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ASSESSING PATIENTS' ATTITUDES TOWARDS DIETARY SUPPLEMENTS

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ABSTRACT

Background. There is currently many over the counter products on the market that exert nutritional or physiological effects on the human body. The differences between dietary supplements and non-prescription drugs are however poorly understood by the average consumer and may thus affect their expectations as to the desired effect produced on the body.
Objectives. To evaluate patients' knowledge and attitudes towards dietary supplements as compared to non-prescription drugs.
Materials and Methods. Subjects were 335 patients of the Mazowiecki Voivodeship Hospital in Warsaw, Poland. The data were collected from a face-to-face interview using a single and multiple choice questionnaire with 10 questions on dietary supplements. Statistical analysis used the *Chi*-square ($\chi 2$) test.
Results. The majority of respondents were found to be familiar with the term 'dietary supplements', but had difficulties in classifying these products into appropriate categories. Over 55% do not consider dietary supplements to be foodstuffs and more than 40% considered such products to be drugs. Most respondents thought that the main purpose of taking dietary supplements is to improve nutrition, but over one third expected them to also treat disease. Over 70% declared taking notice to which category the non-prescription products they bought belongs to ie. whether non-prescription drugs (medicinal products) or dietary supplements.
Conclusions. Many patients mistakenly believe that dietary supplements are drugs and can be used to treat disease and health disorders.

Key words*: dietary supplements, opinion on dietary supplements, nutrition, dietary supplement vs. medicinal product*

STRESZCZENIE

Wprowadzenie. W obrocie handlowym znajduje się wiele preparatów, dostępnych bez recepty, przeznaczonych do stosowania w celach odżywczych lub fizjologicznych w organizmie. Przeciętny konsument może nie dostrzegać różnicy pomiędzy suplementami diety a preparatami farmaceutycznymi, co z kolei może wpływać na jego oczekiwania dotyczące działania tych preparatów.
Cel badań. Celem badań była ocena wiedzy i postaw pacjentów wobec suplementów diety oraz ocena tych produktów na tle innych preparatów dostępnych bez recepty.
Materiał i metody. Badanie zostało przeprowadzone wśród 335 pacjentów Mazowieckiego Szpitala Wojewódzkiego w Warszawie za pomocą bezpośredniego wywiadu.
Wyniki. Badania wykazały, że większości ankietowanym znane jest określenie „suplement diety", ale trudności sprawiała im kwalifikacja tych produktów do właściwej kategorii. Ponad 55% ankietowanych nie traktuje suplementów diety, jako żywność, a ponad 40% zalicza je do leków. Najwięcej respondentów uważało, że głównym celem stosowania suplementów diety jest poprawa sposobu odżywiania, ale ponad jedna trzecia z nich oczekuje również leczenia chorób. Ponad 70% respondentów zadeklarowało, że kupując preparat bez recepty zwraca uwagę na kategorię (lek – suplement diety).
Wnioski. Wielu pacjentów błędnie sądzi, że suplementy diety to leki, które mogą być stosowane do leczenia chorób i zaburzeń stanu zdrowia.

Słowa kluczowe: *suplementy diety, opinia na temat suplementów diety, żywienie, suplementy diety a leki*

INTRODUCTION

Dietary supplements are foodstuffs regulated in the European Union (EU) by the Directive 2002/46/EC of the European Parliament and of the Council of 10 June 2002 and in the United States by the Dietary Supplement Health and Education Act of 1994 [8, 20]. They are defined as products containing vitamins, minerals

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or other substances with a nutritional or physiological effect, such as amino acids and plants components, but exclude medicinal products as defined by pharmaceutical legislation. Dietary supplements may be used for food supplementation, if for whatever reason such nutrients cannot be consumed in sufficient quantities through eating conventional food. The products are marketed in various forms such as tablets, capsules, sachets of powder or other similar forms designed to be taken in measured small unit quantities [20, 21, 34].

The range of dietary supplements on offer is extensive and their intended effects cover virtually everybody system and organ in humans. They include supplements for enhancing the function of the immunological, nervous and cardiovascular systems, eyes, as well as in delaying the ageing process, reducing weight, improving skin and hair condition along with many other desirable effects [17, 28].

