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Full Length Research Paper

Descriptive study of contemporary status of the traditional knowledge on medicinal plants in Bulgaria

Ekaterina Kozuharova[1], Hristina Lebanova[2], Ilko Getov[2], Niko Benbassat[1] and Julia Napier[3]

[1]Department of Pharmacognosy, Faculty of Pharmacy, Medical University Sofia, Bulgaria.
[2]Department of Social Pharmacy, Faculty of Pharmacy, Medical University Sofia, Bulgaria.
[3]University College, London, Gower Street, London.

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In the contemporary reality of globalization and urbanization in Bulgaria, traditional empiric ethnobotanical knowledge is disappearing. The aim of our study was to check the attitude of a random sample of people to the herbs and the traditional way of healing: 1) to find out which herbs are the most popular in Bulgaria; 2) what is their most popular application; 3) to study the distribution of negative or positive attitudes to the traditional use of medicinal plants according to age and gender of Bulgarian people. In total, 77 plant species (including the ones in the formula combinations) were mentioned during the study. They belong to 38 families. The most important families are Lamiaceae, Rosaceae, Asteraceae and the plants which most commonly referred to as "Granny's cure" were *Hypericum perforatum*, *Cotinus coggigria, Plantago major, Sempervivum* sp. div., *Calendula officinalis, Melissa officinalis, Allium sativum, Aesculus hippocastanum*, *Matricaria chamomilla* and *Cornus mass.* The greatest number of herbs were the ones used to treat disorders of central nervous system (CNS), bones, skin, gastro-intestinal and respiratory system.

Key words: Traditional healing, medicinal plants, remedial properties.

INTRODUCTION

In the contemporary reality of globalization and urbanization in Bulgaria (worldwide tendency), traditional empiric ethnobotanical knowledge is disappearing. More often we find that when we question rural people they say, "There used to be a woman**,** who knew all about medicinal plants**,** but she passed away". The traditional experts belong to both sexes, but the great majorities were women. Few of the women experts were famous but many of them had a good general knowledge of the subject. This is not surprising**,** because the mother is, usually, the parent who would deal with most common ailments and illnesses. Despite that discouraging tendency observed in ethnobotanical researches during the last decade, we have found several examples of traditional empiric data which had not been documented and so we were inspired to see what more had been overlooked.

As a whole, the traditional knowledge about medicinal plants and their usage, preserved and transmitted from generation to generation, is quite well documented in Bulgaria. The collecting of common names was pioneered by teachers, University professors, naturalists, folklorists and physicians during 19 and 20th centuries. These pioneers recorded their use for conventional remedial purposes and also their use in traditional spells and magical rituals (Stanev, 2010). This collection of ethnobotanical data led to the publication of valuable scientific works (Petkov, 1982; Mitrev and Popova, 1982; Kitanov, 1987; Pamukov, 1992; Nikolov, 2006). The traditional knowledge documentation bases the list of 741 taxa recognized in Bulgaria by the law as medicinal plants, although the therapeutic effect and application is not specified (Medicinal Plants Act, 2000). The formulas and recipes of the famous Bulgarian healer, Peter

*Corresponding author. E-mail: ina_kozuharova@yahoo.co.uk.

Dimkov, are well known for their efficacy, and are accepted by the vast majority of Bulgarians. His books have gone into numerous editions, the last one after his death (Dimkov, 2001). The resent decades ethnobotanical research has been performed both by national and foreign scientists (Ivancheva and Stantcheva, 2000; Leporatti and Ivancheva, 2003; Ploetz and Orr, 2004; Kültür and Sami, 2009; De Boer, 2010).

The aim of our study was to investigate the attitude of a random sample of people to the herbs and the traditional way of healing: 1) to find out which herbs are the most popular among the population of Bulgaria; 2) what is their most popular application; 3) to study the distribution of the negative or positive attitudes to the traditional use of medicinal plants according to the age and gender of Bulgarian people. The study has a preliminary character and will reveal the critical points in the contemporary situation that need to be investigated in more details.

MATERIALS AND METHODS

The most common method used in ethnobotanical studies is interviewing potential respondents. The focus of the interviews may be a certain therapeutic category or a wider, less defined scope. The author's assessment of the implications of the study, and of the further uses of a particular medicinal plant may, of course, differ from one to another (Martin, 1995; Alexiades, 1996; Nolan and Robbins, 1999; Ertug, 2000; Cunningham, 2001; Vandebroek et al., 2004; Everest and Ozturk, 2005; Pieroni et al., 2005; Heinrich et al., 2009; Pieroni et al., 2011; Anderson et al., 2011; Mustafa et al., 2012).

In order to test the current state of traditional knowledge about medicinal plants, we performed the study as a Rapid Ethnobotanical Appraisal. It forms in the way of a structured interview based on fixed questions concerning plants used for certain health disorders. The interviews were conducted in a short time without requiring expensive tools because the participants sought to obtain sketch of local conditions rather than an in-depth-study. A small group of local people was selected and interviewed qualitatively about a wide range of topics in a semi-structured way, allowing a comprehensive view of how the community behaved as a whole. The interviews are highly visual and are carried out by community members, often in collaboration with the researcher (Gerique, 2006).

Our research team consisted of University lecturers in pharmaceutical botany and pharmacognosy and undergraduate students specially trained for the purpose of the study. We devised a questionnaire listing some of the main groups of medicinal problems. In order to trigger the informants and obtain as much as possible information without boring and repelling them**,** we tried to balance between not enough detailed and too heavy list. Some informants are prone to explain more details than it is possible to explore dealing problems with vision, inflammation of the eyes, ears, skin, rash, warts, joint pains, rheumatism, sciatica, exostoses, failures of the immune system, colds, bronchitis or other problems of the respiratory tract, contraception, miscarriage, breast feeding, mastitis, colics, bedwetting, blood disease, hypertension, heart disease*,* gastrointestinal disorders (diarrhoea and constipation), kidney and urinary tract problems (cystitis and prostatitis), menstrual disorders, treatment of trauma/wounds, memory loss and insomnia.

