

PRESCRIBING OF DRUGS FOR THE TREATMENT OF MIGRAINE WITH SPECIFIC EMPHASIS ON SUMATRIPTAN

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ABSTRACT

Migraine affects between 5-15% of males and 13,5-31% of females in South Africa. Little is known about the prescribing patterns of anti-migraine drugs in South Africa. The aim of the study was to investigate the prescribing of drugs for the treatment of migraine (ATC Group N02C), with specific emphasis on sumatriptan, in a primary care patient population in South Africa, making use of a computerised prescription database. A total of 3 011 products for the treatment of migraine at a cost of R451 559 were prescribed to 578 patients in the study over a period of one year (1996) since sumatriptan was the only triptan available in South Africa in 1996. The average age of patients was 48,40 (SD = 14,19) years, with 74,57% of patients between 20 and 59 years of age. Approximately 80% of patients were females. Female patients were prescribed 81,53% of the products. Most drugs (67,55%) were for the prophylaxis of migraine, of which clonidine and flunarizine were the most frequently prescribed. Of the drugs prescribed specifically for the management of migraine, sumatriptan (575 prescriptions to 103 patients) was the most frequently prescribed, followed by 400 prescriptions for ergotamine. Tablets were the preferred dosage form. Since migraine affects primarily the economically active sector of the community and its treatment is relatively expensive, pharmacists have an important role to play in managing and counselling migraine sufferers.

OPSOMMING

Migraine affekteer tussen 5-15% van mans en 13,5-31% van vroue in Suid-Afrika. Min inligting is beskikbaar oor die voorskryfpatrone van middels teen migraine in Suid-Afrika. Die doel van die studie was om die voorskrywing van middels vir die behandeling van migraine (ATC Groep N02C) in 'n primêre sorg-pasiëntpopulasie te ondersoek, met spesifieke klem op sumatriptan, deur gebruik te maak van 'n gerekenariseerde voorskrif-databasis. 'n Totaal van 3 011 produkte vir die behandeling van migraine teen 'n koste van R451 559 is aan 578 pasiënte in die studie oor 'n tydperk van een jaar (1996) voorgeskryf aangesien sumatriptan die enigste triptan was wat beskikbaar was in 1996. Die gemiddelde ouderdom van die pasiënte was 48,40 (SD = 14,19) jaar, met 74,57% van die pasiënte tussen 20 en 59 jaar oud. Ongeveer 80% van die pasiënte was vroue. Vroulike pasiënte het 81,53% van die voorgeskryfde produkte ontvang. Die meeste middels (67,55%) was vir die voorkoming van migraine, waarvan klonidien en flunarisien die meeste voorgeskryf is. Van die middels spesifiek vir die behandeling van migraine, was sumatriptan (575 voorskrifte aan 103 pasiënte) die meeste voorgeskryf, gevolg deur 400 voorskrifte vir ergotamien. Tablette was die gewildste doseervorm. Aangesien migraine hoofsaaklik die ekonomies aktiewe sektor van die gemeenskap beïnvloed en die behandeling relatief duur is, het aptekers 'n belangrike rol om te vervul in die bestuur en konsultering van migrainelyers.

BACKGROUND TO THE STUDY

Headache disorders are extremely prevalent and represent a major health problem which merits increased attention (Rasmussen, Jensen, Schroll & Olesen, 1991:1147; Rasmussen, Jensen & Olesen, 1992:443). Usually they are mild or infrequent, but when they are severe or frequent they cause considerable suffering as well as decreased or abolished working capacity (Rasmussen *et al.* 1991:1147). In a study conducted in Denmark on a random population of 25- to 64-year-old men and women, the lifetime prevalence of headache (anybody with any form of headache), migraine and tension-type headache was 93%, 8% and 69% in men, and 99%, 25% and 88% in women, respectively (Rasmussen *et al.* 1991:1147). In the migraine group, nearly all stated that the pain impaired or abolished their working capacity or other activities (Rasmussen *et al.* 1991:1147; Rasmussen *et al.* 1992:443). In Belgium, migraine affects up to 5,8% of the population at some time in their life, with a gender ratio of 86% in women to 14% in men (Schoenen, Bulcke, Caekebeke, Dehaene, De Keyser, Hildebrand, Joffroy, Laloux, Louis, Monseu, Pierre, Vanderlinden, Sautois & Vandenberghe, 1994:55). Research in South Africa has shown that migraine affects between 5% and 15% of males and 13,5% and 31% of females (Turner, 1996:2).

