



Original Contribution

DIETARY SUPPLEMENTS: VIEWS OF PATIENTS WITH CHRONIC SKIN DISEASES

Zh. Tsokeva^{1*}, E. Hristakieva^{2,3}, M. Ganeva^{1,2}

¹Section of Pharmacology and Clinical Pharmacology, Faculty of Medicine, Trakia University, Stara Zagora, Bulgaria

²Clinic of Dermatology and Venereology, UMHAT „Prof. Dr. Stoyan Kirkovich“, Stara Zagora, Bulgaria

³Section of Dermatovenereology, Faculty of Medicine, Trakia University, Stara Zagora, Bulgaria

ABSTRACT

Purpose: The study aims to examine the use of dietary supplements (DSs) in patients with chronic dermatological diseases, as well as, the patients' views of the safety and benefit of DSs. **Methods:** A cross-sectional study of patients hospitalized in the Clinic of Dermatology and Venereology at the University Hospital "Prof. Dr. Stoyan Kirkovich" - Stara Zagora from March 2019 to March 2020 was performed. A specially designed and validated questionnaire was used to collect data. Descriptive statistics was performed to analyze the results. **Results:** Overall 250 patients were involved in the study. The intake of DSs was established in 174 (69.6%) of the participants. Commonly used DSs were vitamins/minerals (41.2%) and herbal supplements (8.2%). Most of the respondents (59.2%) were ignorant about adverse reactions to DSs and 44.4% perceived DSs as completely safe. The majority of DSs consumers (59%) declared satisfaction with the effect of DSs and were convinced (62.4%) of their benefits. **Conclusions:** DSs are widely used in patients with chronic skin diseases. Most of the patients are ignorant about the risk associated with DSs intake. Physicians' awareness of DSs use in hospitalized patients is important for the rational use of DSs and their safe combination with drugs.

Key words: food supplements, safety perceptions, dermatology disorders

INTRODUCTION

According to European legislation, DSs are intended to supplement the diet and represent concentrated sources of nutrients or other substances with nutritional or physiological benefits, marketed in dose forms (tablets, capsules, ampoules, etc.) designed to be administered orally in measured small units quantities (1). DSs contain one or a combination

of the following ingredients: vitamins and minerals (V/M), amino acids, enzymes, probiotics, essential fatty acids, botanical or botanical extracts, and miscellaneous bioactive substances (2). The leading cause of the popularity of these products remains the conviction of consumers that DSs are harmless because of their natural origin (3). Recently, well-documented data on adverse reactions (ARs) and interactions between DSs and drugs are emerging (4, 5). The relationship between skin health and diet is well known (6) and suggests the interest of dermatology patients in nutrition, including dietary supplementation. The detection of serious adverse drug reactions, the high cost, and the lack of long-term efficacy of mainstream medication

***Correspondence to:** Dr. Zhivka Tsokeva, Section of Pharmacology and Clinical Pharmacology Faculty of Medicine, Trakia University, Armeiska 11 St., 6000 Stara Zagora, Bulgaria, E-mail: zhivka.tsokeva@trakia-uni.bg, Tel: +3594266321, Fax: +35942600705

presume the widespread use of DSs in this patient population (7).

AIM

The purpose of the study was to examine the use of DSs in patients with chronic dermatological diseases, as well as, the patients' views of the safety and benefits of DSs.

MATERIALS AND METHODS

A cross-sectional study involving hospitalized patients with various skin disorders was performed in the Clinic of Dermatology and Venereology at the University Hospital "Prof. Dr Stoyan Kirkovich" in Stara Zagora, Bulgaria. One arm of the study included patients with chronic skin diseases who were admitted to the Clinic because of exacerbation of their dermatological disorders. Here we analyze data collected for one year from March 2019 to March 2020.

Participants

Medically stable and cognitively intact patients were included in this study. Participation in the study followed the ethical principles of voluntarism and anonymity and the laws and regulations in Bulgaria. Data on DS use were collected by two researchers using a self-completed questionnaire.