We were looking mainly for information flow that passed from generation to generation in a verbal way and the stories start with motto "Granny's cure for this was ….".

During the summer period of 2011, 183 interviews were carried out. This is a preliminary study that we intend to conduct in depth in the future. Target groups were the few people**,** that we knew to be particularly interested in medicinal plants and traditional ways of healing but the majority was a random sample of people – male and female of different social status and different ages, above 18. As we aimed to get a Rapid Ethnobotanical Appraisal on the contemporary status of the traditional knowledge about medicinal plants in Bulgaria**,** the interviews were performed in towns and villages from different districts of Bulgaria (Figure 1). As a result of urbanization**,** strict topographic localization of the knowledge is impossible. The data obtained from the inhabitants of a town might come from local villages just as often as distant ones**,** because of the processes of migration.

In this study, the plants were identified according to Jordanov (1963-1995). Ideally, we obtained a sample of the plant in question, or 'voucher material', but most often we were given a description corresponding to the common name. Voucher material presented for identification was deposited in the Herbarium at the Faculty of Pharmacy, Medical University Sofia. If the voucher was in bad condition it was rehydrated in warm dilute alcohol, prepared correctly so that diagnostic features remained visible, and dehydrated carefully. Then it was either identified by comparison to reference material in the herbarium (registered Herbaria of the University of Sofia and the Institute of Botany) or we consulted the leading taxonomist in the taxonomically problematic group of Dr. M. Anchev (*Brassica* sp.). In this second case, fruits were required for correct identification so we could not go further that the genus level.

The collected data are shown in Table 1. The plants were listed according to the number of cases in which they were mentioned for a particular therapeutic effect**.**

The analyses were performed with the methods of the non-parametric statistics as the data do not belong to any particular mode of distribution and they have a ranking but no clear numerical interpretation. Analyses were as follows: 1) systematic of medicinal plants that we found to be popular among the target groups; 2) health disorders grouping; 3) share between persons who are interested in traditional use of healing plants versus indifferent and negative ones. The distribution according to age and gender was also analyzed.

RESULTS AND DISCUSSION

What herbs were currently most popular among the population of Bulgaria? – Systematic of medicinal plants

Totally, 77 plant species (including the ones in the formula combinations) were mentioned during the investigation. They belong to 38 families (Figure 2 and Table 1). The most important families were Lamiaceae, Rosaceae and Asteraceae as their members were among the most often mentioned medicinal plant species, respectively 9 members of the first two families and 6 members of the third family. The families Apiaceae, Brassicaceae, Ericaceae, Fabaceae and Ranunculceae were popular of their 3 members each.

Most popular Granny's cure plants were *Hypericum perforatum*, *Cotinus coggigria, Plantago major* and *Sempervivum* sp. div.; *Calendula officinalis, Melissa officinalis, Aesculus hippocastanum, Matricaria chamomilla* etc (Table 1).

Figure 1. Districts of Bulgaria where interviews were performed.

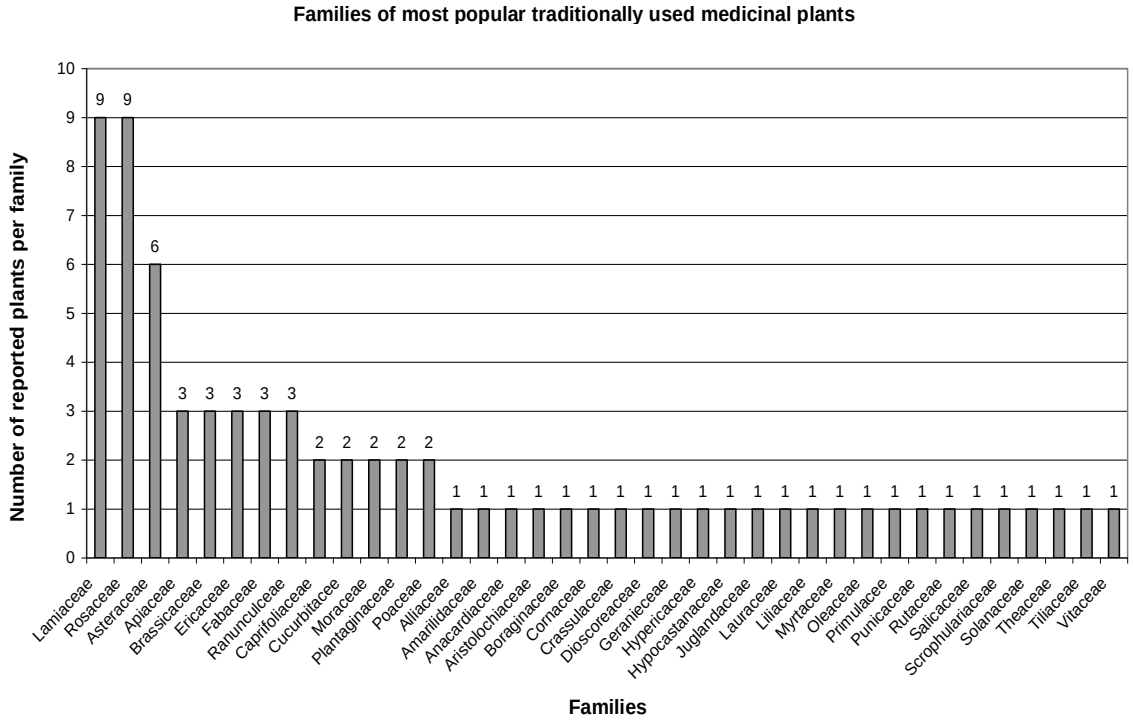

Figure 2. Systematic of medicinal plants currently popular as “Granny’s cure” – frequency of reports of plant family members.

