

Prescription appetite suppressants: A drug utilization study using a claims database

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ABSTRACT

The primary aim of the study was to determine the prescribing and cost of prescription appetite suppressants in a defined private sector patient population. A retrospective drug utilisation study was conducted on a medical insurance claims database in South Africa for 2010 and 2011. In 2010, 37 patients (86.49% females) were prescribed 44 appetite suppressants at a cost of R9 813.39. The average age of patients was 40.95 (SD=12.37) years. In 2011, 27 patients (77.78% females) received 42 prescriptions for appetite suppressants at a cost of R9 967.73. The average age of patients was 40.04 years (SD=10.41). Most products were for phentermine (77.91%), followed by d-norpseudoephedrine (17.44%) and diethylpropion (2.33%). Prescribing patterns in 2010 and 2011 were relatively similar. In 2011, patients were prescribed a total of 630 products (all therapeutic classes). The most often other prescribed medicines in 2011 were gastrointestinal tract products (14.60%), cardiovascular agents (11.11%) and antimicrobial products (9.52%). The most frequently prescribed subclasses were HMG-CoA reductase inhibitors (statins), analgesic combinations, non-selective COX-inhibitors and selective serotonin re-uptake inhibitors. Appetite suppressants were not reimbursed by patients' medical insurance benefits. A limited number of strictly regulated appetite suppressants were prescribed. Consumer studies that include over-the-counter appetite suppressants are recommended.

INTRODUCTION

Pharmacotherapy is recommended for the treatment of obese persons with a body mass index (BMI) of 30 kg/m² or higher, or a BMI of at least 27 kg/m² plus co-morbidities or cardiovascular risk factors (SAMF, 2014; Khan *et al.*, 2001). Obesity (BMI \geq 30 kg/m²) is highly prevalent in the United States, where an estimated 36% of adults are obese (Ogden *et al.*, 2012; Yanovski and Yanovski, 2014). Weight loss of 5% to 10% of initial weight, achieved through intensive lifestyle intervention, reduces cardiovascular disease risk factors, prevents or delays the development of type 2 diabetes, and improves other health consequences of obesity (Knowler, *et al.*, 2002; Ryan and Bray, 2013; Yanovski and Yanovski, 2014). South Africa has been described as "A nation of the hungry and obese" (Fokazi, 2013). More than half of the population is living in hunger or at risk of it, while a large percentage of the rest are obese or at risk of

developing poor lifestyle-related illnesses (Fokazi, 2013). In a recent study (Shisana *et al.*, 2013), it was found that the prevalence of overweight and obesity was significantly higher in females than males (25% and 40.1% for females respectively, compared with 19.6% and 11.6% for males respectively). There was a trend demonstrating that the BMI increased with age in both genders, while it later decreased in females within the age group 65 years and older (Shisana *et al.*, 2013). The age groups of 45–54, 55–64 and 65 years and older had a significantly higher mean BMI (31.5; 31.6; 30.0 for females, respectively and 25.8; 25.0; 25.4 for males, respectively), when compared with the age groups 15-17 years and 18-24 years (23 and 26.2 for females and 20.5 and 21.3 for males, respectively) (Shisana *et al.*, 2013). There are various ways to deal with overweight and obesity, one of which is the use of appetite suppressants or anti-obesity preparations. Appetite suppressants are, however, strictly regulated in South Africa. In 2008, ephedrine, d-norpseudoephedrine and pseudo-ephedrine were rescheduled from a Schedule 2 to a Schedule 6 drug (that is, from an over-the-counter product to a highly regulated Schedule 6 drug) (Osman, 2008).

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The reason was because these active ingredients were increasingly bought legally to be used to illegally manufacture methamphetamine (also known as “tik” or “crystal meth”). These illegal drugs are being abused in South Africa. All d-norpseudoephedrine products are therefore currently Schedule 6, including those that were previously used as appetite suppressants. Despite the popularity of appetite suppressants, there is a lack of population-based data on their use.

No South African studies could be found on the prescribing patterns of appetite suppressants in South Africa, and also no studies that focused on cost aspects. The primary aim of the study was therefore to determine the prescribing patterns and cost of prescription appetite suppressants in a defined private sector patient population in South Africa, as well as the prescribing of medicines for co-morbid conditions to the patient sample.

MATERIALS AND METHODS

A retrospective drug utilisation study was conducted on a medical insurance claims database in South Africa for 2010 and 2011. The total database for 2010 contained 2 126 264 records, and for 2011 contained 2 298 312 records, for medicine, medical devices and procedures.

All records for appetite suppressants (MIMS category 12.2.0) were extracted for analysis. Each medication record contained information on the age and gender of the patient, with a unique number to identify each patient, the date of the prescription, detailed information on the dispensed drug (name, package size, formulation, strength and quantity) and amount claimed and paid.

