



# The Use of Herbs, Dietary Products, and Different Types of Diet for Weight Loss Purposes

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## Abstract

**Background:** Obesity is a global pandemic health problem. Attempting weight reduction, excess weight people commonly seek herbal products in addition to claim diets. We aimed to assess the prevalence of consuming herbal and dietary products for weight loss purposes and to assess weight reduction attitudes and beliefs among a group of excess-weight adults in Jordan.

**Methods:** A cross-sectional study was conducted on a sample of 477 Jordanian adults (81.6% females), between Feb-Apr/2021. The study data collection was completed by using a validated online structured questionnaire.

**Results:** 28.9% of the male participants reported that the most common source of diets they followed was by themselves (43.2%) and by dietitians (25%). Whereas female participants followed the weight reduction diets prescribed by dietitians, by themselves, and on the internet (31.1%; 26.5%, and 23.7; respectively,  $P=0.011$ ). The majority of participants from both genders do not believe in using weight reduction herbs alone for losing weight; it must be done along with diet and exercise ( $P=0.018$ ). Females who use herbs for weight reduction were more than males. In addition, green tea was the most used herb by all participants (8%). The main advisor for using weight reduction herbs and dietary products in females was the internet (30.1%) followed by their own (24.2%). However, in males, it was by their own (21.6%), then by a dietitian (12.6%), and by the internet (12.5%) ( $P=0.001$ ). Moreover, a quarter of male participants and 21.6% of females did not feel that using herbs to lose weight was efficient.

**Conclusion:** The excess weight adults in Jordan seek to use diet, herbs, and dietary products for weight reduction, advised by unreliable sources. Although the majority are convinced that it is not effective alone, further studies are needed to assess the side effects and safety of such consumption among the population.

**Keywords:** Herbs; Overweight; Obesity; Weight loss practices; Jordan



## Introduction

The prevalence of overweight and obesity is estimated to be among over 1.9 billion adults worldwide. It is expected that many world adults will be either overweight or obese by 2030 (1). In Jordan, the prevalence of overweight and obesity is estimated to be 60% in men and 75% in women (2). Also, obesity is considered a major risk factor for several non-communicable diseases, such as cardiovascular disease, hypertension, diabetes mellitus II, and non-alcoholic fatty liver disease (3).

There are various strategies for obesity management, with lifestyle modifications including a healthy diet and being physically active are the key players (4). Other methods are used, such as the use of medications and herbs and bariatric surgery. Such methods are more interesting compared to traditional lifestyle modification since they are more rapid and easy (5).

The use of herbal products is popular among other mentioned results (6). Since they are promoted in the media to give quick and easy results for weight loss, also with beliefs that such "natural" products do not have harmless side effects (7). Five mechanisms have been proposed on how herbal products can reduce weight: suppressant of appetite and reduction in energy intake, thermogenesis stimulation metabolism promoters, inhibition of pancreatic lipase activity and fat absorption reduction, lipolysis boosting, and lipogenesis reduction (8, 9).

Herbal products in Jordan can be sold at relatively low prices through traditional herbal shops without medical or health supervision. Moreover, evaluating the weight loss strategy in any community including the use of herbal products is significant to take precautions and ensure their proper use of them. Far to our knowledge, few studies have evaluated the use of herbal products among people in Jordan; no study had examined such use among overweight and obese people, therefore, this study aimed to assess the prevalence of weight reduction herbal products use

and weight reduction attitudes and beliefs among a group of excess weight adults in Jordan.

## Materials and Methods

### *Study design and sampling*

This cross-sectional survey was conducted from February to April 2021 in Jordan. It was approved by the Faculty of Science, Philadelphia University (2021/3). The World Medical Association Declaration of Helsinki regarding the ethical conduct of research involving human subjects was followed.

An online self-reported questionnaire was conducted on a random sample of obese and overweight (excess weight) adults  $\geq 18$  years.