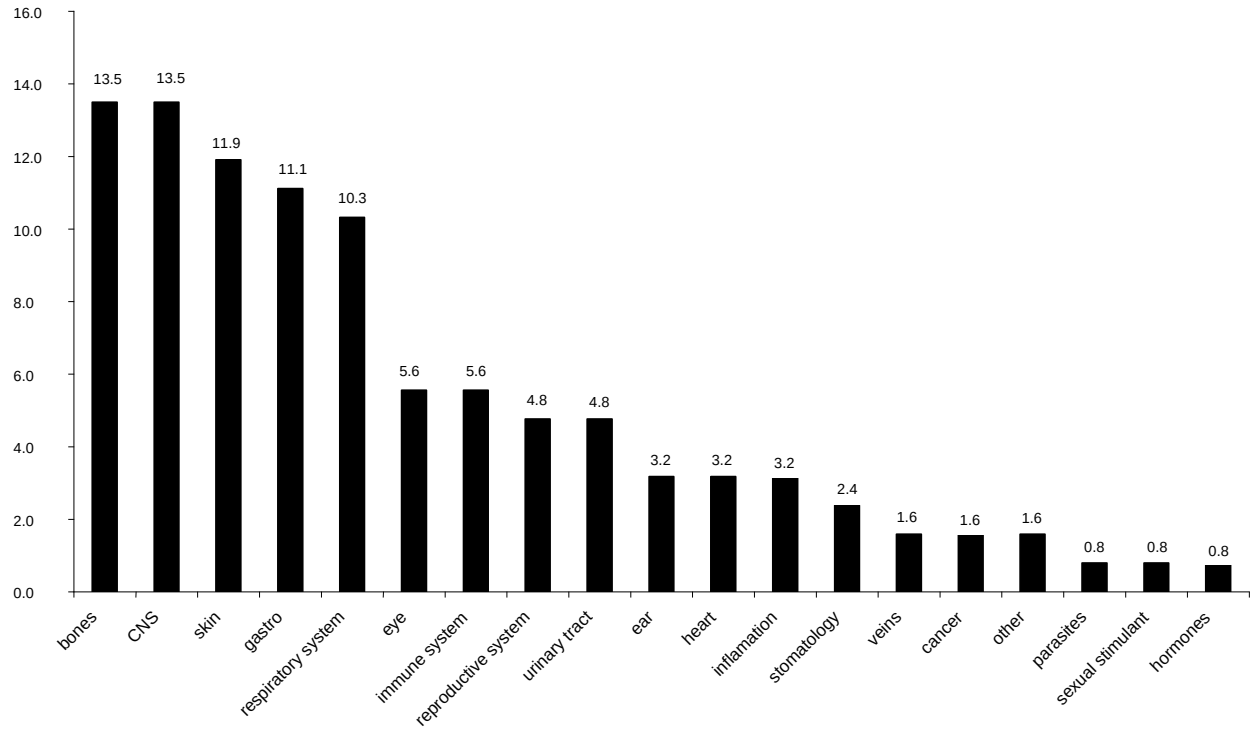

Figure 3. Health disorders grouped by systems, treated traditionally with plants.

What was most the popular application and for which health disorders?

Most herbs are used to treat disorders of central nervous system (CNS) and bones with 17 reports for both of them, followed by those of skin - 15, gastro-intestinal - 14, respiratory system - 13 reports etc. (Figure 3). Within the system disorders, we distinguish subgroups of disorders. The most often mentioned conditions treated with medicinal plants are respectively exostoses and rheumatoid/joint pain; wounds, injuries, pustule, pus; diarrhea, gastritis, gastric ulcer, colitis; and coughs and lymph nodes inflammation. As we aimed to record most precisely the way informants shared their knowledge, some quite similar disorders fall in different subgroups within the main system group (Figures 4 to 6 and Table 1).

The respondents report that each condition might be treated with number of plants species. For instance, exostoses are treated with *Allium cepa, Allium sativum*, *Ononis spinosa*, *Pulsatilla pratensis, Sambucus ebulus, Tamus communis, Neium oleander, Salix* sp. div., *Brassica oleracea.* Rheumatoid/joint pains are treated with *Sinapis arvensis, A. hippocastanum, C. coggigria, Aloe vera, Eucaliptus* sp. Insomnia is treated with *M. officinalis, Achillea millefolium, Tilia* sp. div., *Mentha piperita*. Hypertonia is treated with *Geranium macrorhyzum, Allium schoenoprasum, Olea europaea* and *M. officinalis* (Table 1).

Usually**,** application was mentioned as pure plant substances. In sporadic cases, combination of 1 to 7 herbs formulas was shared. For example**,** *Astragalus glycyphyllos* (herba), *Teucrium polium* (herba), *Capsella bursa-pastoris* (herba), *M. officinalis* (herba), *M. piperita* (folium), *O. spinosa* (radix) and *Betula pendula* (folium) are used as decoction in case of sterility. Combination of *Juglans regia* (fructus – fruit shells or entire fruits), *A. cepa* (bulbus) and *Cydonia oblonga* (seed) prepared as a decoction is applied against cough. Another traditional decoction formula are *Solanum tuberosum* (tuber), *Tilia sp* div. (inflorescentia), *C. oblonga* (fructus), *A. cepa* (bulbus) and *Malus domestica* (fructus). The last one is applied against cough in vulnerable and delicate babies' and in early childhood.

The application that we registered is basically relevant to the records that have been published for Bulgarian traditional and official medicine which relays on medicinal plants (Petkov, 1982; Mitrev and Popova, 1982; Pamukov, 1992; Dimkov, 2001; Nikolov, 2006). Some of the well known data initiate modern detailed research like for instance the antinociceptive effect of *M. chamomilla* (Nouri and Abad, 2012).

