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USE OF HERBAL MEDICATIONS AND THEIR PERCEIVED EFFECTS AMONG ADULTS IN THE GREATER BEIRUT AREA

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Alaaeddine NM, Adib SM, Alawieh HM, Adibilly SM, Khalil MM, Assaad SE, Khayat MC. Use of herbal medications and their perceived effects among adults in the Greater Beirut area. J Med Liban 2012 ; 60 (1) : 45-50.

ABSTRACT • OBJECTIVES : To measure the magnitude of use of so-called "herbal medications" with or without prescribed drugs and to assess the benefits and adverse effects perceived by herbal users in the Greater Beirut area.

METHODS : A sample survey of 480 adults (18-65) in the Greater Beirut (GB) area was conducted over a one-month period in 2009.

RESULTS : The estimated weighted prevalence of herbal use in the previous 12 months in GB was 58.9% (56.7-61.2). Most of the 293 users (72.4%) believed that their use had been of no benefit, but 70% thought use was relatively safe. Of users, 53% were concomitantly using conventional drugs for a chronic condition yet only 45% had thought of informing their physician about herbal use. Among the "concomitant users" 60% had suffered some form of adverse effects.

CONCLUSIONS : There is a relatively high prevalence of herbal medicine use in Greater Beirut, with an important rate of self-reported adverse effects, especially among those who suffer chronic conditions, and little exchange of information on this between patients and doctors. Data indicate the need to educate patients about realities associated with abusive use, expected benefits and potential drug-herb interaction. Patients on chronic medications should not be left to actually experience adverse effects in order to discover that herbal medicines are not always effective or innocuous.

Alaaeddine NM, Adib SM, Alawieh HM, Adibilly SM, Khalil MM, Assaad SE, Khayat MC. Usage et effets perçus des préparations herbalistes parmi les adultes du Grand Beyrouth. J Med Liban 2012 ; 60 (1) : 45-50.

RÉSUMÉ • OBJECTIFS : Mesurer l'importance de l'usage des préparations à base de plantes médicinales, avec ou sans prescription médicale, et évaluer les bienfaits et les effets indésirables perçus par les usagers dans la région du Grand Beyrouth.

MÉTHODOLOGIE : Une enquête a été menée auprès d'un échantillon de 480 adultes (18-65) durant un mois de l'année 2009.

RÉSULTATS : La prévalence pondérée de l'usage des préparations herbalistes durant les 12 mois précédant l'enquête est estimée à 58,9% (56,7-61,2). La plupart des 293 usagers (72,4%) n'ont perçu aucun bienfait de cet usage mais 70% le considèrent néanmoins comme étant sans danger. Parmi ces usagers, 53% prenaient aussi des médicaments conventionnels pour des conditions chroniques, mais seulement 45% avaient informé leurs médecins de l'usage concomitant de préparations herbalistes. Parmi ces doubles-usagers, 60% rapportent avoir souffert de certains effets indésirables.

CONCLUSIONS : L'usage de préparations médicinales semble être relativement répandu dans la région du Grand Beyrouth, malgré l'apparition d'effets indésirables chez les personnes qui emploient en même temps temps des médicaments conventionnels, dans un contexte d'échange limité d'informations entre patients et médecins traitants. Les données indiquent que la population aurait besoin d'être éduquée sur les conséquences potentielles de l'usage abusif de préparations herbalistes, et ne devrait pas être laissée sous l'impression que ces préparations pourraient être effectives ou même inoffensives.

INTRODUCTION

Herbal medicine, the most common form of alternative medicine, is defined as the use of plant-derived products to treat and prevent diseases. The history of herbal medicine started with the ancient Egyptians, through the Chinese and Indian traditional medicine on to Galen and Avicenna. The Arabs separated the practice of medicine from that of pharmacy and were the first to create apothecary shops where most remedies were derived from plants or animal products [1]. With the development of chemistry and the ability to synthesize drugs the use of herbs in pharmaceuticals declined. However, in recent years, this decline may have stopped and even reverted in several places in the world and for a variety of causes [2]. This recent trend has attracted the attention of the World Health Organization (WHO) as well as that of the Food and Drug Administration (FDA), both having initiated planned action to assess the impact of this rising trend [3-4]. WHO has reported in year 2005 that about two-thirds and 50-80% of the population of developed and developing countries respectively have used some form of traditional or complementary medicine (TCAM) [5].