Recent years have witnessed a dynamic growth in the dietary supplements market. In Poland for 2003, business operators notified the Chief Sanitary Inspector of their intention to market approximately 550 dietary supplements. This number grew to 1200 in 2007, and in 2010 it amounted to roughly 1900 [6, 27]. In fact, the dietary supplements market in Poland more than doubled in value over the years 2005-2009 [10]. According to the estimates of the Food and Drug Administration, there were around 55 600 dietary supplements on the US market in 2009 [1]. Consumption of dietary supplements has increased due to this sector rapidly developing coupled with intensive advertising. The proportions of people taking dietary supplements in Poland now ranges from 14% to 74%, depending on the population group, and reaches 98% for pregnant women [3, 13, 15, 29, 33]. In the United States, 52-73% of adults report using dietary supplements and the sales of such products increase by about 4% annually [19, 22, 30]. In Northern Ireland about one third of people take non-prescription medications about once monthly [14].

A growing market means an increasing availability of dietary supplements [4, 28]. Apart from chemists/pharmacies, such products are sold in groceries, at petrol stations, in online shops and even in post offices. Such a wide availability may incline the consumers to believe that dietary supplements do not pose any risk for health and to ignore any problem of their abuse or harmful interactions with drugs [5, 10, 14, 24]. Some studies demonstrate one third of dietary supplement users, with self-reported adverse events, having taken a food supplement instead of prescription drug to treat or prevent medical disorders, with almost half not consulting a doctor. [24]. A similar situation is observed in cancer patients who commonly use complementary/alternative medicine without most of them informing their doctors [26].

From 2002, when dietary supplements were classified as a foodstuff category, there are two kinds of non-prescription products over the counter (OTC) preparations now available: dietary supplements and medicinal products (non-prescription drugs). At the same time some non-prescription medical products have been reclassified into dietary supplements, mainly due to a much easier registration procedure for such products [23, 25]. Currently there are no legal regulations at the EU level about classifying products as dietary supplements [18, 28]. Apart from deliberations on the subject within the pharmaceutical and food sector, it would be interesting to determine whether the actual status of OTC products is important for consumers when purchasing these products.

The study aim was to thus evaluate hospital patients' knowledge about dietary supplements and their attitudes towards them which included evaluating the importance of these products to their body function, together with assessing whether the registration status of such products (food supplement vs. medicinal product) influences their purchase decisions.

MATERIALS AND METHODS

The study was conducted in 2010 in patient subjects from the Voivodeship Gastroenterological Outpatient Clinic of the Mazowiecki Voivodeship Hospital in Warsaw, Poland. One in five subjects, for their first doctor visit in a given year was enrolled for the study. However, about 20% of patients declined to participate with the final number of subjects being n=335. Data were obtained through a face-to-face interview using a single and multiple choice questionnaire with 10 questions on dietary supplements as follows:

Do you know the meaning of the term "food supplement"? (yes, no)

Do you think dietary supplements are: a type of food, a type of drug or another product group?

What is the purpose of using dietary supplements? (to improve nutrition, to prevent disease, to treat disease and medical disorders)

Do you buy dietary supplements? (yes, no)

What motivates you to buy dietary supplements? (advertisements - radio, TV, press, doctor's recommendation, chemist/pharmacist's suggestion, own decision)

When buying a non-prescription product, do you pay attention to the form of its registration - as a 'food supplement' or 'medicinal product'? (yes, no, it's irrelevant)

Do you think that the form of registration may determine the product quality? (yes, no)

The confidence you place in dietary supplements and in non-prescription medicinal products is: the same, is higher for non-prescription medicinal products, is higher for dietary supplements?

Do you believe the labelling information on supplements and advertisements about the beneficial impact that dietary supplements have on health? (yes, no, it's irrelevant) Do you think dietary supplements should be sold in: chemists/pharmacies, supermarkets, online shops, post offices or petrol stations?