Migraine is defined as a headache that lasts four to 72 hours, is throbbing, is moderate to severe in intensity, is unilateral, becomes worse with exertion, and is associated with nausea, vomiting, or sensitivity to light, sound or smell. Only three or four of the above criteria must be present for accurate diagnosis (Merck Manual of Diagnosis and Therapy, 1999:1376). Migraine may occur at any age but usually begins between the ages of 10 and 40 years, more often in women than in men (Merck Manual of Diagnosis and Therapy, 1999:1376). Headaches often partially or completely remit after the age of 50 years (Merck Manual of Diagnosis and Therapy, 1999:1376). The mean frequency of migraine attacks is 1,5 attacks per month, but it is important to stress that at least 10% of patients suffering from migraine will have one attack per week (Smuts, 2003:29). Migraine is therefore a major reason for time lost from work and resulting medical expenses (Smuts, 2003:29), and as such a disorder of economic importance.

Various drug products are available on the South Afri-

can market for the prevention and treatment of migraine. Therapies for migraine are either prophylactic, such as beta-blockers, calcium channel blockers, pizotifen and methysergide, or acute, such as ergot derivatives, analgesics, non-steroidal anti-inflammatory agents or narcotics very often associated with antiemetics (Schoenen *et al.* 1994:55). The triptans are some of the newer agents that are specifically indicated for the treatment of acute attacks of migraine. Four triptans are registered for use in South Africa, namely sumatriptan (Imigran®), rizatriptan (Maxalt®), naratriptan (Naramig®) and zolmitriptan (Zomig®). Only one of these active ingredients, namely sumatriptan (Imigran®), was available on the South African market in 1996 (SAMF, 1997; MIMS, 1997). Consequently the findings of this study provides important baseline information on triptan prescription.

Sumatriptan, a selective serotonin agonist agent, has been described as a welcome addition to the physician's arsenal (Gaist, Hallas, Sindrup & Gram, 1996:161). Sumatriptan is specifically indicated for the treatment of acute attacks of migraine but can also be used for the treatment of cluster headaches (Gaist *et al.* 1996:161; MeReC Bulletin, 1992:29). It may be administered orally or by subcutaneous injection, with an onset of action within 10 minutes (subcutaneous) and 30 minutes (oral) (SAMF, 1997). It is generally recommended not to exceed a maximum repeated use of three 100 mg tablets or two subcutaneous injections of 6 mg daily, if the attack recurs within 24 hours (Gaist *et al.* 1996:161). The different strengths and package sizes in which sumatriptan was available at the time of the study in South Africa were:

- 6 mg/5 ml starter pack;
- refill pack;
- 50 mg (2) tablets;
- 50 mg (6) tablets; and
- 100 mg (4) tablets.

Adverse drug reactions attributed to sumatriptan in the postmarketing period include acute myocardial infarction, depression and skin reactions (Ottervanger, Valkenburg, Grobbee & Stricker, 1996:353). Furthermore, since the marketing of the drug, several patients have been observed who developed an increase in the frequency of migraine attacks with consequent dependence and misuse (Ottervanger *et al.* 1996:353). The potential for overuse or abuse of sumatriptan has

therefore been investigated by several researchers (Gaist *et al.* 1996; Ottervanger *et al.* 1996).

Pharmacoepidemiology is defined as the application of epidemiologic reasoning, methods and knowledge to the study of the uses and effects (beneficial and adverse) of drugs in human populations (Porta, Hartzema & Tilson, 1998:2). Pharmacoepidemiology therefore aims to describe, explain, control and predict the uses and effects of pharmacologic treatments in a defined time, space and population. Its core lies at the intersection of two subspecialties, namely clinical pharmacology and clinical epidemiology. It is a useful and appropriate approach to study drug prescribing and usage, and to relate it to the different disease states for which drugs are indicated.

