

Nonprescription medicine use in a multiple sclerosis clinic population

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Aims To determine the use of nonprescription medicines in a cohort of multiple sclerosis (MS) patients and to identify a subgroup of patients liable to spend more on nonprescription medicines

Methods A questionnaire was given to MS patients attending a neurology out-patients clinic during the previous year. Medicines from a General Practitioner (GP), pharmacy and 'other' sources utilized in the last month were determined, along with demographic data. Additional information was obtained from hospital notes.

Results One hundred and seventeen MS patients responded to the questionnaire, giving a response rate of 79% (117/148). Responders differed from nonresponders only in age, with responders being significantly older than nonresponders ($P=0.011$). Over one-third of medicines taken in the last month were nonprescription medicines (35%; 219/627). A gamolenic acid containing preparation was the most popular, purchased by 28% of patients. Fifteen percent (17/117) of MS patients had exceeded the recommended daily allowance of a vitamin (frequently vitamins A, D and E), and one exceeded the upper safe level for daily self-supplementation of vitamin A and D. Females spent significantly more than males in the previous month (£10.09 compared with £5.53, respectively; $P=0.022$). Patients who were older, reported worsening MS symptoms in the last year and those who exhibited greater disability were more likely to have been prescribed medicines by a GP ($P<0.0005$), although they were not more likely to self-prescribe or take alternative remedies ($P>0.05$). However, those with poorer mobility were significantly less likely to have purchased a pharmacy medicine in the last month ($P=0.033$).

Conclusions MS patients were high users of nonprescription medicines. A typical subgroup of MS patients that spent more on nonprescription medicines could not be identified, aside from females. Furthermore, the strong predictors for increased use of prescription medicines (increasing age, severity of symptoms in the last year and poorer mobility) were not found for nonprescription medicines. Excessive intake of the fat soluble vitamins could lead to hypervitaminosis, the effects of which could exacerbate or mimic MS symptoms. Health professionals should be aware of these issues and counsel the MS patient accordingly, particularly as the majority purchased products from 'other' sources where typically there is no health-professional available to give advice. The limited use of pharmacy medicines by the more disabled patient could indicate a problem with access to the pharmacy, or could reflect the greater use of prescription medicines.

Keywords: drugs, medicine usage, multiple sclerosis, nonprescription, over-the-counter

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Introduction

Previous studies have reported that between 30 and 56% of multiple sclerosis (MS) patients receive no prescriptions from their General Medical Practitioner (GP) for up to

12 months [1, 2]. These figures were comparable with the general population where between 40 and 56% received no prescriptions from the GP [1, 2]. However, it is possible that the MS patient may be self-treating with over-the-counter (OTC) or alternative medicines, possibly without the knowledge of the GP or neurologist. Such drugs may interact with prescribed medication, reducing efficacy or potentiating side-effects, and be of questionable efficacy and considerable cost to the MS patient. Indeed, MS patients should be discouraged from spending money on unproven treatments which may be potentially harmful [3]. Many 'alternative' medicines have limited evidence of efficacy and little is known about their use by MS patients. This present study aimed to examine the use of nonprescription medicines and their cost to the MS patient and to identify a subgroup of patients who are more likely to use them.

Methods

The use of prescription and nonprescription medicines during a 4-week period was determined by means of a prepiloted questionnaire. MS patients who had a neurology out-patient appointment in the previous year at one of two South Wales hospitals were targeted. Patients were either given a questionnaire and information sheet whilst at out-patients by the neurologist or were contacted by post and invited to participate. GPs were initially contacted for all patients discharged from follow up from the neurology department. A free-post envelope was included for the return of the questionnaire or for the invitation to participate. Nonresponders were sent a reminder after 2 weeks. Additional information, such as MS course and comorbidity was obtained from each patient's hospital notes. The questionnaire gathered details about medicine usage in the previous 4 weeks from the GP, the pharmacy and from 'other' sources, such as health food shops, supermarkets and mail order. Patients were asked to rate their MS symptoms in the last year and their level of mobility using predetermined tick-box answers. Basic demographic data was also obtained. The 'volunteer information sheet' accompanying the questionnaire was found to have a Flesch Reading Ease of 61.6, which was within the recommended standard score range of 60–70.

