Original Research Article

ATTITUDES, KNOWLEDGE AND PRACTICE OF HERBAL REMEDY USE AMONG THE POPULATION VISITING PHARMACIES AND HEALTH CARE PROVIDERS IN ALEXANDRIA, EGYPT: A CROSS-SECTIONAL STUDY

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ABSTRACT

Aims: to show the levels of awareness, attitude, practices and socioeconomic factors related to consuming herbal products among Alexandrian citizen visiting pharmacies. The findings of this study are meant also to show the practices and beliefs of healthcare providers regarding using herbal remedies in treatment, including advising patients, reporting adverse effects and possessing knowledge about specific herb-drug interactions.

Study design: people visiting pharmacies as well as pharmacists in their pharmacies and physicians in their clinics were invited to complete a questionnaire about their knowledge and personal experience in the consumption of herbal remedy. Anonymity was guaranteed. Questionnaire consists of three parts: demographic data, personal experience and a part concerning health care providers**.**

Place and Duration of Study: Study area is the city of Alexandria, Egypt from the 1st July through September 2018.

Methodology: This is a descriptive cross-sectional study that used a self-administered, questionnaire from 213 participants (153+ 60 health care providers HCPs)**.**

Results: Almost half the respondents preferred to be treated with herbs because they believed that herbs are safe. But they are not the proper choice to cure chronic diseases. Only 25% of herb users recorded suffering from side effects. The most common source of information about herbs was via internet, followed by family and friends, television and other types of media. Herbal remedies were purchased mainly from outlets other than pharmacies. The willingness to buy such products was not affected by participants' education level or their monthly income. The public didn't feel it's important to mention any herbal remedy they consume to their physician, similarly HCPs did not ask them. Generally, it was shown that HCPs have inadequate knowledge about herbs**.**

Conclusion: The prevalence of herb usage is moderate among the Alexandrian population. and it is imperative to educate HCPs about the benefits, risks and interactions of herbal supplements**.**

Keywords: Alexandria , herbal medicines, herb-drug interactions, questionnaire

1. INTRODUCTION

During the last few decades, the phenomenon "back to nature" is spreading globally, along with a growing market demand for herbal remedies [1]. Even in industrialized regions such as Europe and North America, more than 50% of the population has used complementary or alternative medicine at least once [2]. According to the World Health Organization (WHO), about 80% of the population in most developing countries, especially in Africa, mainly

depends on plant-based traditional medicines since they are often the only accessible and affordable treatment available for primary health care [3]. WHO also stated that health goals can't be achieved without the incorporation of herbal medicines [4].

Using herbs is common in the Arab world. Egypt has great plant biodiversity, which has provided a foundation for the use of traditional herbal medicine throughout the decades [4]. It is also important to note that medicinal herbs are not classified as drugs by the U.S. Food and Drug Administration (FDA) [5].

Until 2015, The Egyptian Guidelines for Registration of Herbal Medicines allowed for the free use of indigenous herbal remedies by the local community or in the local region, even if there was a lack of detailed information on these remedies. They had to meet the requirements of safety and efficacy, as specified in the Egyptian regulations for herbal medicines, only if they entered the market [6]. However, this changed in 2016, when traditional herbal medicines were defined as medicinal herbs used inside Egypt for a period of not less than fifteen years and that they should be supported by references for safety and efficacy [7]. However, these regulations applied only to pharmacies, which are the only outlet under control of the Ministry of Health. In herb stores, herbal medicines are widely and freely available to Egyptian citizens, with no regulatory control [8].

Population in Egypt are accustomed to regularly consult pharmacist about minor as well as major health problems, they usually seek the pharmacy to buy their cosmetics "shampoo, diapers, creams and perfumes" the thing that made it easy to distribute the questionnaire in the pharmacy.

Health care providers have a professional responsibility to advise patients about potentially harmful aspects of herbal remedies, including contraindications or interactions with synthetic medications [9]. Previous studies from Nigeria, Kuwait, the United Arab Emirates and Australia have shown that most community pharmacists do not possess enough knowledge about the potential interactions and side effects of herbal medicines that they supply [10-12].