Data collection was completed by using an online structured validated questionnaire designed and produced by using Google Forms. It was developed after an extensive literature review for related studies and disseminated through internet routes (WhatsApp, Facebook, and Messenger). The questionnaire included three parts: the first part was about information describing the study purpose and the participant's agreement included informed consent form; the second part included self-reported data about socio-demographic and anthropometric data including weight (kg) and height (cm); the third part was about weight-loss strategies and herbal and dietary products consumption data. Inclusion criteria included adults from both genders age  $\geq 18$ , non-pregnant and non-lactating females, and an ability to read and write Arabic among people in Jordan. Moreover, normal-weight participants were excluded after body mass index (BMI) calculation; only excess-weight participants (overweight and obese) were included. The suitable sample size was calculated using online Raosoft software (Raosoft, Inc. free online software, Seattle, WA, USA), with a 5% confidence interval, 95% confidence level, and 50% response distribution. The sample size was used in case patients refused to enroll in the study or did not match

the inclusion criteria. Therefore, 689 participants have completed the online questionnaire, among them, 477 overweight and obese subjects were included.

The questionnaire was pre-tested for validity on a separate, non-included sample of 30 participants. Cronbach's alpha ( $\alpha$ ) was calculated to measure internal consistency reliability (10) using SPSS version 21.0 (IBM Corp., Armonk, NY, USA). The results showed good reliability ( $\alpha = 0.715$ ,  $P < 0.05$ ).

### Self-reported measurements

Weight and height were self-reported by participants; their BMI was calculated and categorized (as overweight and obese ( $\geq 25$  kg/m<sup>2</sup>) (11). Furthermore, self-reported sociodemographic data including sex, age, educational level, and marital status were reported. Participants were asked about weight loss strategies that they followed, the herbs and dietary products that they used for weight loss, the form, duration of use, beliefs

about efficiency and attitudes, by whom it was described, and obtaining method.

### Statistical analysis

Analyses were carried out using SPSS version 21.0 (IBM Corp., Armonk, NY, USA). Means, frequencies, and standard deviations were calculated using a frequency descriptive statistic test to describe the sample. Data are expressed as mean  $\pm$  standard deviation. The chi-square test was used to assess the difference in proportions. A  $P$ -value less than or equal to 0.05 was considered statistically significant.

## Results

### General characteristics of participants

Table 1 shows the general characteristics of the participants. Most participants were female (88.1%). In addition, the majority age group was 18-40 years (almost 70%). Furthermore, single participants were 64.8%, and the majority had completed undergraduate educational (57.4%).

**Table 1:** General Characteristics of the study population (n=477) \*

Characteristics		N (%)
Gender	Male	88 (18.4)
	Female	389 (81.6)
Age (year)	18-40	333 (69.8)
	41-65	143 (30.0)
	< 65	1 (0.21)
Marital status	Married	136 (28.5)
	Single	309 (64.8)
	Other	32 (6.6)
Weight status (Excess weight)	Overweight	270 (56.6)
	Obesity	207 (43.4)
Education level	Secondary education	86 (18.0)
	College	58 (12.2)
	University	274 (57.4)
	Postgraduate education	59 (12.4)
*All participants were classified as excess weight (overweight and obese, BMI $\geq 25$ kg/m <sup>2</sup> )		

### Self-image and weight reduction beliefs and attitudes

Table 2 shows that 91.8% of female respondents and 69.3% of males reported that they think their

weight is not ideal ( $P$ -value  $< 0.001$ ). Almost two-thirds of males believed that they have excess weight (73.9%), while 91.3% of females believed that they have excess weight ( $P = 0.001$ ).

Moreover, 43.2% of the male participants reported that the most common source of diets they followed themselves, then dietitians (25%), and by Internet (11.4%). Whereas female participants followed the weight reduction diets prescribed by a dietitian, by themselves, and on the internet

(31.1%; 26.5%, and 23.7; respectively,  $P$ -value=0.011). Almost half of the participants followed either low calories diet (26.1% of males and 24.7% of females) or more than one type of diet (21.6% of males and 27.0% of females).