Study instrument

The survey instrument was developed and its content was adapted to the existing literature. The study questionnaire was validated by a panel of 5 independent experts. The relevancy of individual items and the overall questionnaire were assessed. The final version of the questionnaire consisted of 28 questions distributed in 6 domains concerning information on dietary and lifestyle behaviors, patients' current health status, patients' view of the safety of DSs, information about DSs use during the previous year, consumers' behaviors and communication attitudes regarding DSs and data on the preferred sources of information about DSs. Additional data on the socio-demographic and lifestyle characteristics of the participants such as age, gender, weight, height, marital status, level of education, and employment were included.

Statistical analysis

The statistical analyzes were performed using SPSS, version 19.0. Descriptive statistics was used to examine the results. Continuous data are presented as the median and interquartile range (IQR).

RESULTS

In general 250 patients – 130 females (52%) and 120 males (48%) with a median age of 47.36 ± 14.74 were involved in the study. Most of the patients (n=150, 75%) were hospitalized because of severe types of psoriasis (ICD code L40.0-L40.9). Patients with atopic dermatitis (ICD code L20.0-20.9) were 26 (10.4%) and the rest of the respondents suffered from miscellaneous chronic skin diseases such as discoid lupus erythematosus, irritant contact dermatitis, etc. Approximately one-third of the respondents had a university degree in education. Most patients rated their diet as good (n=143; 57.2%) or very good (n=21; 8.4%). More patients were smokers (n=129; 51.6%) and were not involved in sports or regular physical activities (n=167; 66.8%). The higher proportion of patients was with pre-obesity (n=108; 43.2%) and obesity (n=76; 30.4%) with a mean body mass index of 27.50 kg/m^2 (IQR 24.80-31.16). Various chronic systemic diseases were reported in 70 (28%) patients.

DS use

The use of any DS during the previous year was reported by 174 (69.6%) of participants. Comparing the patients with different chronic skin diseases, we found the use of DSs in 102 (68%) of patients with psoriasis vulgaris, 18 (69.2%) of patients with atopic dermatitis, and 54 (73%) of patients with other chronic skin diseases. Most dietary supplement users (DSUs) in our study (n=78; 44.8%) used a single food supplement. Typically, most DSUs (n=98; 56.3%) have used DSs for up to 1 month. Long-term use of DSs for more than 6 months was established in 34 (19.5%) of DS consumers.

Comparing individual groups of nutritional supplements V/M (n=70; 41.2%) and DSs of herbal origin (n=14; 8.2%) were commonly used in patients with chronic skin diseases (**Figure 1**).

