Mediterranean Journal of
Pharmacy & Pharmaceutical Sciences
www.medjpps.com

ISSN: 2789-1895 online
ISSN: 2958-3101 print

ORIGINAL RESEARCH article

Use of weight-reducing products among Libyans: Pharmacist intervention in obesity management

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Received: 10-11-2022, **Revised:** 24-11-2022, **Accepted:** 02-12-2022, **Published:** 31-12-2022

HOW TO CITE THIS

Jaaida et al. (2022) Use of weight-reducing products among Libyans: Pharmacist intervention in obesity management. Mediterr J Pharm Pharm Sci. 2 (4): 54-64. [Article number: 90]. https://doi.org/10.5281/zenodo.7479770

Keywords: Anti-obesity drugs, herbal product, obesity, pharmacist role, weight loss

Abstract: Obesity is a complex and challenging global public health concern. It is a major disease involving excessive fat accumulation that may impair health. Obesity is dangerous and has been related to a range of long-term health issues that can impact adults and children. According to the World Health Organization, more than one billion people worldwide are obese as of March 2022. In the Libyan situation, the prevalence of obesity has increased among the public over the last decade. This cross-sectional survey-based study is conducted by using a self-structured questionnaire to evaluate the use of anti-obesity drugs and herbal products among Libyan people. Additionally, considered as an indirect method, pharmacist performance in obesity management was also evaluated. The investigators collected interview data from three different cities in the Northwest of Libya over a period of five months, in 2019. A total of 170 participants who use weight loss products were randomly selected to participate in the study after obtaining their verbal consent. The participants' experience with weight reduction agents revealed that more than half of the participants (52.3%) used herbal products while 32.0% of the participants have used drugs of chemical origin and 15.6% have used both (herbal and drugs). The majority of the participants (91.4%) used these products without medical consultation which in turn led to failure to lose and maintain weight with 74.2% gaining weight after stopping using these products. In conclusion, poor pharmacist intervention in obesity management was revealed where the majority of the participants reported that Libyan community pharmacists had not been offering weight management services, monitoring weight loss progress, or explaining the risks of being overweight or obese.

Introduction

Obesity is a complex and challenging global public health issue concern that affects individuals of all ages, genders, races and nations. It is ranked as the fifth leading cause of death in the world [1, 2]. The World Health Organization (WHO) defines overweight and obesity as abnormal or excessive fat accumulation that may impair health [3]. Body mass index (BMI) is used by WHO to measure and classify obesity in adults. A recent WHO report indicated a dramatic increase in overweight and obesity among children and adults whereas the prevalence of obesity nearly tripled between 1975 and 2016 [3]. The danger of obesity is linked to a number of chronic health problems and increases the risk of other diseases such as heart disease, high blood pressure, diabetes, cancer, gallbladder, osteoarthritis, gout and breathing problems such as sleep apnea and asthma [4].

ISSN: 2789-1895 online
ISSN: 2958-3101 print

Within the Libyan situation, obesity is a growing health concern. The prevalence of obesity rose from 12.6% in 1984 to 30.5% in 2009 [5, 6]. In 2019, a study indicated that 75.3% of Libyan adults are overweight and obese (42.4% for obesity and 32.9% for being overweight) and they found the obesity prevalence among women was higher than in men [7, 8]. Several factors can play a role in gaining and carrying excess weight including biological, psychological, social, political, cultural, and economic factors and the unsafe environment that affects the Libyans' daily lives by forcing them to remain indoors for a long period of time [9]. The most successful ways to treat and prevent obesity are the consumption of a healthy diet, regular physical activity, behavioral adjustment, surgery and the use of different types of anti-obesity products [10, 11]. Pharmacological treatment is usually indicated, especially for those individuals who have a BMI of more than 30.0 kg/m^2 or when obesity is accompanied by major health problems such as diabetes mellitus type 2 and hypertension [12]. Because of the success limitation of lifestyle modifications for the long term and weight gain problems after discontinuation, weight loss drug products are more frequently taken concurrently with lifestyle modifications for better obesity management [13]. Food and Drug Administration (FDA) has approved a large number of anti-obesity medications for use, many of these medications exhibited adverse drug reactions and were withdrawn from the market. These drugs are phentermine, diethylpropion, dexfenfluramine, fenfluramine, rimonabant and sibutramine [14-17]. FDA has recently approved five drugs for the treatment of obesity: orlistat, phentermine, topiramate, lorcaserin, naltrexone, bupropion and liraglutide. These medications exert their action by enhancing satiety, inhibiting hunger, or increasing catabolism. Although multiple drugs used to manage obesity are associated with several side effects [18]. Thus, just two medications have been approved for long-term use, orlistat, marketed as xenical, which is a selective pancreatic lipase inhibitor and sibutramine as serotonin uptake inhibitor [19]. Other approved appetite suppressant medications (diethylpropion, phentermine and benzphetamine) are used for the short-term. However, improved drugs with limited side effects are urgently required [20]. FDA approved a new agent (semaglutide) for chronic obesity management, especially in patients having a BMI of 27 kg/m^2 or higher and it is recommended for use in obese patients who suffer from one of obesity-associated health conditions such as hypertension type 2 or diabetes [21]. Development of weight-reducing products of natural origin with fewer side effects compared to chemical drugs has increased [22]. Whereas many natural anti-obesity products derived from many biological sources or chemical compositions are effective in the management of obesity through various mechanisms of action [23]. Obesity management, in general, necessitates the potential influence, involvement and collaboration of healthcare practitioners. A community pharmacist is a health care provider that is easily accessible to patients and well positioned to provide weight control services, which can be conducted through their health promotion role [24, 25]. In the US, the American Society of Health-System advises pharmacists to enhance their role in obesity management via patient counseling and safe anti-obesity drug monitoring [26]. Several studies have reported successful pharmacist interventions in obesity management [27-29]. The positive attitude of community pharmacist toward overweight and obesity management was indicated in different studies, including those conducted in developed countries [30, 31]. This study is aimed to evaluate the use of anti-obesity medications and herbal products among Libyan citizens and to assess pharmacist intervention in its management.