The majority of respondents were middle-aged and possessed secondary education; their profiles are presented in Table 1. Data taken for further analysis were from those who gave a positive answer to question 1 of the questionnaire (ie. 238 subjects). Statistical analysis used the *Chi*-square ($\chi 2$) test. Taking into account the relatively large number of comparisons (levels of education, age groups), the statistical significance for paired comparisons was reduced to $p < 0.02$.

Table 1. Characteristics of respondents

Age		
Age group	Number of persons	Percentage [%]
Up to 35 years	52	15.6
36-60 years	183	54.5
Over 60 years	100	29.9
Education		
Level of education	Number of persons	Percentage [%]
Primary	73	21.7
Secondary	152	45.4
Student	30	9.0
Higher	80	23.9

RESULTS

Knowledge about dietary supplements

The term 'food supplement' was known to 71% of respondents. It was found that subjects with only a primary education more often declared they were unfamiliar with the term, compared to those with secondary and higher education ($p<0.001$). The largest proportion of patients that knew about dietary supplements was students (90%). The proportion of subjects familiar with dietary supplements was least in those aged over 60 years (63%) and highest in young people; up to 35 years (75%), however the difference was not statistically significant. The study showed that patients differently classified dietary supplements as foodstuffs or drugs with 44.2% declaring that the dietary supplements are foodstuffs, whilst 41.3% classified them as drugs; the others stating that they were neither foodstuffs or drugs, but another group of products altogether. Subjects with primary education twice more frequently classified dietary supplements as drugs, compared to those with higher education; 58% and 29%, respectively, $p=0.004$. The most popular answer to the question about the purpose of using dietary supplements (multiple choice questions) was 'to improve nutrition' (82.2% of answers). This answer was both chosen by patients who believed dietary supplements to be foodstuffs (83.7% of answers) and those who classified supplements as drugs (73.2% answers). According to many subjects, dietary supplements are also used to prevent disease (47% of answers) and to treat disease and medical disorders (35.6% of answers).

Purchase of dietary supplements and factors affecting their purchase

68.5% of subjects (respondents) declared buying such products, most often due to their doctor's recommendation but least some because of advertising, particularly in the press (Figure 1). Almost all patients (95.8%) selected chemists as being the place that dietary supplements should be sold (from the multiple choice question), however other public places of retail also featured highly. The fewest subjects favoured that dietary supplements be obtained from online shopping

