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Original Research Article

Analgesic Use in Older Adults with Back Pain: The BACE Study

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Abstract

Background. Older patients with back pain are more likely to visit their general practitioner (GP) and are more likely to be prescribed analgesics.

Objective. To assess analgesic use in older adults with back pain in general practice.

Methods. The BACE study in the Netherlands is a prospective cohort study. Patients (aged >55 years) with back complaints were recruited when consulting their GP or shortly thereafter. Measurements took place at baseline and at 3- and 6-month follow-up. For medication use, patients were asked if they had used any medication for their back pain in the previous 3 months and, if so, to specify the medication name, dosage used, frequency of usage, and whether the medication was prescribed or purchased over the counter.

Results. Of the 1,402 patients who were approached to enter the study, 675 were included. Of these patients, 484 (72%) reported medication use at baseline. Nonsteroidal anti-inflammatory drugs (NSAIDs) (57%) were more often used than paracetamol (49%). Paracetamol was mostly obtained over the counter (69%), and NSAIDs were mostly obtained by prescription (85%). At baseline, patients with severe pain (numerical rating scale score ≥7) used more paracetamol, opioids, and muscle relaxants. Patients with chronic pain (back pain >3 months) used more paracetamol, while patients with a shorter duration of pain used more NSAIDs. During follow-up there was an overall decline in medication use; however, at 3- and 6-month follow-up, 36% and 30% of the patients, respectively, still used analgesics.

Conclusions. In these older adults consulting their GP with back pain, 72% used analgesics at baseline. Despite a decrease in medication use during follow-up, at 3 and 6 months a considerable proportion still used analgesics.

Key Words. Back Pain; Analgesics; Older Adults

Introduction

Back pain is a major health problem with a reported lifetime prevalence of up to 84% [1]. In the Netherlands, about 30–45% of patients with back pain visit their general practitioner (GP) [2,3]. A recent study in the UK showed that older patients (>70 years) with low back pain are more likely to visit their GP and more likely to receive analgesics compared with younger adults with back pain [4]. With regard to analgesic options, international guidelines for low back pain usually recommend paracetamol as first

choice, followed by nonsteroidal anti-inflammatory drugs (NSAIDs) [5]. Selecting analgesic medication for back pain is important, not only for effective pain relief but also because each class of medication is associated with particular (serious) adverse reactions, especially in older adults.

NSAIDs, for example, are associated with adverse reactions such as gastrointestinal and cardiovascular events [6,7]. An Australian study reported that since NSAIDS such as ibuprofen became available "over the counter," fewer people were using them appropriately and according to the instructions [8]. Three percent of patients participating in the study used more than the maximum dose of NSAIDs, 7.5% used more than one NSAID, and 13% were at risk of an interaction with another medication that they took.

Adverse reactions from opioids are most commonly dry mouth, nausea, vomiting, dizziness, and constipation [9,10]. Dizziness can cause increased incidence of falls and fractures [11,12]. A frequently used opioid, codeine, can even elevate risk of all-cause mortality after only 30 days' usage [13].

Most studies on analgesic use only report prescribed medication [14–16]. This can give a wrong impression of medication use, because paracetamol and NSAIDs are often used without prescription. Furthermore, previous studies assessing analgesic use in older adults were mostly performed in settings other than general practice [4,17,18], and most of these studies were cross-sectional [4,16,19]. In the present study we examine both "over-the-counter" and prescribed analgesic use in older adults with back pain in general practice. Medication use was assessed over 6 months of follow-up and compared between patients with (1) different ages (55–74 years vs ≥75 years), (2) different durations of pain (<3 months vs ≥3 months), and (3) different pain scores for baseline severity of back pain (<7 vs ≥7; range 0–10).