Materials and methods

Study design and setting: An observational cross-sectional study was applied to evaluate the use of anti-obesity drugs and herbal products among general people in Libya. Assessment of pharmacist educational role in obesity management has been evaluated in this study. The study was based on verifying obesity among all the participants and collecting data using a face-to-face interview survey type by investigators. The study was carried out in the three cities in the northwest of Libya (Zawia, Sabratah and Al Ajaylat) over a period of five months from March to August 2019. It was conducted under the approval of the ethics committee at the

ISSN: 2789-1895 online
ISSN: 2958-3101 print

University of Zawia, Zawia (2022) among anti-obesity drug and herbal product users in private pharmacies and public health care centers.

Study participants and sampling: A total of 170 participants who use weight loss products were randomly selected to participate in the study after obtaining their verbal consent. The interviews were conducted under the agreeability of the participants in community pharmacies and public health care centers. To maintain ethical standards and ensure privacy, the interview was held in a private space and lasted between 15 - 20 min., no personally identifiable information was collected.

Study variables: A self-structured questionnaire designed in a clear, simple Arabic way was developed for data collection. Pre-validation was accomplished by a pilot study on randomly selected 20 participants. A small-scale pilot interview was conducted before the study to ensure that all the participants understood all questionnaire questions and to assure the suitability of study instruments. In addition, BMI was measured for all the participants to measure and verify obesity according to WHO criteria. BMI is calculated by dividing a person's weight in kilograms by the square of their height in meters. Height and weight were measured by trained 4th-year pharmacy students using anthropometric tape measuring 205 cm and an electronic scale of 180 Kg capacity.

Study instrument: The questionnaire contained open and closed questions; it consisted of three sections: The first section is the socio-demographic characteristics of the participants (age, gender, material state, occupations and educational level). The second section is about participants' practices and attitudes toward using weight reduction products. The last section is intended to evaluate pharmacists' educational role in obesity management.

Satirical analysis: The collected data were analyzed by using a descriptive statistic for both frequency and percentage using Microsoft Excel worksheet 2010.

Results

Socio-demographic characteristics: A total of 170 anti-obesity product users were invited to participate in this study, only 128 responded and interviewed to complete the questionnaire with a response rate of 75.3% as shown in **Table 1.** This study included 93.0% (n=119) female adults and 07.0% (n 9) male Libyan adults ranging in age of different subgroups from 20 to over 50 years. The majority of the participants 53.1% (n=68) were between the ages of 41 and 50 years. A large proportion of the respondents 64.8% (n=83) were married, 59.4% (n=76) had a high degree of education and 68.8% (n=88) of the participants were employed.

Classification of participants based on BMI: **Table 2** shows how WHO classified the BMI into four major classes, along with the finding data. The results stated that only 07.0% of the subjects with normal BMI and 01.6% of the participants were underweight. Obesity (class I) was presented in 39.8% of the participants. The prevalence of overweight and morbid obesity (class II) was 25.8% and 16.4% of the participants, respectively, while 09.4% of the respondents were extremely obese (class III).