**Table 2:** Participants’ self-image and weight reduction attitudes and beliefs

Variable	Gender		P- value
	Male (n=88) N (%)	Female (n=389) N (%)	
Self-image and weight beliefs:			
1. Do you believe your weight is ideal?			
Yes	15 (17.0)	10 (2.6)	<0.001
No	61 (69.3)	357 (91.8)	
Maybe	12 (13.6)	22 (5.7)	
2. Do you think you are suffering from:			
I Don't Know	4 (4.5)	13 (3.3)	0.001
Underweight	1 (1.1)	0 (0.0)	
My weight is within the ideal body weight	18 (20.5)	21 (5.4)	
Excess weight	65 (73.9)	355 (91.3)	
3. If you believe you have excess weight, for how long do you think you suffer from it?			
Less than a year ago	12 (13.6)	85 (21.9)	0.163
For five years	10 (11.4)	47 (12.1)	
5-10 years ago,	7 (8.0)	49 (12.6)	
Over 10 years ago	5 (5.9)	30 (7.7)	
I don't think I do have excess weight	54 (61.4)	178 (45.8)	
Participants’ Attitude and knowledge toward weight reduction diets:			
4. If you have followed a weight loss diet, who has prescribed it to you?			
Did not follow a diet	7 (8.0)	39 (10.0)	0.011
Physician	2 (2.3)	6 (1.5)	
Dietitian	22 (25.0)	121 (31.1)	
Friend or family member	7 (8.0)	26 (6.7)	
Internet	10 (11.4)	92 (23.7)	
by myself	38 (43.2)	103 (26.5)	
Others	2 (2.3)	2 (0.6)	
5. If you have followed a weight loss diet, what was it?			
I did not follow any kind of diet	13 (14.8)	55 (14.1)	0.119
Low Calories diet	23 (26.1)	96 (24.7)	
Low carbohydrates diet	10 (11.4)	37 (9.5)	
ketogenic diet	2 (2.3)	4 (1.0)	
High protein diet	5 (5.7)	7 (1.8)	
Intermittent fasting diet	9 (10.2)	65 (16.7)	
Blood typing diet	1 (1.1)	0 (0.0)	
Mediterranean diet	1 (1.1)	1 (0.3)	
Others	5 (5.7)	19 (4.9)	
I have followed more than one diet	19 (21.6)	105 (27.0)	

In Table 3, the majority of participants from both genders believe in the role of using herbs along with diet and exercise for weight loss ( $P=0.018$ ). 36.4% of males reported that they did not use herbs or dietary products for losing weight as

compared to females (16.5%). Green tea was the most used herb as a single herb by all participants (8% in males and females).

**Table 3:** Participants' beliefs and attitudes toward herbs and dietary products used for weight loss purposes

Variable	Gender		P- value	
	Male (n=88) N (%)	Female (n=389) N (%)		
1. Do you believe in the role of herbs alone in losing weight?				
Yes	6 (6.8)	15 (3.9)	0.448	
No	73 (83.0)	328 (84.3)		
I Don't Know	9 (10.2)	46 (11.8)		
2. Do you believe in the role of herbs in losing weight, along with diet and exercise?				
Yes	60 (68.2)	318 (81.7)	0.018	
No	15 (17.0)	37 (9.5)		
I Don't Know	13 (14.8)	34 (8.7)		
3. Have you used any of the following herbs or foods for weight loss purposes?				
I did not use herbs	32 (36.4)	64 (16.5)	0.001	
Apple vinegar	4 (4.5)	5 (1.3)		
Green tea	7 (8.0)	31 (8.0)		
Flaxseed	0 (0.0)	7 (1.8)		
Honey	1 (1.1)	7 (1.8)		
Cumin	1 (1.1)	2 (0.5)		
Green coffee	0 (0.0)	3 (0.8)		
Lemon	0 (0.0)	7 (1.8)		
Ginger	1 (1.1)	6 (1.5)		
Others	5 (5.5)	15 (4.1)		
Used 2-3 herbs	15 (17.0)	116 (29.8)		
Used 4-6 herbs and more	23 (26.2)	126 (32.4)		
4. Who prescribed herbs for you?				
I did not use herbs	31 (35.2)	69 (17.7)		0.001
Physician	0 (0.0)	4 (1.0)		
Dietitian	12 (13.6)	48 (12.3)		
herbalist	5 (5.7)	7 (1.8)		
Friends or family member	10 (11.4)	49 (12.6)		
Internet	11 (12.5)	117 (30.1)		
By my self	19 (21.6)	94 (24.2)		
5. How many times a day did you take herbs for weight loss purposes?				
I didn't use herbs	32 (36.4)	65 (16.7)	0.003	
Once daily	27 (30.7)	139 (35.7)		
Twice daily	18 (20.5)	108 (27.8)		
3 times daily	4 (4.5)	39 (10.0)		
Once a week	4 (4.5)	9 (2.3)		
Twice a week	1 (1.1)	8 (2.1)		
Other	2 (2.3)	21 (5.40)		
6. In which form you took the herbs?				
I did not use herbs	33 (37.5)	66 (17.0)	0.001	
Powder	2 (2.3)	21 (5.4)		
Capsules	1 (1.1)	9 (2.3)		
Boiled as a tea	50 (56.8)	283 (72.8)		
Other forms	2 (2.3)	10 (2.6)		
7. Do you think that using herbs for weight loss purposes is safe?				
Yes	36 (40.9)	158 (40.6)	0.910	
No	24 (27.3)	99 (25.4)		
I Don't Know	28 (31.8)	132 (33.9)		
8. Did you feel that your weight changed after using the herbs?				
I did not use herbs	32 (36.4)	64 (16.5)	<0.001	
Yes	13 (14.8)	68 (17.5)		
No	22 (25.0)	84 (21.6)		
I Don't Know	17 (19.3)	141 (36.2)		
At the beginning of use and then the effect stopped	4 (4.5)	32 (8.2)		
9. Are you willing or intend to use the herbs again to lose weight?				
Yes	27 (30.7)	160 (41.1)	0.171	
No	17 (19.3)	71 (18.3)		
I Don't Know	44 (50.0)	158 (40.6)		

