

A Questionnaire-Based Study on the Use of Weight-Loss Medicines and Herbal Mixtures among Pharmacy Students in the Hail Region

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ABSTRACT

Objectives: The obesity epidemic continues to grow at an alarming rate because the lifestyle we live plays a big role in the continuation and exacerbation of this problem. The use of medicines and herbs has become widespread, especially among young people. This study's objective was to identify the medicines and herbs used to treat obesity specifically among pharmacy female students in Hail city. **Materials and Methods:** An online, semi-structured questionnaire was used to collect data, and the resulting information was then statistically analyzed. **Results:** Obesity problems can be observed among pharmacy female students but at a moderate rate (41%) and most of the participants started showing symptoms of obesity at an early age. About 10% of study participants have an incorrect belief that natural products are better than synthetic ones. Horsetail, green tea extract, and red tea extract were the most extensively utilized herbal extracts for weight loss, according to this study. Liraglutide, Semaglutide, and Orlistat were the most commonly used weight-loss medicines among female students, even though their use was less common than that of herbal combinations. Although a number of the research, respondents used unknown herbal mixtures mostly on the commercial market. **Conclusion:** This study found that female pharmacy students in the Hail region frequently utilize herbal remedies to lose weight. Therefore, it has become one of the priorities of our upcoming research to try to find out the truth of what is contained in the herbal mixtures used by the students and to reveal their side effects.

Keywords: Obesity, Weight loss medications, Herbal mixtures, Pharmacy Female students, Hail City.

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INTRODUCTION

Weight gain is a result of too much energy being consumed or too little energy being expended over time. It is defined clinically as having a high Body Mass Index (BMI).¹ According to the World Health Organization (WHO), a disease is caused by both genetic and non-genetic factors, and is a worldwide epidemic

that leaves the individual as well as the public in grave danger.² Globally, it is estimated that 1.4 billion people are overweight and 500 million people are obese. Obese persons have doubled in number during the previous generation.³ Around the world, obesity prevalence rates are increasing, especially in Asia, Africa, and South America.⁴ Childhood obesity is of increasing concern throughout the world. Increasing obesity rates and overweight are burdening the health-care system worldwide. Overweight and obesity account for one-third of the global population (2.1 billion people) and 5% of all deaths worldwide. By 2030, nearly half of all adults will be overweight if the current trend continues.⁵ Conservative therapy like, pharmacological therapy, and bariatric



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surgery are all options for treating obesity and overweight. The effectiveness of each treatment plan varies due to cost, unwanted side effects, and issues with compliance. Exercise, avoiding fatty foods, reducing calories, and increasing physical activity are all part of the conservative treatment.⁶ Consumers are constantly looking for more natural alternatives to achieve the same weight loss goals as medical therapy for obesity. For instance, herbal remedies claiming to cause weight loss are increasingly popular today.

The number of obese adolescents in the world will outnumber those who are underweight by 2022. Over the past four decades, the number of obese adolescents worldwide has increased tenfold. Current trends, according to a new study led by Imperial College London and the WHO, will, if continued, result in more adolescents suffering from obesity than those who are either slightly or extremely underweight by 2022.⁷ Moreover, for both men and women, the rates of overweight ranged from 23.2% in Japan to 66.3% in the USA among developed countries, and from 13.4% in Indonesia to 72.5% in Saudi Arabia among developing nations. Male and female obesity rates varied widely between countries, from 2.4% in Indonesia to 35.6% in Saudi Arabia. These rates were 2.4% in the Republic of Korea and 32.2% in the USA, respectively, among developed nations.⁸ There are numerous reasons why some people struggle to lose weight. Obesity is typically caused by genetic, physiological, and environmental factors, as well as dietary, physical activity, and life decisions.⁹ One study found that environmental and lifestyle factors, genetics, and diseases may all be contributing to the rising rates of overweight and obesity among women in low-income countries.¹⁰ Overweight women in the area have been linked to factors such as higher education, older age, greater parity, and more marriages.¹¹ The recent global conditions exacerbated by the spread of the Covid-19 virus have also exacerbated the situation further. Obesity is more than just an aesthetic issue. Rather, it is a medical condition that raises the risk factors for diseases and other health issues such as, heart disease, diabetes, high blood pressure, and certain types of cancer.¹² Obesity can lead to a lower quality of life in general. Fitness obsession is a dream of many people, especially girls, who are always looking for a slim figure and an attractive appearance. Recently, numerous pages emerged on social media, and fitness groups became victim to the advertising of these products, which the owners claim can help you lose hundreds of kilograms without diet or exercise in a short time. This phenomenon led many to resort to them without returning to the doctor and opened the doors to riches for the delusional sellers who market it, but what is behind a small pill that promises to eradicate all the extra pounds without effort? What is the truth? This study aims to prove this and learn more about the prevalent use of weight-loss drugs and herbal mixtures among college students, particularly pharmacy female students in Hail.