Participant experience with weight reduction products: In **Table 3**, overall, the participants were in good health with 92.2% (n=118) of them did not suffer from any chronic health condition. The participants' experience with weight reduction agents revealed that more than half of the participants (52.4%) used herbal products while 32.0% used drugs of chemical origin and 15.6% used both products. The vast majority of the participants (85.9%) did not adhere to a strict healthy diet to control their obesity. In addition, 58.6% (n=75) of the participants reported losing weight after using medicine or herbal products with 54.7% losing 5-10 Kg. Furthermore, 43.7.1% and 25.8% of the participants purchased weight reduction products from pharmacies and friends, respectively, while 08.6% obtained them from herbal shops. A high proportion of the participants

ISSN: 2789-1895 online
ISSN: 2958-3101 print

(91.4%) used weight loss products without seeking medical advice and 73.4% (n=94) reported side effects, however, 70.3% (n=90) gaining weight after discontinuing treatment.

Table 1: Socio-demographic characteristics of Libyan participants

Variables		Frequency	Percentage
Gender	Male	09	07.0%
	Female	119	93.0%
Age	20-30	24	18.8%
	31-40	31	24.2%
	41-50	68	53.1%
	>50	05	03.9%
Educational level			
	Primary education	18	14.1%
	Secondary education	31	24.2%
	Higher education	76	59.4%
	Non educated	03	02.3%
Occupation	Employed	88	68.8%
	Unemployed	40	31.2%
Marital state	Single	26	20.3%
	Married	83	64.8%
	Other	19	14.8%

Table 2: Classification of Libyan participants according to BMI

Weight Status	BMI (kg/m^2)	Frequency	Percentage
Underweight	>18	02	01.6%
Normal range	18.5-24.9	09	07.0%
Overweight	25.0-29.9	33	25.8%
Obese			
Obese Class I	30.0-34.9	51	39.8%
Obese Class II	35.0-39.9	21	16.4%
Obese Class III	<40	12	09.4%

Utilization of weight-reducing agents among the participants: The participant's experience with weight-reduction agents revealed that slightly more than half of the participants (52.4%) used herbal and natural formulated products while 32.0% used drug of chemical origin and 15.6% used both products. In **Table 4**, a high proportion of the respondents reported and preferred to use naturally formulated products. The results revealed that 46.0% of the participants used herbal tea as a weight loss product, whereas, 20.7% used a slimming capsule. In addition, the usage rate of the anti-obesity drug was high, the most common medication used among the participants was metformin (64.0%), followed by orlistat (36.0%). Moreover, the use of more than one weight loss product has been evident among 15.6% of the respondents. The most utilized combination that used contained metformin and herbal tea.

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ISSN: 2958-3101 print

Table 3: Experiences of participants with weight reduction products use

Items	Frequency	Percentage
Do you suffer from any chronic health condition?		
Yes	10	07.8%
No	118	92.2%
Do you follow restrict health diet to control obesity without use any drugs or herbal product?		
Yes	18	14.1%
No	110	85.9%
Have you succeeded in losing weight after using medicines or herbal product?		
Yes	75	58.6%
No	53	41.4%
How long have you been using anti-obesity medication?		
Days	19	14.8%
Months	70	54.7%
Years	39	30.5%
The source of purchased products?		
Community pharmacies	56	43.7%
Internet	28	21.9%
Herbal shop	11	08.6%
Friends	33	25.8%
Did you take these products after medical consultation?		
Yes	11	08.6%
No	117	91.4%
Did you experience any side effect?		
Yes	94	73.4%
No	34	26.6%
Did you gain weight after stopping use drugs?		
Yes	95	74.2%
No	33	25.8%
Did you gain weight after stopping use herbal products?		
Yes	90	70.3%
No	38	29.7%
How many kilograms have you lost after using weight loss products?		
5 - 10 kg	70	54.7%
11 - 20 kg	33	25.8%
21 - 30 kg	11	08.6%
Over 30 Kg	00	00.0%
Non	14	10.9%

Participant's attitude towards anti-obesity products utilization: Product safety and approval use were the two main aspects used to evaluate the participant's attitudes. The vast majority of the respondents believe that weight loss herbal products are safe for long-term use, whereas three-quarters of the participants do not realize that many anti-obesity products have no regulatory approval (**Table 5**).