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In Lebanon, as elsewhere, a marked increase in the popularity of "herbal" medications has been seen. These medications have been dubbed "natural" products in the advertisements which have invaded the mass media. They are presented as an alternative to conventional drugs, and the public has been subtly brought to believe that "natural" means safer and healthier. This situation may be alarming since these "herbal" products and other dietary supplements, unlike conventional drugs, are not tested for safety and efficacy and are not regulated [4]. Some of those so-called "herbal" medications may actually be a mixture of cheaper generic drugs sold as "miracle" products at much higher prices. There is no implementation of legal regulations against fake practitioners of "alternative" medicine in Lebanon. Even when those products are bona-fide herbal derivatives, their prescription by unprofessional or unscrupulous practitioners to treat or relieve symptoms of chronic diseases may prompt patients to stop their usual conventional medication, sometimes leading to disastrous results. In addition, a major concern about using herbal-based products concomitantly with conventional medications is the risk of herb-drug interactions which increases with the variability in packaging, labeling and adulterations. Drug-herb interaction can either lessen or on the contrary increase the impact of a drug, and in both situations consequences may be dire for the patient [6-8].

The current magnitude and patterns of use of "herbal" medications, whether of known origin and composition or not, in the Lebanese population today has not yet been measured, despite the perception that increasingly more persons are resorting to this type of treatments with varying results. Informal reports are circulating among healthcare practitioners regarding herbal medical products misuse in Lebanon. The aim of this study is to document the magnitude of use of so-called "herbal medications" with or without prescribed drugs and to assess the benefits and adverse effects perceived by herbal users in the Greater Beirut area.

METHODS

Study design

This study is based on a sample survey of adults (18-65) permanently residing in the Greater Beirut area, because the topic of herbal preparations use had never been formally studied in the past, this survey may be considered as a pilot assessment. For this reason, it was limited essentially to the Greater Beirut area where about 40% of the entire Lebanese population lives, where most advanced conventional care centers are located, and where the headquarters of the most visible outlets of herbal products are currently located.

Sampling size

The sampling size was determined using the basic survey formula: $\mathbf{N \geq (Z\alpha)^2\ pq/\delta^2}$ where • the expected prevalence (p) = 76% and q = [1-p] = 24%, based on results of a survey conducted in Abu Dhabi (UAE) in 2008 [6] • $Z\alpha = 1.96$ for $\alpha = 0.05$; and • δ (tolerated sampling error) = 4%.

Based on this formula:

$N \geq (1.96)^{2*}0.76^{*}0.24/(0.04)^2 = 434$ persons.

Sampling procedures

Because of the pioneering nature of this survey, the sampling approach used was a nonrandom sampling by quotas. Equal quotas of 120 persons were selected from four areas within Greater Beirut (GB), totaling 480 persons. These four areas representing various socioeconomic population compositions were identified as:

1. East Beirut (weight 10% for the entire GB population)
2. West Beirut (weight 25%)
3. Southern suburbs (weight 40%)
4. Northern suburbs (weight 25%).

In each quota, sexes and three age-groups: 18-29; 30-49; 50-65, were equally represented. Participants were encountered in medium and large shopping malls in each of the four areas, away from herbal medications sales outlets. Questionnaires were consecutively completed until each quota has been fulfilled. Older adults were not included in view of the particular physiological responses to any kind of medication expected in a geriatric population, which would have biased the results.

