



## **Assessment of Knowledge, Attitudes and Practice of Community Pharmacists towards Weight Management in Khartoum State, Sudan**

**Abd Elmoneim O. Elkhalifa<sup>1\*</sup>, Fajr H. E. Humida<sup>2</sup>, Maha A. S. Hussien<sup>2</sup>  
and Shaza O. H. Kanan<sup>3</sup>**

<sup>1</sup>*College of Applied Medical Sciences, University of Hail, Hail, Kingdom of Saudi Arabia.*

<sup>2</sup>*School of Pharmacy, Ahfad University for Women, Omdurman, Sudan.*

<sup>3</sup>*School of Medicine, Ahfad University for Women, Omdurman, Sudan.*

### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author AEOE designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors FHEH and MASH managed the analyses of the study. Author SOHK managed the literature searches. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JAMMR/2019/v31i830312

#### Editor(s):

(1) Dr. Thomas I. Nathaniel, School of Medicine-Greenville, University of South Carolina, Greenville, USA.

#### Reviewers:

(1) Jombo Henry Effiong, University of Uyo, Nigeria.

(2) Awofadeju Stephen Olajide, Wesley Guild Hospital Ilesha, Obafemi Awolowo University Teaching Hospital, Nigeria.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/53540>

**Received 15 October 2019**

**Accepted 17 December 2019**

**Published 25 December 2019**

**Original Research Article**

### **ABSTRACT**

This research was carried out to assess the knowledge, attitudes and practice of community pharmacists in Khartoum state towards weight managements, and to explore their roles in dispensing of off label drugs as weight management drugs. A questionnaire was used to collect primary data from 100 community pharmacists in Khartoum state who were chosen randomly. The secondary data was collected from different references, journals, textbooks and internet website. The results of this study showed that 91% of community pharmacists were highly involved in providing advice in weight management. The dispensing of weight management medications depended mainly on weight of the patients (25%). This research revealed that 49% of pharmacists dispensed the metformin for off label use as anti-obesity drug, 58% of them dispense it under prescription while 51% of the pharmacists never dispensed it for weight loss. In addition, 27% of the pharmacists' dispensed mosegore (sandomigran) for weight gain while the majority of them never dispense it (73%).

\*Corresponding author: E-mail: [ao.abdalla@uoh.edu.sa](mailto:ao.abdalla@uoh.edu.sa), [aoelkhalifa@hotmail.com](mailto:aoelkhalifa@hotmail.com);

**Keywords:** Community pharmacists; KAP; healthy weight; off label drugs.

## 1. INTRODUCTION

Weight problems are important risk factors affecting people nowadays worldwide. Obesity and underweight are serious health issues should be taken in consideration by health care practitioners. They are considerable predisposing factors of many health problems and chronic diseases such as cardiovascular disease, cancer, diabetes, osteoporosis, anemia, fertility issue hair loss and weakened immune system which are a rise as a result of weight problems [1].

Management of weight problems is either by diet and physical exercise and/or medications. Weight management medications are medically prescribed only in case of morbid problems where the weight loss or weight gain is a lifesaving. As in the case of obesity these medications work in different ways either prevents the digestion like OTC fiber or increase the body metabolism rate, some of them suppress the appetite (anarxogenic) other agents interfere with the absorption e.g. ortislat (brands; xenical) [2].

Many of the weight management drugs posses' serious side effects and drug interactions should be taken in consideration so they should not be used for cosmetic benefits only. Some of the medications used for weight gain act by stimulating appetite others may affect how the body absorbs or store glucose lead to fat deposits, some cause calories to be burned slower by changing body metabolism other drugs can cause water retention which add weight but not fat [3].

Off-label uses are the use of pharmaceutical drugs for an unapproved indication or in an unapproved age group, unapproved dosage, or an unapproved route of administration. Both prescription drugs and over-the-counter drugs (OTCs) can be used in off-label ways.

Some medicines are used for treatment of certain diseases and cause weight loss e.g. (Metformin) which is an anti-diabetic agent used in type2 diabetes, preferably in obese patients. It inhibits the hepatic synthesis of glucose and decreases peripheral insulin resistance [4]. On the other hand, there are some medicines, which were used to treat special health problems and have side effects in form of weight gain e.g.

Pizotifen, which is a benzocycloheptene-based drug used as medicine, primarily as a preventative to reduce the frequency of recurrent migraine headaches, it's a serotonin antagonist acting mainly at the 5-HT2a and 5HT2c receptor it also has some activity as anti-histamine and anti- cholinergic activity [5].