We found some new information that has not been recorded yet. *Thalictrum minus* L. (Ranunculaceae) was reported to have quite rapid wound healing effect and reduction of scars. The plant is so far known to contain berberine-type alkaloids and has cytostatic effect (Kumazawa et al., 1984; Velcheva et al., 1992; Vanisre

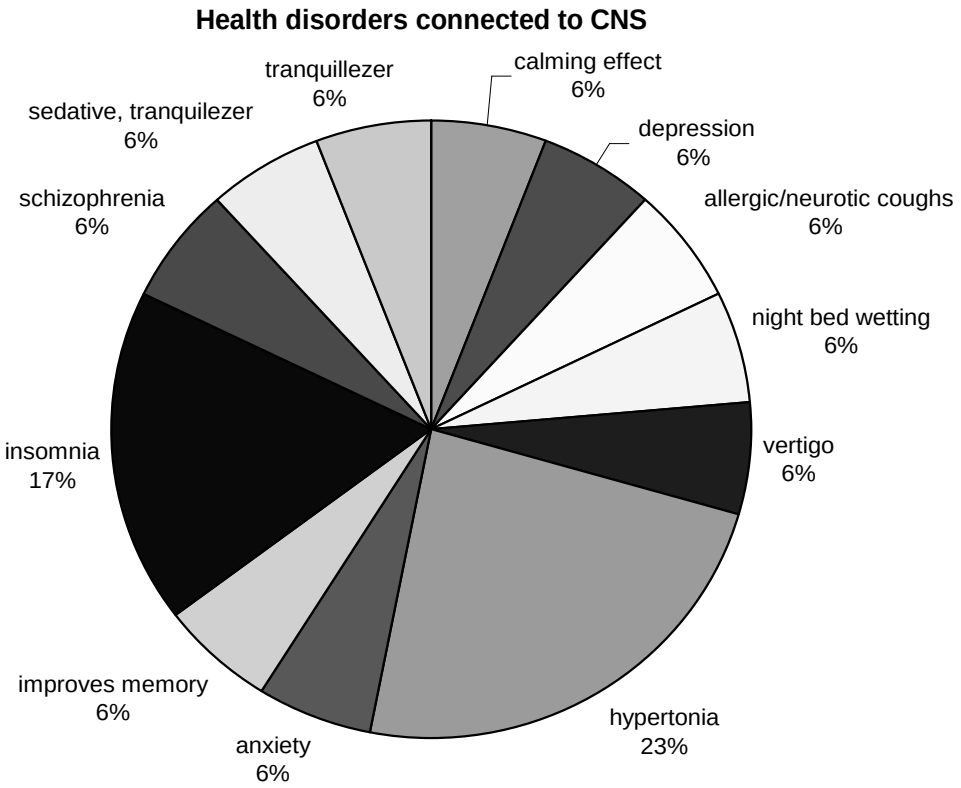

Figure 4. Health disorders connected to CNS treated traditionally with plants in the way they were reported by informants.

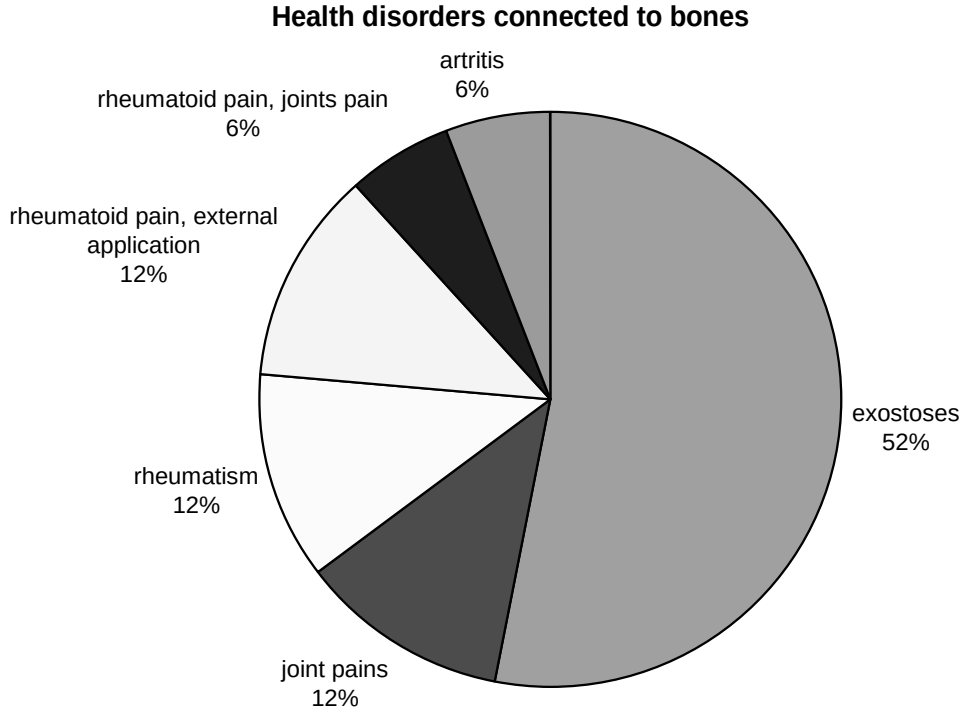

Figure 5. Health disorders connected to bones treated traditionally with plants in the way they were reported by informants.

