: Sofia, Plovdiv, Pazardzhik, Blagoevgrad, Yambol, Haskovo, Veliko Tarnovo, Ruse, Stara Zagora, Pleven, Kyustendil, Varna, and Burgas.

The demographic characteristics of the participating healthcare professionals are presented in the table below:

Table 1. Demographic characteristics.

Input data	Value
Qualification	
Master Pharmacists	135
Assistant Pharmacists	16
Gender	
Male	38
Female	111
No information	2
Age	
18–24	29
25–44	94
45–65	24
>65	4

Pharmacists' views on dispensing food supplements and related risks

Out of 151 pharmacists surveyed, 128 (84%) expressed willingness to recommend food supplements, with 113 (88%) of them being licensed pharmacists. Recommendation rates were 81% among men and 86% among women. Most pharmacists (89%) indicated that they could play a role in monitoring the use of food supplements among chronically ill patients (**Table 2**).

Table 2. Pharmacists' attitudes toward food supplement dispensing and associated risks

Question	Response	Number (%)
Would you, as a Master or Assistant Pharmacist, recommend food supplements to patients?	Yes	128 (84%)
	No	23 (16%)
Do you provide patients with information on potential adverse effects of food supplements, particularly regarding drug interactions?	Yes	145 (96%)
	No	6 (4%)

In your opinion, can pharmacists supervise the use of food supplements in patients with chronic illnesses?	Yes	134 (89%)
	No	17 (11%)

Patients' attitudes toward food supplements

Survey results indicate that 139 (92%) of pharmacists reported that patients frequently request food supplements in pharmacies, and 132 noted that patients actively seek guidance on food supplements and over-the-counter medications. However, 84 respondents observed that patients rarely report any adverse effects related to food supplement use (**Table 3**). A follow-up study is planned to monitor chronically ill patients, their medication and supplement intake, and any resulting side effects.

Table 3. Patients' attitudes toward food supplements

Question	Response	Number (n)
Do patients frequently inquire about food supplements?	Yes	139
	No	12
Do patients seek guidance regarding food supplements and over-the-counter medications?	Yes	132
	No	19
Do patients report experiencing side effects from food supplements?	Yes	67
	No	84

About one-fifth of the surveyed professionals did not provide an opinion on the value of involving pharmacists in monitoring patients, which may reflect a lack of awareness of their potential role in patient care. Another possible explanation is a limited understanding of the benefits of food supplements and the risk of adverse interactions in chronically ill patients taking both OTC products and prescription medications from different classes.

A smaller proportion of respondents indicated that they would neither recommend food supplements nor engage in patient counseling, citing the belief that these products primarily drive sales and lack genuine therapeutic value. The majority of master and assistant pharmacists, however, recognized that their involvement in monitoring could be highly meaningful, particularly in terms of:

- preventing harmful interactions;
- providing pharmaceutical care and improving patient adherence;
- optimizing therapy outcomes;
- promoting rational medication use;
- preventing overdosing;
- offering patients clearer guidance and understanding.

Overall, the survey demonstrates that most professionals who expressed an opinion possess the competence to counsel patients and advise on supplement use.

Statistical analysis

Regarding the inclusion of pharmacists in chronic disease management, 84% of male respondents and 90% of female respondents supported the concept. A Chi-square test was performed to assess the correlation between gender and agreement to include pharmacists, and no significant correlation was found.

As illustrated in **Figure 1**, 84% of males and 90% of females are willing to participate in the management of chronic diseases and oversee the recommendation and dispensing of food supplements to minimize potential side effects.