Pharmacists are the most accessible health care professionals in the community that can help patients in management of overweight and obesity by assisting in the selection of weight loss agents and offer counseling for effective pharmacotherapy outcomes. Pharmacists must take patients medical history and use the Body Mass Index (BMI) to help in selection of weight loss drugs and control the dispensing of the off label drugs, which are drugs to treat certain diseases and cause weight loss. The limited studies are available involving pharmacists in weight management have found conflicting data onto pharmacists' perception of their knowledge or medical expertise and the training needed to appropriately counsel and give patients advise on weigh management [6-11].

This study was designed to assess the knowledge, attitudes and practice of pharmacists about weight management and to explore the dispensing of the off-label drugs as weight management drugs.

## 2. METHODOLOGY

This is a descriptive cross-sectional study done involved community pharmacists working in pharmacies within Khartoum state, Sudan. Data were collected from one hundred pharmacists working in community pharmacies. Self-administered, pretested and structured; questionnaire mostly close ended questions, was used. The questionnaire was designed to collect data about knowledge, attitudes and practice of the pharmacists towards weight management. Descriptive statistics was used to analyze the obtained data.

## 3. RESULTS AND DISCUSSION

This study was conducted in Khartoum state targeting community pharmacies to describe the knowledge and practice of community pharmacists in weight management. The study showed that 91% of the pharmacists under study provided a counsel concerning weight problems,

while only 9% of them have never provided a counsel (Table 1). Those who do not provide counseling on weight management they thought that this is physicians' job, some stated that they didn't have enough knowledge about weight management and others have never come across such patients. These results showed that pharmacists have generally positive attitudes towards the provision weight management services.

**Table 1. Pharmacists' counseling for weight management**

Type of counseling	Frequency	Percentage
Provide a counsel	91	91%
Never provide counsel	9	9%
Total	100	100%

**Table 2. Condition of patients who seek counseling**

Patient condition	Frequency	Percentage
Obese	22	24%
Under weight	11	12%
Both	58	64%
Total	91	100%

According to the results shown in Table 2, 64% of counseling was done for both, obese and underweight patients and 24% for obese while only 12% for underweight patients. Despite the fact that the majority of the patients have received advice on weight management only 10% of the patients felt comfortable with this

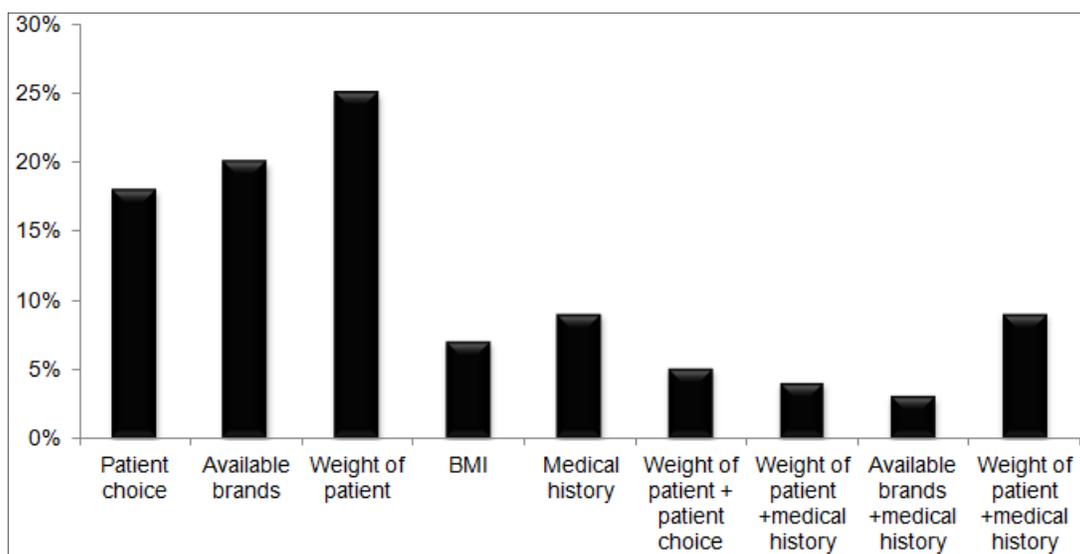
service as shown in Table 3 this is because they feel embarrassed. Therefore, there is a need for an increase in the public awareness and acceptance of such services.

