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# **The prevalence and strategy trends of using Herbs to reduce weight in Iraqi population**

**Research submitted to the College of Pharmacy  
University of Basra as a partial fulfilment of the  
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Pharmacy**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{نَرْفَعُ دَرَجَاتٍ مِّنْ نَّشَأُكَ وَفَوْقَ كُلِّ  
ذِي عِلْمٍ عَلِيمٌ}

صدق الله العظيم

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## ABSTRACT

**BACKGROUND:** Obesity is a global health pandemic; several studies have indicated that people commonly seek to claim diets, exercise and herbs as more natural alternatives to achieve weight loss.

**AIM:** The purpose of this study was to explore the preferences of Iraqi residents for the use of herbal remedies, conventional medicine, diet and exercise for weight loss, determining as well, the most commonly used herbs and identifying the most experienced adverse effects.

**METHODS:** A cross-sectional study was conducted on a random sample of 649 adults ( $\geq 18$  years) using a structured validated online questionnaire. Data about sociodemographic, anthropometric data, weight-loss strategies, diets, and herbs used were collected. A frequency descriptive statistic test was used to describe the sample. A p-value of  $< 0.05$  was considered statistically significant.

**RESULTS:** The majority of respondents (67.39%) aged 18- 29 years were overweight or obese and (77.93%) of them were females. Most of the participants were educated (61.13%) and attributed their obesity or weight gain to lifestyle (45.5%). In this study, all of the participants used herbs but with a different strategy. The most successful strategies reported were using a flexible, yet consistent 4-6 months program, a twice-daily consumption of herbs (p-value  $< 0.0001$ ) with exercise (n= 71, 61.97%) and herbs with a diet (n= 81, 66.6%). The majority of those who were satisfied with their weight loss preferred to include green tea (21.34%) and ginger (20.83%) in their weight loss strategy. However, (43.95%) of the participants reported Heartburn (29.45%) and nausea (21.28%) as

adverse effects accompanied mainly (by 43.43%) by the use of ginger.

**CONCLUSION:** The obese and overweight adults in Iraq seek different weight-reducing strategies, including the use of diet, exercise, herbs, and pharmaceutical preparations. The current study suggests that using herbs for weight loss is very frequent in Iraq, especially among those with excess weight. The use of certain herbs seems to be efficient in reducing weight only if used in a correctly designed program that involves either exercise or a diet with appropriate duration and frequency of use. The results also reported that most herbs used for weight reduction are green tea and ginger.

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# **CHAPTER ONE**

# **INTRODUCTION**

## 1. INTRODUCTION

A WHO report defined obesity as a chronic disease characterized by an increase in body fat storage that can be assessed clinically and a body mass index (BMI)  $>30 \text{ kg m}^{-2}$ . Individuals having a BMI ranging between  $25\text{--}29.9 \text{ kg m}^{-2}$  are categorized as overweight (1). The prevalence of obesity has doubled in the last 40 years in more than 70 countries worldwide (2). Moreover, almost 50% of the world's adult population is predicted to be overweight or obese by 2030 (3). Regarding morbidity and mortality, obesity is a global public health problem, attributed to 5.0% of deaths worldwide in 2014 (4). Additionally, it is associated with an elevated risk of several non-communicable diseases, such as diabetes mellitus (DM), dyslipidemia, cardiovascular disease (CVD), and cancer (5). This reflects the situation in Iraq; the rate of obesity is high and increasing. In a national 2015 Iraq STEPS survey, the prevalence of overweight (31.8%) and obesity (33.9%) or overweight/obesity (65.7%) were reported (6), which was very similar to previous local investigations, e.g., in Erbil city (7), in Basrah (8), and among females in out-patient clinics in Baghdad (9). The survey also found that being female, being middle-aged, having a higher socioeconomic status (less household crowding), and residing in urban areas were associated with being overweight and/or having obesity. Of concern as well is that 55.2% of young women and 40% of young men aged 18–29 were already overweight or obese, showing that a large proportion of overweight/obesity is already established in early adulthood (6).

