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Research of the patients' attitude in their use of plant products (traditional plant medicinal products, plant food supplements, teas) in Bulgaria

Vladislav Bachev[1*], Iliyana Yaneva[2], Ignat Ignatov[3]

1.Master-pharmacist, "Siyana" Pharmacy, 33 Todor Kableshkov Str., Sofia, Bulgaria

2. Associate Professor, National Public Health Centre and Analyses, 15 Akad. I. Geshov Blvd, Sofia 1431, Bulgaria

3.DSc, Professor, Scientific Research Center of Medical Biophysics (SRCMB), 32 N. Kopernik Str., Sofia 1111, Bulgaria

*E-mail of the corresponding author: vbachev@yahoo.com

Abstract

At present there is sufficient scientific information available for a few plants only regarding their pharmacological action and the risks associated with their usage. A great number of different plant types are utilized based on their traditional use. Plant usage for supporting of health is one of the most ancient methods in the world and in our country. Different literature sources indicate that consumers use plant products in order to maintain their health such as tea, juices, plant medicinal products, food additives etc. Preliminary pilot research at home shows that Bulgarian patient in most cases does not separate among the different types of plant products; he/she is not informed that some plants may have side effects, and that some plants must not be taken together with certain medicinal products. Bulgarian patient trusts easily incorrect information regarding plant products usage that is published in Internet, printed publications and even programmes, broadcasted by our electronic media.

The aim of current publication is to research the attitude of citizens about plant product use and their influence over the health, which are intended to purchase without them being subject to prescription and medical observation. Such a research is first of its kind for Bulgaria. One of the tasks of this investigation is to establish the demographic characteristics of participants in this research; reasons for use of plant products; sources of information about plant products; information that citizens have referring the plant products etc. A study was conducted (Cross-sectional survey design) with 400 people (N=400), aged 18-80 years in 2017, who expressed willingness and agreed to fill a questionnaire with a guaranteed anonymity. Methods used are: sociological – direct individual paper-based survey, documentary method; the statistical analysis of data from the survey cards was performed by statistical package SPSS 20.0. Used critical level of relevance is α=0,05. The corresponding null hypothesis is being rejected at confidence level of $p < 0,05$. Limitation – the study was conducted only in the city of Sofia, where based on data from National Statistical Institute, there is concentrated population of 1 325 429 people, from total of 7 050 034 people for the whole country, and this has been taken into consideration during result analysis. The main conclusions that can be drawn in general from conducted research are that women respondents prevail in number in comparison with men; the relative share of respondents who do not distinguish between plant and medicinal products is higher; predominant is the relative share of respondents, women, as well as men, who do not know that plant products can have side effects, and that some plant products must not be taken together with certain medicines. Overall, from the representative sample is predominant the relative share of non-users of plant products that can be explained to a certain extent with the fact, that no rural population was questioned, who traditionally collects plants from nature and prefers self-healing with them due to its lower income. From the study we can reach the conclusion that doctors do not provide sufficient information to their patients regarding the effects of plant products, and it is not in the interest of patient safety. The recorded information from conducted research shows that in our country exist problems in usage of plant products for health purposes, which can be bought over the counter without doctor's prescription and observation. The safety of patient when using plant products should be a number one priority in the national health policies.

Keywords: attitude of citizens, usage, plant products, Bulgarian patients

1. Introduction

The aim of current publication is to research the attitude of citizens about plant product use - PP (PFS[1], TPMP[2], plant teas[3]) [4] and their influence over the health, which are intended to purchase over the counter without doctor's prescription and observation. One of the tasks of this investigation is to establish the demographic characteristics of participants in this research; reasons for use of plant products; sources of information about PP; information that citizens have referring the plant products etc.