Little is known about the extent and type of medicine and health service utilisation of patients suffering from migraine in South Africa. Information on the prescribing patterns of sumatriptan is also lacking. Furthermore, because the triptans are expensive drugs and because migraine affects primarily the economically active sector of the population, it is important from an economic and cost point of view to analyse the drug treatment of migraine. The primary aim of the study was therefore to investigate the prescribing of drugs for the treatment of migraine (ATC Group N02C), with specific emphasis on sumatriptan, in a well-defined primary care patient population in South Africa, making use of a computerised prescription database, in order to comment on usage patterns and cost. Since sumatriptan is specific in its action and is used exclusively for the treatment of migraine, it was decided to focus on the prescribing patterns of sumatriptan in more detail.

SUBJECTS AND METHODS

Computerised medication records were obtained from a national pharmaceutical benefit management (PBM) company that serves various medical aid schemes in South Africa and is one of the largest PBMs in South Africa. Prescription data of 578 patients who received one or more drugs for the treatment of migraine (ATC Group N02C) during one year (1 January 1996 to 31 December 1996) were retrospectively analysed. Since the 1996 data were relatively old, additional reference to the results of a similar study on 2002 data from a different (smaller) South African PBM will be made in

the results section. It is, however, not a comparative study since further analyses must still be conducted on the 2002 data and the two datasets are not directly comparable in all respects. The ATC Classification System (Anatomical Therapeutic Chemical (ATC) classification index with Defined Daily Doses (DDDs), 1999), the South African Medicines Formulary (SAMF, 1997) and MIMS (1997) were used to identify drugs and to classify drugs into their main therapeutic groups. Descriptive statistics were used in the data analysis. The Pearson chi-square test was applied to frequency data to compare the distributions of the two genders where appropriate. All costs in the study are indicated in South African Rand (R).

Each medication record contained information on the date of birth and gender of the patient, with a unique number to identify each patient. This number was randomly allocated by the organisation providing the data to ensure patient confidentiality. Furthermore, the date of the prescription, detailed information on the dispensed drug (name, package size, formulation and quantity), price and various reimbursement variables were also recorded. The indication for treatment was, however, not registered. Limitations of the study were therefore that the data were relatively old (1996), no diagnoses, medical history (except for the drugs prescribed) or information on the lifestyle habits of patients (for example, smoking and diet) were available. It is therefore possible that patients who suffered from mild or low frequency migraine that did not require the more aggressive treatment for migraine may not be included in this patient sample.

RESULTS AND DISCUSSION

Prescribing and cost of drugs in ATC Group N02C

A total of 3 011 products for the treatment of migraine at a cost of R451 559 were prescribed to the 578 patients in the study over a period of one year. Patients were therefore prescribed an average of 5,21 (SD = 5,02) products for migraine over the year. Half of the patients (292 patients) received three or less products for migraine during the year. Female patients received an average of 5,40 (SD = 5,11, minimum = 1, maximum = 49) products over the year, compared to 4,52 (SD = 4,71, minimum = 1, maximum = 31) for male patients.

Approximately 80% of the patients in the study were females, and female patients were prescribed 81,53% of the products. The average age of patients was 48,40 (SD = 14,19) years, with 74,57% of patients between 20 and 59 years of age.

The prescribing frequency and cost of the different drugs for female and male patients are given in Table 1. Most drugs (67,55%) were for the prophylaxis of migraine, of which clonidine and flunarizine were the most frequently prescribed. Prescribing differences between female and male patients were observed for the different drugs. Clonidine was more frequently prescribed to female patients, and flunarizine more frequently to male patients. Clonidine was relatively inexpensive, accounting on average for 32,22% of the prescribing volume but for only 21,37% of prescribing cost. The opposite was true for sumatriptan, which accounted for 19,10% of prescribing volume but for 38,65% of prescribing cost. Tablets were the preferred dosage form (accounting for 64,66% of all prescriptions), followed by capsules (31,78%), suppositories (2,46%) and injections (1,10%).

Of the drugs prescribed specifically for the management of migraine, sumatriptan (575 prescriptions to 103 patients) was the most frequently prescribed. Since the focus of this study is on the prescribing of sumatriptan, the rest of the manuscript will discuss the prescribing of sumatriptan.