Local Ethics Committee approval for the study was obtained. Statistical analysis was carried out using SPSS 6.1. Odds ratios (OR) have been quoted with the 95% confidence interval (95%CI) and were calculated using the SPSS package. Non-parametric tests were carried out in most cases as, apart from age, data were not normally distributed.

Results

A total of 148 MS patients were contacted through neurology out-patients clinics; 79% (117/148) of whom returned a completed questionnaire. A single reminder increased the response rate from 66% to 79%. Responders to the questionnaire were significantly older than nonresponders (mean difference = 5.6 years; 95% CI: 1.3, 9.9); Student's *t*-test = -2.57 ; $P=0.011$). No other significant differences were found with regards gender, MS course, years since diagnosis or disability status ($P>0.05$). Demographic data for responders to the questionnaire are presented in Table 1.

Over one-third of medicines taken in the previous 4 weeks were found to have been obtained without a prescription (35%; 219/627) as recorded in Table 2. Thirty-six percent (79/219) of nonprescription medicines were obtained from a pharmacy, with 64% (140/219) from 'other' sources, including supermarkets, health food shops and mail order.

Duplication and excessive use of medication

Fifteen percent of patients (17/117) were found to have exceeded the recommended daily allowance (RDA) [4] of one or more vitamin (typically A, D or E) by taking two or more preparations each containing the same vitamin. Eighty-two percent of these patients (14/17) had purchased these from 'other' sources, one patient solely from the pharmacy, and the other two from a mixture of pharmacy or GP and 'other'. Four patients had reached the upper safe level (USL) for daily self-supplementation of

Table 1 Demographic data for responders to the questionnaire ($n=117$).

Variable	Number
Mean age/years (s.d.)	44.6 (10.9)
Females (%)	85 (78%)
Mean years since diagnosis (s.d.)	9.0 (7.9)
<i>MS course</i>	
Benign	8 (7%)
Relapsing–remitting	35 (30%)
Secondary progressive	54 (46%)
Primary progressive	11 (9%)
Unknown	9 (8%)
<i>Disability status (inside the home)</i>	
Walks unaided	14 (12%)
Some difficulty walking, does not use a stick	46 (39%)
Walks with a stick	19 (16%)
Walks with bilateral assistance	15 (13%)
Wheelchair bound	20 (17%)
Bed-bound	2 (2%)
Data missing	1 (1%)

Table 2 Medicines taken in the previous 4 weeks, by gender.

Medicine type	Female (n = 86)			Male (n = 31)			Total (n = 117)		
	Sum	Range	Mean (s.d.)	Sum	Range	Mean (s.d.)	Sum	Range	Mean (s.d.)
1. prescribed by the GP	320	0–13	3.8 (3.10)	88	0–10	2.8 (2.76)	408	0–13	3.5 (3.06)
2. from the pharmacy	67	0–6	0.9 (1.17)	12	0–5	0.4 (1.0)	79	0–6	0.7 (1.13)
3. from 'other' sources*	108	0–7	1.3 (1.71)	32	0–14	1.0 (2.66)	140	0–14	1.2 (2.00)
4. nonprescription (2 and 3)	175	0–12	2.0 (2.24)	44	0–14	1.4 (2.78)	219	0–14	1.9 (2.41)
Total	495	0–17	5.8 (3.81)	132	0–18	4.1 (3.95)	627	0–18	5.4 (3.91)

*e.g. supermarket, health food shop, mail order.

vitamin D (10 µg daily) and one had exceeded the USL of vitamin A and D. Excessive use arose with the consumption of cod-liver oil in combination with another vitamin supplement and/or evening primrose oil.

