

The prevalence of herbal products and dietary supplements misuse in the Syrian community: A cross-sectional study

Noor MHD Mazen Al Khawwam,

Haneen Hisham Sulaiman,

Samar Alzeer

*Department of Pharmacology & Toxicology,
Faculty of Pharmacy, University of Damascus,
17 Nissan Street, Mazzah, Damascus, Syria.*

Lata Gautam

*School of Life Sciences,
Anglia Ruskin University-Cambridge Campus,
Cambridge, UK Anglia Ruskin University, UK.*

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Abstract

Introduction: The increasing prevalence of overweight and obesity is one of the most challenging and concerning global health issues. This study aims to investigate knowledge, awareness and use of herbal supplements for weight loss in various segments of Syrian society according to gender, age and education.

Methods: A cross-sectional questionnaire was structured by Angela-Ruskin university, and distributed online between 17 February and 21 April 2021. The questionnaire consisted of series of

questions about sociodemographic background as well as about their usage of herbal products and weight loss pills.

Results: 21.1% Of participants stated they used herbal supplements. More than half of them consumed licensed products and 21.5% took these products randomly. A surprising 45% admitted they did not consult a doctor prior to taking these products if they were pregnant or breastfeeding. 50.8% regained their lost weight when discontinuing herbal slimming supplements. Community pharmacists were the most important source of information (31.2%). Most

participants did not originally complain of obesity and did not want to lose weight, 10.5 % of them feared their side effects.

Conclusions: The study highlights the need for further investment in public health education, especially with regard to pregnant and lactating women, to understand the importance of seeking a medical advice before taking supplements. The effectiveness of these supplements in weight loss should not be exaggerated on social media, and their use without a medical supervision should not be encouraged. Our study emphasizes the need to enforce the laws regarding manufacture, distribution, marketing and dispensing such medicines.

Keywords: Herbal supplements, slimming products, weight loss, Syria,

* **Introduction**

Background: The increasing prevalence of overweight and obesity is one of the most challenging and concerning global health issues. The World Health Organization defines overweight and obesity as “abnormal or excessive fat accumulation that may be harmful to health (Zobel et al., 2016) .

Obesity is a complex, multifactorial disease. The worldwide prevalence of overweight

and obesity has doubled since 1980 to the point where nearly a third of the world's population is now classified as overweight or obese. Obesity rates increased across all ages and both sexes regardless of geographic location, race, or socioeconomic status, although the prevalence of obesity was higher in the elderly and women. This trend was similar across regions and countries, although the absolute prevalence of overweight and obesity varied widely (Chooi et al., 2019) .

In a study that included most of the Middle Eastern countries, A total of 698,905 participants who met the inclusion criteria for this meta-analysis were identified. The pooled estimates for the prevalence of obesity and overweight in the Middle East region were 21.17 (95% CI: 17.05–26.29) and 33.14 (95% CI: 26.87–40.87), respectively. The results showed that the prevalence of obesity increases with age, so that the highest prevalence of obesity and overweight was observed in people over the age of forty (Okati-Aliabad et al., 2022) .

Complementary and alternative therapies have long been used in the Eastern world but recently these therapies are being used increasingly worldwide. When conventional medicine fails to treat

chronic diseases and conditions such as obesity efficaciously and without adverse events, many people seek unconventional therapies including herbal medicine. Although the number of randomized trials on complementary therapies has doubled every 5 years and the Cochrane library included 100 systematic reviews of unconventional interventions, none of these studies specifically mentioned herbal therapy in obesity (Hasani-Ranjbar et al., 2009).

Recent advances in slimming drugs have enabled clinical potential for dramatic weight loss. Mounting evidence has shown that lifestyle improvements in nutrition and exercise with one of these medications can lead to greater weight loss than those without medication (May, 2009). Most of the current weight-loss drugs approved by the FDA are appetite suppressants (Pilitsi et al., 2019). For example, Phentermine (Johnson & Quick, 2020), Flouxetine (Serralde-Zúñiga et al., 2019), also other chemical drugs can be used, such as Orlistat, Which is used as an inhibitor of lipase and thus prevents the absorption of fat (Bansal & Al Khalili, 2020), or metformin, whose effect on decreasing insulin resistance leads to weight loss (Rena et al., 2017). Some

stimulants may be used illegally, such as amphetamines, to reduce weight, but they are extremely dangerous to human health (Heal et al., 2013).