The research is first of its kind in Bulgaria. According to consumer research of Project PlantLibra, (first of its kind in Europe regarding consumption of PFS), conducted in Finland, Germany, Italy, Romania, Spain and United Kingdom (Garcia-Alvarez, Alicia et al., 2014) the consumption of PP for health purposes is growing. Plant use to maintain health is one of the most ancient methods in the world and at home (Materials for Bulgarian botanical guide, 1939). Different definitions in literature – "natural medicine", "people's medicine", "traditional medicine", where PP are being used, make difficult the assessment of their use in international aspect (Vargas-Murga L, et al. 2011; Kharitonova, V.&Ianeva-Balabanska, I., 2017, Harrison et al., 2004). Investigation in this respect at European and world level concerns the use of PP as part of different named therapies – complementary, alternative, traditional, unconventional and so on medicine (WHO Traditional Medicine Strategy, 2002-2005); Vargas-Murga L, et al.p, 2011). By literature data plants are used for health and dietary purposes as teas, juices, plant medicinal products, PFA, etc. (Menniti-Ippolito F et al., 2002; Larrañaga-Guetaria A, 2012; Garcia-Alvarez, A. et al., 2014). We cannot ignore the fact that according to literature data PP are being used increasingly in diseases of social value (chronic non-infectitious diseases – CND), which are influenced by health risk factors (WHO, 2005) as artery hypertension (Tabassum & Ahmad, 2011), dyslipidaemias (Yaneva & Balabanski, 2015), smoking (Soobin Jang, et al., 2016), alcohol misuse (Overstreet DH et al., 2003), etc. Death reasons in Bulgaria, according to data from National Statistical Institute (NSI[5]) from the CND have leading for decades the diseases connected to organs of blood circulation (DOC). Many scientists turn to research of specifics of these diseases for people over the age of 65 years (Steg .P.G.., et al., 2012; Gurwitz JH et al.,1992.; Balabanski & Demirevska, 2016, etc.), due to the extended number of older population. Ageing is considered to be one of the biggest social and economic challenges for the European societies in 21st century. Probably due to that reason in consumer studies, as well as the current one, the characteristics of users of PP (PFS) include older respondents (Garcia-Alvarez, A. et al., 2014). For example under conducted research by Project PlantLibra in Finland the share of people aged 50-59 is considerably higher (26,2%) in survey participants from the other age groups (Garcia-Alvares, A. et al, 2014). For higher consumption of PP from older people in comparison with the younger ones has been reported also in other studies (Foote JA, et al., 2003; Radimer K, et al., 2004; Kelly JP, et al., 2005; Bailey Rlet al., 2013).

In the fight against health risk factors are included all medical measures – maintaining, prophylactic, therapeutic or recovery, whose major aim is health enhancing. Among these, PPs have their place. The inclusion of PP taking in the national research would provide database for comprehensive evaluation of the risk and benefits not just at national level (Garcia-Alvarez, A. et al., 2014).

The Directive of European Union (EU) for FS[6] (2002/46/EU) defines Food Supplements (FS) as foods. The common rules for food supplements introduced by Directive 2002/46/EO also relate to Food Additives that contain plants in one form or another (PFS). At this stage no specific rules have been laid down from the Community regarding plants, their parts and extracts from them, which are added in FS composition. The legal status of PP differs from one country to another that makes the market situation more complicated (Larrañaga-Guetaria A, 2012).

At that stage in each of the countries of EU are applied national rules referring PFS. The national requirements in our country regarding PFS include a "negative list" of plants that are forbidden to add in FS, and which are only

[1] Plant Food Supplements – foods that aim to complement the normal diet, which contain plants, parts and extracts of plants. PFS are offered in the form of capsules, tablets, pills and others such as powder sachets, ampoules of liquids, drops and other similar forms, intended for taking in small unit quantities, intended for use without doctor's prescription and observation (Garcia-Alvares, A. et al, 2014)

[2] Traditional plant medicinal products – medicinal products containing plants that are used for prevention and treatment of diseases, and according to their composition and purpose of use are intended for taking without being subject to medical prescription and observation, they are registered by simplified procedure on the basis of the Law for medicinal products in human medicine, and are offered on the market in dose forms same as for PFS.

[3] Tea – water extract obtained by boiling or steaming of dried parts of plants or whole plants

[4] Within the meaning of this study

[5] NSI, http://www.nsi.bg/bg/content/3351

[6] Food supplements

120, as opposed to containing ones in the Compendium of European Food Safety Authority, which stand at more than 900 positions.