Age and gender distribution of patients prescribed sumatriptan

A total of 2 198 drug items (all therapeutic groups) were prescribed to the 103 patients receiving sumatriptan. Sumatriptan accounted for 26,16% of all the prescriptions to these patients, and for 47,37% of the prescribing cost. This again gives an indication that sumatriptan is relatively expensive when compared with the other drugs that were prescribed.

The age and gender distribution of the 103 patients who received one or more prescriptions for sumatriptan during the study period is given in Table 2. The majority of patients (80,58%) were females, which is in agreement with literature findings (Schoenen *et al.* 1994:57; Van Schoor, 1999:4). In a study on the use of sumatriptan in Denmark in 1994 and 1995, a female to male one

year period prevalence ratio of 3,8:1 was found (Gaist, Andersen, Aarup, Hallas & Freng Gram, 1997:433). Female patients furthermore received proportionately more medicine items (89,85% of the 2 198 products), than male patients (10,15%). Three quarters of the patients (75,73%) were between 30 and 59 years of age. The Pearson chi-square test was used to detect differences between female and male patients ($\chi^2 = 4,40$; d.f. = 2; $p < 0,5$). Differences were observed in the frequency distributions. There were proportionately more male patients in the younger age groups.

The average age of patients receiving sumatriptan was 41,99 (SD=11,53) years. Patients receiving sumatriptan were therefore on average younger than all the patients who received drugs for migraine (41,99 years compared to 48,40 years for all patients). The average age of female patients who were prescribed sumatriptan was 43,48 years (SD = 10,85 years; median = 44 years; minimum age = 22 years; maximum age = 65 years). The average age of male patients was 35,80 years (SD = 12,50 years; median = 37,50 years; minimum age = 10 years; maximum age = 56 years). The results of this study are therefore also in agreement with another study on sumatriptan use in Denmark in 1992 to 1994, in which 78% of the users were females and the median age of users was 43 years (interquartile range 35 to 50 years) (Gaist *et al.* 1996:162). It can therefore be stated that young to middle-aged women are prescribed sumatriptan more often than other groups of people.

Sumatriptan is not indicated for patients over 65 years, or for patients under the age of 18 years (MIMS, 1997). Only one patient fell outside these age limits, namely a 10-year-old boy who received six prescriptions for sumatriptan over the one-year period in a dose of 50 mg.

Dosage forms in which sumatriptan was prescribed

The 103 patients received a total of 575 prescriptions for sumatriptan during the year. The dosage forms in which sumatriptan was prescribed to female and male patients are illustrated in Table 3. Sumatriptan nasal spray was not yet available on the South African market at the time of the study. The 100 mg dosage form was the most popular and accounted for 45,22% of all sumatriptan prescriptions. Tablets accounted for 94,26%

Table 1: Prescribing frequency and cost of drugs in ATC group N02C for female and male patients

ACTIVE INGREDIENT	PRESCRIBING FREQUENCY				PRESCRIBING COST			
	Females	Males	Both genders		Females	Males	Both genders	
	(%)	(%)	Number	%	(%)	(%)	Amount (in Rand)	%
Clonidine	35.72	16.73	970	32.22	23.42	10.97	96 500.12	21.37
Dihydroergotamine	0.08	0.00	2	0.07	0.03	0.00	106.48	0.02
Ergotamine	10.84	24.10	400	13.28	6.43	18.69	38 151.45	8.45
Flunarizine	28.39	46.76	957	31.78	23.73	48.15	125 325.51	27.75
Methysergide	1.06	1.80	36	1.20	1.46	3.19	7 888.61	1.75
Pizotifen	2.65	1.08	71	2.36	2.21	0.97	9 052.20	2.00
Sumatriptan	21.26	9.53	575	19.10	42.72	18.03	174 534.66	38.65
TOTAL	100.00	100.00	3 011	100.00	100.00	100.00	451 559.03	100.00

Table 2: Age and gender distribution of patients receiving sumatriptan *

AGE GROUP (in years)	% FEMALES (n = 83)	% MALES (n = 20)	BOTH GENDERS	
			NUMBER	%
< 30	14,45	35,00	19	18,44
30-39	21,69	25,00	23	22,33
40-49	28,92	25,00	29	28,16
≥ 50	34,94	15,00	29	31,07
TOTAL	100,00	100,00	103	100,00

* $\chi^2_{(2)} = 4,40$; $p < 0,5$ (after collapsing the first two rows in the table).