Pharmacist's role in obesity management: **Table 6** shows that the majority of the participants reported that there are no weight management services available at the community pharmacies they visited. Thus, 89.1% of the participants ensured that pharmacists did not provide the BMI and that 87.5% of the participants did not provide information about obesity management programs. Furthermore, a high proportion of the respondents (81.2%) stated that they had not received advice on a healthy lifestyle from pharmacist. 96.9% and 92.2% of the respondents reported that community pharmacist had not been monitoring weight loss progress or explaining the risks of being overweight or obese.

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Table 4: Types of weight reduction products taken

Utilization of anti-obesity medication (n = 61)		
Weight reduction products	**Frequency**	**Percentage**
Metformin tablets	39	64.0%
Orlistat capsules	22	36.0%
Utilization of herbal and natural formulated weight loss products (n = 87)		
Slimming capsules	18	20.7%
Herbal tea	40	46.0%
Green coffee	08	09.2%
Chitocal capsules	10	11.5%
Ginger cream	05	05.7%
Mixture of ginger and vinegar	06	06.9%
Concurrent utilization of weight reducing agent among the participants (n = 20)		
Metformin & herbal tea	11	55.0%
Metformin & ginger cream	04	20.0%
Metformin & ginger & vinegar	05	25.0%

Table 5: Attitude of participants toward weight reduction products usage

Items	Frequency	Percentage
Do you think the use of anti-obesity products is safe for long term?		
Yes	19	14.8%
No	06	04.7%
Only herbal products	103	80.5%
Do you know that most anti-obesity products have been withdrawn from markets and many of them have no regulatory approval?		
Yes	32	25.0%
No	96	75.0%

Table 6: Interaction of weight reduction products users with community pharmacists

Items	Frequency	Percentage
Has any pharmacist calculated your body mass index?		
Yes	14	10.9%
No	114	89.1%
Has any pharmacist offered you obesity management program?		
Yes	16	12.5%
No	112	87.5%
Did the pharmacist explain the risks of overweight and obesity?		
Yes	10	07.8%
No	118	92.2%
Did the pharmacist advise you on healthy diet and physical activity?		
Yes	24	18.8%
No	104	81.2%
Did the pharmacist inform you about the side effects of weight loss products?		
Yes	19	14.8%
No	109	85.2%
Has any pharmacist monitor (following up) your progress to lose weight?		
Yes	04	03.1%
No	124	96.9%

ISSN: 2789-1895 online
ISSN: 2958-3101 print

Discussion

To the best of our knowledge, this is the first study to search for the utilization of anti-obesity products by obese Libyans to lose weight. The primary objective of the research is to evaluate the use of anti-obesity products among the public and from another perspective, pharmacist interventions in obesity management were assessed. Out of 170 participants, 42 subjects declined to participate due to obesity stigma and a lack of time. Notably, there have significantly been more female participants than male participants, and the prevalence of overweight and obesity (BMI: 30.0) was 25.8% and 65.6%, respectively. This is consistent with the previous study by Lemamsha et al. [8] who found that obesity is more prevalent in women than men (47.4% vs 33.8%). Elhisadi and others [32] have reported similar findings regarding the prevalence of overweight and obesity. Females are more concerned about their body weight and use weight-loss medications not only in Libya but also globally [33, 34]. In term of participant experience with weight loss agents, the present findings show poor weight loss practices, even though the majority of the participants were highly educated. In a Brazilian study [34], weight loss attempts were not accompanied by healthy practices. Though lifestyle changes and behavioral counseling are the cornerstones of obesity treatment [35, 36]. In addition, 8.6% of the participants had sought medical consultation before consuming anti-obesity products. This number is lower than that reported in studies conducted in Malaysia and the US where the number of participants who discussed the use of anti-obesity products with their physicians was 19.4% and 30.0%, respectively [37, 38]. As in our study, the irrational use of weight loss products was observed by underweight (1.6%) and normal weight (7.0%) respondents. This may be attributed to many reasons, which include; availability and easy access to weight loss products; lack of awareness regarding BMI and body dissatisfaction [39]. The minority of respondents (7.8%) complained of chronic medical conditions. This is unexpected since the prevalence of chronic diseases increases as BMI increases [40, 41]. Moreover, a previous Libyan study reported that about 70.0% of type 2 diabetic patients or pre-diabetes patients were obese [42]. This can be explained by the fact that only a few of them are classified as obese class III which related to many health complications or they may have undiagnosed illnesses as a result of poor medical monitoring.