While people now prefer to use herbal medicines, laxatives are the most commonly used for the purpose of slimming, even though it is wrong and harmful to health (Bashir & Sizar, 2020). For example, usage of Senna (P.Rodgers, 2012) and Chinese Rhubarb (Xiang et al., 2020) as an Osmotic laxatives and flaxseed as an active laxative. Indirectly, by depriving the absorption of the food intake as well as depriving important nutrients, leads to unhealthy weight loss (Bashir & Sizar, 2020).

Recently, the use of other herbal medicines become widespread, such as Hoodia gordonii, which acts as an appetite suppressant (Chevallier, 2016), or Barberry, which has anti-insulin resistance properties (Wang et al., 2017).

In the preceding two decades, the utilization of traditional medicines has increased significantly worldwide (Barnes et al., 2016). The prevalence of the use of traditional medicines is 5.9–48.3% in Canada, 12% in United States, and 19% the European Union (Eardley et al., 2012); (Wu et al., 2011).

As for the Middle East, in developing countries, 80% of the population relies on traditional herbal medicines for their primary healthcare (Samreen et al., 2020) .

In Saudi Arabia , where these products are still widely used, whether in the Bedouins or in urban areas, The SFDA analysis revealed the presence of sibutramine in Magrim Super Diet being sold by street vendors as a natural product for weight loss (Samreen et al., 2020).

In Egypt, They found that herbal medicines, which are promoted as 100% natural, contained harmful chemicals such as sibutramine, sildenafil, phenolphthalein, and orlistat(Ahmed et al., 2019) .

In Jordan, where Herbal supplements are sold in 98.5% of pharmacies, 63.1% of the Jordanians were not aware of potential herb-drug interactions (Jalil et al., 2022) .

Syria, a country that contains 15 governorates and has a population of about 277 millions (The Official Website of the Central Bureau of Statistics in Syria, 2022) , The use of traditional Arabic medicine for various diseases has been popular but scarcely studied (Alachkar et al., 2011). In a local study, Sibutramine was found to be a slimming plant

preparation spread in the local market in Syria (Barakat & Skef, 2021) .

This study aims to measure the culture of use of herbal supplements and medicines, especially those used for the purpose of weight loss, among various segments of Syrian society according to specific criteria such as gender, age, and education.

*** The study problem**

People in Syria believe that using traditional medicine to treat different diseases is convenient in terms of cost and side effects compared with manufactured drugs(Khatib et al., 2021a) .

The aim of this study is to investigate knowledge, awareness and use of herbal supplements for weight loss in various segments of Syrian society according to gender, age and education.

This research is the first of its kind in Syria, as it sheds light on the use of medicines and herbal supplements, and it became clear that it is widespread and there is clear misuse of them, especially those used for weight loss. It is interesting to note that pregnant women use it without obtaining medical advice or asking a doctor.

*** Methods**

Study design: This was a cross-sectional study conducted in Syria. The questionnaire was adapted from

(Aina et al.,2020) and had ethical approval from Angelina Ruskin university prior to publication. Participants were asked for consent before completing the questionnaire. The questionnaire consisted of series of questions about sociodemographic background as well as about their usage of herbal products and weight loss pills. The questionnaire was shared on several social media platforms (eg Facebook, Telegram, WhatsApp, etc.), and distributed between 17 February and 21 April 2021.

Participants were 18 years and above and those who lived in Syria at the time of study

* Sample Size calculation

The Morgan's tables (Krejcie & Morgan, 1970) was employed for sample size calculation. The number of social media users to whom we presented the questionnaire was approximately 150000, which means that the minimum sample size equal to 384.

* Data analysis

Microsoft Excel was used for data analysis.

* Results

A total of 415 participants responded to the questionnaire, but several responses were from individuals living outside Syria. Therefore, after excluding these

replies, the total number was 308 responses. Table (1) shows sociodemographic of study participants.