The Anatomical Therapeutic Chemical (ATC) Classification System (ATC/DDD Index 2011), MIMS (2011) and the South African Medicines Formulary (SAMF, 2014) were used to identify medicines. Microsoft Access® and Excel® were used to analyse the data. Descriptive statistics were calculated. One Euro (€1.00) was equal to R9.25 (South African Rand), one US Dollar (\$1.00) was equal to R6.91 and one British Pound (£1.00) was equal to R10.96 at the time of the study (15 January 2011). Patients served by the government or state’s health care system (the public health care sector) were not included in the study. Limitations of the study were that no clinical information (for example, the BMI of patients) or diagnoses were available in the database. ICD-10 Codes for diagnoses were not recorded.

Ethical approval to conduct studies on prescription databases has been obtained from the Research Ethics Committee (Human) of the Nelson Mandela Metropolitan University (ethics clearance number: H08-HEA-PHA-005).

RESULTS AND DISCUSSION

Demographic information of patients

Fifty-eight patients were prescribed one or more appetite suppressants during 2010 and 2011 (see Figure 1). The majority

of patients (80.03% or 47 patients) were females. The average age of patients was 40.02 (SD=11.68) years. It was interesting that female patients were on average younger than male patients (female patients: 37.98 (SD=11.76) years; male patients: 48.73 (SD=6.23) years). Most patients (40) were married, 16 patients were single and two patients were divorced.

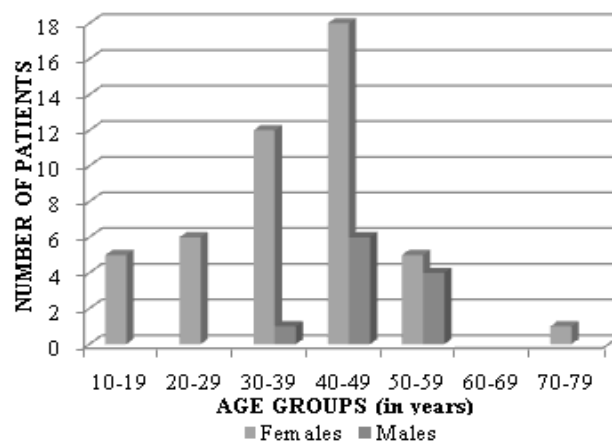


Fig. 1: Age and Gender Distribution of Patients (N=58).

In 2010, 37 patients (86.49% females) were prescribed 44 appetite suppressants at a total cost of R9 813.39. The average age of patients in 2010 was 40.95 (SD=12.37) years. In 2011, 27 patients (77.78% females) received 42 prescriptions for appetite suppressants at a total cost of R9 967.73. The average age of patients was 40.04 years (SD=10.41) (females: 37.95 (SD=7.76) years; males 47.33 (SD=10.52) years).

Prescribing frequency of appetite suppressants

Of the 58 patients in the study, most patients (40 patients or 68.97%) were prescribed only one appetite suppressant over the two-year study period, 22.41% (13 patients) received two prescriptions, 3.45% (2 patients) received three prescriptions, 1.72% (one patient) received four prescriptions and 3.45% (two patients) received five prescriptions. These products were therefore not used on a chronic or continuous basis. Long-term use of appetite suppressants is not advised, since there are only short-term studies to support their use (SAMF, 2014).

The prescribing frequency of the different appetite suppressant active ingredients is shown in Figure 2. Most products were for phentermine (77.91% for both years: 75.0% in 2010 and 80.95% in 2011), followed by d-norpseudoephedrine (17.44% for both years: 20.45% in 2010 and 14.29% in 2011) and diethylpropion (2.33% for both years: none in 2010 and 4.76% in 2011).

Prescribing patterns in 2010 and 2011 were relatively similar. Phentermine is a sympathomimetic with central nervous system stimulant properties similar to dexamphetamine. It has significant abuse potential (SAMF, 2014). There is a rare but serious risk of pulmonary hypertension associated with its use.

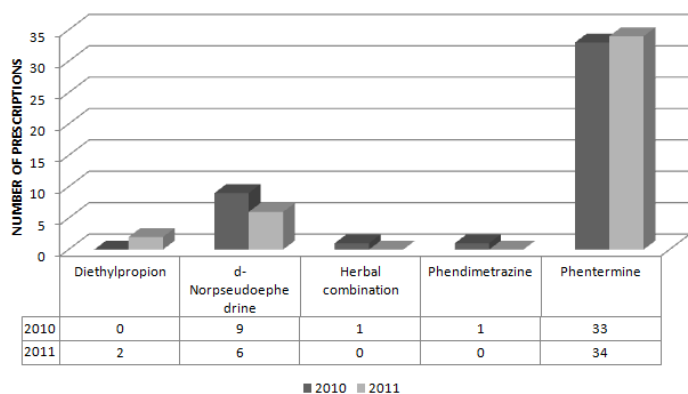


Fig. 2: Prescribing Frequency of Appetite Suppressants (N=86).