The Compendium contains plants reported to contain biologically active ingredients that are an issue of concern for the human health. The Compendium aims to support the safety assessment of plants and plant products that are intended to use as FS (European Food Safety Authority, 2012). In PFS are added plants, which contain biologically active substances that will have pharmacological effects. Due to this fact the claim in regulatory provisions concerning PFS (that they cannot be connected with "healing and prophylaxis of diseases") simply seems illogical. In some European countries the approach regarding FS is not so liberal as it is at home, which benefits the safety of patients (Larrañaga-Guetaria, A., 2012).
In our current study is researched the attitude of citizens for use of PP, intended to use without being subject to medical prescription and observation (FS, TPMP, teas). There is a difference in our national legislation of the aspects of TPMP and PFS. Often FS and TPMP containing the same plant, have the same form of market presentation (capsoules, tablets, tincture etc). There is an existing paradox that the same plant can be bought on the market in the form of PFS or TPMP, but the citizens do not make the difference between the two types of products. Teas – table or small packages are characterized as food.
Preliminary pilot research in our country shows that in most cases Bulgarian patient does not separate among different types of PP, Bulgarian patient is not informed that plants may have side effects (ADR)[7], and that some plants taken together with some MPs can cause adverse clinical interactions (ACI) and must not be taken together. Bulgarians in most cases collect the plants themselves from their natural habitats, and sometimes they even collect plants containing harmful substances that need to be applied strictly only under medical supervision.
Bulgarian patient trusts incorrect information regarding use of PP published in Internet, newspapers, and even programmes, broadcasted by our electronic media. In majority of cases the older polulation, which has disease multimorbidity, also takes PP that they collect themselves from nature for self-healing due to their lower income, especially in the villages. At present there is sufficient scientific information available for a few plants only regarding their pharmacological action and the risks associated with their usage. A great number of different plant types are utilized based on their traditional use. It should be always taken into consideration the fact that the application of herbal substances and herbal preparations is connected with certain pharmacological effects, and respectively – with some risks and benefits.

2. Materials and Methods

2.1. Research design

A study was conducted (Cross-sectional survey design) with 400 people (*N*=400), aged 18-80 years in 2017 regarding the attitude of citizen for use of plant products (plant food supplements, traditional plant medicinal products, teas) in Bulgaria, which are intended to take without being subject of medical prescription and observation. All respondents have expressed willingness and have agreed to participate with a guaranteed anonymity.

Observation attributes – social-demographic characteristics of respondents – age, sex, education, social situation, mind-set of respondents, who have purchased PP in "Siyana" Pharmacy, city of Sofia, within 10 days.

Time reference – 3-7 July 2017 and 11-15 December 2017

2.2. METHODS

A. Sociological method

A.1. **Direct individual paper-based survey –** completed anonymously from all responded people, who have bought plant product intended to purchase without medical prescriprion and observation in "Siyana" Pharmacy, city of Sofia.

A.2. Documentary method – data analysis from: literature sources – monographs, scientific publications, Internet etc.

B. The Statistical analysis of the data from survey cards has been performed using statistical package SPSS 20.0. Used critical level of relevance α=0,05. The corresponding null hypothesis is being rejected at confidence level of p <0,05.

[7] Adverse drug reactions

Limitation – the study was conducted only in the city of Sofia, where based on data from NSI[8], there is concentrated population of 1 325 429 people, from total of 7 050 034 people for the whole country, so the conclusions that will be drawn will only relate to the state population concentrated in the cities. In the city of Sofia is concentrated approximately 1/7 from the total population in Republic of Bulgaria. As a main reason for that can be stated "better employment opportunities".

3. Results and Discussions

3.1. Social-demographic characteristics of respondents – age, sex, education, employment

In the research have taken part 400 persons from the city of Sofia. From them 181 (45,3%) are men, women are 219 (54,8%). The included respondents (n=400) are aged between 18 and 80 years old. The average age of respondents is 45 years ± 13, and the most frequent ages among participants are 39 and 42 (6,3 %), fig. 1. The relative share of women in the current study **(**54,8%) is close to the number of women consumers of PFS in Spain (56,7%), who participated in the survey research of project PlantLibra (Garcia-Alvarez, A. et al., 2014). We have observed predominant relative share of women than the one of men regarding use of PFS or other PP also in other studies (Schaffer, D.M., et al., 2003; Messerer, M., et al., 2001; Menniti-Ippolito, F., et al., 2002).