Attempting weight loss, using 2-3 herbs and 4-6 herbs and more were used by females to males (17% and 26.2%, respectively) ( $P=0.001$ ). A total of 117 (30.1%) of females who used herbs and dietary products for weight reduction were advised by the internet, followed by their own (94, 24.2%), then family members or friends (49, 12.6%) and dietitians (48, 12.3%). However, the most common advisor for using herbs in an attempt to lose weight in males was on their own (19, 21.6%), followed by a dietitian (12, 13.6%), then internet (11, 12.5%) and friends or family member (10, 11.4%) ( $P=0.001$ ). Only 4 (1.0 %) and 7 (1.8%) female participants admitted that their herbal advisors were physicians and herbalists, respectively.

Almost two-thirds of females (283, 72.8%) and about half of the males (50, 56.8%) reported that they prepared herbs as a hot drink by mixing them with boiling water ( $P=0.001$ ).

However, a quarter of male participants (22, 25%) and (84, 21.6%) of females did not feel that using herbs to lose weight was efficient, a total of (13, 14.8%) of males and (68, 17.5%) females felt that their weights had been changed after using herbs. Even though it is not significantly different, nearly half of the participants (40.9% of males and 40.6% of females) believed that using herbs in an attempt to weight loss is safe, while the rest of them either thought it not safe (27.3% of males and 25.4 of females).

## Discussion

The present study investigated the prevalence of using herbs and dietary products for weight reduction among a group of excess-weight adults living in Jordan. We reported a high prevalence using weight reduction herbs and dietary products (63.6% and 83.5% in males and females, respectively), with an overall prevalence of 79.9%. This prevalence is increased over 10 years than the expected prevalence in developing countries (up to 70%) (12). The highest prevalence of using herbal products for obesity treatment was observed in Taif, Saudi Arabia (13). Most people

use it for many reasons, the most important of which does not require a medical prescription (14), preparation methods are easy such as boiling with water (15), cheap, and have fewer side effects than conventional medications or surgical solutions (16), and it is attractively and remarkably marketed to support health and beauty (17). Whereas using herbal for weight reduction is not limited to developing countries, it is a global trend. It was reported among 42.9% of excess-weight Mexicans (18), and 33% of obese Americans (16). Also, several variables play a role in the dissonance of the reported prevalence among countries, it is related to the variation of the study design, studied participants, cultural and traditional practices, and population awareness of herbal use (13, 19, 20).

In agreement with previous studies, the higher participation response rate in the study was reported in 18-40 years females (81.6% of the studied population) (13, 14, 16, 20-22), as this category is highly concerned about the social psychology of body shape, self-image, and appearance (23), and they are always aspiring all available solutions to reach the ideal satisfied body weight and attractive body shape.