Treatment methods used for obesity and overweight are conservative therapy, pharmacological therapy, and bariatric surgery. All of the treatment plans have varying degrees of effectiveness due to cost, unwanted side effects, and compliance issues. Conservative therapy, such

as lifestyle and diet control, includes exercise, avoiding fatty intakes, reduced caloric intake, and increased energy expenditure. Pharmacological therapies were recommended for a short period because of adverse effects. In addition to the pharmacological intervention for obesity, consumers are continually seeking a more natural alternative treatment to achieve the same weight loss goal. Currently, herbal products that claimed to give weight loss are popular ([10](#)).

Herbs are considered one of the most common alternative therapies for weight loss worldwide ([11](#)). Many studies have investigated the efficacy and safety of medicinal plants in treating obesity, dyslipidemia, and diabetes mellitus ([12-14](#)). Additionally, many plant and plant products have been shown to possess anti-obesity effects, including *Curcuma longa* (curcumin), *Zingiber officinale* (ginger), *Nigella sativa* (black seed), *Camellia sinensis* (black Chinese tea, green tea), *Bidens odorata*, soybean, apple cider vinegar, castor oil, and flaxseeds ([15-17](#)). In Iraq, herbs, and supplements are freely available in both pharmacies (registered approved products) and herbal remedy traditional shops (unregistered products), using very high expectations propaganda regarding fast and safe weight loss. To date, there is not enough data to examine the practices of weight loss in Iraq in particular regarding the use of herbal supplementations, plant-based products, or fad diets; hence, the objective of the study was to assess the prevalence of weight-loss strategies and herbs use among adults in Iraq.



## **CHAPTER TWO**

**MATERIALS**

**&**

**METHODS**

## 2. METHODS

### 2.1. Study Design:

A cross-sectional survey was conducted from December 2022 to February 2023 in Basrah by fifth-grade students of the College of Pharmacy, University of Basrah, Iraq. An online self-report questionnaire was carried out in a random sample among adults  $\geq 18$  years.

### 2.2. Data collection, Sampling, recruitment Participants and Eligibility Criteria:

The study data collection was performed using a structured validated online questionnaire established using Google Forms and disseminated through internet routes (WhatsApp, Facebook, and Messenger). It was developed after an extensive review of related studies. The questionnaire included the study's purpose description and agreement to participate; self-reported sociodemographic and anthropometric data, including weight (kg) and height (cm); weight-loss strategies and herbs and supplementation use data.

This study included only respondents who were easily available for data collection and interested to provide information willingly.

Those who did not feel comfortable giving information were excluded from the study as well as those who did not meet the study criteria, such as normal and underweight persons. Inclusion criteria included being of age  $\geq 18$ , being a nonpregnant and nonlactating woman, and having the ability to read and write Arabic.

Answers from the questionnaires were exclusively used as the data source.

### 2.3. Sample size:

The appropriate sample size for this study was calculated using Raosoft software (Raosoft, Inc. free online software, Seattle, WA, USA). The current population of Iraq is 42,881,917 as of Thursday, June 15, 2023, based on Worldometer elaboration of the latest United Nations data (<https://www.worldometers.info/world-population/iraq-population>). With a confidence interval of 5%, a confidence level of 95%, and a response distribution of 50%, a sample size of 385 was necessary. In our study, a larger sample size was used in case patients refused to enroll in the study

or did not match the inclusion criteria (pregnant and lactating women, who cannot write and read Arabic, and are less than 18 years old). Therefore, 649 participants completed the online questionnaire; among them, 512 matched the eligibility criteria.

#### **2.4 Consent:**

Informed consent for each participant was obtained on the first page of the survey, and the privacy and confidentiality of the respondents were strictly protected

Participants were assured that all data would be de-identified and stored and handled anonymously; and if they changed their mind about anything they said, they could contact a named researcher and withdraw that section of the data.

The research proposal was approved by the Human Research Ethics Committee, College of Pharmacy, Basrah University.