Methods

The Back Complaints in the Elders (BACE) study in the Netherlands is a prospective observational cohort study. Patient inclusion (N = 675) took place between March 2009 and September 2011 in a representative sample of 49 general practices around Rotterdam. Patients aged >55 years were recruited when they consulted a GP with a new episode of back complaints. Back complaints were defined as pain in at least a part of or the whole region from the top of the shoulder blades to the first sacral vertebra, with or without pain radiation to the leg. If a patient had not visited a GP with the same back complaints in the preceding 6 months, it was considered a new episode. Patients were invited to participate in the study by their GP during the consultation or in writing within 2 weeks after the consultation.

Patients were excluded if they were unable to fill out the questionnaires due to cognitive impairment or were not able to read and write in Dutch. Patients who were unable to undergo physical examination (e.g., wheelchair-bound patients) were also excluded.

The Medical Ethics Committee of Erasmus University Medical Center, Rotterdam, approved the study protocol. Details of the BACE study design are described elsewhere [20].

Data Collection

Baseline measurement included a questionnaire and physical examination of the back. Follow-up measurements took place at 3 and 6 months post-baseline by means of questionnaires. The questionnaires asked about patient characteristics, features of the back complaint, and use of pain medication. Patients' perceived severity of back pain averaged over the previous week was measured on an 11-point numerical rating scale (NRS) [21], with 0 as "no pain" and 10 representing "worst pain imaginable." Disability was measured with the Roland–Morris Disability Questionnaire (RDQ) [22]. RDQ scores can range from 0 (no disability) to 24 (severe disability). Quality of life was measured with the Dutch version of the Short Form—36 (SF-36) [23]. The SF-36 measures eight dimensions: physical function, physical role function, bodily pain, general health, vitality, social function, emotional role function, and mental health. Scores on these eight dimensions can be summarized by two summary scores: a physical component summary score and a mental component summary score. Each dimension and summary score is scored from 1 to 100, with a higher score representing better health [24,25]. Summary scores were calculated with adapted *Z*-values in view of the higher mean age of our study population [23]. Depression was measured with the Center for Epidemiologic Studies Depression Scale (range 0–60). Patients with a higher score are more prone to depression [26]. Pain catastrophizing was measured with the Pain Catastrophizing Scale (range 0–52), with a higher score representing a higher risk for catastrophizing [27]. Patients' beliefs about their back pain were investigated with the Back Beliefs Questionnaire (range 9–49), with a higher score representing more positive thoughts on recovery [28]. Lifestyle factors assessed included smoking habits (yes/no) and alcohol consumption. Alcohol consumption was measured with the Alcohol Use Disorders Identification Test – Consumption questions [29,30]. Women were defined as possible hazardous drinkers if they scored ≥3 on the scale, men if they scored ≥4. During physical examination, body weight and height were measured and converted to body mass index (BMI).

For medication use, patients were asked if they had used any medication for their back pain in the previous 3 months and, if so, to specify the medication name, used dosage, frequency of usage, and whether the medication was prescribed or purchased as "over-the-counter" medication. The exact question asked is shown in the Appendix. The medications reported by the patients were recorded in a database and classified by an MD by group: paracetamol, NSAID, opioid, muscle relaxant,

antidepressant, anticonvulsant, and other. Nonpharmacologic treatments were also recorded; patients were asked if they had visited their GP, physiotherapist, or medical specialist in the past 3 months.

Statistical Analysis

Descriptive statistics are used to present patient and back complaint characteristics in patient counts for all variables with categorical data and as mean and standard deviation (SD) for continuous variables. Patients using medication for back pain at baseline were compared with the patients not using any medication for their back pain. For continuous variables, an independent-sample *t*-test was used. Variables with categorical data were analyzed using the chi-square test. If >20% of the cells contained an expected count of <5, a Fisher's exact test was performed. Patients using medication for back pain at baseline, 3 months, or 6 months were selected, and medication use was further analyzed. Patient counts were used to describe which medication types were most commonly used and the frequency of medication use.

Patients using medication were divided into groups according to age (>55–74 years vs ≥75 years), to whether pain was acute or chronic (<3 months vs >3 months), and to the severity of back pain at baseline (NRS <7 vs NRS ≥7). Differences were analyzed using the chi-square test. If >20% of the cells contained an expected count of <5, a Fisher's exact test was performed. Reported *P* values were from two-sided tests, and a P value < 0.05 was defined as statistically significant. All analyses were performed using SPSS software (version 20 for Windows, Chicago, IL, USA).