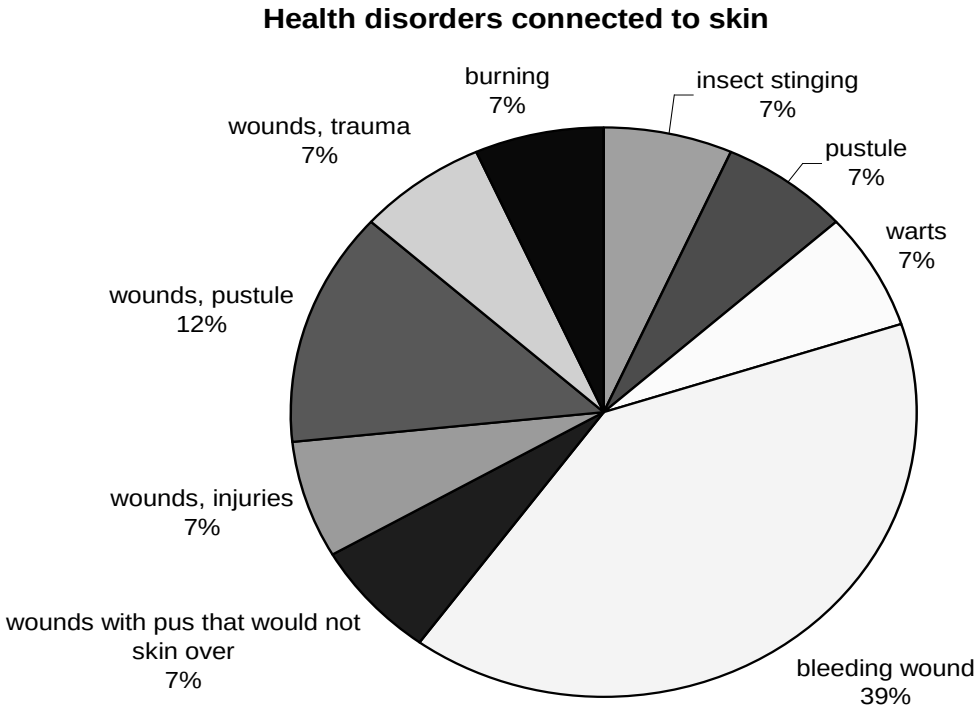

Figure 6. Health disorders connected to skin treated traditionally with plants in the way they were reported by informants.

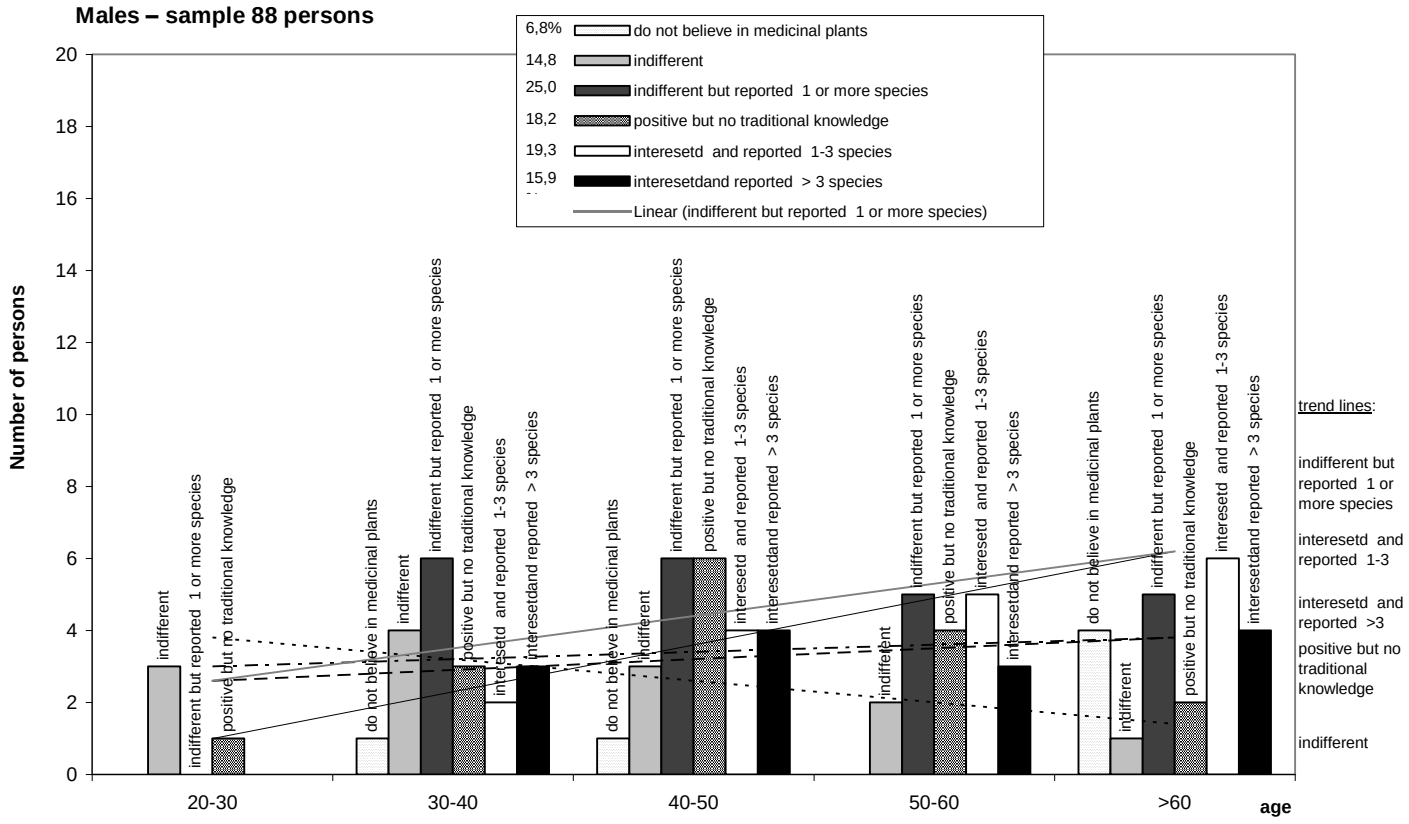

Figure 7. Attitude to the traditional use of medicinal plants amongst the male informants.