Study instrument

The study instrument was a questionnaire composed of closed questions, partially inspired from previous publications [9]. The questionnaire was prepared in Arabic and pilot-tested in a group of 40 persons, 10 from each quota area, to improve its comprehensiveness. The questionnaire was administered in a face-to-face interview which did not exceed 15 minutes in its final form. The categories of variables included in the questionnaire were:

1. Patterns of use of herbal preparations and conditions associated with obtaining those preparations.
2. Sociodemographic factors.
3. Health and disease variables.
4. Perceived results attributed to herbal preparations use.

Study variables

The *dependent variable* in this study was "use of herbal preparations". The herbal preparations were defined as all herb-based products packaged and sold as medicines, excepting those sold by traditional herbalists. The use of those "medicines" was measured as:

1. Any lifetime use: ever/never.
2. Any recent use (in the previous 12 months) of one or more preparations, serially or in combination: never/occasional (≤ 30 days in a row)/habitual (more than 30 days).

For those reporting any recent use, the following information was also obtained:

1. Names of preparations.
2. For each preparation, name of provider (preparing laboratory or importer).
3. Supposed finality of use.

4. Number of medically-prescribed drugs concomitantly used and the finality of use.

Independent variables include:

1. Age in years.
2. Sex.
3. Current region of residence.
4. Last educational attainment.
5. Perception of sufficiency of income: very sufficient, sufficient, just sufficient, not sufficient at all.
6. Socioeconomic status (SES) as measured by the crowding index in persons/room. The higher the crowding, the lower the SES. The crowding index is obtained by measuring the total number of persons living in the same house depending on the number of rooms in this house. This indicator has been validated for urban Lebanon [10].

Ethical considerations

An ethical clearance was requested and approved from the Ethical Committee of the USJ Faculty of Medicine. At the time of encounter, participants were informed about the objectives of the survey and invited to freely consent to participate. They were assured that all information would be treated in total confidentiality. At the end of the interview, participants using herbal medications were strongly advised to inform their physicians about any concomitant use with prescribed drugs, to avoid possible adverse interactions.

TABLE I
SOCIODEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS (N = 480)

	n	(%)
Sex		
Males	240	(50.0)
Females	240	(50.0)
Age		
[Mean = 40.4 years; SD = 14.6; Median = 40 (18-65)]		
18-29	160	(33.3)
30-49	160	(33.3)
50-65	160	(33.3)
Educational level		
Illiterate	33	(6.9)
Primary	65	(13.5)
Complementary	114	(23.8)
Secondary	123	(25.6)
University	145	(30.2)
Perception of monthly family income		
More than enough	32	(6.7)
Enough	177	(36.9)
Not enough at all	165	(34.4)
Bad	78	(16.3)
Very bad	28	(5.8)
Persons in the same household ≥ 6 months		
[Mean = 4.3; SD = 2.0; Median = 4 (1-24)]		
1	13	(2.7)
2-8	462	(96.3)
≥ 9	5	(1.0)
Crowding Index (persons/room)		
[Mean = 1.2; SD = 0.7; Median = 1 (0.2-6)]		

Plan of analysis

All variables were tabulated depending on their types: categorical ones as frequencies and percentages, and continuous ones as means, standard deviations (SD) and intervals. The prevalence of herbal medicines use in the previous 12 months was measured as a gross percentage, and subsequently weighted by the distribution of the population in the four sub-areas, with a corresponding 95% confidence interval (CI). The associations between dependent and independent variables were assessed using adequate statistical tests: Chi-square and variants, t-test, ANOVA, etc., depending on each situation. An association would be considered statistically significant when the statistical test yields a p-value ≤ 0.05.

While a multivariate analysis had been originally planned, bivariate analyses results precluded the need for this step. Data were entered and analyzed using SPSS-16.

RESULTS

Four hundred eighty survey questionnaires were completed in four regions composing the larger Greater Beirut area. The mean age of the sample was 40 years, ranging from 18 to 65, and it was composed equally of men and women. About 30% reported a university education, but almost 20% had a primary education or less. Almost 40% declared their revenues to be enough or more than enough. The mean crowding index was 1.2 persons/rooms; ranging from 0.2 to 2.6. All sociodemographic characteristics of participants are presented in details in table I.