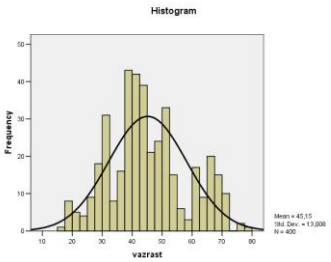

Figure 1. Distribution of respondents by age.

For the purposes of the research respondents are grouped in two age groups: 18-39 years; 40-40+ years (40-80 years). The relative share of persons in age group 40 years and over is higher 64,2%, and the relative share of the group up to 39 years of age is 35,8%.

By education: respondents are separated in 6 groups: with higher education, college, secondary, basic, primary and without education. The relative share among respondents is the group of people with secondary education - 40%, followed by respondents with college education - 30,25%, the group of respondents with higher education - 24,5%, and the lowest share is for the respondents with primary education - 0,75% (Table 1). None of the surveyed people stated that they had no education.

Table 1. Distribution of respondents by educational status.

Educational status		Relative share
1.	Higher education	24,5%
2.	College education	30,25%
3.	Secondary education	40,0%
4.	Basic education	4,5%
5.	Primary education	0,75%

Predominant share in the selected sample had the the respondents, who live in a family or partnership - 63,5%, followed by the group "not married/single" - 13,5% from the sample. Third comes the group "separated or divorced" - 13,25%. The smallest in number is the group "widow/widower" with a relative share in the sample of 10%.

Regarding the distribution of respondents by "**occupation**" the highest relative share of respondents have – "skilled non-manual jobs" - 59,75%, followed by the group of "manual workers" - 38%, the relative share of the

[8] http://www.nsi.bg/bg/content/2975/

group of "people involved with farming" is the lowest - 0,75%, with a possible reason in this case can be given the fact that the study was conducted only in the city of Sofia. The participants with "other" occupation are with a relative share of - 1,5%. The fact confirms the investigation results stating that users of food supplements include people, who have high level of education and social-economics status (Rock, C.L., 2007; Block, G., et al., 2007).

3.2. Attitude of patients regarding use of PP

At the question "**Do you make difference between PP and MP?"** 10,9% of men respondents have answered "yes", which is approximately the same as the answer "yes" of women - 10,8%. The lowest is the relative share 3,7% of women in age group 18-39 years, who answered that they can separate between PP (within the meaning of this research) and MP. Predominant are the relative shares (very close in value to each other) of men respondents (89,1%), as well as women respondents - (89,2%), in the groups of men and women accordingly, who replied that they do not separate between PP and MP. The reason for this lies in the lack of credible information that can be found in different health communication channels. Recommending of channels for health communication that provide trusted information is obviously for now not within the priorities of Ministry of Health.

Table 2. Distribution of respondents by sex and age groups regarding the answers of question "**Do you make a distinction between PP and MP?"**

Sex	Answers	Age group 18-39г		Total
Men	Да	19,7%	10,8%	10,9%
Men	Не	80,3%	89,2%	89,1%
Women	да	3,7%	11%	10,8%
Women	Не	96,3%	89%	89,2%

Highest is the relative share of women-respondents with higher education, table 3, who prefer PP to MP - 17,9%, and it confirms the results from studies that state how users of food supplements include people with high level of education (Rock, C.L. , 2007 ; Block, G., et al., 2007), and the prevalence of women in comparison with men has already been discussed.

Table 3. Distribution of respondents by sex and educational status with regards to their answer of the question "Do you prefer PP to MP?"

	Higher Education		College Education		Secondary Education		Basic and Primary Education	
Answers of question „Do you rather prefer PP to MP?"	men	women	men	women	men	women	men	women
yes	6,5	17,9	17,5	0,0	13,8	1,3	0,0	12,5
no	93,5	82,1	82,5	100,0	86,3	98,8	100,0	87,5

Over 50% of respondents intentionally take PP due to their "less harmful effect" and "the greater belief" in PP.

To the question "**Have you taken PP**" 12,5% of respondents have answered with "yes" and the relative share of men 8,9% is approximately the same as the relative share of women 9,3%, table 4, which is in line with the preferences given by respondents. Results from conducted European examination by project PlantLibra indicate that the share of non-users of FS varies from 20,7% in Finland to over 80% in the United Kingdom and Italy, and prevails the share of users, the same thing was observed in our country taking into account the conducted research about use of PP.