Phentermine was available in 15 mg and 30 mg capsules, phendimetrazine as 35 mg tablets, and diethylpropion as 75 mg tablets. Three different trade name products of d-norpseudoephedrine were prescribed (50 mg capsules, drops and 20 mg tablets). Only one prescription was dispensed for a herbal combination product, Antagolin[®], which is also used in insulin resistance. The prescribing frequency over the two years showed seasonal variations, with peaks in January and again in August and September (see Figure 3). The number of patients was too small to make any definite conclusions but prescribing did peak in summer and spring months in both years. In a study conducted in England (Thomas and Campbell, 1996), it was also reported that prescribing frequency was higher in the spring and summer quarters and reduced in the winter quarter. The winter months in South Africa are June and July, during which a general decrease in prescribing frequency can be observed in Figure 3.

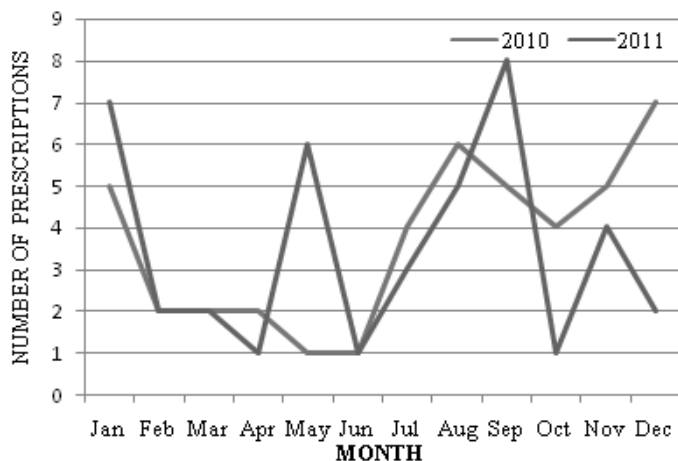


Fig. 3: Prescribing Frequency Of Appetite Suppressants Over The Two Years (N=86)

Prescribing cost of appetite suppressants

The total amount claimed for appetite suppressants was R19 781.12. Appetite suppressants were excluded from patients' medical insurance benefits, and were therefore not reimbursed by the medical insurance schemes and patients had to pay for it out of their own pockets. The average cost of an appetite suppressant

prescription claimed was R230.01 (females R227.28; males R245.36).

The average amount claimed for each active ingredient is given in Table 1. The most expensive product was diethylpropion 75 mg tablets with an average amount claimed per prescription of R372.68, and the least expensive product was d-norpseudoephedrine 50 mg capsules.

Table 1: Average Amount Claimed per Appetite Suppressant Prescription According to the Active Ingredients.

Active Ingredient	Percentage of Products (N=86)	Percentage Claimed (In Rand) (N=R19 781.12)	Average Amount Claimed Per Product (In Rand)
Diethylpropion	2.33	3.77	372.68
d-Norpseudoephedrine	17.44	8.91	117.44
Herbal combination	1.16	0.70	140.00
Phendimetrazine	1.16	1.12	220.60
Phentermine	77.91	85.50	252.44
ALL PRODUCTS	100.00	100.00	230.01

Prescribing patterns for co-morbid conditions in 2011

In 2011, a total of 630 products (all therapeutic classes) were prescribed to the 27 patients. The most often other prescribed classes in 2011 were gastrointestinal tract products (14.60%), cardiovascular agents (11.11%) and antimicrobial products (9.52%).

The most frequently prescribed subclasses were HMG-CoA reductase inhibitors (statins), analgesic combinations, non-selective COX-inhibitors and selective serotonin re-uptake inhibitors. The total amount claimed from the medical insurance scheme for all the products was R73 013.71, however, only R37 553.24 was paid out (appetite suppressants were excluded from patients' medical insurance benefits).

CONCLUSION

A limited number of strictly regulated appetite suppressants were prescribed to this patient sample. The patient sample was small and since no clinical information was available, this study can only be regarded as a preliminary study. Appetite suppressants that patients can buy over-the-counter were also not included in this study.

Pseudoephedrine has recently been rescheduled to be more strictly controlled due to its abuse potential. Consumer studies on appetite suppressants which include clinical information, over-the-counter products and information on the perceived effectiveness of appetite suppressants will provide a useful insight into the role of these products in weight loss efforts.

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