Results

Figure 1 shows that 1,402 patients were invited to participate and that 675 patients were eventually included.

Characteristics of all patients included in the BACE study are presented in Table 1. Mean age was 66 ± 7.6 years, and 274 of the patients were male (41%). For all included patients, the mean severity of baseline back pain was 5.2 ± 2.7 (NRS). Pain severity was higher in patients using pain medication at baseline compared with those who did not use analgesics for their back pain (5.5 ± 2.7 vs 4.4 ± 2.4 respectively). For 87 patients (13%), this episode of back pain was the first in their life. Mean disability measured with the Roland–Morris Disability Questionnaire was 9.8 ± 5.8; disability score was higher in patients using analgesics for their back pain compared with those who did not take analgesics (10.6 ± 5.7 vs 7.7 ± 5.6, respectively). Chronic back complaints (duration >3 months) were reported by 156 patients (23%). Patients who did use pain medication were less likely to have chronic back complaints compared with those who did not use analgesics. Furthermore, patients using pain medication for their

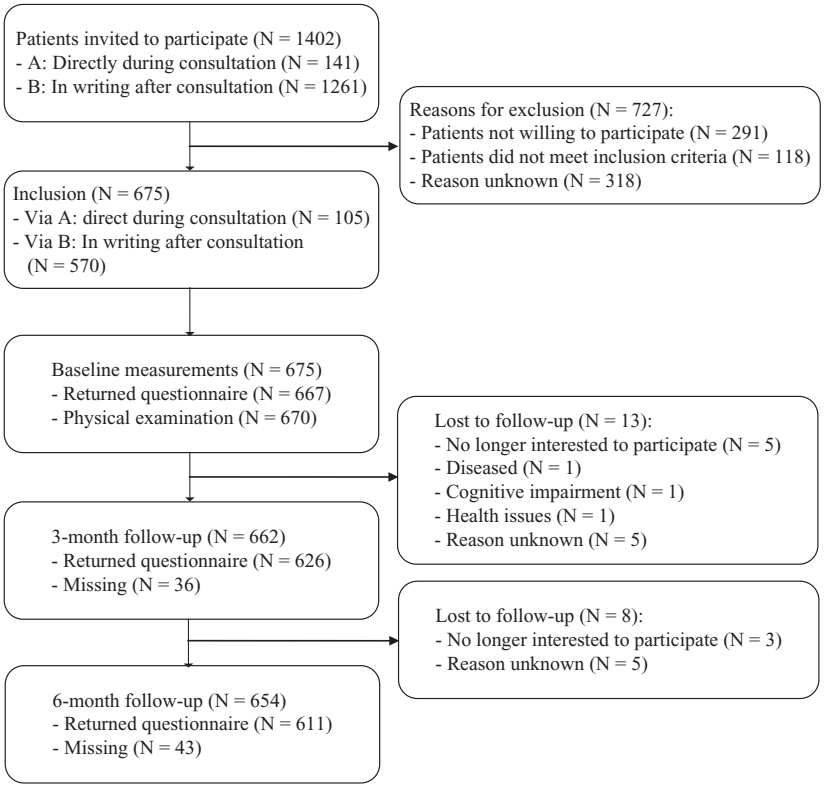

Figure 1 Flowchart of patient inclusion.