Four patients were identified as taking two paracetamol-based analgesics; one obtained from a pharmacy and the other from the GP. Combinations included both Co-codamol from the GP and from the pharmacy, under different brand-names. Three patients had taken two types of NSAIDs in the previous 4 weeks. One patient was prescribed regular diclofenac (at the maximum daily dose of 150 mg) from the GP, but also purchased aspirin for headache from a pharmacy.

Gender differences

Males were significantly less likely to have purchased a nonprescription medication compared with females (44% of males compared with 71% of females; OR: 0.32 (95% CI: 0.14, 0.75)). Females had taken significantly more prescription and nonprescription medicines in the last month compared with males (mean of 3.8 compared with 2.8 prescription medicines, Mann-Whitney $P=0.008$; and a mean of 2.0 compared with 1.4 nonprescription medicines, respectively, Mann-Whitney, $P=0.013$) as shown in Table 2. However, when nonprescription medicines were split according to source, the gender difference was only significant for those medicines purchased from the pharmacy (Mann-Whitney, $P=0.022$), but not from 'other' sources ($P=0.11$).

Age

The number of prescription medicines taken in the previous month was found to increase significantly with increasing age (Spearman's rank correlation coefficient $r=0.32$; $P<0.0005$). However, there was no significant association between age and nonprescription medicine use from either the pharmacy or 'other' sources ($P>0.05$).

Symptom severity

Those patients reporting more severe MS symptoms in the last year had taken significantly more prescription medicines, with the mean number of drugs increasing from 2.3 for those with no or mild symptoms to 3.0 for those with moderate symptoms and 5.7 for those with severe symptoms (Kendall's rank correlation coefficient $Kr=0.31$; $P<0.0005$). Interestingly, there was a trend for those reporting more severe symptoms to have taken fewer nonprescription medicines, although this did not reach statistical significance ($Kr=-0.12$, $P=0.14$).

Ambulatory status

Those patients reporting poorer mobility were found to have taken significantly more prescription medicines in the last month ($Kr=0.41$, $P<0.0005$). Conversely, those reporting poorer mobility were significantly less likely to have purchased a pharmacy medicine ($Kr=-0.20$, $P=0.033$). There was no significant trend for medicines obtained from 'other' sources ($P>0.05$).

Cost of medicines

The mean expenditure on nonprescription medicines in the previous 4 weeks was £8.85 (s.d. £13.20), although spending ranged from zero to £80. Females spent a significantly greater amount than males (mean expenditure by females was £10.09 (s.d.13.90) and by males was £5.53 (s.d.10.66; Mann-Whitney, $P=0.022$). Two of the three top spending patients were not prescribed any medicines from their GP. One female spent £80 on a range of vitamins and minerals after having her hair analysed. Another spent £45 on cod-liver oil, vitamin C and ferrous sulphate tablets (from the pharmacy), and aloe vera juice and a herbal remedy (from 'other' sources). One man spent £40 on evening primrose oil, multivitamins, vitamin C, a calcium preparation and vitamin B₁₂ (all from 'other' sources). As expected, those exempt from the prescription charge ($n=64$) spent significantly less on nonprescription

medicines than those who were not exempt (mean expenditure on medicines in last 4 weeks = £6.64 and £13.26, respectively; Mann–Whitney, $P=0.013$). There was no correlation between the amount spent on nonprescription medicines and age, MS course, severity of symptoms or number of years since diagnosis ($P>0.05$).