MATERIALS AND METHODS

Data was collected by using a preformed questionnaire online. Data entry and coding were carried out using statistical package (version 21) (SPSS, V.21 2022) and Excel V.10 2022. Mean, standard deviations, and percentages were calculated. Descriptive statistics are applied in the form of frequency and percentage for categorical variables. The sample size was calculated using the online tool Raosoft® sample size calculator using a 5% margin of error a confidence level of 95%, a population size (Pharmacy female students in Hail city), and a response rate of 50%: the estimated sample size was 128 (Raosoft Sample Size Calculator).¹³ Ethical approval was not required since the nature of the data in the manuscript is not critical and the study would generally be considered a zero-risk project.

RESULTS

Population of Survey

It is noted from Table 1 that 50.53% of the female students in the faculty of pharmacy participated in the survey, i.e., 96 out of 190 where participate in the survey.

Age at Obesity Diagnosis. From Table 1 also, we noted that the majority of the respondents were considered themselves not obese

Table 1: The age-related data of the survey participants.

Percentage of survey respondents		
	Frequency	Percent
Total number of female students in the faculty of pharmacy who participated in the survey.	96	50.53%
Total number of pharmacy female students in Hail city.	190	-
Age at obesity diagnosis		
Age	Frequency	Percent%*
5-7 years	14	15%
15-18 years	8	8%
20-22 years	12	13%
Did not remember exact age at obesity diagnosis	5	5%
Considered not obese	57	59%
Total	96	100%
*Mean: 33%/SD:0.221		
Duration of obesity (Years)		
Age	Frequency	Percent%**
2 years	12	35%
4-7 years	8	24%
15-17 years	14	41%
**Mean: 33%/ SD:0.086		

at a rate of 59%, 15% were detect themselves at the age period 5-7 years, 13% at the age period 20-22 years, 8% at age period 15-18 years and 5% they didn't remember exact age at obesity diagnosis.

Duration of Obesity (In Years)

Only 34 out of 96 people responded to this question, as shown in Table 1, and their responses were as follows: 35% of them have been obese for two years, 24% have been obese for four to seven years, and 41% have been obese for between 15 and 17 years.

Source: by SPSS V.21 2022

Cause of Obesity

In Figure 1, we can see that 62% of respondents had other causes for their obesity, whereas just 18% have genetic causes.

Follow Up With Doctor

Only 17% of respondents who responded followed up with their doctor, while 83% did not. As shown in Figure 2.

Using Herbal Mixtures

We found that herbal combinations were used by 52% of the study's participants (Figure 3).

Using Weight Loss Medicines

Only 8% who had a doctor's follow-up were using weight-loss medications, and the rest were not using weight-loss medications (Figure 4).

The Medicine/S Used Among the Participants

We can see from Table 2 that, the most commonly used drugs among participants were liraglutide (3%), semaglutide (3%), and orlistat (2%).

The Herb/s Used Among the Participants

Table 2 shows that the majority of participants use Horsetail, Green tea extract, and Red tea extract at a rate of 30%, 9% use Apple Cider Vinegar/Chitosan + Kelp extract, 5% use Chitosan + Garcinia Cambogia Extract, 5% use Liquorice Flavonoids oil, and only 3% use Cinnamon extract. Notably, 3% of study participants used an unknown herbal mixture that was not licensed.

Reasons for Using Herbal Mixture or Weight Loss Medicines

Concerning the reasons for using herbal mixtures or weight loss medications, we noted that 21% of study participants want their bodies to be beautiful and appropriate for their age, 16% used them because they believed in natural remedies, which becoming more popular among consumers, 10% have a misconception about natural products, they thought that it is superior to the synthetic product. 6% self-medicated and finally, 47% of participants did not want to answer this question.