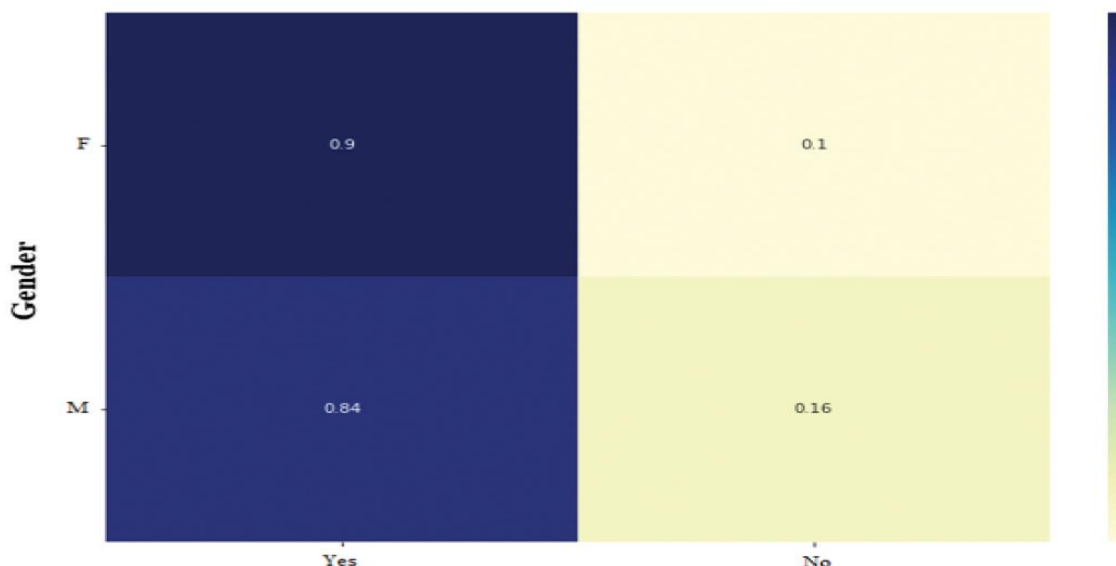


figure 1. Association between gender and pharmacists' readiness to engage in the management of chronic diseases.

All results obtained using the Chi-squared test cannot be generalized due to the limited sample size, yet they are adequate to indicate trends among the pharmacists analyzed. Age did not appear to affect pharmacists' awareness of adverse events or the information they provide to patients. Notably, the oldest pharmacists and assistant pharmacists tended to offer less information about adverse events to patients; however, this observation cannot be statistically confirmed because of the small number of pharmacists in this age group.

The differences in attitudes toward recommending food supplements were most pronounced between the youngest group (18–24 years) and the oldest pharmacists (over 65 years), with 90% of the youngest and 75% of the oldest willing to recommend such products. Again, the small sample size of the oldest group prevents generalization. The oldest pharmacists surveyed consistently declined to participate in chronic disease management, potentially reflecting the fact that pharmaceutical care in Bulgaria is currently not reimbursed. Conversely, pharmacists aged 25–44 years were the most inclined to supervise patients' food supplement intake.

Regarding patient preferences, 93% expressed a desire to receive guidance on food supplements from their pharmacist. Among patients who did not want a consultation, 84% held this view. Pharmacists provided information about adverse events to 46% of patients who inquired about OTC products or supplements, compared to 32% who did not inquire. Differences between these groups could not be statistically verified.

Results and Discussion

Recent years have seen a notable rise in the use of food supplements for prevention, prophylaxis, and management of chronic diseases. To improve oversight of their market placement, usage, and safety, the European Commission implemented regulations to harmonize standards and prevent misleading claims. Directives 2002/46/EC and 2006/37/EC established a harmonized list of vitamins and minerals permitted in supplements and their allowed doses, while Regulation (EC) No 1924/2006 set guidelines for scientifically substantiated health claims [9].

Recent evaluations of the Bulgarian pharmaceutical market indicate a growing availability of food supplements, approaching levels seen with over-the-counter medications [10]. Our findings align with previous studies highlighting the need for additional pharmacist training and public education regarding food supplements, as patients often cannot differentiate them from OTC drugs. Development of national and regional policies is necessary to address this gap [8].

A 2021 cross-sectional study in Croatia by Bukic *et al.* demonstrated that community pharmacists require further education on evidence-based pharmacy practices, particularly concerning supplement safety. Similar research conducted globally—in Australia, Ethiopia, Germany, Malaysia, New Zealand, Saudi Arabia, the UAE, and the USA—has emphasized the need to identify barriers preventing pharmacists from fully assuming professional responsibilities related to safe supplement use. Most studies report a significant disparity between public

understanding of supplement safety and the pharmacist's role as a trusted healthcare advisor, underscoring the need for further specialization in this area [11-18].

Conclusion

There is a clear need for rigorous monitoring and risk assessment of food supplement–drug interactions in patients with chronic conditions, alongside enhanced education and training for pharmacists. Community pharmacists, as the most accessible healthcare professionals, are willing to engage in pharmaceutical care related to supplement use. Since combining supplements with medications can lead to adverse effects, careful consultation is essential. Furthermore, stricter registration and regulatory mechanisms for food supplements in Bulgaria would help minimize potential drug interactions and adverse events in the future.

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