#### **2.5 Self-reported Measurements:**

Participants reported their weight and height; their BMI was calculated and categorized as follows: underweight ( $<18.5 \text{ kg/m}^2$ ), normal weight ( $18.5$  to  $24.9 \text{ kg/m}^2$ ), overweight ( $25$  to  $29.9 \text{ kg/m}^2$ ), and obese (over  $30 \text{ kg/m}^2$ ) (Center of Disease Control (CDC), 2020); the excess weight group included overweight and obese participants. Additionally, self-reported sociodemographic data, including sex, age, educational level, were reported. In addition, they were asked about weight loss strategies that were followed, the name of herbs they were using for weight loss, form, duration, frequency, beliefs about efficiency, and by whom it was described (families or friends, media, or health care providers) and obtaining method in the past three to five years from data collection. Side effects and which herb was mostly responsible for these side effects were also reported.

#### **2.6 Data analysis:**

Data were analyzed using GraphPad Prism (version 9). The descriptive analysis was carried out using mean values and SD for continuous variables and percentages for qualitative variables. The chi-square test was used to calculate P values for categorical variables. P values of less than 0.05 were considered significant.

# **CHAPTER THREE**

## **RESULTS**



### 3. RESULTS

#### 3.1 Participants' Demographic Characteristics:

A total of 649 participants responded to this questionnaire. Among these, only 512 matched the study criteria. More than three-quarters of the participants (77.93%) were female. Slightly less than half of the participants were 21-29 years old (47.27%). the majority reported as overweight (43.95%), About two-thirds of the participants ( 61.13%) were university enrolled or have a higher education (Table 3.1).

**Table (3.1):** Demographic characteristics of participants (n= 512)

<i>Characteristics</i>	<i>Response</i>	<i>Percentage</i>
<b><i>Gender</i></b>		
Male	113	22.07%
Female	399	77.93%
<b><i>Age (years)</i></b>		
18-20	103	20.12%
21-29	242	47.27%
30-40	108	21.09%
41-49	44	8.59%
50-60	15	2.93%
<b><i>BMI</i></b>		
Overweight	225	43.95 %
Obese	195	38.08%
Extremely obese	92	17.97%
<b><i>Education</i></b>		
University or higher education	313	61.13%
Secondary	143	27.93%
Less than secondary	45	8.79%
Non-educated	11	2.15%

### 3.2 Participants' history of Obesity/overweight

Table (3.2) shows that slightly less than half of the participants (45.89%) believed that they had excess weight for less than 5 years. Of which 45.5% of participants attributed this increase in weight to lifestyle. Approximately 72.07% of the participants did not consult with a specialist (physician/nutritionist) to treat their overweight or obesity.

**Table (3.2):** Participant's history of Obesity/overweight ( $n= 512$ ).

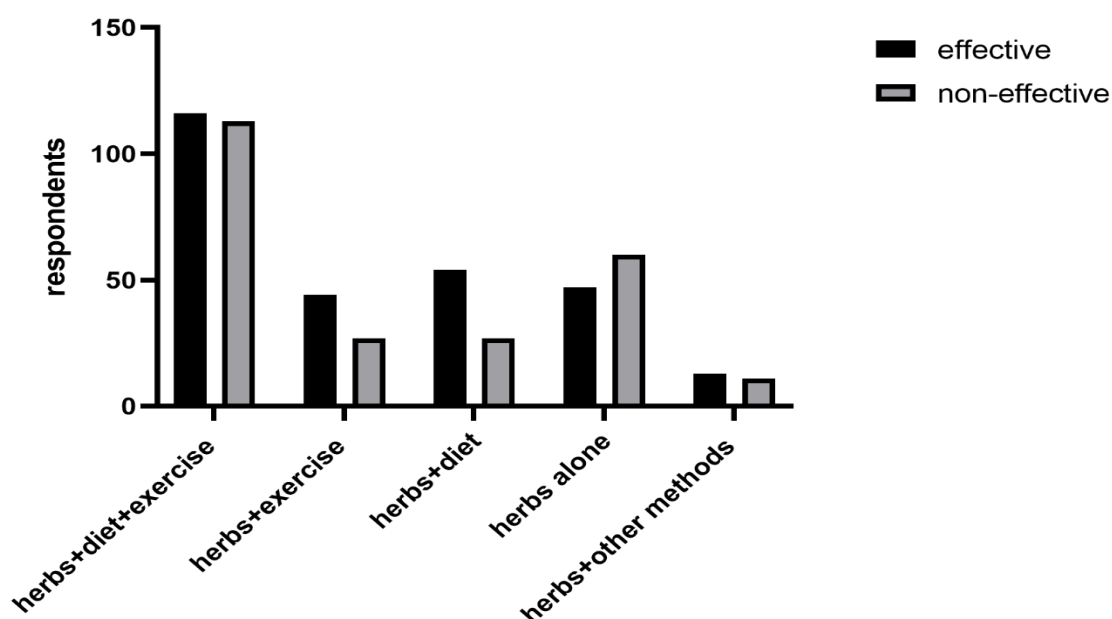
<i>Characteristics</i>	<i>Response</i>	<i>Percentage</i>
<i>Duration of obesity (years)</i>		
<5	235	45.89%
5-9	151	29.49%
10-19	97	18.95%
20-24	21	4.10%
$\geq 25$	8	1.56%
<i>Causes</i>		
<i>Life style</i>	233	45.5%
<i>PCO</i>	92	17.96%
<i>Medication</i>	24	4.7%
<i>Hypothyroid</i>	17	3.32%
<i>Follow up with a specialist (physician/nutritionist)</i>		
Yes	143	27.93%
No	369	72.07%