Table (1): Sociodemographic background of the respondents

	Number of responses (%)
Gender	
• Female	252 (82 %)
• Male	49 (16%)
• Prefer not to say	7 (2 %)
Age	
• ٢٠-٢٨	166 (54 %)
• ٣٠-٣٦	52 (17 %)
• ٤٠-٣١	47 (15 %)
• ٥٠-٤١	30 (10 %)
• ٦٠-٥١	9 (3 %)
• More than ٦١	4 (1 %)
Educational level	
• Elementary	5 (2 %)
• preparatory	5 (2 %)
• secondary	29 (9 %)
• University student	211 (68 %)
• Postgraduate	58 (19 %)

Among the participants, 21.1% (N= 65) stated they used herbal supplements while the majority (77.2%, N= 238) did not use it. the rest 1.62% (5) refused to answer the question.

Table 2 shows the period of using such products. 38.5% (N=25) of participants (N=65) stated they used these products for one month, followed by 29.3% (N=19) who used them for 2-4 months. Very few responses stated longer period of a year or more.

Table (2): Time period for using herbal products (N= 65)

Time	Number of participants (Frequency)
Week	3 (4.6%)
2-3 weeks	3 (4.6%)
1 month	25 (38.5%)
2-4 months	19 (29.3%)
5-8 months	3 (4.6%)
9-11 months	1 (1.5%)
Year	3 (4.6%)
2-3 years	3 (4.6%)
Over 10 years	2 (3.1%)
They didn't remember	3 (4.6%)

More than half the participants (58.5%, N=38) consumed licensed products, while 9.2% (N= 6) took unlicensed products, and 27.7% (N=18) of them did not mind consuming products of both types. Only 4.6% (N= 3) Cannot identify the sources.

The majority of responses (78.5%, N=51) , took these products following a specific dose, and 21.5% (N=14) took it randomly. When asking whether a pregnant or breastfeeding woman consulted a doctor before taking herbal supplements, a surprising 45.5% (N=5 of 11 pregnant or breastfeeding women) replied (NO).

When asked about the reason for resorting to herbal supplements for slimming, the answers varied as follows (table 3).

Table (3): Reasons for taking herbal supplements for slimming (n = 65 , N= 21.1%)

Reasons for taking Herbal diet pills	Frequency
The need to lose weight	84.6% (N=55)
The need to stimulate metabolism	1.5% (N=1)
Better solution than chemical medicine	10.8% (N=7)
Treat hormonal disorders that causes obesity	3.1% (N=2)

When discontinuing herbal slimming supplements, (50.8% N=33) regained their lost weight, 32.3% (N= 21) recovered only a small part of the weight, but 17% (N= 11) kept the result they had reached.

Sources of knowledge about herbal slimming products are listed in figure 1. Community pharmacists were the most important source of information (31.2 %, N=30), therefore, pharmacies were the major sources of these products (Figure 2). 24.6% (N=16) of participants used other medicines or herbs in conjunction with herbal slimming supplements .

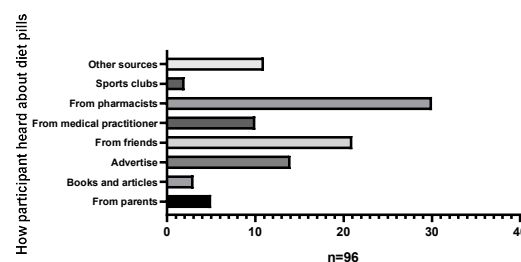


Figure (1) : Sources that introduce participants to herbal slimming supplements

Community pharmacists were the most important source of

knowledge about herbal slimming products (31.2 %, N=30), followed by friends (21.9 %, N=21) and advertising (14.6%, N=14). Articles and books, friends, parents, advertisements, medical practitioners, sport clubs were listed among other sources.

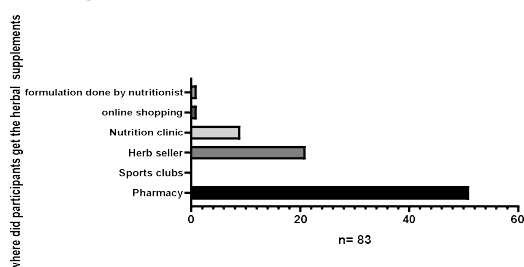


Figure (2): Sources where participants get the herbal slimming supplements

The majority of participants (51, 61.4%) obtained products from community pharmacies, followed by herbal shops (25.3, 21%), nutrition clinics (10.9%, N=9)

When asked about understanding the interactions between herbal weight loss supplements and other medications, almost half of the participants had no prior knowledge (47.7%, N=31) (table 4)

Most participants stated their experience as positive (47.7%, N=31), 30.7 % prefer to use other options, while 15.4 % (N=10) found no effect (table 5). To cope with side effects, the majority, 76.9% (N=50), cease usage for a while, another 20% (N=13) consulted a doctor, and 3.1% (N=2) took other herbs. Participants

agreed the side effects if present were mild and did not require hospital care.