Table 2: All essential details regarding the medications and herbal mixtures used by the participants.

Herbal mixtures used among the participants		
Ingredients	Dosage formulation	From 52% who are used herbal mixture***
Liquor ice Flavonoids Oil.	Cap	5%
Apple cider vinegar, Chitosan and Kelp extract.	Cap	9%
Horsetail, green tea extract, red tea extract.	Cap	30%
Cinnamon extract.	Cap	3%
Chitosan + Garcinia Cambogia extract.	Tab	2%
Unknown herbs mixture from trade market.	Powder	3%
*** (Mean: 9%/SD: 0.107)		
The medicine used among the participants		
Medicine	Dosage formulation	from 8% who are used medicines****
Orlistat	Cap	2%
Liraglutide 6 mg/mL	Injection	3%
Semaglutide 1 mg	Injection	3%
**** (Mean: 3%/SD: 0.006)		
Reasons for using herbal mixture or weight loss medications		
Reason	Percent%*****	Reason
Natural remedies and alternative medicines are becoming popular among consumers.	16%	Natural remedies and alternative medicines are becoming popular among consumers.
Misconception about that "natural products are better than synthetic products".	10%	Misconception about that "natural products are better than synthetic products".
Self-treatment is becoming more common.	6%	Self-treatment is becoming more common.
As girls, they want their bodies to be beautiful and appropriate for their age.	21%	As girls, they want their bodies to be beautiful and appropriate for their age.
No answer	47%	No answer
Total	100%	Total
***** (Mean: 20%/SD: 0.161)		

Source: by SPSS V.21 2022.

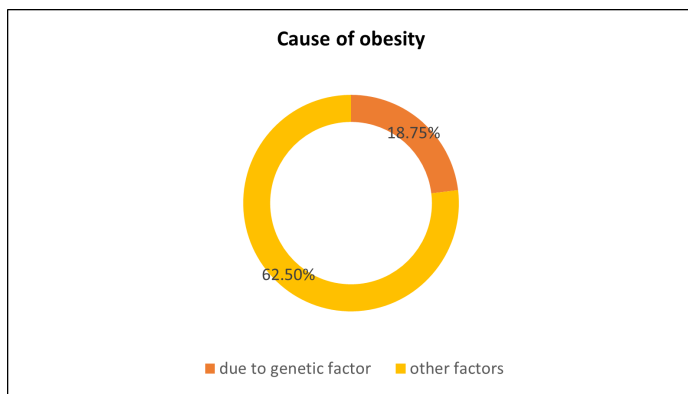


Figure 1: Cause of obesity (Mean: 41%/SD: 0.309).

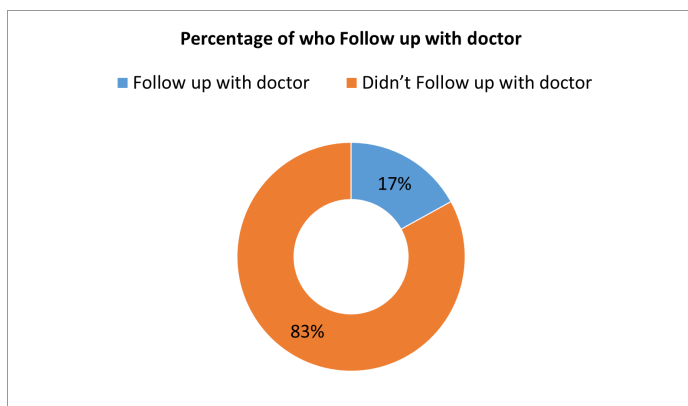


Figure 2: Follow up with doctor (Mean: 50%/SD: 0.466).

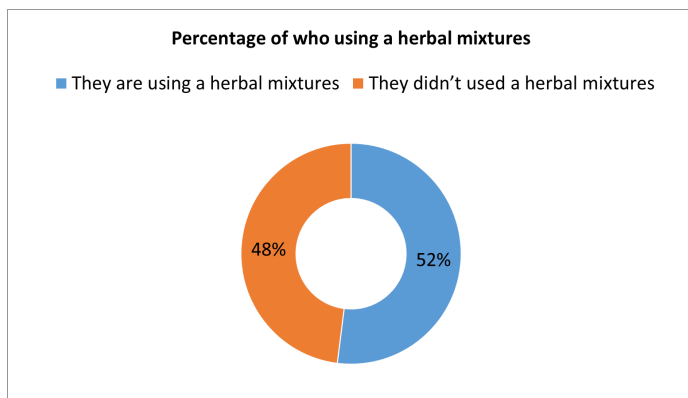


Figure 3: Using herbal mixtures (Mean: 50%/SD: 0.028).