Thus, this study is designed to determine the awareness, patterns of use, attitude and socioeconomic factors among the general public visiting pharmacies and HCPs in Alexandria city, Egypt.

2. METHODOLOGY

2.1 General procedures:

2.1.1.Study area

Study area is the city of Alexandria, the second-largest city in Egypt situated on the northern coast on the Mediterranean Sea.

2.1.2.Study design and setting

The study is based on a cross-sectional survey that used a self-administrated questionnaire designed to obtain information about the behaviour regarding, knowledge of and use of medicinal herbs among Alexandrian society in different areas, with varied social and cultural levels.

We started with a pilot study on twenty Alexandrian citizens; not included in the study; to help determine the most suitable design and length of the questionnaire. Minor language adjustments were made.

2.1.3.Participants

Questionnaires were distributed and collected by the authors. Clients; eighteen years of age and above; who entered community pharmacies during the study period were enrolled in the study by way of a random sampling process—they were free to refuse participation in the survey. Data were collected anonymously via a self-administered questionnaire. Those who agreed to take part in the study were given the questionnaires, which were completed anonymously and collected after completion. They were assured of confidentiality, and they gave verbal consent to participate in the study.

2.1.4.Health care providers' participants

The questionnaire was handed to pharmacist in their pharmacies and to physicians in their clinics. Both were free to refuse participation, and data collection was completed as above.

2.1.5.Questionnaire

The content of the questionnaire was generated by reviewing the literature [10, 13–18]. No guidance or assistance was provided to participants as they completed the questionnaire during their visit to the pharmacy.

The questionnaire was in Arabic, and it comprised three sections. (the first two sections designed to be filled by both public respondents and HCP's and the third section directed only for HCP's) .The first section included questions related to sociodemographic and education characteristics, including age, gender, marital status, occupation, health insurance and monthly income. The second section addressed people's beliefs and behaviours related to herbal remedies. Respondents were asked to answer a series of questions concerning herbal remedy purchases and uses in the twelve months prior to the study, including the type of herbs being used, their main source ,their price, the reasons behind their use, and to report any adverse events they suffered. Participants were asked to provide only one answer for each question except for two questions; the first one regarding the herb source and the second whether they suffer from chronic disease. The third section had to do with HCPs' knowledge and how they advise their patients about the safe use of herbal products, how they report adverse effects, and how they check for a herb's interaction with conventional drugs that they dispense or prescribe.

The study was conducted from the 1st July through September 2018. An English translation of the questionnaire is available from the authors.

2.2.Statistical analyses

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) software program version 17.0 (SPSS Inc., Chicago, IL, USA).

3. RESULTS AND DISCUSSION

3.1.Demographic and socioeconomic data of the study population

In all, 153 participants, all residents of Alexandria, out of 200 distributed questionnaires, responded and completed the questionnaires appropriately for inclusion into the study. This was a response rate 76.5%.

In addition to a total of 60 out of 100 distributed questionnaires to HCPs (pharmacists and physicians) responded (60% response rate). The demographic and economic characteristics of the participants are listed in Table 1.

Table 1. Demographic and socioeconomic data of study population

	Frequency of citizens (153)	Frequency of HCP's (60)	total
Sex:			
Male	57	8	65
Female	95	52	147
missing	1	-	1
Age:			
18-24	42	13	55
25-39	46	40	86
40-60	56	6	62
Above 60	8		8
missing	1	1	2
Marital status:			
Single	56	32	88
Married	52	16	68
Married with children	38	9	47
Divorced or widow	8	3	11
Working status:			
None	8		
Government employee	88		
Worker	2		
housewife	15		
student	35	7 (postgraduate)	
other	5	53	
Educational level:			
Non educated	1		1
Primary	4		4
Middle school	30		30
High school	16		16
University	95	41	136
Postgraduate	7	13	20
Monthly income L.E.:			
none	42		42
500-1000 (30-60 USD)	19	1	20
1000-3000 (60-180 USD)	40	31	71
Above 3000 (above 180 USD)	26	4	31
Prefer not to answer	26	24	51
Chronic diseases*:			
None	-	48	
Hepatic diseases	-	-	
Renal diseases	107		115
Diabetic	2		2
Cardiac diseases and	10		10

hypertension	10		10
Bronchial asthma	24	1	24
Others	3	2	3
missing		9	
Health insurance:			
Yes	100	39	139
No	52	13	65
missing	1	7	8