Table 3: Dosage forms in which sumatriptan was prescribed

DOSAGE FORM AND PACKAGE SIZE	NUMBER PRESCRIBED			
	FEMALES	MALES	BOTH GENDERS	%
6 mg/5 ml starter pack	13	0	13	2,26
Refill	20	0	20	3,48
50 mg (2) tablets	110	13	123	21,39
50 mg (6) tablets	141	18	159	27,65
100 mg (4) tablets	238	22	260	45,22
TOTAL	522	53	575	100,00

of all sumatriptan prescriptions. In the study by Gaist and others (1997:430) on the use of sumatriptan in Denmark in 1994 and 1995, tablets accounted for 92% of the total sumatriptan consumption.

Prescribing frequency of sumatriptan

The frequency distribution of sumatriptan prescriptions for the different age and gender groups is given in Table 4. The Pearson chi-square technique was again used to investigate prescribing differences in respect of age and gender groups ($\chi^2 = 36,85$; d.f. = 3; $p < 0,0001$). Prescribing differences were observed between female and male patients. Female patients, accounting for 80,58% of patients in the study, received 90,78% of the prescriptions for sumatriptan. Male patients received more sumatriptan prescriptions at younger ages.

Patients received an average of 5,58 (SD = 6,26) prescriptions for sumatriptan over the year. Female patients received an average of 6,29 (SD = 6,69) prescrip-

tions, compared with only 2,65 (SD = 2,48) sumatriptan prescriptions for male patients.

More than half of the patients (54,37%) received one, two or three prescriptions for sumatriptan during the year (see Table 5). Eleven patients received more than twelve prescriptions per year, in other words, more than one prescription for sumatriptan per month. In the study on the use of sumatriptan in Denmark in 1994 to 1995, it was found that 41% of sumatriptan users presented only a single prescription for sumatriptan (Gaist *et al.* 1997:431). In the earlier (1992 to 1994) Danish study, 45% of the patients submitted only one prescription for sumatriptan (Gaist *et al.* 1996:162).

The Lorenz curve of sumatriptan prescribing is given in Figure 1. The x-axis indicates various percentiles, and the y-axis indicates these percentiles' cumulated share of total sumatriptan drug prescribing (Hallas & Nissen, 1994). From the curve, it can be seen that 10%

of the patients were responsible for 51,72% of the total number of prescriptions for sumatriptan, and that 50% of patients were responsible for 93,22% of all sumatriptan prescriptions. Utilisation of sumatriptan in the 1992 to 1994 Danish study was also highly skewed, with the one percent and 10% heaviest users of

sumatriptan responsible for 20% and 60% of total consumption, respectively (Gaist *et al.* 1996: 162).

Table 4: Frequency distribution of sumatriptan prescription for the different age and gender groups

AGE GROUP (IN YEARS)	PRESCRIBING FREQUENCY *		BOTH GENDERS		AVERAGE NUMBER (SD) OF SUMATRIPTAN PRESCRIPTIONS **		
	FEMALES (n = 522)	MALES (n = 53)	NUMBER	%	FEMALES	MALES	BOTH GENDERS
< 30	7,85	32,07	58	10,08	3,42 (2,39)	2,43 (2,15)	3,05 (2,30)
30-39	26,25	33,96	155	26,96	7,61 (7,38)	3,60 (4,22)	6,74 (6,94)
40-49	37,35	18,88	205	35,65	8,13 (9,49)	2,00 (0,71)	7,07 (8,92)
≥ 50	28,55	15,09	157	27,31	5,14 (3,58)	2,67 (2,08)	4,91 (3,52)
TOTAL	100,00	100,00	575	100,00	6,29 (6,69)	2,65 (2,48)	5,58 (6,26)

* $\chi^2_{(3)} = 36,85$; $p < 0,0001$.