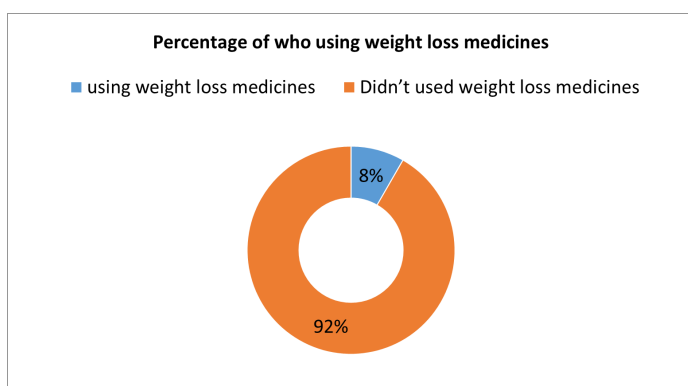


Figure 4: Using weight loss medicines (Mean: 50%/SD: 0.594).

Table 3: Data regarding the negative consequences of weight-loss drugs and herbal remedies used by the participants.

Side effects of using weight loss drugs and herbal formulas	% of participants
Having side effects	25%
Having no side effects	75%
Total	100%
(Mean: 50%/SD: 0.354)	
Types of side effects	% of participants
Abdominal pain	9%
Nausea and vomiting	7%
Depression and anxiety	6%
Liver disorders	3%
(Mean: 6%/SD: 0.025)	
Notifying their physician of any side effects	% of participants
Informed their doctor about the side effect	31%
Experienced side effects but, did not inform their physician	69%
Total	100%
(Mean: 50%/SD: 0.269)	

Having Side Effects

Twenty-five percent of those using weight loss drugs and herbal formulas had side effects, and 75% had no side effects. Of those who experienced side effects, 9% experienced abdominal pain, 7% experienced nausea and vomiting, 6% suffered from depression and anxiety, and only 3% had liver disease. Moreover, the majority (69%) of individuals who experienced side effects did not inform their physician, while 31% did so (Table 3).

DISCUSSION

Obesity has become a major medical issue, as it is one of the most common nutritional illnesses, with rates rising in developed nations and continuing to rise in emerging countries, influencing primarily teenagers and adults, particularly females. We noted that the majority of the respondents were considered themselves not obese at the rate of 59%. About 15% started to suffer from symptoms of obesity at an early age (5-7 years), and about 13% started to have symptoms of obesity at a late age (20-22 years). In a related study, M Simmonds *et al.* reported that 70% would be obese over age 30.¹⁴ Concerning the cause of obesity, 62% of our study respondents have causes of obesity from other factors, while 18% are due to genetic factors; this is according to the answers of the participants in the study. Furthermore, 41% of the respondents suffer from obesity for the age period 15-17 years. In 2016, the WHO reported that over 1.9 billion persons aged 18 and older were overweight, with over 650 million of these adults being obese and this is support our previous finding. Unfortunately,