The present study reported that excess-weight females are significantly more concerned about ideal weight, approximately 90% of them know that they were either overweight or obese in comparison to about 30% of males who omitted their overweight and obesity ( $P < 0.001$ ). A higher prevalence of excess weight was reported in males in the last updated study of Jordan University students (20). This gap could relate to male knowledge about the excess weight undesired consequences such as type 2 diabetes mellitus, insulin resistance, metabolic syndrome, cardiovascular diseases (24), gout (25), and cancer (26). Also, excess-weight males are significantly recognizing themselves as normal weight (20.5%) five times more than females (5.4%). However, females were more anxious about excess weight, since 91.3% of them self-reported overweight or obesity existence, and 73% of males recognized and/or denied this problem ( $P=0.001$ ).

Referring to the source of the weight reduction diet that was followed by participants, our results were consistent with Issa's findings (2018), whereas an equal proportion of males (30.8%) were based on self-education or nutritionists. However, this study reported that female participants tend to follow weight reduction diets prescribed by a dietitian (31.1%) in the first place, followed by themselves (26.5%) and the internet (23.7%), in contrast to Issa's findings (2018) by which 51.4 % of female university students followed a personal diet planning (20).

In line with global trends, among different types of herbs and food used for weight reduction, green tea is the most commonly used (8% in both genders) consistent with findings that were reported in 16% of university students (20) and 88.4% of Taif excess weight residence (14). Discordant findings were reported from Mexico, where the Brazil nut was used mainly to achieve this goal (59.3% of participants). Females were high prevalence of using ginger, lemon, green coffee, honey, and flaxseed than males, whereas apple vinegar and cumin are more used by males ( $P<0.05$ ). Also, using a combination of herbs at the same time were significantly noticed in female, in contrast to Mexican excess weight where 87% of them used only one herbal product (18).

Many studies agreed on the present finding of the most reported form of herbs intake; herbs intake as boiled in water like a tea rather than powder and capsule ( $P=0.001$ ), since this form can be shared with family and friends (27), the participants may think it is safer than chemically modified powder and capsules (27), and the crude plant is the most common form of herbs used globally (28). Moreover, 85.9% of Saudis intake herbal in this form (13).

In line with a study conducted in Mexico, the highest proportion of participants took herbal once daily (18). Even though it not significantly different, about 40% of males and females were believed in the safety of herbal use for weight loss, subsequently, this finding can explain the high prevalence of herbal consumption for this purpose among excess-weight people living in

Jordan (27). In contrast, while 76.6% of university students believe in safety, 23.4% of them complained of urinary, gastrointestinal, or menstrual side effects (19, 20). Moreover, 35.5% of Taif's excess-weight residents suffer from side effects, and half of them suffered from diarrhea (13).

Physicians and herbalists have no role in herbal prescription, both genders rely on the internet, self-education, family members or friends, and dietitians for advice about herbal use for weight reduction ( $P=0.001$ ). Given the previous data, the majority of Jordanian university students (70.2%) depend on homemade herbs whereas the remnant students debate with pharmacists before using them (19, 20). Excess weight Saudi residents in Taif rested on friends (35.8%) and herbalists (31.0%) (13), also Mexican overweight and obese adults relied on family or friends, and personal prescriptions (67%, and 33%; respectively) (18). This highly refers to untrusted sources of herbal used in weight reduction which may lead to adverse consequences (29, 30). Obesity self-management was also reported in Brazil (31), Colombia, and India (32, 33).

The results of the study have many limitations; the nature of survey admission (self-reported questionnaire) sampling including weight and height reporting and selection bias may be expected, and no causality could be established by such a cross-sectional survey. On the other hand, the representative results due to the large sample size, random sampling process, and the first study conducted on obese and overweight Jordanian adults are considered as a strong point of the study.

Research scarcity was found in this aspect, more and more future studies are needed to fill this gap in knowledge, behavior, awareness, and attitudes toward using herbs and dietary products for weight reduction in the general population and high-risk groups such as overweight and obese people, with metabolic syndrome, and chronically infected patients.

## Conclusion

The excess weight adults in Jordan seek to use diet, herbal, and dietary products for weight reduction, advised by unreliable sources (internet, self-education, family members, or friends). Although the majority of them are convinced, that it is not effective alone for weight reduction. In addition, green tea is the most commonly used herb for weight reduction, and the participants favor consuming herbs as a drink with hot water.

## Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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## Conflict of interest

The authors declare no conflict of interest.

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