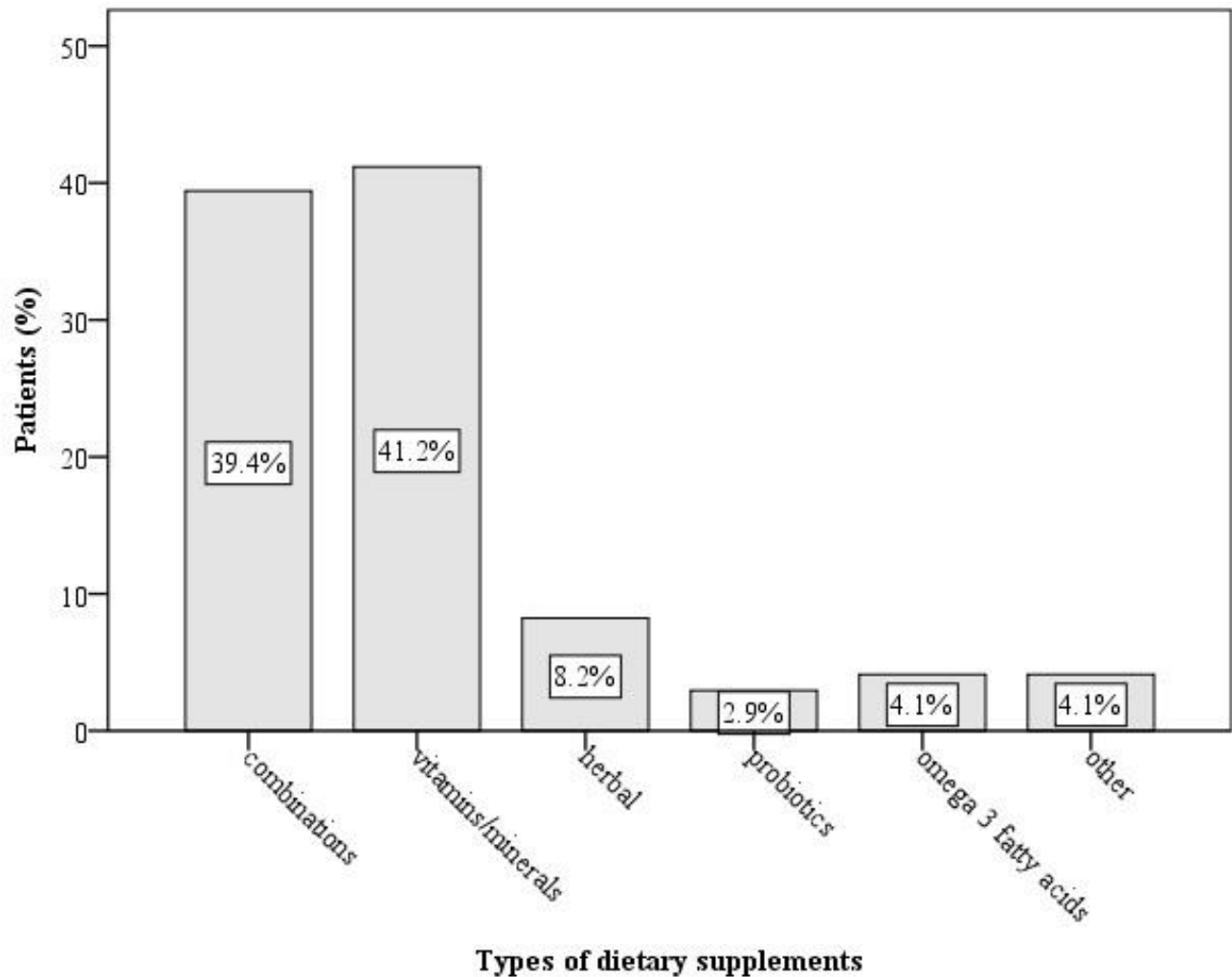


Figure 1. Distribution of patients according to the use of various types of dietary supplements

The use of various combinations of different DSs was reported by a significant part of the participants (n=67; 39.4%). The use of V/M was indicated by 47 (46.1%) patients with psoriasis, 7 (38.9%) patients with atopic dermatitis, and 16 (29.6%) patients with other chronic skin diseases. Of the V/M users, 47 indicated the type of products used. Data showed that vitamin C is the most commonly used vitamin (n=29, 61.7%), and calcium (n=19, 40.4%) and magnesium (n=10,

21.3%) were the most widely used minerals. The common reason for DSs use was "to boost immunity" according to patients in the whole studied group and patients with various chronic skin diseases (**Table 1**). The prevalent part of DSUs declared to take DSs for the management of various organ-related disorders, "skin, hair and nails" being the most common in the study group (**Table 1**).

Table 1. Reasons for dietary supplements intake

Reason for DS intake	Users of dietary supplements			
	All (n=174)	Psoriasis (n=102)	Atopic dermatitis (n=18)	Other (n=54)
Maintain overall health and wellness				
Boost immunity	88 (50.6%)	43 (42.2%)	12 (66.7%)	33 (61.1%)
Supplement the diet	54 (31.0%)	33 (32.4%)	5 (31.3%)	16 (29.6%)
Prevent ADRs	29 (16.7%)	15 (14.7%)	2 (12.5%)	12 (22.2%)
Fill nutrient gaps in sport	11 (6.3%)	6 (5.9%)	-	5 (9.3%)
Weight management	10 (5.7%)	6 (5.9%)	-	4 (8.7%)
Organ related reasons				
Skin, hair, and nails	83 (47.7%)	46 (45.1%)	4 (22.2%)	33 (71.7%)
The health of bone and joints	43 (24.7%)	25 (25.5%)	8 (44.4%)	10 (21.7%)
Digestive health	24 (13.8%)	17 (16.7%)	2 (11.1%)	5 (9.3%)
Improve sleep and mood	16 (9.2%)	10 (9.8%)	2 (11.1%)	4 (7.4%)
Heart health, lower cholesterol	16 (9.2%)	8 (7.8%)	2 (11.1%)	6 (11.1%)
Improve memory and concentration	11 (6.3%)	7 (6.9%)	1 (5.6%)	3 (5.6%)
Urogenital health	9 (5.2%)	2 (2.0%)	2 (11.1%)	5 (9.3%)
Other	19 (10.9%)	6 (3.9%)	4 (22.2%)	9 (16.7%)