** Standard deviations (SDs) are indicated in brackets.

Table 5: Number of prescriptions for sumatriptan per patient over the study period

NUMBER OF PRESCRIPTIONS	NUMBER OF PATIENTS			
	FEMALES	MALES	BOTH GENDERS	%
1	16	8	24	23,30
2	14	6	20	19,42
3	10	2	12	11,65
4	6	0	6	5,83
5	4	2	6	5,83
≥ 6	33	2	35	33,97
TOTAL	83	20	103	100,00

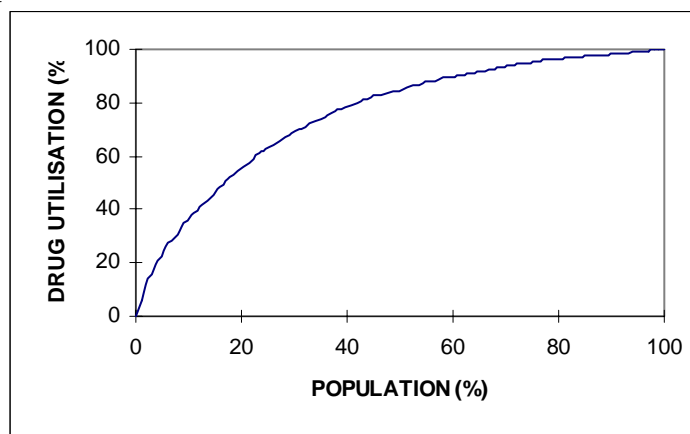


Figure 1: Lorenz curve of sumatriptan prescribing in the patient population

Table 6: Ten most often prescribed products (excluding sumatriptan)

RANK	PROPRIETARY NAME	ACTIVE INGREDIENT(S)	PRESCRIBING FREQUENCY			
			FEMALE	MALE	BOTH GENDERS	% *
1	Lentogesic [®]	Dextropropoxyphene, paracetamol, pemoline, L-glutamine	43	16	59	3,64
2	Stemetil [®]	Prochlorperazine	41	0	41	2,53
3	Trepiline [®]	Amitriptyline	38	0	38	2,34
4	Inderal [®]	Propranolol	37	1	38	2,34
5	Sibelium [®]	Flunarizine	21	10	31	1,91
6	Lanzor [®]	Lansoprazole	26	2	28	1,73
7	Prepulsid [®]	Cisapride	28	0	28	1,73
8	Efexor [®]	Venlafaxine	28	0	28	1,73
9	Premarin [®]	Conjugated oestrogens	28	0	28	1,73
10	Neoral [®]	Cyclosporine	28	0	28	1,73

* Calculated as a percentage of the total number of prescriptions, excluding sumatriptan (n=1 623).

Other drugs prescribed with sumatriptan

A total of 1 623 other products representing 219 different proprietary (trade) name products (excluding sumatriptan) were prescribed to the 103 patients during the course of the year. The ten most often prescribed products (excluding sumatriptan) are given in Table 6. The results of the 1992 to 1994 Danish study also indicated the use of strong analgesics, dextropropoxyphene and codeine with sumatriptan (Gaist *et al.* 1996:164).

Prescribing differences were detected in the prescribing of the different proprietary name products to female and male patients in the age groups under 30 years, 30 to 39 years, 40 to 49 years, and 50 years and older ($\chi^2 = 341,66$; $df = 3$; $p < 0,0001$). If all the products prescribed to the patient population are considered, it was interesting to observe that the average number of prescriptions per patient over the one year period was 21,24 (SD = 31,61). The average for female patients (average = 23,80; SD = 34,39) was considerably higher

than the average for male patients (average = 11,15; SD = 11,14).

Cost of sumatriptan prescriptions

A total of 2 198 products at a cost of R368 427,39 were prescribed to the 103 patients. Sumatriptan accounted for 47,37% of the prescription cost, which is high if compared to the finding that sumatriptan accounted for only 26,16% of prescription volume. The average cost per prescription (all therapeutic groups) was R167,62 (SD = R215,23). The average cost of a prescription for sumatriptan was R303,54 (SD = R217,44), which is very high.

Comparison with the results of a study on 2002 data

The above results for 1996 are compared in a summarised manner with the results of another study conducted on the data of a different PBM in 2002 (see Table 7). As can be seen the results of the two studies differ. Sumatriptan was the only triptan available on the South African market during the 1996 study. After the

introduction of the second generation triptans (naratriptan, rizatriptan and zolmitriptan), the prescribing frequency of the triptans increased to 26,89% in 2002, compared to 19,10% for triptans (only sumatriptan) in the 1996 study. Further comparisons will be investigated. The 1996 study thus provides important baseline information on triptan prescription in South Africa.