Table 1 Baseline characteristics of the patients in the BACE study

	All Patients (N = 675)	Patients Using Pain Medication (N = 484)	Patients Not Using Pain Medication (N = 191)	*P* Value
Age in years, mean ± SD	66 ± 7.6	66 ± 7.7	66 ± 7.6	0.58
Male, N (%)	274 (41)	188 (39)	86 (45)	0.14
BMI, mean ± SD	27.5 ± 4.7	27.3 ± 4.7	27.9 ± 4.7	0.19
Low education level, N (%)	279 (41)	205 (42)	74 (39)	0.57
Smoking, N (%)	122 (18)	87 (18)	35 (18)	0.80
Hazardous drinking, N (%)*	333 (49)	242 (50)	91 (48)	0.88
Severity of back pain, mean ± SD†	5.2 ± 2.7	5.5 ± 2.7	4.4 ± 2.4	< 0.001
Disability, mean ± SD‡	9.8 ± 5.8	10.6 ± 5.7	7.7 ± 5.6	< 0.001
First episode of back pain, N (%)	87 (13)	61 (13)	26 (14)	0.69
Duration of back pain >3 months, N (%)	156 (23)	104 (21)	52 (27)	0.04
Pain radiates to below the knee, N (%)	205 (30)	155 (32)	50 (26)	0.20
Pain location only lumbar, N (%)	450 (67)	313 (65)	137 (72)	0.19
Quality of life physical summary scale, mean ± SD§	43.2 ± 8.9	41.7 ± 8.5	47.2 ± 8.8	< 0.001
Quality of life mental summary scale, mean ± SD§	49.6 ± 10.3	49.8 ± 10.4	48.9 ± 9.9	0.32
Depressive symptoms, mean ± SD¶	10.0 ± 7.8	10.3 ± 7.8	9.2 ± 7.7	0.09
Pain catastrophizing, mean ± SD**	14.1 ± 10.6	15.1 ± 10.8	11.5 ± 9.5	< 0.001
Attitude and beliefs about back pain, mean ± SD††	26.4 ± 7.2	25.8 ± 7.2	28.0 ± 7.1	0.001

* Hazardous drinking is measured with Alcohol Use Disorders Identification Test—Consumption: range 0–12; ≥3 in woman and ≥4 in men is risk of hazardous drinking [29,30].
† Measured with a numerical rating scale as an average of the previous week; range 0–10; 0 indicates no pain, 10 indicates the worst pain imaginable.
‡ Measured with the Roland–Morris disability questionnaire; range 0–24; zero indicates no disability [22].
§ Measured with the Short Form-36, range 0–100; higher score indicates higher quality of life [23–25].
¶ Measured with the Center for Epidemiologic Studies Depression Scale, range 0–60; higher score indicates more prone to depression [26].
** Measured with Pain Catastrophizing Scale, range 0–52; higher score indicates more risk for catastrophizing [27].
†† Measured with Back Beliefs Questionnaire, range 9–49; higher score indicates more positive thoughts of recovery [28].
Missing values ranged from 0% to 12%.

back pain had a lower mean quality of life on the SF-36 physical summary scale, scored higher regarding pain catastrophizing, and had less positive thoughts regarding recovery.

Out of all patients, 72% (484 patients) reported using pain medication in the 3 months prior to baseline (Table 2). In patients using analgesics, NSAIDs (57%) were more often used than paracetamol (49%). Most patients (69%) using paracetamol purchased it over the counter, while NSAIDs were more frequently obtained via a prescription (85%). A relatively large proportion of the patients used opioids (17%), and 8% used muscle relaxant. Used opioids were morphine, codeine, and tramadol. The muscle relaxants were mostly benzodiazepines (92%). Overall, the frequency of taking pain medication was mostly daily (67%); only a small proportion (7%) of all medication was used less than once a week. Most patients (49%) used one kind of medication; 120 patients (18%) used two types, and only 35 patients (5%) used three types (Figure 2). Medications reported in the "other" category were hydrocortisone (2 patients), NSAID cream (2 patients), glucosamine (2 patients), homeopathic cream (2 patients), nefopam (1 patient), *Harpagophytum procumbens* (1 patient), and menthol gel (1 patient).