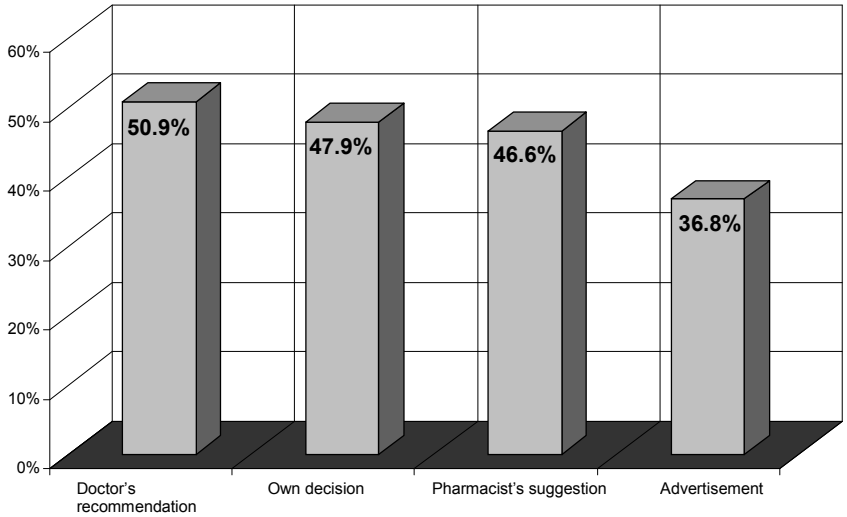

Figure1. Factors influencing the purchase of dietary supplements

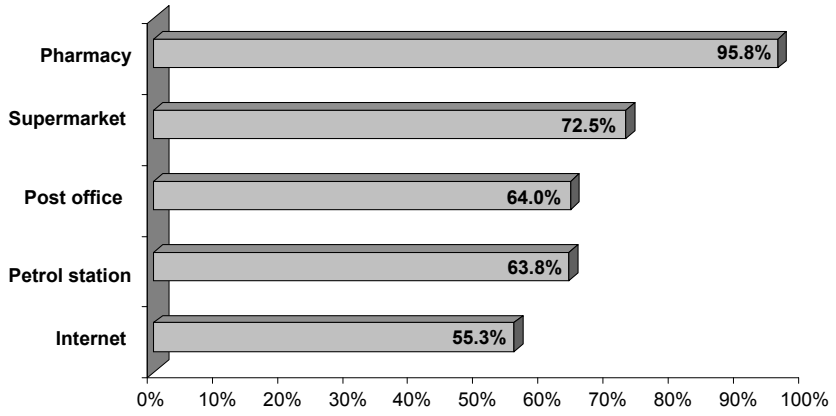

Figure 2. Places where consumers believe dietary supplements should be sold

(Figure 2). Those who were against the sale of dietary supplements in other places than chemists (27.5% – 44.7%) said that they didn't trust these products sold in such places and would suspect fraud in any non-chemist shop sale. Another adverse factor quoted was the lack of professional advice and service upon making such purchases. The presented study however found no differences in the opinions of young and older subjects about the places where dietary supplements should be sold. It was established that patients are very interested (71.8%) in the form that non-prescription products are registered. Furthermore, the majority (65.3%) believe that the form of registration may determine product quality.

Patients' confidence in dietary supplements

The analysis of the answer to the question about the patient confidence in dietary supplements and other non-prescription medicinal products showed that over 53% of respondents declared that they have more confidence in the second group of products (Figure 3). The information about the beneficial impact of dietary supplements on health placed on the labelling of supplements and in advertisements is commonly considered to be reliable (83.7% of respondents). Only 10.3% of patients declared they being mistrustful whilst 6.0% found this information irrelevant.

DISCUSSION

In similar fashion to the world market, dietary supplements have been on the Polish market for many years [11, 18]. Due to their very wide ranging market presence and intensive media advertising, the majority of subjects were familiar with the term 'dietary supplements'. This study, together with another conducted in Poland, showed that the term is the most commonly known to student subjects (90% and 97% respectively) [31]. However, over half the subjects did not consider dietary supplements to be foodstuffs and many of them believed such products are medicines. This mis-classifying of dietary supplements as well as drugs was also found in other studies, although to a significantly lesser extent (19.5% of respondents) [31]. Furthermore, such mistaken opinions are seen in the presented study with over a third of subjects expecting that supplements can be used for treating disease and various medical disorders. Such mis-conceptions may result from the traits dietary supplements share with drugs, like the physical form (eg. tablets, capsules), their unit packaging and the common advertising strategy employed. Indeed, studies have demonstrated that patients often use dietary supplements to treat numerous medical disorders, even instead of taking prescription drugs [12, 16, 23, 24]. According

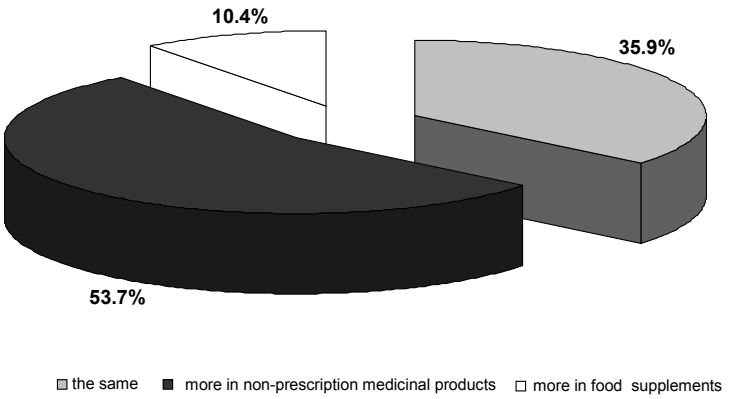

Figure 3 Consumer confidence in non-prescription preparations

to the *Blendon* et al. study, 61% of respondents believe dietary supplements can help treat colds, arthritis (53%) and depression (52%), whilst 35% think they can help treat cancer. In fact the majority of these subjects felt so strongly about the health benefits of using dietary supplements, that they would continue using them it even if clinical studies proved them ineffective [5]. Also a study by *Hanna* and *Hughers* found that over two-thirds of subjects agreed that if there was no evidence from drug trials to say that the OTC medication was neither effective nor harmful, then they would still be willing to try it [14].