*participants were allowed to choose more than one disease

The majority of the healthcare respondents (66.3%) were between 25–39 years old, while 36.6%. of the public respondents were between 40–60 years old .A total of 51 people reported having chronic disease.

The majority of total respondents (citizens and HCP's) were female (147, 69%). About two-thirds (63.8%) of the respondents had attended university. Reported monthly income varied, with 34.6% earning between 1,000–3,000 Egyptian pounds (LE), 15.1% earning more than 3000 LE, 9.7% earning between 500–1,000 LE, 20.5% with no income (housewives and students), and 14.1% preferring not to answer this question.

Most of the respondents were married (115 participants, 56%), and 65.2% (139 participants) had health insurance. 63.7% of citizens participants were government employees

3.2.The use of Herbal remedies

A total of 109 (93 + 16 HCPs) preferred to use herbs in general for treatment. But only 98 (76 + 22 HCP's) of them admitted to prior treatment with herbs—35 were males, and 63 were females-.

3.3.The reason behind choosing to be treated with herbal remedies

Overall, 89 (77 + 12) HPCs, from the 109 herb users, believed that herbs are safe. The details of the remaining reasons are summarized in table 2.

Table 2. Frequency of herb users and non users and reason behind their opinion

reason	Herb users		reason	Herb non users	
	frequency			frequency	
		HCP's			HCP's
Herbs are safe	77	12	I didn't get the expected results	14	14
They have rapid onset of action	4	1	I don't have a trusted source of information about herbs	34	23
Their reasonable price	5	2	Herbs might have dangerous side effects	5	4
Herbs are more effective than regular medications	7	-	Their price is not reasonable	1	-
missing	-	-		3	2
total	93	16		60	44

3.4.Source of herbs

The 98 that were previously treated with herbs admitted that the most common source for buying herbs was at herb stores (60 [50 +10 HCPs]), followed by 24 (17 + 7 HCPs) from

pharmacies, 6 from supermarkets, 6 from family or friends and 2 from TV commercials,. Strikingly, when linking the educational levels of herb users to the source of buying herbs, 33 of the university graduates bought the herb from herb stores, versus only 6 buying from the pharmacy. The monthly income did not affect the source of buying the herbs.

3.5.Side effects reported

Few (26%) herb users indicate that they have experienced certain associated side effects,. Six participants suffered from nausea, two from vomiting, seven from diarrhoea, four from constipation, one from irritability, one from skin rash and four didn't specify which side effects. It is worth mentioning that 15 out of 21 stated that they obtain their information about herbs from the internet, and eight said that they get their information from family and friends. Unfortunately, no one mentioned if they reported these side effects to a physician. In addition, no one specified the name of the herb(s) that caused these side effects.

3.6.The reasons that encourage them to buy a herb

These are summarized in table 3.

Table 3. The frequency of the reasons that encourage them to buy a herb

Reason*	frequency	Frequency of HCPs
Price	50	9
As a nice drink	72	27
According to speed of onset of action	19	8
Package	2	1
I trust the store	16	8
Whether there is any associated side effects	15	12
Media	30	12
Known brand	27	14
Good offer	3	-

*participants were allowed to choose more than one reason

3.7.The maximum price they are willing to pay for a herb

The study showed that the maximum limit that participants will pay to purchase herbal products ranges between 1–10 LE (29.5% [53 + 10 HCPs]) and 11–50 LE (35.6% [54 + 25 HCPs]). A total of 28 participants were willing to pay between 51–100 LE, and the remaining 10 chose to spend between 100–300 LE. It is worth mentioning that 14 of those 28 stated that their monthly income is above 3,000 LE

3.8.Effect of monthly income on using herbs

Monthly income did not affect the decision on whether to use herbs, as the ratio between herb users and non-users was almost the same among all categories.