Even though a high proportion (89.1%) of the respondents lost weight (5-30 kg) after using anti-obesity products for months (54.7%) and years (30.5%), 41.4% of the participants failed to succeed in losing weight after using medicines or herbal products. It could be related to the duration of using anti-obesity products since these products showed great effect on weight loss after months or year of consumption [43, 44]. Nonetheless, about three-quarters of the subjects regained weight after discontinuing the use of anti-obesity agents. This is not surprising and some studies reported such observation [45, 46]. This may be due to behavioral, neurohormonal and environmental factors [45]. As well, it is necessary to continue using long-term pharmacological treatment to sustain weight loss [47]. Three-quarters of the study sample experienced side effects which are conceivably the main reason for discontinuing anti-obesity products. Previous studies have identified potentially harmful pharmacological reactions or side effects which are always a major public health concern [48]. Further, many studies found that dietary supplements and orlistat have gastrointestinal side effects [45, 49, 50]. About half of the participants prefer herbal and naturally formulated products to lose weight. This is also observed in other studies conducted in Taiwan [35], Malaysia [38], Turkey [51] and in the US [33]. The main reason for obtaining these products is the perception that herbal products are natural and safer than prescription medication. In addition, patients often think that they do not need the assistance of a healthcare professional with these alternative therapies. Consistent with other studies, herbal tea was the most commonly used substance for weight loss [34, 51]. Several clinical studies have revealed the valuable effects of herbal products in the prevention of obesity and chronic disease management [52]. Additionally, a high proportion of respondents (64.0%) used metformin either alone or in conjunction with other products to lose weight. Although it has anti-obesity effects, it remains obscure as a primary treatment for obesity [53].

ISSN: 2789-1895 online
ISSN: 2958-3101 print

Concerning participants' attitudes, three-quarters of the participants do not realize that many anti-obesity products have been withdrawn from the market and many of them have no regulatory approval. Poor knowledge and awareness of consuming such products result from self-management of obesity without medical supervision or consultation. Most of the anti-obesity drugs that have been developed so far have a limited efficacy and considerable adverse effects, affecting tolerability and safety [49, 51]. It is disappointing to find that the vast majority of the participants reported that there are no weight management services available at the community pharmacies they visited. 89.1% of the participants ensured that the pharmacist did not provide the BMI and about 85.0% did not provide information about obesity management programs. Further, a high proportion of the respondents stated that they had not received advice on healthy lifestyles from pharmacist. This is contrary to the practice in Kuwait where community pharmacists counsel patients about various aspects of obesity management [54]. Even though, 43.7% of the participants would rather purchase weight loss products from community pharmacies that provide a good chance for pharmacist intervention. A high number of the respondents reported that community pharmacists had not been monitoring weight loss progress or explaining the risks of being overweight or obese, respectively. This would emphasize poor public knowledge and unsuccessful obesity management among the respondents. Since the community pharmacist is one of the most easily accessible and trusted healthcare providers [55] with the ability to recognize obese and overweight people [56]. The involvement of the community pharmacist in countries like Libya, where overweight and obesity are prevalent, can be a valuable tool in obesity management. It is obvious that poor pharmacist practice regarding obesity and lack of obesity services may have a potential impact on the quality of life. Several studies have focused on evaluating the role of the pharmacist in obesity and overweight services provision [57-60]. These studies show a positive pharmacist attitude toward obesity and overweight services provision [58, 61]. On the other hand, it explained many challenges facing community pharmacists in providing such services, including the absence of a private consultation room, lack of pharmacist's time, potential discomfort when discussing patients' weight, additional costs and the need for additional staff [57, 58, 61].

Conclusion: Unsatisfactory obesity management and weight gain problems were prevalent among the Libyan respondents. This is attributed to poor public knowledge and a failure to follow a healthy lifestyle, in addition to the lack of medical supervision. In order to rationalize the use of weight-reducing products; decrease obesity health risk and improve patient's quality of life. This study recommends increasing people's education and awareness regarding obesity and lifestyle changes; enhancement of Libyan pharmacist counseling and educational role, special training of pharmacist toward obesity management and prevention services.

Acknowledgments: The authors would like to thank all the participants for taken part in this study.
Author contributions: All authors contributed equally and have approved the final version of the manuscript.
Conflict of interest: The authors declare the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.
Ethical issues: Including plagiarism, informed consent, data fabrication or falsification and double publication or submission were completely observed by the authors.
Data availability statement: The raw data that support the findings of this article are available from the corresponding author upon reasonable request.
Author declarations: The authors confirm that all relevant ethical guidelines have been followed and any necessary IRB and/or ethics committee approvals have been obtained.

ISSN: 2789-1895 online
ISSN: 2958-3101 print

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