despite extensive lifestyle modulations and support for healthy practices in the university environment, some continue to take slimming drugs without consulting physicians or nutritionists.¹⁵ Thus, 83% of the study-respondents did not follow up with doctor and only 17% follow up with doctor. 52% of the participants in this study used herbal remedies to reduce their obesity. According to Mohamed *et al.*^{16,17} 33% of obese patients in the US employed herbal therapy to address their obesity, with the majority of these patients being female. Based on this study, Horsetail, green tea extract, and red tea extract are frequently used to reduce excessive weight. Studies on the usefulness of green tea have shown that it is beneficial for fighting obesity and a number of other illnesses, including type 2 diabetes and cardiovascular disease.¹⁸ Furthermore, 3% of the people participating in the study were found to use unknown herbal mixture from the commercial market. Thus, the use of herbal supplements is increasing among the world's population, even developed ones.¹⁹ Nevertheless, more studies are needed to confirm the safety of these supplements, especially as they contain more than one herb, and the potential for herbal interactions and side effects is very high. We noticed that only 8% of those who followed up with the doctor used weight loss drugs and the most used drugs were Liraglutide (3%), Semaglutide (3%) and Orlistat (2%).²⁰ Moreover, a small percentage (25%) of herbal mixtures and weight loss drugs experienced side effects and did not inform their doctors about them (68.75%). The most frequent side effects reported among participants were abdominal pain (9%), nausea and vomiting (7%), depression and anxiety (6%), and liver disorder (3%). Auerbach *et al.*²¹ revealed a link between using traditional herbal remedies and research participants in Uganda developing liver fibrosis. Furthermore, it was mentioned in many studies the relationship between the liver injury and Orlistat therapy.²² The majority of study participants (21%) want their bodies to be beautiful and appropriate for their age and have enough conviction in natural remedies (16%). The interesting thing is that some participants (10%) mistakenly believe that natural products are better than synthetic products. Yet, it is critical to grasp that albeit numerous herbal or dietary supplements (and a few professionally prescribed drugs) come from normal sources, "herbs" does not generally imply that it is a more secure or better choice for your wellbeing. Herbal mixtures might contain dozens of chemical compounds, and not all of its ingredients may be known. Therefore, it is very important to notice that the use of complementary and alternative medicine (CAM) should be accompanied by appropriate guidelines from health services. In this regard, both national health authorities and the public are quite concerned about the safety of traditional and herbal medications.²³

CONCLUSION

Obesity is a common health problem and it is increasing all over the world. This problem is very common in adults, especially among female college students who are not looking for fitness to maintain health only but also, to imitate artists and models. Obesity problem can be observed among pharmacy female students but at a moderate rate (41%) and the most of the participants started showing symptoms of obesity at an early age. This study showed that horsetail, green tea extract and red tea extract were the most common and most widely used weight loss-herbal extracts. Although the use of weight-loss drugs was lower in compared to the herbal mixtures, this study found that Liraglutide, Semaglutide and Orlistat were the most frequently used weight loss-medications among female-students. The effect of using herbal mixtures of unknown source was additionally noted in this study, and therefore studies should be continued to learn more about this subject. Further investigations are required to discover what associations and risk factors increase the probability that increase the obesity among female adults, as well.

The Limitations of a Study

Some limitations were observed in this study, which have led to making a few recommendations for future studies on obesity;

- Although genetics is widely recognized as a great indicator of obesity, our study did not give much attention to the topic. Therefore, it is suggested that this indicator be evaluated in our future research.
- The results of this research are limited by the use of a sample among female-students of the College of Pharmacy - University of Ha'il. It is not possible for this sample to be representative of all university students in Hail. Therefore, the current results do not have enough capacity for generalization in other areas.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

BMI: Body mass index; **CAM:** Complementary and alternative medicine; **WHO:** World Health Organization.

SUMMARY

Because of our lifestyles, the obesity epidemic is growing rapidly. Herbs and medications are widely used, especially by adolescents. The goal of this research was to identify the drugs and natural remedies used to treat obesity among Hail city's female pharmacy students. An online, semi-structured questionnaire was used to gather information, and then the results were analyzed utilizing statistical software (SPSS, V.21 2022) and (Excel, V.10 2022). Women studying pharmacy face an obesity epidemic, albeit at a moderate incidence (41%), with most participants exhibiting early-onset symptoms (5-7 years). Ten percent of the people in the research are mistaken in thinking that natural remedies are superior to their manufactured drugs. According to the results, horsetail, green tea extract, and red tea extract were the most widely used herbal extracts for weight loss. The most popular weight loss medications among female students were Liraglutide, Semaglutide, and Orlistat, although their use was far lower than that of herbal combinations.

In spite of the findings, many studies have found that respondents have turned to commercial markets for unproven herbal mixtures. Female pharmacy students in the Hail area were found to have a comparatively high reliance on herbal remedies for the treatment of obesity, according to the study's findings. As a result, one of the focuses of our future investigation is to uncover the real ingredients in the herbal mixtures utilized by the female pharmacy students and to expose the negative impacts they may have.

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