### 3.3 Participants' Consumption Strategy of Herbs alone or with other methods for Weight Reduction:

Almost half of the participants used herbs based on a friend (26.17%) and network (25.19%) recommendations.

Participants were asked to describe their loss plan strategy using herbs, the majority of them (44.72%) were committed to an extensive short-duration program of dieting, exercising and using one or more herbs. However, almost half of this group (49.34%) did not find that herbs contributed significantly to their weight loss.

On the other hand, those who used flexible yet consistent programs of exercising with herbs and dieting with herbs described their plan as successful (61.97%) and (66.66%) respectively with a p-value of (0.0147) compared with other groups. The respondent's using these two programs particularized herbs as major contributors to their significant weight loss (Table 3.3) and (Figure 3.1).



**Figure (3.1):** Illustration of the significant effect of herbs in programs including exercising or dieting in reducing body weight with a p-value of (0.0147) compared with the insignificant effect of herbs in other programs that involved the use of herbs alone, or extensive programs of exercising and dieting.

**Table (3.3):** Participants' Consumption Strategy of Herbs alone or with other methods for Weight Reduction (n=512):

<i>Characteristics</i>	<i>Response</i>	<i>Percentage</i>		
<i>Who recommended including herbs in your weight loss plan?</i>				
<i>Friend</i>	134	26.17%		
<i>The network</i>	129	25.19%		
<i>Patients with obesity</i>	77	15.04%		
<i>Apothecary</i>	73	14.26%		
<i>Nutritionist</i>	36	7.03%		
<i>Pharmacist</i>	34	6.64%		
<i>Physician</i>	29	5.66%		
<i>Characteristics</i>	<b>Total (%)</b>	<b>Effective (%)</b>	<b>Non-effective (%)</b>	<b>P value</b>
<i>Herbs with exercise and diet</i>	229 (44.72%)	116(50.65%)	113(49.34%)	0.0147
<i>Herbs with exercise</i>	71(13.87%)	44(61.97%)	27(38.02%)	
<i>Herbs with diet</i>	81(15.82%)	54(66.66%)	27(33.34%)	
<i>Herbs alone</i>	107(20.9%)	47(43.93%)	60(56.07%)	
<i>Herbs with other methods</i>	24(4.69%)	13(54.17%)	11(45.83%)	