**Table 3. Condition of patients who seek counseling**

Level of comfort	Frequency	Percentage
Comfortable	9	10%
not comfortable	82	90%
Total	91	100%

The current results showed that the dispensing of weight management medications is mostly according to the weight of the patients (25%), and 20% according to the available brands while only 18% according to the patient choice. Only 9% of the pharmacists dispense weight management medications according to the medical history of the patients, which should be taken as a high consideration when dispensing any medication (Fig. 1).

The knowledge of the pharmacists of the main method used for the determination of nutritional status of individuals (BMI) is in (Fig. 2); results revealed that 59% of the community pharmacists have come across the term BMI, while only 9% of them have full knowledge as they were familiar with the categories and they knew how to calculate the BMI, 22% had fair knowledge about BMI, which is mean only knew some of the categories or knew how to calculate BMI (Fig. 2). However, more training would be required to



**Fig. 1. Pharmacists choices for dispensing weight management medications**

increase pharmacists' knowledge level in providing healthy weight management services.

When pharmacists start a discussion about weight management with the patients 40% of the questions that they usually asked were about life style; diet, frequency of meals, nutritional habits and physical activity. The questions about medical history formed 27% of the total questions. The pharmacists asked about the medical history in order to find some of the causes of weight problems. The answers in response to medical history were diabetes, hypertension, high blood cholesterol, thyroid problems, while some of the pharmacists asked about the family history seeking for genetic factors. Only 10% of the total questions were about medications the respondents thought that maybe the medications were behind the cause of the patient's weight problems. Current weight, age and psychology scored only 5%, 6% and 3%, respectively. In addition, 9% of pharmacists didn't asked any questions to the patients because they thought there is no need and some thought that it is the dietitian's job (Fig. 3). Again here these results showed that the pharmacists need more training in providing this service.

Concerning underweight management 44% of the pharmacists indicated high recommendation

for vitamins and minerals, as a method for increasing weight. From the overall recommendations for weight management diet scored 33%. Some of the pharmacists recommended both diet and vitamins (16%) as they could be effective together and have better outcomes, only 7% of the recommendations of the pharmacists were about diet and medications and herbs (Table 4).

For the practice of the pharmacists 31% of them are highly recommended diet and exercise together as weight reduction technique, while 20% of them recommend physical exercises. They thought that physical exercises are safe, effective and available non pharmacological management. Diet accounted 29% of the respondent's recommendations. Medications represented (3%) of the total recommendations, which included mainly Via-ananas, ketone, glucoforte, chitocal and metformin (Fig. 4). The reasons behind dispensing these medications in particular were either due to their actions, reputation or their herbal ingredients as in case of via-ananas and ketone.

As shown in Fig. 5 internet was the common source of diet information for 45% of the pharmacists while low perceptions were given for the rest of the sources.

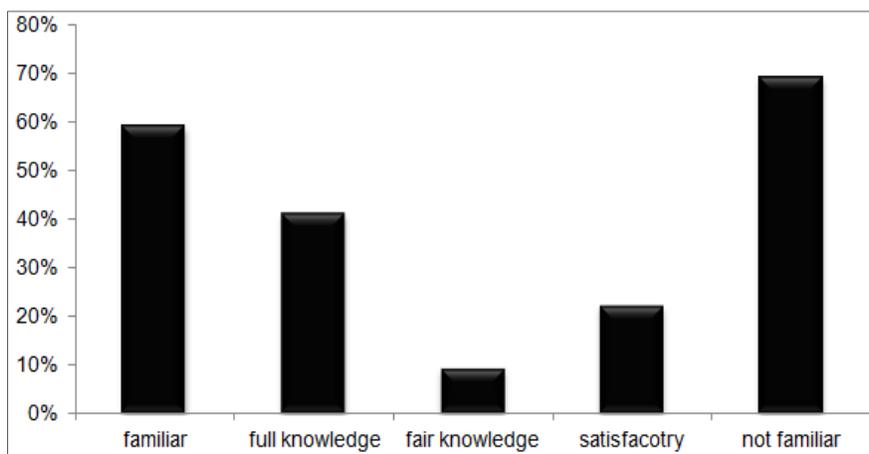
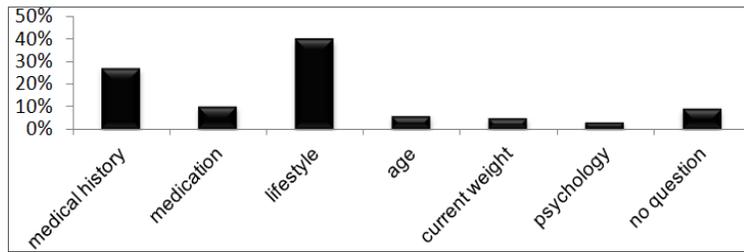