CONCLUSION AND RECOMMENDATIONS

Analysis of medication consumption based on dispensing or reimbursement data has two limitations. Firstly, no information is available on non-compliance and, secondly, no information is available on drugs which are bought over-the-counter. Furthermore, this type of data also does not provide direct information on efficacy, clinical events or adverse reactions observed by consumers. Yet, despite the limitations, drug utilisation studies on prescription databases do provide a relatively inexpensive insight into the prescribing practices and cost of the various drug classes. Since little is known about the prescribing and use of drugs for the treat-

Table 7: Selected prescribing parameters of the 1996 and 2002 studies on anti-migraine preparations

PRESCRIBING PARAMETER	1996 STUDY	2002 STUDY
Number of patients	578	464
Average age of patients	48,40 years (SD = 14,19 years)	42,36 years (SD = 14,82 years)
Percentage female patients	78,72%	63,58%
Average number of anti-migraine products prescribed during the year	5,21 (SD = 5,02)	2,90 (SD = 3,80)
Percentage of patients receiving three or less anti-migraine products during the year	50,52%	95,04%
Percentage of drugs for the prophylaxis of migraine	67,55%	60,70%
Percentage of prescriptions for sumatriptan	19,10%	6,69%
Percentage of prescriptions with tablets as dosage form	64,66%	72,88%

ment of migraine in South Africa, the aim of the study was to investigate the prescribing of drugs for the treatment of migraine (ATC Group N02C), with specific emphasis on sumatriptan, in a well-defined primary care patient population in South Africa.

A total of 3 011 products for the treatment of migraine at a cost of R451 559 were prescribed to the 578 patients in the study during 1996. The average age of patients was 48,40 years, with approximately 80% of patients being females. Most drugs (67,55%) were for the prophylaxis of migraine, of which clonidine and flunarizine were the most frequently prescribed. Of the drugs prescribed specifically for the management of migraine, sumatriptan was the most frequently prescribed. The preliminary results of a study on 2002 data indicated that there was an increase in the prescribing frequency of the triptans after the introduction of the new second generation triptans on the South African market, and a slight decrease in the prescribing of products for migraine prophylaxis. These findings are currently being further investigated.

Sumatriptan is highly efficacious in aborting acute attacks of migraine. The average age of patients prescribed sumatriptan in the 1996 study was 41,99 years (younger than the total study population), with the majority of patients (80,58%) also being females. Similar to other studies, the prescribing of sumatriptan in this study was skewed, with 10% of patients responsible for more than half of all sumatriptan prescriptions. Although it is not possible to prove overuse or abuse of sumatriptan in this study due to a lack of diagnosis or migraine attack rates, the overuse of sumatriptan can have important economic consequences. The results of a study conducted in the Netherlands during approximately the same time found that a small group of patients (four percent) used sumatriptan too often (Ottervanger *et al.* 1996:353). Another study conducted in Denmark reported that the one percent and 10% heaviest users of sumatriptan were responsible for 20% and 60% of total consumption, respectively (Gaist *et al.* 1996:162). Limited information is furthermore available on the long-term effects of sumatriptan (Visser, De Vriend, Jaspers & Ferrari, 1996:46). Little is known about whether headache relief after sumatriptan and the occurrence of headache recurrence and chest symptoms are attack-related effects (that is, may vary per attack within a patient) or

are patient-related effects (that is, may vary between patients but are consistent effects within a patient over multiple attacks) (Visser *et al.* 1996:46).

Migraine affects primarily the economically active sector of the community. Pharmacists therefore have an important role to play in managing and counselling migraine sufferers. Furthermore, since the treatment of migraine is expensive, the impact that drugs for the treatment of migraine, with specific emphasis on sumatriptan and the other triptans, have on the quality of life of migraine sufferers should be measured in economic terms.

Studies on the pharmacoepidemiology of migraine can greatly enhance the understanding of this disease state in South Africa. It is recommended that further drug utilisation studies on the prescribing of the triptans be conducted as the newer triptans are introduced onto the South African market. Furthermore, qualitative studies where interviews are conducted with patients suffering from migraine can greatly enhance the understanding and treatment of patients with migraine.

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