**3.4 participants' information regarding the herbs they used in their weight loss plan:**

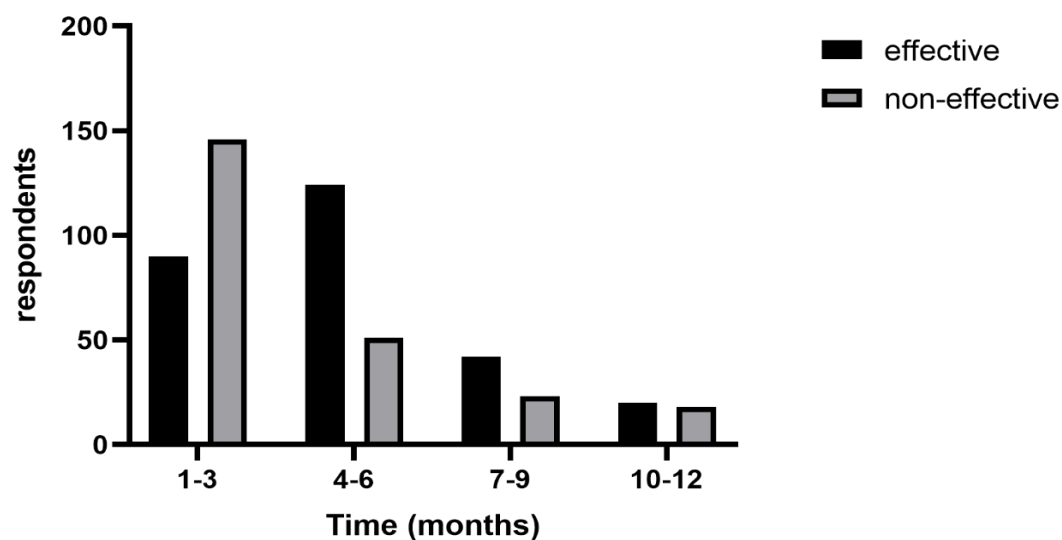
The majority of those who found their weight loss plan was successful with the effective effect of herbs used mainly green tea (21.34%) followed by ginger (20.38%) while those who were not satisfied with their results used mainly lemon (20.64%) followed by green tea (19.57%).

(45.26%) of Respondents who were satisfied with their results explained their strategy as a flexible yet consistent 4-6 months program with almost the same percentage of them (45.62%) using herbs twice daily.

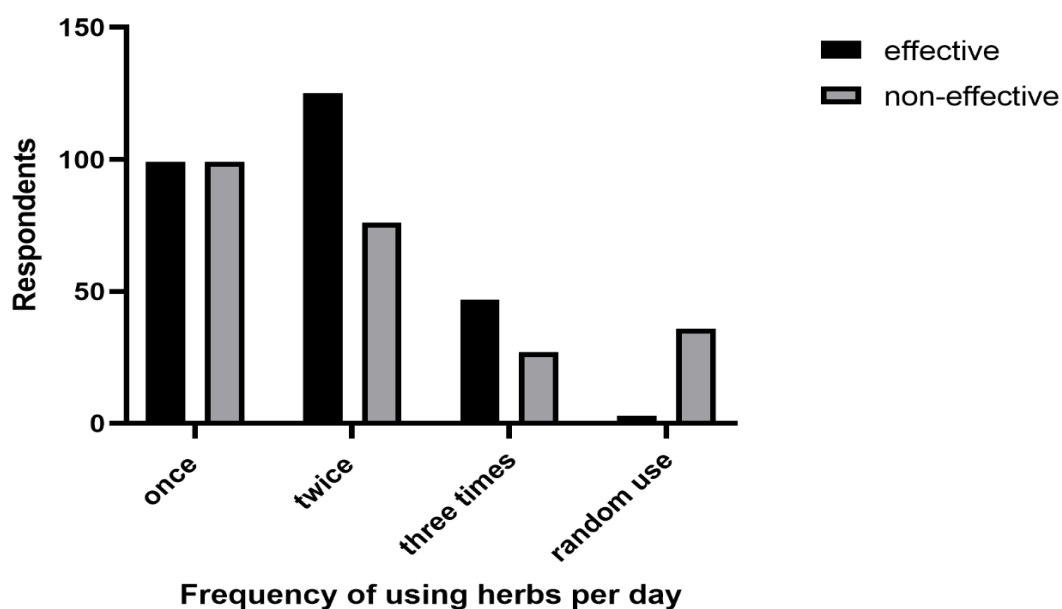
Whereas the majority (61.34%) of those who were not satisfied with the effect of herbs described their commitment to an extensive (1-3) month program and (41.6%) of them were using herbs once daily (Table 3.4) and (Figure 3.2). Noteworthy, the majority of both groups the satisfied and the non-satisfied (74.45%), (73.52%) respectively were using boiled herbs as a formulation in their plan (Table 3.4) and (Figure 3.3).