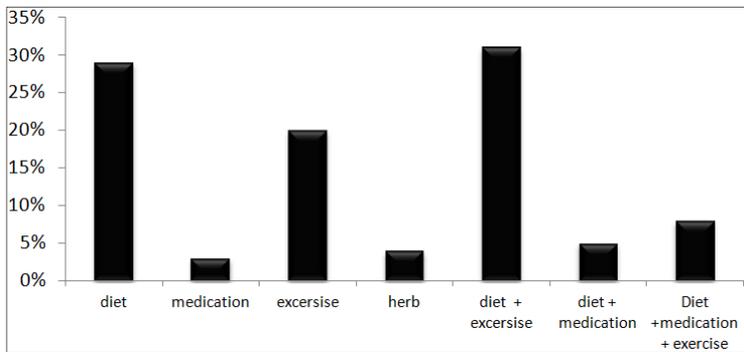
Fig. 2. Pharmacists knowledge of BMI

Table 4. Pharmacists recommendations for underweight

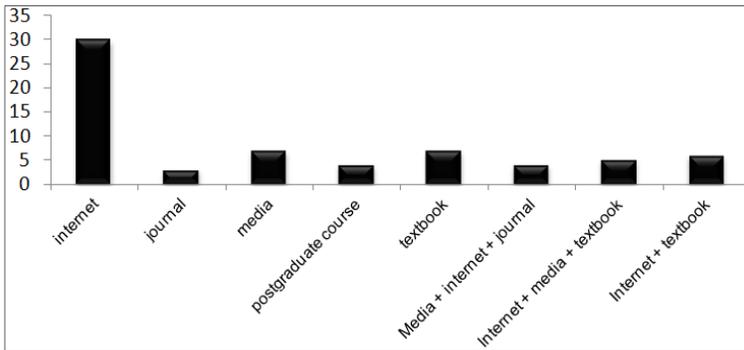
Recommendations	Frequency	Percentage
Diet	30	33%
Vitamins and minerals	40	44%
Diet and vitamins	15	16%
Diet and others	6	7%
Total	91	100%



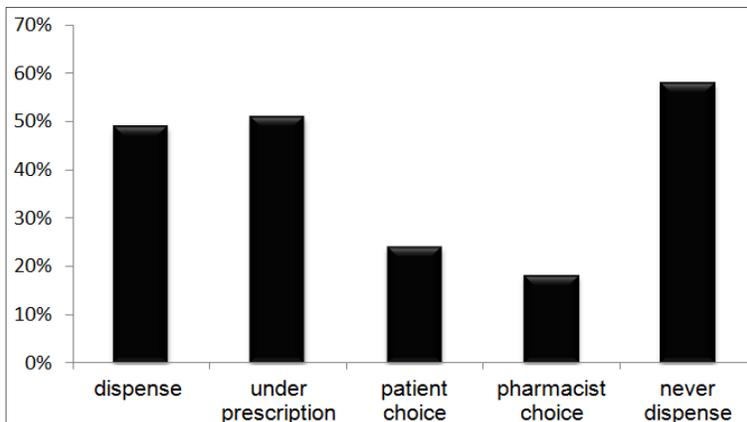
**Fig. 3. Types of frequent questions ask to the patients**



**Fig. 4. Pharmacists recommendations for weight reduction techniques**



**Fig. 5. Pharmacists sources for diet information**



**Fig. 6. Pharmacists' dispensing of metformin for weight loss**

Off-label drug use generally means that a drug is being used for an unapproved indication, or at an unapproved dosage. In addition to these unapproved uses, anti-obesity drugs may be also employed for longer than recommended durations, when contraindicated, or in other ways contrary to the approved label. The results in this study revealed that 27% of the pharmacists dispensed mosegore (sandomigran) for an off label use as weight gain agent despite that the weight gain and increased appetite are side effects of this medication. Most of the pharmacists have never dispensed it for off label use (73%) (Table 5).