The percentage of herbal medications use in the 12 months preceding the survey was 61%, with highest use found in West Beirut (68%) and lowest in the Southern suburbs (52%). After weighing for each sub-area's representation within GB, the prevalence of use was estimated at 58.9% (95% range from 56.7 to 61.2). The largest proportion of users (about 37%) had been encouraged into trying herbal medications by TV and other mass-media advertisements, as well as information shared by friends, neighbors and families. Few reported triggers from pharmacies (5.5%) or physicians (2.4%). Of users, 7.5% used herbal medications only occasionally while at the other extreme of the distribution 8.5% used them daily. There was a diversity of herbal medicine used, but the most frequently mentioned ones were **Borojo®** (18.1%) in order to regulate diabetes, cholesterol, and hypertension, to prevent osteoporosis and hair loss and to improve immunity. **Ginkgo Biloba** (7.8%) to treat loss of memory, atherosclerosis, cerebrovascular insufficiency, sterility and migraine, **garlic** (7%) to regulate blood pressure; **diet herbal pills** (6.5%) for weight loss and decreasing appetite and **Herborem®** (5.1%) which is taken to relieve

back pain and rheumatism. Other products were also mentioned with lower frequencies (Table II).

Most users (72%) believed that their use was of no perceived benefit, yet 70% believed those medications to be safer than conventional drugs. Among those 293 using herbal medicines, the most frequently reported side effects were gastrointestinal (19%), neuropsychological (19%) and cardiovascular problems (9%). Numerous other side effects were mentioned at lesser frequencies. All details are presented in Table II.

There were no significant differences in herbal use associated with gender, age, education, income or SES. However, there was some tendency for higher use at the two extremes of education (primary and university), and with increasing perception of better income. These tendencies may explain significant differences between subareas, with more affluent sectors within Beirut showing higher levels of use than less affluent suburban sectors (Table III).

Of the 293 participants reporting herbal medicines use in the previous 12 months, 156 (53.2%) suffered from chronic conditions requiring conventional drugs, of whom 55.2% did not inform their primary care physicians about their use of herbal medicines, and 39% who did inform their primary care physician received no negative feedback. Yet, 60% of those concomitant users attribute some adverse effects to the combination (Table IV).

DISCUSSION

The use of herbal medicines is growing significantly around the world including in the Middle East area [11-17]. Frustration from conventional drugs and the misconceived perception of total safety of herbal medicine have contributed to this growth in the Lebanese population. This study shows for the first time the marked use of herbal remedies in Beirut city and its suburbs, known as Greater Beirut, estimated around 60%, although rarely on a daily basis. Herbal medicines are not a cheaper alternative to expensive conventional drugs. In fact, use is more likely with increasing levels of income, which suggests motivations far beyond mere economics. Seventy percent of users believed those remedies to be safer than conventional ones. There were no age or sex differences between users and nonusers of herbal medications.

Of great concern is that one in every two herbal remedy users in this survey were also under concomitant treatment with conventional drugs for chronic conditions. Misconceptions regarding the safety of herbal medicines and the lack of knowledge about possible drug-herb interactions not only have increased the consumption of herbal medicines but have also led sometimes to disastrous consequences [18-22]. A study from Singapore in 2005 revealed that Ginkgo Biloba, a product most frequently mentioned in GB users, caused bleeding when combined with warfarin or aspirin, raised blood pressure when combined with a thiazidic diuretic and even caused coma when combined with Trazodone.