Table (4): participants' perception of interactions between herbal weight loss supplements and other medications (21.1% , N = 65)

Participant Perception	Frequency
It is herbal so it should be safe	7.7% (N=5)
It may have side effects	15.4% (N=10)
It may cause an allergic reaction	1.5% (N=1)
It may have complications when having chronic diseases	3.1% (N=2)
It may decrease or increase the effectiveness of the other drug	24.6% (N=16)
I have no idea	47.7% (N=31)

Table (5): participant experience with using herbal drugs (N=65)

participant experience	Frequency
positive	47.7% (N=31)
no effectiveness	15.4% (N=10)
uncomfortable side effect	3.1% (N=2)
caused health problems	3.1% (N=2)
prefer other solutions	30.7% (N=20)

For the 238 participants who said they never used herbal supplements before, many reasons were given, which are described as follows (figure 3):

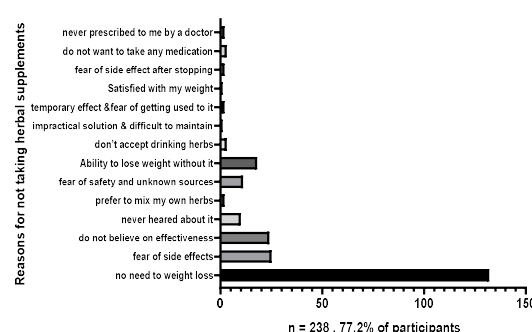


Figure (3) : Reasons for not taking herbal supplements.

Participants stated several reasons, most notably not need to lose weight, fear of side effects , or lack of

confidence in their effectiveness or their sources.

The majority of participants (55.5 % , N= 132) did not originally complain of obesity and did not want to lose weight , some of them (10.5 % ,N=25) feared their side effects, and 10.1 % (N= 24) did not believe in their effectiveness in weight loss. 4.2 % (N= 10) of the participants did not know of these products before, 4.7 % (N= 11) did not trust the sources of these products, and (7.6 % N=18) they can simply lose weight without resorting to such methods.

1.3 % (N= 3) did not like drinking herbs, another 1.3 % (N= 3) did not want to take any medication, while 0.8 % (N= 2) said that they prefer to use their own mix of herbs, 0.8 % (N= 2) thought that these supplements have temporary effect and they are fear of getting used to it. In addition, 0.8 % (N=2) fear of side effect following to stop, and 0.8 % (N= 2) said that this supplements never prescribed to them by a doctor. 0.4 % (1) believe that slimming herbs are impractical solution and difficult to maintain, while 0.4 % (N=1) was satisfied with his\her weight.

In order to assess awareness regarding the presence and usage of certified and uncertified diet herbal products, A third of participants 34.4 % (N=106) never heard about such

classification and did not knew the difference between them. Another third (35.7% , N=110) heard about certified products, but did not understand what the difference is, while only 29.9% (N=92) said they knew about both types, and how they are different.

Participants who answered (NO) to the last question suggested recommendations regarding public awareness and using this supplements (table (6)).

n = 240, 77.9% of participant

Table (6): participant recommendations to improve using herbal slimming supplements & public health .

Participant suggestions	Number of participants (%)
spreading awareness	84 (35%)
I don't have Idea	60 (25%)
doing more researches	28 (11.6%)
Authorities control this type of product	11 (4.6%)
pass strict laws & work on licensing available supplements	16 (6.7%)
consult a doctor or a pharmacist	9 (3.7%)
Other solutions than herbal supplements	10 (4.2%)
List ingredients, information and side effects on a product label + insert leaflet	22 (9.2%)

* Discussion

The aim of this project was to assess the attitude of in Syria about the use of herbal supplements for slimming, and we noticed that the majority of the responses were from females with a rate of 82%, perhaps because the subject of the study is concerned with the external appearance, which attracts females more than males, Considering that

females in Syria suffer from obesity more than males .