Medicine type

Dietary supplements were the most popular of all prescription and nonprescription medicines taken in the previous 4 weeks. They accounted for 21% (131/627) of all medicines, with over half (51%; 60/117) of all patients taking at least one. The majority of dietary supplements were purchased from 'other' sources (71%; 94/131), with 18% (23/131) obtained from the pharmacy and 11% (14/131) from the GP. Females were significantly more likely to have taken at least one dietary supplement (from all sources) in the last 4 weeks (58% of females *vs* 34% of males; OR: 0.38 (95% CI: 0.17, 0.89). Paracetamol-based analgesics and drugs for spasticity (predominantly baclofen) were the most frequent medicine prescribed by the GP (39% and 22% of patients were prescribed at least one, respectively). Gamolenic acid containing preparations which included evening primrose oil and starflower oil were the most popular nonprescription medicines

purchased by 28% of patients (Table 3), followed by a multivitamin purchased by 20%.

Discussion

MS patients have been found to be high users of nonprescription medicines, with 63.2% of surveyed patients having purchased a nonprescription medicine in the previous 4 weeks (70.6% of females and 43.7% of males). This compares with 37.5% of responders in the 1995 Welsh Health Survey ($n=26804$) where 45.3% of women and 31.1% of men under 65 years had purchased a nonprescription medicine in the previous 4 weeks [5]. The difference found between the MS and the general population could conceivably be even greater in a nonclinic based MS population.

The most frequently prescribed drugs to MS patients were analgesics and drugs for spasticity, which was in agreement with previous studies examining GP prescribing data for MS patients [1, 6]. However, when nonprescription medicines were included, the use of dietary supplements exceeded both of these, with over half of all patients having taken at least one. The majority of dietary supplements had not been obtained from the GP. In total, over one-third of all medicines taken in the previous 4 weeks were purchased OTC.

Table 3 Non-prescription medicine usage in the previous 4 weeks.

Preparation	Number of patients purchasing from:		Total	% of patients
	'other' source	the pharmacy		
Gamolenic acid	29	4	33	28.2
Multivitamin	18	5	23	19.7
Paracetamol-based analgesic	2	18	20	17.1
NSAID	0	13	13	11.1
Vitamin C	10	2	12	10.3
Vitamin B	8	2	10	8.5
Cod-liver oil	6	4	10	8.5
Other minerals	5	4	9	7.7
Herbal/plant extracts	9	0	9	7.7
Calcium preparations	8	0	8	6.8
Laxative	2	5	7	6.0
Vitamin E	5	1	6	5.1
Other fish oil	4	0	4	3.4
Antacid	1	3	4	3.4
Topical NSAIDS	0	4	4	3.4
Vitamin B ₁₂	2	1	3	2.6
Phenylalanine	3	0	3	2.6
Hyperbaric oxygen	2	0	2	1.7
Cannabis	1	0	1	0.9
Miscellaneous*	15	2	17	14.5
**Totals	55 (47.0%)	45 (38.5%)	74	63.2

*miscellaneous included: antihistamines (three patients), garlic (2), homeopathic remedies (1), cranberry juice, brewers yeast, digestive enzymes, lecithin, royal jelly (2), 'tired leg' gel, thyroid stimulating hormone. **Note: columns do not add up as some patients purchased multiple products.

Of concern was that 15% of all patients were identified as exceeding the RDA of one of the fat-soluble vitamins A, D or E, while one patient had exceeded the upper safe level for daily self-supplementation of vitamins A and D. Excessive use of vitamins can cause hypervitaminosis which could exacerbate or mimic MS symptoms. Common symptoms of MS include fatigue and muscle weakness [7]. Vitamin D is the most likely vitamin to cause toxicity leading to hypercalcaemia, with muscle weakness, apathy, headache and anorexia [8]. However, vitamin D supplements may be beneficial in those MS patients that are largely house-bound, with minimal exposure to sunlight coupled with a deficient diet. Low levels of 25-hydroxyvitamin D have been associated with accelerated bone loss in MS patients [9]. Of the other two commonly over-used fat soluble vitamins, large doses of vitamin E can cause GI disturbances, fatigue and weakness while vitamin A toxicity is characterized by fatigue, irritability and anorexia [8].