**Table (3.4):** Participants' information on types, duration, frequency and formulation of herbs used in their weight loss plan.

<i>Characteristics</i>	<i>Effective (n=274) (53.5%)</i>	<i>Non-effective (n= 238) (46.48%)</i>	<i>P value</i>
<b><i>Types of herbs used</i></b>	<b>Total (SZ=787) (%)</b>	<b>Total (SZ= 373) (%)</b>	
<i>Green tea (Camellia sinensis)</i>	168 (21.34%)	73 (19.57%)	
<i>Ginger (Zingiber officinale)</i>	164 (20.83%)	59 (15.81%)	
<i>Lemon</i>	111 (14.1%)	77 (20.64%)	
<i>Cinnamon</i>	89 (11.3%)	45 (12.06%)	
<i>Cumin</i>	63 (8%)	25 (6.7%)	
<i>Flaxseed (Linum usitatissimum)</i>	62 (7.8%)	22 (5.89%)	
<i>Cider vinegar</i>	48 (6.09%)	35 (9.38%)	
<i>Pharmaceutical</i>	46(5.84%)	30 (8.04%)	
<i>herbal preparations</i>			
<i>Senna leaves (Cassia angustifolia)</i>	36 (4.57%)	7 (1.87%)	
<b><i>How long were you on this plan? (month)</i></b>			
<i>1-3</i>	90 (32.85%)	146 (61.34%)	<0.0001
<i>4-6</i>	124 (45.26%)	51(21.40%)	
<i>7-9</i>	42 (14.96%)	23 (9.66%)	
<i>10-12</i>	20 (6.93%)	18 (7.60%)	
<b><i>Formulation</i></b>			
<i>Boiling</i>	204 (74.45%)	175 (73.52%)	0.9433
<i>Capsule</i>	43 (15.69%)	40 (16.80%)	
<i>Powder</i>	27 (9.85%)	23 (9.66%)	
<b><i>Frequency</i></b>			<0.0001
<i>Once a day</i>	99 (36.13%)	99 (41.60%)	
<i>Twice a day</i>	125 (45.62%)	76 (31.93%)	
<i>Three times a day</i>	47(17.15%	27 (11.34%)	
<i>Random use</i>	3 (1.10%)	36 (15.13%)	



**Figure (3.2):** Illustration of the effect of time duration using herbs with a significant effect of 4-6 months program (p-value <0.0001) compared with other programs



**Figure (3.3):** Illustration of the effect of frequency of using herbs to reduce body weight with a significant effect of a twice-daily regimen (p-value <0.0001) compared with other weight loss regimens.

### 3.5 participants' knowledge and experience of herbs' adverse effects:

(56.05%) of the participants described the use of herbs as an adverse-effect-free experience. Heartburn (29.45%) and nausea (21.28%) were reported by the others (43.95%) as major adverse effects with ginger being responsible for the majority (43.43%) of these adverse effects (Table 3.5).

**Table (3.5):** participants' knowledge and experience of herbs' adverse effects (n=512)

<i>Characteristics</i>	<i>Response</i>	<i>Percentage</i>
<i>Did you experience any adverse effects?</i>		
<i>yes</i>	225	43.95%
<i>No</i>	287	56.05%
<i>Specification of side effects (n=225) (SZ=404)</i>		
<i>Heartburn</i>	119	29.45%
<i>Nausea</i>	86	21.28%
<i>Headache</i>	50	12.37%
<i>Abdominal pain</i>	48	11.88%
<i>Vomiting</i>	39	9.65%
<i>dizziness</i>	38	9.4%
<i>Tachycardia</i>	24	5.94%
<i>Which herb caused the side effect (SZ= 175)</i>		
<i>Flaxseed</i>	3	1.71%
<i>Green tea</i>	6	3.43%
<i>Lemon</i>	6	3.43%
<i>Herbal pharmaceutical preparation</i>	12	6.86%
<i>Senna</i>	14	8%
<i>Cider vinegar</i>	16	9.14%
<i>Cumin</i>	17	9.71%
<i>Cinnamon</i>	25	14.29%
<i>Ginger</i>	76	43.43%