Table 4 – Relative share of respondents in respect of their answers to the question "**Have you taken PP?**"

Answers of respondents to the question: "Have you taken PP?"	**Total**	**Men**	**Women**
Yes	12,5%	8,9%	9,3%
No	87,5%	91,1%	90,7%

At the question "**If you distinguish among PFS, TPMP and herbal tea, what type of product would you prefer from a certain plant?**" the highest relative share of respondents, who prefer PP in the form of tea - 76,55%, followed by the group of these ones, who prefer PP "under a different form, but they haven't indicated exactly the type of form" – most probably they mean juices and/or spices; after them comes the group of people, who prefer PFS - 5,5%, and last by relative share is the group of respondents that favour TPMP - 1,25% - table 5. The predominant relative share of the group that prefers tea can be explained with the traditional use of this type of form of plants in our country.

Table 5. Relative share of respondents regarding their choice of form of PP

Form of PP	Respondents – relative share
PFS	5,5%
TPMP	1,25%
Tea	76,5%
Other	16,75%

At the question "**If you have taken/take PP, PP that contain how many different plants do you take/have taken until now?**" the highest is the relative share of respondents, who have taken (in general, not for a certain time period) PP containing 1 plant - 56,25%, followed by the group of respondents, who have taken PP containing 2 plants - 33%, third ranks the group of respondents, who have taken PP containing 4 and more than 4 plants – 6,5% and the lowest relative share is the group of participants, who have taken PP containing 3 plants - 4,25%. Table 6

Table 6. Distribution of respondents according to their intake of PP containing respectively 1,2,3,4 or more plants.

Respondents, who have taken PP containing 1 plant	Respondents, who have taken PP containing 2 plants	Respondents, who have taken PP containing 3 plants	Respondents, who have taken PP containing 4 and more plants
56,25%	33%	4,25%	6,5%

According to participants in research by project Plantlibra - (Garcia-Alvarez, A. et al., 2014) overall, 51,5% of users have taken plant product containing 1 plant, and the same is concluded in the current study.

At the question regarding the reason for purchase of PP, the highest is the relative share of respondents, who have bought it in order to "improve their health" - 77,5%, followed by the group of people, who have purchased it with the aim – "I would like to heal with a method that has no side effects" - 14,5%, next in line comes the group aiming to"apply it for disease treatment" with relative share - 1,8%, the group of respondents, who have answered "I wasn't cured by the official treatment methods" - 3%; the relative shares of groups, who have replied – "I have improvement from the official methods of treatment, but it it is not substantial"; "all the official methods of treatment have been exhausted" come at under 2%.
The highest are the relative shares in the groups, who have purchased PP in order to "improve their health" with "secondary education" - 80,6%, and "basic and primary education" - 81%, which can be explained with the lower income of these respondents.

As a comparison with the results from the research by project Plantlibra (Garcia-Alvarez, A. et al., 2014), PP are taken mostly "periodically" (37,3%), as respondents also state using of PFS when "deterioration appears or ill health" (22,2%), and it can be compared to the answers of respondents in the current research – "disease" (1,8%), as the relative share of respondents in the present study being 11 times lower than the ones in the European study.

At the question "If you take certain PP, who called your attention to it?", the highest is the relative share of respondents directed by "friends" for purchase of certain PP - 22,3%, followed by the group of directed by "relatives" - 22,3%; third comes the group of people, who replied "accidentally heard about it" - 18,8 %, the group of "doctors" is fourth in the line by relative share - 15,5%, and next comes the group of "pharmacists" - 9,3%. Conclusions we can draw in this case are that users of PP use information about PP mainly from friends and relatives, who most probably have shared their positive experience when using certain PP. Obviously the citizens haven't got much trust in doctors and pharmacists for purchase of PP. 32,2% of respondents have said that the doctor, who recommended the PP to them, has prescribed jointly with it MP as well. 34,7% of respondents have replied that their doctor have explained to them what type of MP can be taken with PP, and 34,6% have responded that their doctor has explained the effects the PP may have.

The relative shares of respondents, who have answered "yes" to both questions, are very close. Over 65% of doctors have not provided this information to their patients. It appears that similar in value are also the relative shares of respondents, who do not take jointly PP and MP with those ones, who received explanation by their doctors what MP can be taken at the same time with certain PP.