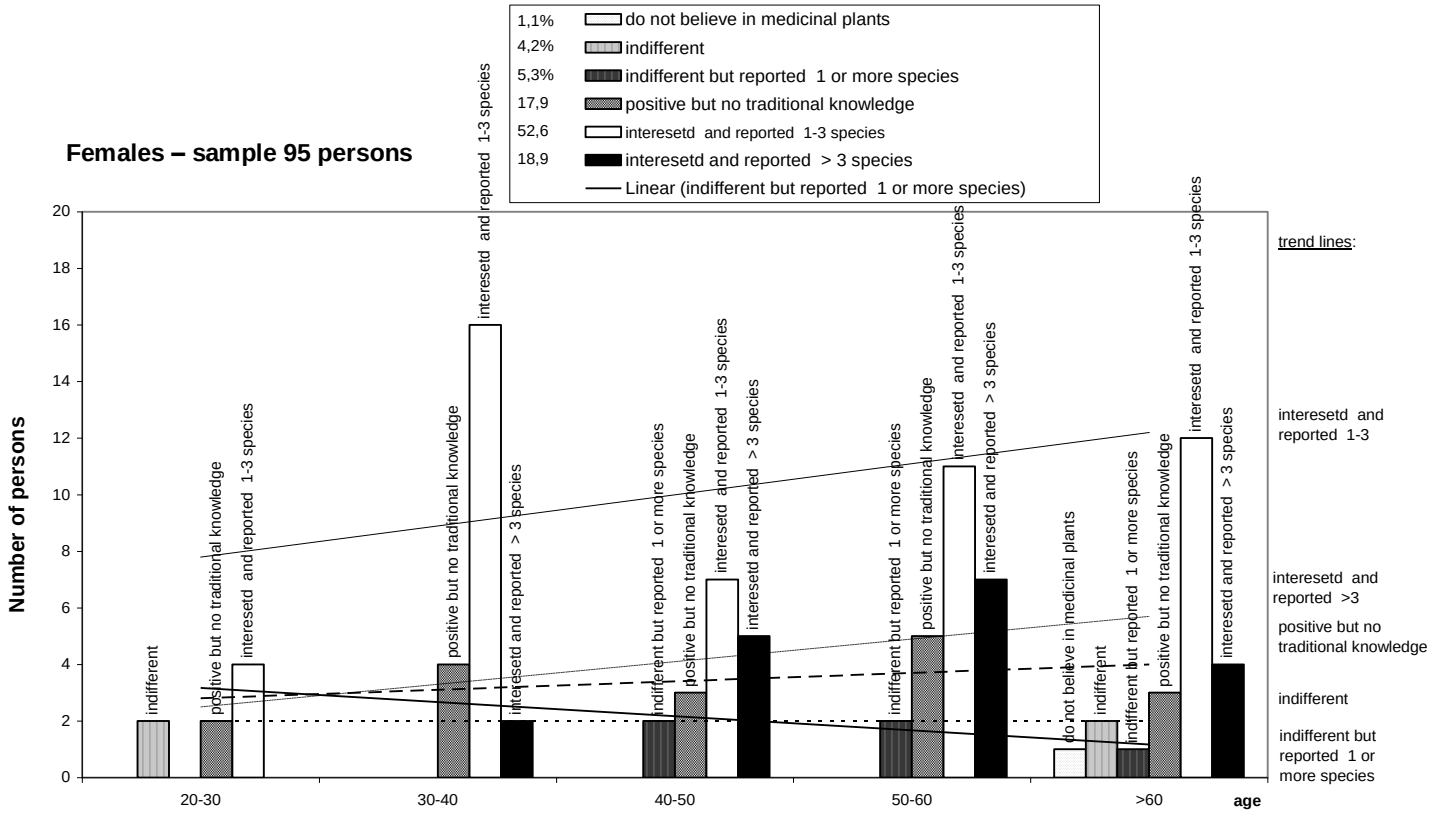

Figure 8. Attitude to the traditional use of medicinal plants amongst the male informants.

et al., 2004). *Pulsatilla vulgaris* Mill. (Ranunculaceae) was reported that fresh leaves are used as compress against exostoses. Warning that in case of prolonged application "muscles could be melted" was given too. The plant so far is known as sedative and anaphrodisiac (Petkov, 1982). It is prescribed as central-acting analgesic (Yarnell, 2002). In homeopathy *Pulsatilla* 6X is used against migraine disorders, vertigo, neuralgic pain, venous stasis (Gottwald and Weiser, 2000).

Demographic analysis – how negative or positive attitude to the traditional use of medicinal plants was related to age and gender of people?

Although we tried to keep the gender and age balance of the informants from the 183 questioned persons, 48% (88) were males, 52% (95) were females. The slightly prevalent age group was between 40 and 50 years for men (27.3%) and between 50 and 60 years for women (26.3%).

"Do not believe in medicinal plants" or "indifferent" was the response of 21.6% of the males. Positive and more or less knowledgeable were 78.4% of the males. "Do not believe in medicinal plants" or "indifferent" was the response of only 2.3% of the females. Positive and more or less knowledgeable were 94.7% of the females (Figures 7 and 8).

Most of the male informants (25%) said they were not interested in healing plants, but reported one or more species they know. The tendency of this attitude was to increase with the age of persons (Figure 7).

Most of the female informants (52.6%) said they were interested in medicinal plants and familiar with 1 to 3 species. The basic tendency of this attitude was to increase with the age of persons with a peak and the highest percent (27.1%) in the age group between 30 and 40 years old (Figure 8). Within this age group the women who were interested in medicinal plants and familiar with 1 to 3 species consisted 72.8%. Possible explanation to this fact is the motherhood and the desire to treat the children with natural methods when possible.