Patient's view on DSs safety and usefulness

Opinion about the safety and usefulness of DSs was assessed among all study participants - users and non-users of DSs. A 5-point Likert scale with responses ranging from "strongly agree" to "strongly disagree" was used to assess the level of agreement with the statements concerning DS usefulness and safety. More than 40% of participants "strongly agree" (n=43; 17.2%) or "agree" (n=68; 27.2%) with the statements that DSs are "completely safe". Most of the respondents (n=148; 59.2%) were ignorant about adverse reactions to DSs. An even larger proportion of patients with skin diseases were convinced of the usefulness of DSs products -59 (23.6%) of the participants "strongly agree" and 97 (38.8%) "agree" that food supplements have beneficial effects on human health. Moreover, approximately half of the patients in the study (n=121; 48.4 %) shared the opinion that DSs can be used to treat diseases.

Exploring the opinion of DSUs 40.4% (n=101) of them declared satisfaction with the effect of DSs. Only 4 (2.3%) of the DSUs observed ARs to the products they used. The commonly reported ARs included gastrointestinal disturbances and skin rashes. About half of DSUs in the study (n=81; 46.6%) were taking DSs concomitantly with

conventional drugs. Half of the supplements' consumers (n=90; 51.7%) reported having used DSs without a doctor's recommendation. Only 6 (3.5%) of DSUs substituted a prescribed medication with DSs.

DISCUSSION

Our results show that 69.6% of the patients hospitalized for chronic skin diseases had taken one or more DSs during the previous year. Most data on DS use have been obtained from studies on the general population, while data on the use of DSs in hospitalized patients, including those with dermatology diseases, are limited. In a study of 300 outpatients with various skin diseases, Kalaaji et al., found that 81% of the patients were taking V/M, and 58% were taking herbal or other DSs (8). Our data closely match the data of Yousefzadeh et al. showing that 72% of a total of 138 hospitalized patients with psoriasis vulgaris are DSUs. (9). Data on the use of DSs in dermatology patients in Bulgaria are few. In a previous study, Tsokeva et al. found that 67% of hospitalized patients with various acute and chronic skin diseases take DSs (10). Despite differences in the design, multiple studies convincingly show that V/M and herbal DSs are the most widely used DSs in the general population (3, 11). The widespread use of V/M

and DSs with herbal origin is confirmed in other studies concerning DSs use in hospitalized patients with dermatological and non-dermatological diseases (8, 12). About 2% of all DSUs in our study reported the occurrence of ARs to the products they used. Other authors registered the manifestation of different ARs to DSs in about 4% of supplements consumers (5). Most data of ARs to DSs are associated with the use of herbal supplements (4, 5). According to a prospective observational study in the USA, approximately 30% of ARs caused by DSs different from V/M are moderate to severe and include symptoms such as seizures, coma, myocardial infarction, arrhythmias, blood coagulation disorders, hepatotoxicity and anaphylactic reactions (4). Our participants take mainly V/M which can explain the lower rate of ARs established in the study. The frequent intake of DSs simultaneously with drugs established in our study is also confirmed by other authors, finding that half of DSUs take DSs concomitantly with different drugs (13). About 60% of the participants in the study were ignorant about the ARs to DSs. A significant part of all respondents agreed with the opinion that DSs are safe and beneficial for human health, which was also reported by other authors (11, 13). Consistent with other studies, more than half of DSUs with psoriasis vulgaris or other skin diseases were of the opinion that DSs could be used to treat diseases (14). Some authors raise concerns that patients' beliefs that DSs can be used to treat diseases lead to a delay in drug treatment or to the substitution of prescribed medications with DSs (14). Our data showed that only 3.5% of DSUs substituted a prescribed drug with a dietary supplement, which was also found in other hospitalized patients (13). Our results support the statement of other authors that the use of DSs in patients with chronic diseases does not lead to an underestimation of conventional drug therapy. More than half of DSUs in our study declared satisfaction with the effect of DSs. Our results are close to the results of two other studies, whose authors reported that between 60-70% of DSUs were satisfied with the effect of products that they took and would recommend them to other people (11).