3.9.Source of information about the herbs

The most common sources for recommending and providing information regarding the use of herbs was the internet followed by family and friends, table 4.

Table 4. Participants' opinions regarding the current available source of information on herbs

Source	frequency
TV and media	47
Internet	89
Family and friends	55
Herb stores	25
Pharmacist	33
Physician	12
others	5

3.10.Whether herb can treat chronic diseases

A total of 75 (62 + 13 HCPs) believed that they can, while 134 (90 + 44 HCPs) believed that they cannot. An education level up to university graduates and postgraduates (almost 60 [70%]) were more likely to believe that they cannot.

3.11.Health care providers responses

The following is the summary of their answers on the first and second sections:

The demographic and economic characteristics of the participants are listed in Table 1.The majority of the healthcare respondents (66.3%) were between 25–39 years old, most of them were females (52, 86.7%) and single (32 participants, 53.3%). with only 3 reported having chronic disease. Their monthly income varied, with 31 earning between 1,000–3,000 Egyptian pounds (LE), 4 earning more than 3000 LE, 1 earning between 500–1,000 LE, , and 24 preferring not to answer this question.

16 preferred to use herbs in general for treatment. But 24 admitted to prior treatment with herbs. The most common source for obtaining herbs was at herb stores 10, followed by 6 from pharmacies, 4 from a physician, and 6 from supermarkets. Six herb users suffered from nausea, two from vomiting, seven from diarrhoea, four from constipation, one from irritability, one from skin rash and four from unspecified side effects.

Among the non users, 23 were concerned about the source of the herbs, 8 were afraid they might suffer from dangerous side effects, 14 stated that they did not see any results when using herbs, and the remaining were worried about herb prices.

3.12.The third sector of the questionnaire

This sector was designed to target the health care providers; pharmacists and physicians; to measure the extent of their behavior and knowledge relating to the study topic.

3.12.1.Attitude towards herbal remedy

The first question, was "Before prescribing a medication, do you ask the patients if they are taking medicinal herbs?" The answers differed between "I occasionally ask them" (23 [43.4%]), "No, I do not ask them" (23 [43.4%]) and "I often ask them" (7 [13.2%]).

3.12.2.Dispensing/prescribing herbal remedies

A total of 71% did not prefer to dispense/prescribe herbs for treatment, and 78% did not believe that herbs can treat chronic diseases. The reasons behind their refusal to use herbs included not getting the required results (26%) or concerns about the herb source (38.5%).

The third question, “Do you advise your patients to consume herbs as a medication?” was crucial to figure out HCPs’ behaviour regarding the dispensing of medicinal herbs. The participants answered evenly between “yes” (50%) and “no” (50%).

3.12.3.Source of information about herbs

Almost 30% chose the most commonly trusted sources to provide information, including “by Google search” (28%), “searching in books” (30%), and asking academic colleagues or a pharmacist (18%). The worrisome percentages were, 12% get their information from family and friends, 6 % get their information from herb stores, and a small percent do not bother to ask (6%).

3.12.4.General knowledge about herb-drug interactions

At the end of the questionnaire, we added three questions that may give us a general perspective about medical participants’ knowledge of medicinal herbs. The first question was: “What is the herbal product that interacts with hypolipidemic drugs such as Atorvastatin”. They were offered three choices; garlic, gingko and hibiscus. The correct answer was “garlic,” which has a powerful synergistic effect with hypolipidemic drugs [18]. A total of 57.7% of respondents answered this question correctly, and 11 participants didn’t respond to the question

The second question was about the herb that may cause abortion or premature labour to pregnant women. they had three answers to choose from fenugreek, parsley or anise and the correct answers were “fenugreek” or “parsley”—potent uterine stimulants [19,20]. The percentage of those who answered correctly was 59.6%. Five chose not to answer, and three chose “anise”.