# **CHAPTER FOUR**

## **DISCUSSION**

## 4. DISCUSSION

In the Eastern Mediterranean Region (EMR), high alarming prevalence rates of obesity have been recorded in many countries due to changes in food consumption and increases in sedentary lifestyles (18). Based on GBD 2015 Eastern Mediterranean Region Obesity Collaborators, the prevalence of obesity in adults increased from 15.1% in 1980 to 20.7% in 2015 (2). According to this study population (78.89%) was either overweight or obese as defined by BMI; this matches the result of a recent study indicating that almost two-thirds of men or women were either overweight or obese (6). Furthermore, this study reported that the majority of overweight or obese participants were females, (61.13%) and were either enrolled in a university or had a higher degree which is consistent with several previous studies in Iraq (6-9) as well as with other studies worldwide (19-22). This study found that being female and having a higher socioeconomic status (less household crowding) were associated with being overweight and/or obese. One additional factor contributing to a higher rate of obesity among women than men may be related to cultural restrictions limiting access to exercise (23).

Of concern, this study also found that (67.39%) of participants aged 18-29 years were already overweight or obese, showing that a large proportion of overweight/obesity is already established in early adulthood. Therefore, obesity interventions starting in childhood or adolescence should be prioritized in Iraq. 45.5% of participants stated that their lifestyle has contributed greatly to their overweight or obesity. Generally, the high prevalence of overweight and obesity in Iraq might be attributed to a continued demographic and epidemiological transition, economic improvement, and redistribution of wealth after political changes (6, 9).

Obesity prevention requires a complex approach, including interventions at societal, community, family, and individual levels. Changes to diet and exercise are the main treatments recommended by health professionals (24). Weight stigma and social pressure encourage people to lose weight, which pushes people, especially obese people, to use medications, including drugs and/or herbs, to lose weight (25).

Interestingly, 80% of the participants followed the recommendations of the non-professionals such as friends (26.17%) or social networks (25.19%) to include herbs in their weight loss plan. Physicians and

herbalists have a low role in herbal prescription, this was consistent with previous studies ([1](#), [16](#), [17](#), [26-28](#)).

In the present findings, the excess weight participants seek to include herbs in their weight loss plan by different strategies. The majority of them (44.72%) were committed to an extensive short-duration program of dieting, exercising and using one or more herbs. However, almost half of this group (49.34%) did not find that herbs contributed significantly to their weight loss.

On the other hand, those who used flexible yet consistent programs of exercising with herbs and dieting with herbs described their plan as successful (61.97%) and (66.66%) respectively with a p-value of (0.0147) compared with other groups. The respondent's using these two programs particularized herbs as major contributors to their significant weight loss.

This variation in weight loss was attributed to three main reasons, first: the type of the most common herb/mixture of herbs being used, where the majority of those who experienced significant weight loss preferred to use green tea (21.34%), as well as ginger (20.83%). Meanwhile, lemon (21.34%) was mostly used by those who didn't report a significant effect of herbs on weight loss. Taking a mixture of herbs of two to more 6 products was more frequent among the study participants. Second: the duration of using the strategy, in which (45.26%) of those who lost significant weight committed to a 4-6 weight loss program. In contrast to those who did not lose weight, where the majority of them (61.34%) used a 1-3 program duration. Finally: the frequency of using the herb per day, in which (45.62%) of those who lost significant weight used a twice-daily regimen, whereas, the majority (41.6%) of those who did not report significant weight loss used a once-daily regimen.

On the other hand, herb formulation had no significant effect on the weight loss (p-value 0.943) where the majority of both groups the satisfied (74.45%) and the non-satisfied (73.52%) were using boiled forms of herbs. Only (15.69%) and (16.80%) of both groups used capsules, which indicates that the majority of the sample purchases herbal supplements from herbalists or local markets but not pharmacies, this was consistent with a study in Jordan ([3](#)).