CONCLUSION

DSs are widely used in patients with chronic skin diseases. Most patients are ignorant about the possibility of ARs to DSs. The presence of a chronic disease requiring hospitalization and inpatient medical treatment increases the risk of occurrence of ARs and unwanted DSs-drugs interactions. Physicians' awareness of DSs use in hospitalized patients is useful for the safe use and rational combination of these products with drugs.

REFERENCES

1. European Directive 2002/46/EC on the approximation the laws of the Member States relating to food supplements. Available at http://eurlex.europa.eu/legalcontent/EN/ALL/;ELX_SESSIONID=g52vJqTYtQjyNL8rycyNGLDhYqDkPqp8FrkBxyJsplfj3LckrrLs!1424345081?uri=CELEX:32002L0046
2. European Advisory Services (EAS) (2007). The use of substances with nutritional or physiological effect other than vitamins and minerals in food supplements. Study undertaken for DG SANCO, European Commission. Service contract nrSANCO/2006/E4/018. Available at: http://ec.europa.eu/food/food/labellingnutrition/supplements/documents/2007_A540169_study_other_substances.pdf.
3. Bailey, R., Gahche, J., Lentino, C., Dwyer, J., Engel, J., Thomas, P., et al., Dietary supplement use in the United States, 2003-2006. *J Nutr*, 141(2):261-266, 2011.
4. Palmer, M., Haller, C., McKinney, P., Klein-Schwartz, W., Tschirgi, A., Smolinske, S et al., Adverse events associated with dietary supplements: an observational study. *Lancet*, 361 (9352):101-106, 2003.
5. Timbo, B., Ross, M., McCarthy, P., Lin, C., Dietary supplements in a national survey: Prevalence of use and reports of adverse events. *J Am Diet Assoc*, 106:1966-1974, 2006.
6. Afifi, L., Danesh, M., Lee, K., Beroukhim, K., Farahnik, B., Ahn, R., et al., Dietary Behaviors in Psoriasis: Patient-Reported Outcomes from a U.S. National Survey.

- Dermatol Ther (Heidelb)*, 7(2):227-242, 2017.
7. Tirant, M., Lotti, T., Gianfaldoni, S., Tchernev, G., Wollina, U., Bayer, P., Integrative dermatology – the use of herbals and nutritional supplements to treat dermatological conditions. *Open Access Maced J Med Sci*, 6:185-202, 2018.
 8. Kalaaji, A., Wahner-Roedler, D., Sood, A., Chon, T., Loehrer, L., Cha, S., Bauer, B., Use of complementary and alternative medicine by patients seen at the dermatology department of a tertiary care center. *Complement Ther Clin Pract*, 18(1):49-53, 2012.
 9. Yousefzadeh, H., Mahmoudi, M., Banihashemi, M., Rastin, M., Azad, F., Investigation of dietary supplements prevalence as complementary therapy: Comparison between hospitalized psoriasis patients and non-psoriasis patients, correlation with disease severity and quality of life. *Complement Ther Med*, 33:65-71, 2017.
 10. Tsokeva, Z., Ganeva, M., Gancheva, T., Hristakieva, E., Dietary supplements-use and safety perception: A study among hospitalized dermatology patients. *Int J Clin Pharmacol Ther*, 59(2):116-126, 2021.
 11. Troxler, D., Michaud, P., Graz, B., Rodondi, P., Exploratory survey about dietary supplement use: a hazardous and erratic way to improve one's health? *Swiss Med Wkly*, 143, 2013.
 12. Goldstein, L., Elias, M., Ron-Avraham, G., Biniarishvili, B., Madjar, M., Kamargash, I., Consumption of herbal remedies and dietary supplements amongst patients hospitalized in medical wards. *Br J Clin Pharmacol*, 64: 373–380, 2007.
 13. Samuels, N., Zisk-Rony, R., Zevin, S., Becker, E., Yinnon, A., Oberbaum, M., Use of non-vitamin, non-mineral (NVNM) supplements by hospitalized internal medicine patients and doctor-patient communication. *Patient Educ Couns*, 89: 392-398, 2012.
 14. Wierzejska, R., Jarosz, M., Siuba, M., Rambuszek, M., Assessing patients' attitudes towards dietary supplements. *Rocz Panstw Zakl Hig.* 2014; 65: 317-23, 2014.