The prevalence of obesity in Syria was shown to be higher than other regional countries. (34.8% for females compared to the regional average of 8.75 %, and 20.9% for males compared with the regional average of 6%) . At the same time, diabetes is estimated to affect 15.3% of women and 14.0% of men.) according to (Global Nutrition Report Website - Syrian Arab Republic, 2022)

It was also noted that the majority of the responses came from a young age group between 18 and 25 years, and this is often because the fact that these are the most users of social networking sites, which we used to publish the questionnaire link, and they also have more concerned about obesity and its impact on public health.

The responses of those with a university degree were the most, which was expected, since in Syria, most of the population go to university or have a university degree. Public universities in Syria are almost free, and society strongly encourages youths to have careers that require a university degree (WENR Website - Education in Syria, 2016).

Most of the people who did not use herbal slimming supplements, stated they did not need to lose weight, which is in contrast with the obesity report mentioned-above. Some of the participants also did not trust their effectiveness in weight loss or they heard about others negative experiences. A small percentage feared the side effects of these products.

Most of the slimming products marketed in Syria are often laxative herbs, mainly senna, which should not be used for this purpose for its long term damage to the intestines and the problem of dehydration. . (Posadzki et al., 2013) (Brusick & Mengers, 1997).

A recent study reported that some people in Hama and Homs (central Syria) stated they believe in the effectiveness of slimming herbal products in weight loss compared to other types of slimming drugs. (Khatib et al., 2021b). There are also about from people who used these supplements found that these supplements are an easy solution to lose weight without the need of appropriate diet and exercise, which is not possible.

Most participants did not know the ingredients of herbing products. Some of them believed they affect metabolism, target specific enzymes

or hormones. However, as we mentioned above, the majority of the licensed products in the Syrian market are laxatives

A surprising result in our survey was that pregnant and lactating women stated they used herbal supplements without medical advice, because they think that natural and herbal products are harmless, and have no side effects on their offspring, unlike chemical drugs. (Dathe & Schaefer, 2019)

Unfortunately, self-medication is very common in Syria, even with prescribed drugs, such as antibiotics, so over the counter herbal supplements are frequently taken without medical advice.

Most of the participants had obtained their information about the use of diet supplements from community pharmacists, which highlights the crucial role of pharmacists as health care providers to raise awareness against the random use of herbal supplements without medical supervision. Other sources of knowledge were friends and adverts, and to a lesser extent nutrition clinics and spice shops (commonly found in the middle east). The later is one of the major sources for unlicensed products.

When faced with side effects resulting from taking herbal

supplements, a high percentage prefer to just rest until feeling better, without the need to see a doctor. It may be an underestimation of the harm that can be caused by herbal supplements.

It was alarming that two-third of participants in our study did not know the difference between licensed and un licensed herbal supplements, which indicates a lack of awareness about the importance of licensing, and ignorance of danger resulting from taking unlicensed products, especially when the ingredients were not listed on the label.

This is a summary of our results and studies of other countries whose results are tender and results for our results data:

Source	Educational level	Side effect	Weight loss	Male	female	Target group	country
(Burnett et al., 2017)	Postgraduate		%16	%34	%47	Random	Australia
(Del Balzo et al., 2014)			%5.7	%49	%51	High school students	Italy
(Kobayashi et al., 2017)	University students	%7.5	%14	%27	%73	University students	Japan
(AboAli & Elgamal, 2016)	University students		%27	%56	%44	gym goers	Egypt
(Samreen et al., 2020)						Pharmacy students	KSA
(Abdulla et al., 2019)	University students		%5.3	%83	%17	Random	UAE
(ElKhoury et al., 2016)	University students			%40	%60	Random	Lebanon
	diverse	% 3.1	% 47.7	% 16	%82	Random	This study

* Conclusion and Recommendations

This study highlights the need for further investment in public health education, especially with regard to pregnant and lactating women, to understand the importance of seeking a medical advice before taking supplements. The effectiveness of these supplements in weight loss should not be

exaggerated on social media, and their use without a medical supervision should not be encouraged. Some of these supplements that are available in the Syrian market contain laxatives. Which may cause serious side effects with chronic use.

Our study emphasizes the need to enforce the laws regarding manufacture, distribution, marketing and dispensing of such medicines, following them up periodically, and tightening supervision to prevent violations of all kinds.

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