Conclusion

As a whole, the Bulgarians are open to traditional methods of healing. Our study would have positive impact to the practice to define rational combinations between traditional and conventional treatment approaches. Main implications for further research should be ethno and social pharmacy investigations on the

Table 1. Currently popular as "Granny's cure" medicinal plants among the population of Bulgaria, used plant's parts and application presented in the way the knowledge was shared by informants. Note: sometimes the information given by people differs from the officially recognised activity.

Plant species	Used part	Form of use	Health disorders	Pure/combination	Reports
Achillea millefolium L.	Herba	Decoction	Hearth disorders	Pure	1
	Herba	Decoction	Dysmenorrhoea, hyper menorrhoea	Pure	2
	Herba	Decoction	Insomnia	Pure	1
A. hippocastanum L.	Semen	Spiritus extract	Joint pains	Pure	7
	Semen	Spiritus extract	Varicose veins	Pure	5
Agrimonia eupatorium L.	Herba	Decoction	Sour throat	Pure	1
A. cepa L.	Bulbus	Juice in the nostrils	Cold, running nose	Pure	4
	Bulbus	Compress	Exostoses	Tar	2
Allium porrum	Herba	Fried in sunflower oil	Ear inflammation	Pure	5
A. sativum L.	Bulbus	Fried in sunflower oil	Ear inflammation	Pure	2
	Bulbus	Juice applied externally	Exostoses	Pure	1
	Bulbus	Juice applied externally	Insect stinging	Pure	4
	Bulbus	Internal application	Cold	Pure	6
A. schoenoprasum subsp. *sibiricum* (L.) Syme	Folium	Fresh - internal application	Hypertonia	Pure	1
A. vera Mill.	Folium	Juice applied externally	Rheumatoid pain, joints pain	Pure	1
Apium graveolens L.	Folium	Decoction	Arthritis	Pure	1
Arctostaphylos uva-ursi (L.) Spreng.	Folium	Decoction	Kidney disorders	Pure	2
Aristolochia clematitis L.	Herba	Decoction	Aphrodisiac (warning for highly toxic)	*Eupatorium cannabinum* L.	1
A. glycyphyllos L.	Herba	Decoction	Sterility	*T. polium* L. (herba), *C. bursa-pastoris* (L.) Medik. (herba), *M. officinalis* L. (herba), *M. piperita* L. (folium), *O. spinosa* L. (radix) *Betula pendula* Roth (folium)	1
Brassica oleracea cultivar	Folium	Fresh leaves compress	Exostoses	Pure	4

Table 1. Contd.

	Folium	Fresh leaves compress	Rheumatism	Pure	5
	Folium	Raw, compress	Mastitis	Pure	2
Brassica sp.	Herba	Decoction	Colon tumours	Pure	1
C. officinalis L.	Herba	Ointment	Burning	Lard	1
	Anthodium	Decoction, compress	Mastitis	Pure	1
	Herba	Ointment	Wounds	Lard	10
	Herba	Ointment	Varicose veins	Lard	1
	Herba	Ointment	Cold	Lard	1
C. busa-pastoris (L.) Medik.	Herba	Decoction	Hyper menorrhoea	Pure	3
	Herba	Tinctura compress	Wounds, trauma	Pure	2
Carduus sp. div.	Flos	Decoction	Heart disorders	Pure	2
M. chamomilla L.	Anthodium	Decoction internally/inhalation	Throat pain, cold	Pure	7
	Anthodium	Decoction, compress	Swollen eyes	Pure	2
	Anthodium	Decoction, lavement	Cleansing face or genitalia	Pure	1
C. mass L.	Fructus	Fresh, canned or dry preserved	Diarrhoea	Pure	10
Cotinus coggygria Scop.	Folium	Decoction, lavement	Genitlia infections	Pure	2
	Folium	Compress fresh leaves/decoction	Wounds with pus that would not skin over	Pure	13
	Folium	Infusion, lavement	Lesions of the cervix	*J. regia* L.folium	1
	Folium	Spiritus extract	Rheumatoid pain, external application	Pure	1
Crataegus monogyna Jacq.	Folium	Decoction	Calming effect	*Mentha* sp. *Valeriana officinalis* L.	5
Cucurbita pepo L.	Semen	Raw	Anticestodes	Pure	6
C. oblonga Mill.	Fructus	Caned	Diarrhoea	Pure	2
	Fructus	Caned	Coughs	Pure	2

Table 1. Contd.

Cynodon dactylon (L.) Pers.	Rhyzome	Decoction	Cystitis	Pure	2
Daucus carota L.	Radix	Raw	Vision stimulant	Pure	1
Ecbalium elaterium A. Rich.	Fructus	Fresh	Sinusitis	Pure	2
Eucaliptus sp.	Folium	Spiritus extract	Rheumatoid pain, external application	Pure	3
Ficus carica L.	Latex	Fresh external application	Warts	Pure	7
Galanthus nivalis L.	Flores	Spiritus extract	Heart disorders	Pure	2
Geranium macrorhyzum L.	Folium	Fresh	Hypertonia	Pure	3
Helleborus odorus Waldst. & Kit. ex Willd.	Rhyzome	Compress	Inflamed tonsils	On strip of soft dough	1
H. perforatum L.	Herba	Decoction before meal	Gastritis, gastric ulcer, colitis, kidney disorders,	Pure	12
	Herba	Decoction	Anxiety	Pure	4
J. regia L.	Fructus	Syropus - unripe fruits	Thyroid gland	Pure	3
	Fructus	Decoction	Coughs - babies and kids	*A. cepa* L. (bulbus), *C. oblonga* Mill. (seed)	4
	Folium	Infusion	Glaucoma	*Morus alba* L., *Ficus carica* L.	1
Laurus nobilis L.	Folium	Decoction	CNS depression, allergic/neurotic coughs	Pure	1
Levisticum officinale W.D.J. Koch	Folium	Decoction	CNS depression	Pure	1
Mespilus germanica L.	Folium	Decoction	Diarrhoea	Pure	2
M. officinalis L.	Folium	Decoction	Sedative, tranquillizer	Pure	9
	Herba	Decoction	Hypertonia	Pure	2
	Herba	Decoction	Improves appetite	Pure	2
M. piperita L.	Folium	Infusion	Insomnia	Pure	6
	Folium	Infusion	Stomach pain	Pure	2
Mentha viridis (L.) L.	Folium	Decoction	Stomach pain, diarrhoea, nausea	Pure	3
Morus nigra L.	Fructuts	Fresh - locally applied	Aphthous stomatitis	Pure	2

Table 1. Contd.