The origins of these misconceptions are complex, but they are largely entertained by massive mass-media campaigns by which more than 1/3 of users admit having been mostly influenced. The advertisements flooding the Lebanese TV channels sell the idea that these preparations being "natural" can only be safe. When those who use herbal medicine do not bother to inform their physicians

TABLE II
HERBAL MEDICATIONS USE IN GREATER BEIRUT
(N = 480 adults)

Variables	n	(%)
Herbal medication in previous 12 months		
Not weighted	293	(61.0)
Weighted prevalence (95% CI)	[58.9 (56.7-61.2)]	
Main recommandation source for use*		
Mass media (TV, ads)	123	(42.0)
Friends	57	(19.0)
Neighbors	46	(15.7)
Family members	34	(11.6)
Pharmacy	16	(5.5)
Personal reading/Internet search	10	(3.4)
Physician	7	(2.4)
Frequency of use		
Occasional/As needed	36	(12.3)
At least one medical course	81	(27.6)
Several medical courses	135	(46.1)
Everyday	41	(14.0)
Duration of one medical course (days)		
[Mean = 15.7; SD = 6.92; Median = 14 (3-30)]		
Herbal medications most used (n = 293 users)		
Borojo®	53	(18.1)
Ginkgo Biloba	23	(7.8)
Garlic	20	(6.8)
Diet pills	19	(6.5)
Herborem®	15	(5.1)
Laxity®	10	(3.4)
Other herbal products	153	(52.3)
Perceived benefits from herbal use		
Beneficial	140	(48)
Not beneficial	151	(51.4))
Unsure	2	(0.6)
Perceived relative safety of herbal use		
Herbal medicines safer than conventional ones	205	(70.0)
Not safer than conventional	78	(26.6)
Not sure	10	(3.4)
Frequently perceived adverse effects**		
Cardiovascular problems	23	(15.0)
Respiratory problems	4	(2.6)
Gastrointestinal problems	56	(36.6)
Urinary tract problems	3	(2.0)
Neuropsychological problems	55	(35.9)
Dermatology problems	12	(7.9)

CI: Confidence interval.
*The rest of the analysis concerns only the 293 ever-users of herbal medications.
**Among 153 respondents who reported adverse effects.

TABLE III
SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH HERBAL MEDICATIONS USE IN GREATER BEIRUT (N = 480 adults)

	Users	Nonusers	*p*
n (%)	293 (61.0)	187 (39.0)	
Sex [n (%)]			*0.40*
Male	142 (59.2)	98 (40.8)	
Female	151 (62.9)	89 (37.1)	
Mean age [years (SD)]			*0.55*
	40.7 (14.3)	40 (15.1)	
Educational level [n (%)]			*0.10*
Primary or less	63 (64.3)	37 (35.7)	
Complementary	64 (56.1)	50 (43.9)	
Secondary	69 (56.1)	54 (43.9)	
University	97 (66.9)	48 (33.1)	
Perception of monthly family income			*0.06*
Enough or more than enough	141 (67.5)	68 (32.5)	
Not enough at all	98 (59.4)	67 (40.6)	
Bad or very bad	54 (50.9)	52 (49.1)	
Crowding index [persons/room (SD)]			*0.09*
	1.2 (0.7)	1.3 (0.7)	
Areas of residence			*0.03*
East Beirut	79 (65.8)	41 (34.2)	
West Beirut	82 (68.3)	38 (31.7)	
Northern suburbs	70 (58.3)	50 (41.7)	
Southern suburbs	62 (51.7)	58 (48.3)	

about their use they miss an opportunity to receive proper information regarding possible interactions. More worrisome is the finding that even when they do mention herbal use to their physician, patients rarely receive any indications in that regard, which suggest that even physicians may be lacking knowledge and/or are complacent about their dangers. This gap in public and medical perceptions in Lebanon regarding potential dangers of herbal medicines needs to be further documented and addressed soon.

The present level of herbal medication usage in Greater Beirut, while relatively high, compares well with results found elsewhere. In the USA, one study reported that 57.3% of the population use herbal medication to treat specific illnesses [23]. Closer to us, 55.4% of participants in Turkey, a middle-income country, reported use of herbal medicines [24]. In even less developed Trinidad, a survey of primary healthcare patients showed that 49% of the population used herbal medicines for general health and wellness and 30% used them concomitantly with conventional drugs. Of users, 86% believed that herbal medicines were equally or more efficacious than conventional medicines [25].