5,1% of men respondents have stated that they know how some PP have side effects, and the relative share of women is 6,25 %, i.e. slightly higher than the share of men. Overall prevails the relative share of men - 92%, and women - 93,8%, who do not know that some PP cause side effects, which could create conditions for "non-safety" when using PP from them.

As a source of information regarding the knowledge for causing of side effects from some PP, respondents have put first "information from a doctor", whose relative share - 26,25% is the largest. The gained result corresponds to the research data about the used channels for health information among Bulgarian population aged older than 20 years – "communication from a doctor" (50,5%), (Karanesheva, T, 2018). Second comes the group of "persons close to them" as a health-information channel - 23,25%, next comes "printed press" - 21%, "television" -11%, "Internet" - 10,5%, last place is given to the "radio" from 6,25% of respondents.

To the question "Do you know that some PP should not be taken together with certain MP?", 20,5 % of men-respondents have answered "yes", and the women respondents with positive "yes" answer have a relative share of 13%. In total the men, who replied with "yes" in both age groups – 18-39 years and 40-80 years are the majority compared to women in these age groups. In the group 18-39 years – the relative share of men who replied "yes" is 28,8%, and of women – 8,9%; for the age group 40-80 years the relative share of men, who gave "yes" as an answer is 16,2%, and for the women 15,4%. Over 70% of respondents, men as well as women, do not know that some PP must not be taken jointly with certain MP.

As a source of information for non-combined intake of some PP with certain MP respondents have answered with: 38% - "friend"; 34,3% - "doctor";14,3% - "relative"; 8,3% - "pharmacist"; "random person" – 3,1%; "stranger" – 2%, table 7. In comparison with their reply "yes" to the question regarding their knowledge of causing of side effects from some PP where doctors come first in line with a relative share of – 26,25%, here the doctors are put second with a relative share – 34,3%. The group of "persons close to them" here takes third place – 14,3% compared to 23,25% of the answer "yes" to the question with regards to causing of side effects from some PP.

Table 7. Relative share of respondents according to used channel for health information about Adverse Clinical Interactions (ACI) of PP, when taken jointly with MP

Source of information for ACI when PP is taken jointly with MP	Relative share of respondents
Friend	38%
Doctor	34,3%
Relative	14,3%
Pharmacist	8,3%
Random person	3,1%
Stranger	2%

With highest relative share – 76% is the group, who has responded that they "cannot judge" the result about the influence of intake of PP.

At the question "Do you think that the prices of PFS/TPMP should be covered by National Health Insurance Fund (NHIF)?" 57,2% of respondents have answered "yes", 42,8% - have given a negative answer "no".

During the analysis of research results we consider the limitation, that was surveyed only population concentrated in the capital of Bulgaria. The main conclusions we can draw overall are that women respondents exceed in mumber the men; higher is the relative share of respondents, who cannot distinguish between PP and MP, prevalent is the relative share of respondents, both women and men, who do not know that some PP cause side effects, and that some PP should not be taken jointly with certain MP. As a whole from the sample prevails the relative share of non-users of PP, which can be explained to a certain extent with the fact that no rural population was questioned, as they traditionally collect plants from nature and prefer to self-heal with them due to their lower income. The doctors do not inform to a sufficient extent their patients regarding the effects of PP, which is not in the interest of patient safety. The reasons are partly to be found in non-presentation of credible information from different health information channels used by citizens; (Karanesheva, T., 2015, 2015; 2016).

The data from conducted research shows, that there are existing problems in the use of PP intended to buy without being subject to medical prescription and observation, connected to health and safety of citizens. The patient safety when using PP must be a priority of the national health policies. The initiatives and changes in the studied subject have to cover the systems of healthcare and its partners (ministries, non-governmental doctors' organizations, patients, healthcare professionals, medical universities, other scientific institutions in that field). It is necessary for the Ministry of Health to prepare such legislation, which is able to guarantee the safety of patients when using PP. It is desirable to develop an early warning system when ADR appears in usage of PFS (there is such developed system for MP). Doctors, who prescribe PP, need to receive proper training for that. It is necessary to run information and awareness campaigns in this subject for the citizens through measures for health promotion. The patient safety when using PP must be one of priorities in the national health policy.

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