Internationally, several studies have investigated the prevalent use of herbal supplementation and reported that the prevalence of using herbal supplementation was 98.1% in a study in Saudi Arabia ([16](#)), 24.1% in

Turkey (29), and 36% in the United States (30). A population-based study conducted in the United States showed that herbal supplementation for weight loss purposes is more prevalent among people with excess weight (31).

Evidence is emerging to support that increasing the consumption of herbs is an effective strategy for obesity control and weight management. The use of plants and plant products has the potential to keep the increasing prevalence of metabolic syndrome in control. For centuries; people across the countries have been using natural products as plant-based dietary supplements for weight control (32).

In this study, green tea was the most commonly used herbal plant for weight loss among the study population, followed by ginger and lemon. This is similar to another study from Saudi Arabia, which reported that the use of green tea was the most frequent, with 88.4% (16). Hursel et al. (2009) reported in their meta-analysis that green tea has a positive effect on weight loss and weight maintenance; however, the effect was modest (33). Green tea contains two major active ingredients: 1) catechin polyphenol, which inhibits the action of catechol-o-methyl-transferase (COMT), resulting in a prolonged action of catecholamines and 2) caffeine, which inhibits the phosphodiesterase-induced degradation of intracellular cyclic AMP (cAMP) leading to an increase in norepinephrine release. The net result, therefore, is an elevated cellular concentration of cAMP, a critical intracellular mediator for the action of catecholamines on thermogenesis. Furthermore, catecholamines in the brain may play a major role in satiety. Both catechin polyphenols and caffeine may be effective promoters of thermogenesis and fat oxidation, resulting in the reduction of body weight (34).

Ginger (*Zingiber officinale*) is known to have antioxidant, anti-inflammatory, and antiobesity effects. Ginger supplementation inhibits high-fat (HF)-diet-mediated obesity (35). In addition to that, Ginger could modulate obesity through various potential mechanisms including increasing thermogenesis, increasing lipolysis, suppression of lipogenesis, inhibition of intestinal fat absorption, and controlling appetite (34). Moreover, a systematic review and meta-analysis of randomized controlled trials conducted by Maharlouei and colleagues (2018) demonstrated that ginger intake reduces body weight, waist-to-hip ratio, hip ratio, fasting glucose, and HOMA-IR and increases serum HDL

cholesterol levels but does not affect insulin, BMI, triglycerides, or total and LDL cholesterol levels (36).

Studies have reported that lemon and lemon juice might have favourable effects on weight loss (37) and hypocholesterolemic effects (38).

(56.05%) of the participants described the use of herbs as an adverse-effect-free experience. Heartburn (29.45%) and nausea (21.28%) were reported by the others (43.95%) as major adverse effects with ginger being responsible for the majority (43.43%) of these adverse effects. Ginger can cause these adverse effects especially if taken in large doses, as well as abdominal discomfort, diarrhoea, and mouth and throat irritation (39).

This study has some limitations. The use of self-reported data means that some respondents could report inaccurate BW or height. Diet plans and exercise frequency assessed by self-reported questionnaires are subject to bias that can affect data accuracy. Nonetheless, for such a survey, the use of a questionnaire is the most feasible way.

**CONCLUSION**

**&**

**FUTURE  
RECOMMENDATIONS**

## **5. CONCLUSION AND FUTURE RECOMMENDATIONS:**

The obese and overweight adults in Iraq seek different weight-reducing strategies, including the use of diet, exercise, herbs, and pharmaceutical preparations. The current study suggests that using herbs for weight loss is very frequent in Iraq, especially among those with excess weight. The use of certain herbs seems to be efficient in reducing weight only if used in a correctly designed program that involves either exercise or a diet with appropriate duration and frequency of use. The results also reported that most herbs used for weight reduction are green tea and ginger. More national studies with different designs are required. It is highly recommended to train health professionals about herbs during clinical practice and their possible side effects and drug interactions. Besides, national community awareness programs are needed to educate people about safe methods of losing and maintaining weight and the possible risks and benefits of using herbs.

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