In this study, although 60% of "concomitant" users reported some form of adverse effects, 70% believed that herbal medicines are more effective than conventional drugs. Differences in figures are associated with higher socioeconomic levels, leading to the upsetting realization that resorting to these remedies reflects first and foremost doubts and non-satisfaction with conventional treatments rather than "ignorance". Socioeconomically advanced societies have transitioned epidemiologically towards chronic conditions which can be controlled but not cured. Preferences for herbal medications reflect a tendency among modern consumers to want a rapid fix and getting frustrated with long-term processes.

In neighboring Arab countries, the use of herbal medicines is also increasing faster in the richer than in the poorer ones. A survey in United Arab Emirates (2009) reported that 76% of the population are using herbal medicines. In total, 65 different herbs were being taken to treat 48 conditions. The majority of UAE citizens in Abu Dhabi felt herbal medicines were safe yet more than 10% among 250 reported experiencing serious adverse effects [17].

A survey in one city in a rural area of Turkey in 2007-2008 [24] showed that, during the previous 12 months, 39.1% of 3876 participants had used herbal remedies and most of them (62%) did not communicate with physicians on the herbs they used. Herbal remedies were more likely to be used by the relatively younger adults, those with high level of education, those living in households with one to four persons, and those with higher sufficient annual income. That age and gender did not appear as affecting use in GB may be a reflection of demographic differences with the population of rural Turkey, in which income generating persons are more likely to be younger, better schooled ones. In Lebanon, the generation of the less educated grandparents is disappearing and those now in view of or already reaching retirement have had the opportunity to get an education as good as that of younger cohorts. This partial explanation is further consolidated by the fact that users in New York did not differ either by age [23]. However, the absence of a gender imbalance in use in GB remains a particularity which cannot be explained at present.

The use of complementary and alternative medicine (CAM) and its integration within conventional care was also revealed in the context of gender and ethnicity in northern Israel. Based on a survey of patients visiting seven care clinics in urban and rural areas in 2005-2006, women used CAM more often than men (80.2% *vs* 73.7%). Of the female respondents: 58% self-identifying as being Arab and 41.6% as being Jewish. Among Arab women, higher education, lower self-assessed religious-

TABLE IV
CONCOMITANT USE OF HERBAL MEDICATIONS WITH PRESCRIBED MEDICATION IN GREATER BEIRUT (N = 293 adult herbal users)

Variables	n	(%)
Conventional treatment of chronic conditions	156	(53.2)
Informed care provider on herbal use (n = 153)*		
No	85	(55.5)
Yes; with no negative feedback	60	(39.2)
Yes; with negative feedback	8	(5.3)
Adverse effects of concomitant use reported	94	(60.3)

*Three users did not provide an answer to this question.

ness and having heart disease were positively associated with CAM use, but among Jewish women, only higher education was associated with increased CAM use. The Arab women are more "oriented toward herbal medicines" (40.7% *vs*. 16.4%) and characterized by a greater willingness to experience CAM than Jewish women who emphasize more westernized modalities of care such as homeopathy and chiropractic.

In conclusion, the passive attitudes towards herbal remedies in Lebanon must change, now that a majority of the population has willingly exposed itself to those remedies with no attention to possible adverse effects. The advertisements and selling of herbal medicines should be controlled and regulated; patients (and their physicians) should be educated about the sources, benefits and adverse effects of herbal medicines. Users should also be advised by the sellers to inform their physicians about their use of herbal remedies. Such measures may limit the dangers of serious herbal-conventional drug-adverse interactions.

Keypoints

- This study uses a survey to report the most frequent adverse effects from herbal medicine use. It indicates that about 60% of the Greater Beirut population has used a herbal preparation at least once in the previous 12 months.
- The belief that herbal medicine products are safer than conventional drugs drives patients to use herbal medicine
- Instructing the public about the effects, adverse effects, and possible drug-herb interactions will limit the use of herbal medicine and the incidence of side effects.
- Physicians should actively seek information on herbal drug use among their patients on chronic treatment, and provide counseling in case a dangerous or nefarious interaction may exist.

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