The excessive use of the fat-soluble vitamins in this MS population tended to be associated with the consumption of cod-liver oil and a multivitamin or evening primrose oil. This practice by MS patients should be borne in mind by all health-professionals, particularly as the majority of these patients purchased products from nonpharmacy outlets where typically no health-professionals are available to provide advice. Indeed, 84% of all dietary supplements were purchased from a nonpharmacy outlet. Four patients were identified as having taken more than one paracetamol containing preparation in the previous 4 weeks, and three patients two types of NSAIDs. Whether these preparations were actually taken together was not known. Patients may not disclose other products they are taking when purchasing from the pharmacy and minimal control of sale and supply (apart from pack size) occurs in other outlets. Whilst over-consumption of analgesics did not appear to be a major problem, health professionals should be aware of the frequent use of prescription and nonprescription analgesics in this population and question patients as to their use.

There were strong predictors for the use of prescription medicines. Increasing age, severity of symptoms in the last year and poorer mobility were all associated with increasing numbers of medicines from the GP. The same did not apply to nonprescription medicines. However, there was a trend for those reporting more severe symptoms to have taken *fewer* nonprescription medicines. This indicated that as patients' symptoms worsened they were more likely to obtain a prescription from the GP, and not necessarily to self-prescribe or take alternative remedies. Also less mobile patients were significantly less likely to purchase a pharmacy medicine. This could partly be an issue of access and ability to get to

the pharmacy or could indicate a greater reliance on the GP for medicines.

A subgroup of MS patients who were more susceptible to spending a greater amount on nonprescription medicines could not be identified. None of the variables recorded, for example, age, years since diagnosis, MS course or global rating of MS symptoms could be related to money spent on medicines in the last year. However, females had taken significantly more nonprescription medicines than males, and accordingly spent significantly more. As might be expected, those exempt from the NHS prescription charge spent significantly less on medication than those that were not. The highest spending patient had purchased £80 worth of mail order preparations after having her hair analysed – a questionable practice, which probably thrives on susceptible patients with a chronic disease such as MS.

A range of nonprescription medicines were purchased. The most popular was for a gamolenic acid containing preparation. Results from trials have given conflicting indications for the effectiveness of these products, ranging from a definite lack of efficacy [10] to modest benefits [11]. Overall there is a lack of convincing evidence to support their use. Analgesics were the second most popular nonprescription medicine. Pain is a common problem in MS [12]. However, paracetamol-based analgesics and NSAIDs may not be effective in relieving MS associated pain [6]. Other medication for MS-specific pain relief include: baclofen for muscle spasms or carbamazepine for paroxysmal pain (e.g. trigeminal neuralgia). Anecdotal reports claim benefits in using vitamin B₁₂ in MS [13]. True vitamin B₁₂ deficiency can lead to irreversible neurological damage which although similar to MS, can usually be distinguished clinically. Hyperbaric oxygen was used by two patients despite the fact that a review [14] of 14 controlled trials using hyperbaric oxygen concluded that the lack of positive effects precluded a positive recommendation for the use of hyperbaric oxygen for MS.

In conclusion, MS patients were found to be high users of nonprescription medicines. A specific subgroup of MS patients (in terms of severity of MS, mobility, years since diagnosis, MS course, or age) that spent more on nonprescription medicines could not be identified, aside from female gender. Furthermore, the strong predictors for increased use of prescription medicines (increasing age, severity of symptoms in the last year and poorer mobility) were not found for nonprescription medicines. Fifteen percent of MS patients had taken an excessive amount of a fat soluble vitamin in the previous 4 weeks. This could lead to hypervitaminosis, the effects of which could exacerbate or mimic MS symptoms. Health professionals should be aware of these issues and counsel the MS patient accordingly, particularly as the majority of these patients purchased products from 'other' sources where typically

there is no health-professional available to give advice. The limited use of pharmacy medicines by the more disabled patient could indicate a problem with access, or getting to the pharmacy, or could be a reflection of the greater use of prescription medicines.

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