The presented study findings showed that many subjects bought dietary supplements, without establishing how frequently they were taken. A 2006 report of the TNS OBOP polling company showed that 22% of Poles took at least one food supplement per year, with 29% taking supplements every day or almost every day [28]. Our study also confirmed that chemists are considered the most reliable places to buy dietary supplements. Other results on OTC products buying have demonstrated that almost two thirds subjects would most likely buy them at community chemists, rather than in alternative outlets such as supermarkets [14]. It should however be noted many subjects, regardless of age, wanted supplements to be sold in other publicly available places. This shows that some consumers treat dietary supplements as any other product and in the opinion of some experts, the public may be given a false sense of security about their safety [5, 10]. Sales from online shops had proved to be the least accepted form of buying from those listed in the questionnaire. Buyers having the same attitude were also found in a study by *Miller* and *Russell*, where only 19.6% of subjects declared they had purchased dietary supplements online [16].

The current study generally found that patients trust the package information given on dietary supplement labeling about their health benefits as well as from their advertising. According UE regulations, any information on dietary supplements and from their advertising cannot claim that they can prevent or treat disease, nor refer to such qualities [21, 32]. In the USA, food supplement labels must contain a disclaimer stating that these products are not intended to diagnose, treat or prevent any disease [9, 12]. Nevertheless, Regulation No 1924/2006 of the European Parliament and Council on nutrition and health claims made on foods, provides for claims referring to the reduction of disease risk [7]. Until a list of such claims is drawn up, food producers may place health claims on the labeling, provided they are backed by scientific evidence. However, food labeling and advertising cannot mislead consumers by attributing effects or properties to a product which it does not possess [7, 21, 32]. The study found that the majority of subjects trust the information about the health benefits of dietary supplements. This is an additional argument for claims provided by producers to be reliable and credible and to be regularly controlled by official authorities that supervise foodstuffs. In the USA, a study by *Pillitteri* et al. showed that half of subjects taking dietary supplements for weight reduction wrongly believed that were evaluated for efficacy by the Food and Drug Administration and a study by *Ashar* et al. confirmed that one third of physicians were unaware that dietary supplements did not require efficacy data to be submitted before being marketed [2, 20]. Other studies have shown that the majority of Americans support legislative measures to ensure that health claims of dietary supplements are true [5]. Similar conclusions have come from studies in Ireland, where effectiveness was the important requirement in OTC products for most participants and also from a global study covering fifty-one countries, where consumers ranked effectiveness as the one of the most important attributes needed for OTC products [14].

The presented study has shown subjects to be very interested in the registration types of OTC products (ie. dietary supplements vs. medicinal products), although it should be noted that this can also depend on whether these products are bought as a result of doctor's recommendations. Physicians often write down a name of a specific product for patients and thus the choice of the given product is not actually a direct decision of the patient. Over half the subjects had more confidence in medical products than in dietary supplements, but a significant proportion of them thought otherwise. From the few studies about using natural dietary supplements, *Schlegel-Zawadzka* et al. showed that the majority of Polish consumers had a positive opinion about such supplements, claiming that they are effective, safe for health and better tolerated by the body than pharmaceutical products [25]. In addition, other literature abroad confirms, that in the opinion of patients, herbal products are safe because they are natural [26]. According to a USA study by *Pillitteri* et al., one third of those taking dietary supplements for weight reduction believed they are safer than prescription medications [20].

CONCLUSIONS

1. Most respondents consider the purpose of taking dietary supplements is to improve nutrition, but over one third also expect dietary supplements to treat disease and various medical disorders.
2. Many patients mistakenly believe that dietary supplements are drugs.
3. Almost all patients agree that chemists/pharmacies are the best place to buy dietary supplements.

4. Most respondents have more confidence in non--prescription medicinal products than dietary supplements.

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Conflict of interest

The authors declare no conflict of interest.

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