The third and final question was about the herb-drug interaction between the evening primrose herb with anticoagulants, blood pressure medications and non steroidal anti-inflammatory drugs [21]. A total of 25% answered correctly, with eight participants didn’t answer.

4. CONCLUSION

Most of the studies conducted in the United States and Europe were interested in complementary medicine in general, a term that encompasses many forms of treatment, such as acupuncture and spiritual healing. Only few of the studies were focused purely on the use of herbal remedies. Rates of use were low, ranging between 10–20%, whereas in the United Arab Emirates, the percentage of herbal remedy users was higher (60%), compared to 43% in this study. This was partly expected, due to the different cultures of the Arab world and Western countries [22]. Herb users believed that herbs are safe, which agrees with worldwide popular belief [14].

Meanwhile, the need for accurate, up-to-date information on the prevalence and socio-cultural and personal factors (knowledge, beliefs and attitudes) that underlie an individual’s decision to use herbal remedies is of national importance.

Study evidence shows that many herbal remedies are mainly purchased from outlets other than pharmacies, where herbal remedies are sold freely, without regulation of the Ministry of Health [21]. Herbal stores in Egypt are usually run by unqualified personnel, who transmit the information from generation to generation. Herbs are vulnerable to being contaminated, misidentified or adulterated.

Most of the information about herbs is taken from television and the internet due to the increased online availability of information about herbal remedies [22]. Both the public and their HCPs do not give/ask information about any herbal remedy they use when prescribing or during consuming conventional drugs. Nondisclosure of herbal remedy use may cause individual to be at risk of undue harm. This may be justified by Fear of negative response from doctors. In addition to doctor's communication skills and providing enough time for the patient [23]. A study conducted in USA showed another perspective which is; most of the physicians were not comfortable in counseling their patients about CAM treatments [24].

Although natural health products are routinely available without prescription, that does not mean they are completely safe for all individuals. Many of the participants (99, 46.5%) admitted consuming common herbs daily, as soothing drinks, without knowing that these are actually herbal drugs and without knowledge of possible serious drug interactions [25].

Few (26%) herb users indicate that they have experienced certain associated side effects, which is higher than the number reported in North America [17]. Monthly income did not affect the decision on whether to use herbs, as the ratio between herb users and non-users was almost the same among all categories.

Social influencing factors, such as friends or family members, have been reported in other studies and are consistent with the results of the factor analysis of this questionnaire [26].

The findings related to the influence of sex on herbal remedy use were found to be slightly higher percentage of women compared to men in agreement with the previous study [26,27]. The reasons for consuming herbs ranged from safety, perceived efficacy and ease of access—this agrees with previous studies [26]. In addition, the study showed a deficit in information among HCPs regarding herb-drug interactions. Knowledge deficiencies found in this study were also reported by many studies in the Arab region, including Saudi Arabia, Jordan, Oman, Kuwait, Qatar and Lebanon, as well as in the United States [26, 28,29]. A possible reason for HCP’s missing answers is because participants were hesitant to answer them, as they did not know the correct answers [28-30].

There is a need of proper education about herbal products among pharmacists, especially community pharmacists, who are expected to provide correct information about their proper use, adverse effects and interactions [29-30].

Potential limitations to this study include the small number of responders, the majority of whom were females may be because Women are more open and receptive to a health concern and tend to share problems [23,27]. Future studies should focus on testing a larger sample, of equal males and females percentages in order to avoid gender bias. The self-administered questionnaire also has limitations, as the data collection relied on self-reported answers, which could be subject to errors because of memory recall or social-desirability bias.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

CONSENT (WHERE EVER APPLICABLE)

All authors declare that 'verbal informed consent was obtained from the participants.

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

The survey was approved by the ethical committee in the faculty of Pharmacy, Alexandria University, Egypt and was given the number (EC18/1)confirms either that this study is not against the public interest, or that the release of information is allowed by legislation.

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