Nerium oleander L.	Folium	Extract 96% spiritus	Exostoses	Pure	2
Nepeta nuda L.	Herba	Decoction - external	Mastitis	Pure	1
	Herba	Decoction - external	Wound	Pure	1
	Herba	Decoction - internal	Cystitis	Pure	1
	Herba	Decoction	Prostatitis	Pure	1
Olea europaea L.	Folium	Decoction	Hypertonia	Pure	1
O. spinosa L.	Radix	Decoction	Exostoses	Pure	1
P. vulgaris Mill.	Folium	Fresh/dry substance infusion	Aphthous stomatitis	Pure	1
P. major L.	Folium	Pate	abdominal tumours	Pure	1
	Folium	Raw, compress	Wounds, pustule	Pure	11
	Folium	Decoction	Stomach ulcer	Pure	3
Plantago subulata L.	Folium	Decoction	Schizophrenia	Pure	1
Potentilla reptans L.	Herba	Decoction	Mastitis	Pure	2
	Herba	Decoction	CNS night bed wetting	Pure	1
Primula veris L.	Folium	Infusion	CNS vertigo	Pure	1
Prunella vulgaris L.	Herba	Decoction	Haemorrhoids	Pure	1
Prunus domestica L.	Fructus	Raw or decoction	Constipation	Pure	4
P. vulgaris Mill.	Herba	Fresh leaves compress	Exostoses	Pure	1
Punica granatum L.	Fructus	Decoction (cortex)	Diarrhoea	Pure	3
Rosa sp. div.	Radix	Decoction	Diarrhoea	Pure	1
	Hips	Decoction, lavage	Immune system	Pure	5
	Hips	Decoction, lavage	Cystitis	Pure	1
	Galls	Decoction	Coughs of bronchial origin	Pure	2
Rubus idaeus L.	Folium/Fructus	Decoction	Fever	Pure	2
Ruta graveolens L.	Folium	Spiritus extract	Ear inflammation	Pure	1
Salix sp. div.	Radix	Decoction	Exostoses	Pure	2

Table 1. Contd.

Salvia officinalis L.	Herba	Infusion	Improves memory	Pure	1
Salvia verticillata L.	Folium	Fresh leaves compress	Wounds, injuries	Pure	1
Sambucus ebulus L.	Foliom	Immature fresh leaves compress	Exostoses	Pure	1
Sambucus nigra L.	Flos	Decoction	Coughs	Turiones Pini	2
Sambucus nigra/ebulus L.	Fructus	Juice	Immune system	Pure	3
Sempervivum sp.div.	Folium	Juice or the whole leaf	Ear inflammation	Pure	13
	Folium	Compress	Pustule	Pure	2
Sinapis arvensis L.	Semen	Pad	Joint pains	Pure	1
Solanum tuberosum	Tuber	Fresh, compress	Eye irritation or UV burn	Pure	2
	Tuber	Decoction	Coughs - babies and kids	*Tilia sp div.* (inflorescentia), *C. oblonga* Mill. (fructus), *A. cepa* L. (bulbus) *Malus domestica* Borkh. (fructus)	1
Stachys germanica L.	Folium	Raw, compress	Wounds	Pure	1
Symphytum officinale L.	Radix	Spiritus Extract	Rheumatism	Pure	1
Tamus communis L.	Radix	Spiritus extract	Exostoses	Pure	1
Taraxacum officinale F.H. Wigg	Radix	Infusion	Wounds	Pure	2
Teucrium chamaedrys L.	Folium	Decoction	Wounds	Pure	1
Thalictrum minus L.	Folium	Decoction	Wounds, pustule	Pure	1
Thea sinensis L.	Leaves	Infusion, lavage	A stye in the eye	Pure	1
Thymus serpilus	Herba	Decoction	Cold	Pure	4
	Herba	Decoction	Appetite stimulant	Pure	4
	Herba	Decoction	Hearth tranquilizer	Pure	4
	Herba	Decoction	Tranquilizer	Pure	5
	Herba	Compress	Lymph nodes inflammation	Brandy	1
Tilia sp. div.	Flos	Decoction	Fever	Pure	1
	Flos	Decoction	Insomnia	Pure	1

Table 1. Contd.

Trifolium pratense L.	Herba	Infusion	Cold	*Rubus idaeus* L.folium, Rose hips	1
Tussilago farfara L.	Folium	Fresh leaves compress	Wounds	Pure	1
	Folium	Decoction	Coughs	Pure	1
Vaccinium myrtillus L.	Fructus	Decoction	Vision stimulant	Pure	2
Vaccinium vitis-idaea L.	Fructus	Raw or decoction	Cystitis	Pure	1
Veronica chamaedrys L.	Herba	Decoction	Toothache	Pure	1
Vinca major L.	Folium	Infusion	Perfusion	Pure	1
Vitis vinifera L.	Tendril sap	Fresh	Vision stimulant/ cataract	Pure	4
Zea mays L.	Stigmata	Decoction	Cystitis, kidney disorders	Pure	4

potential consumption of medicinal plants and herbal medicinal products.

This is related to the necessity of trending the consumption of certain medicinal plants with limited resources. On the other hand**,** it is crucial to support marketing of some plants that are cultivated and additionally exploited.

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