**Table 5. Percentage of dispensing mosegore (Sandomigran) for weight gain**

Drug dispensing	Frequency	Percentage
Dispense	25	27%
Never dispense	66	73%
Total	91	100%

The results in this study showed that 49% of pharmacists dispensed the metformin for off label use as anti-obesity drug despite that it is an anti-diabetic agent, while 51% of the pharmacists never dispensed it for weight loss, the dispensing was according to the patient choice, pharmacist choice and high percentage of metformin was dispensed under physician prescription (Fig.6). The study revealed that 93% of metformin users for weight loss purposes are females.

Although the label for metformin specifies diabetes as the sole indication, the drug has been prescribed with increasing frequency of overweight and obese patients with impaired fasting glucose following a report that long-term metformin delayed or prevented diabetes and induced weight loss in such patients [12]. Metformin is known to induce modest weight loss in overweight patients even without glucose abnormalities and is prescribed off-label as an adjunct to weight loss [13-15].

#### 4. CONCLUSION

As community pharmacies could be an ideal place for the provision of healthy advices including weight management services. Programs should be set to encourage community pharmacists to have a much more visible and active role in improving public health and specifically measurement of BMI and waist circumference, weight-management to their clients'. Furthermore, as the results indicated that

pharmacists have generally positive attitudes towards the provision weight management services; the development of appropriate undergraduate and postgraduate training in nutrition is required to equip pharmacists with appropriate knowledge and skills to deliver these services effectively.

#### CONSENT

Verbal informed consent was obtained from all participants prior to study.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Malnick SD Knobler H. The medical complications of obesity. *Q J Med.* 2006; 99:565–579
2. National Prescribing Service. Orlistat (Xenical) over-the-counter for obesity, Canberra: NPS; 2004. (Accessed 29 April 2018) Available:www.npsradar.org.au/site.php?page=1&content=/npsradar/content/orlistat.html
3. Rossi S. Drugs in Obesity 3<sup>rd</sup> edition. In: Australian Medicines Handbook. Adelaide: Australian Medicines Handbook Pty Ltd; 2003.
4. Dunn CJ, Peters DH. Metformin. A review of its pharmacological properties and therapeutic use in non-insulin-dependent diabetes mellitus. *Drugs.* 1995;49:721–749.
5. Standal JE. Pizotifen as an antidepressant. *Acta Psy Scan.* 1977;56:276-285.
6. Diabetes Prevention Program Coordinating Center. Long-term safety, tolerability and weight loss associated with metformin in the Diabetes Prevention Program Outcomes Study. *Diabetes Care.* 2012;35: 731-7.
7. Blenkinsopp A, Anderson C, Armstrong M. Community pharmacy's contribution to improving the public's health: The case of

- weight management. *Inter J Pharm Pract.* 2008;16:123–125.
8. Krska J, Lovelady C, Connolly D, Parmar S, Davies MJ. Community pharmacy contribution to weight management: identifying opportunities. *Inter J Pharm Pract.* 2010;18:7–12.
  9. Sarayani A, Rashidian A, Gholami K. Efficacy of continuing education in improving pharmacists' competencies for providing weight management service: three-arm randomized controlled trial. *J Contin Educ Health Prof.* 2012;32:163–236.
  10. O'Donnell DC, Brown CM, Dastani HB. Barriers to counseling patients with obesity: A study of Texas community pharmacists. *J Am Pharm Assoc.* 2006; 46:465-536.
  11. Newlands RS, Watson, MC, Lee, AJ. The provision of current and future healthy weight management (HWM) services from community pharmacies: A survey of community pharmacists' attitudes, practice and future possibilities. *Inter J Pharm Pract.* 2011;19:106–122.
  12. Dastani HB, Brown CM, O'Donnell DC. Combating the obesity epidemic: community pharmacists' counseling on obesity management. *Ann Pharma.* 2004; 38:1800–1804.
  13. Diabetes Prevention Program Coordinating Center. Long-term safety, tolerability, and weight loss associated with metformin in the Diabetes Prevention Program Outcomes Study. *Diabetes Care.* 2012;35: 731–737.
  14. Seifarth C, Schehler B, Schneider HJ. Effectiveness of metformin on weight loss in non-diabetic individuals with obesity. *Exp Clin Endocrinol Diabetes.* 2013;12: 27–31.
  15. Igel LI, Sinha A, Saunders KH, Apovian CM, Vojta D, Aronne LJ. Metformin: an old therapy that deserves a new indication for the treatment of obesity. *Curr Atheroscler Rep.* 2016;18:16.

© 2019 Elkhalifa et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/53540>