At 3-month follow-up, medication use was lower compared with baseline (Table 2). Of the 245 patients (36%) using medication at 3-month follow-up, 214 also used medication at baseline. At 3-month follow-up, paracetamol was used more often than NSAIDs (51% vs 43%). Although most patients still used analgesics on a daily basis, this proportion (56%) was smaller compared with baseline (67%). At 3-month follow-up, paracetamol had been obtained over the counter by 84 patients (67%), and NSAIDs were obtained by prescription by 82 patients (77%). Nevertheless, among medication users, 178 (73%) reported the use of one type of analgesic (Figure 2). At 3-month follow-up medications reported in the "other" category were glucosamine (2 patients), prednisone (2 patients), hydroxychloroquine (1 patient), cold cream (2 patients), NSAID cream (1 patient), and menthol cream (1 patient).

At 6-month follow-up there was a further (albeit small) decline in medication use (204 patients; 30%) (Table 2).

Table 2 Frequency of analgesic use in older adults with back pain in general practice

	Baseline				3-Month Follow-Up				6-Month Follow-Up			
	Overall	Less Than Weekly	Weekly*	Daily	Overall	Less Than Weekly	Weekly*	Daily	Overall	Less Than weekly	Weekly*	Daily
N (%)	484	32 (7)	117 (24)	324 (67)	245	16 (7)	83 (34)	140 (56)	204	18 (9)	80 (39)	98 (48)
Medication												
Paracetamol	235 (49)	14 (6)	84 (36)	131 (56)	126 (51)	7 (6)	63 (50)	50 (40)	115 (56)	10 (9)	63 (54)	40 (35)
OTC	163 (69)	12 (7)	73 (45)	76 (47)	84 (67)	5 (6)	50 (60)	27 (32)	78 (68)	10 (13)	49 (63)	17 (22)
Prescription	60 (26)	2 (3)	9 (15)	47 (77)	25 (20)	0 (0)	6 (24)	19 (76)	21 (17)	0 (0.0)	5 (24)	15 (71)
Unknown	12 (5)	0 (0)	2 (17)	8 (67)	17 (14)	2 (12)	7 (41)	4 (24)	17 (15)	0 (0.0)	9 (53)	8 (47)
NSAID†	277 (57)	27 (10)	71 (26)	173 (63)	106 (43)	18 (17)	37 (35)	48 (45)	89 (44)	15 (17)	36 (40)	21 (24)
OTC	30 (11)	5 (17)	14 (47)	11 (37)	18 (17)	3 (17)	12 (67)	3 (17)	17 (19)	5 (29)	9 (53)	1 (6)
Prescription	235 (85)	20 (9)	55 (23)	156 (66)	82 (77)	14 (17)	23 (28)	44 (54)	60 (67)	7 (12)	21 (35)	31 (52)
Unknown	12 (4)	2 (17)	2 (17)	6 (50)	6 (6)	1 (17)	1 (17)	2 (33)	12 (14)	2 (17)	5 (42)	2 (17)
Opioid	82 (17)	2 (2)	18 (22)	59 (72)	51 (21)	2 (4)	12 (24)	34 (67)	35 (17)	2 (6)	8 (23)	23 (66)
Muscle relaxant	37 (8)	4 (11)	14 (38)	19 (51)	11 (5)	3 (27)	3 (27)	5 (46)	12 (6)	1 (8)	1 (8)	9 (75)
Antidepressant	5 (1)	1 (20)	0 (0)	4 (80)	7 (3)	0 (0)	0 (0)	7 (100)	4 (2)	0 (0)	0 (0)	4 (100)
Anticonvulsant	4 (1)	0 (0)	0 (0)	4 (100)	4 (2)	0 (0)	0 (0)	1 (25)	5 (3)	0 (0)	0 (0)	4 (80)
Other	10 (2)	0 (0)	0 (0)	10 (100)	10 (4)	0 (0)	3 (30)	7 (70)	7 (3)	0 (0)	3 (43)	3 (43)

* Medication use 1–5 times a week.
† At baseline 5 patients used both OTC and prescribed NSAIDs, compared with 3 patients who did so at 3-month follow-up.
OTC = over-the-counter; NSAID = nonsteroidal anti-inflammatory drug.
All results are presented as numbers (%).
Missing values ranged from 0% to 75%.

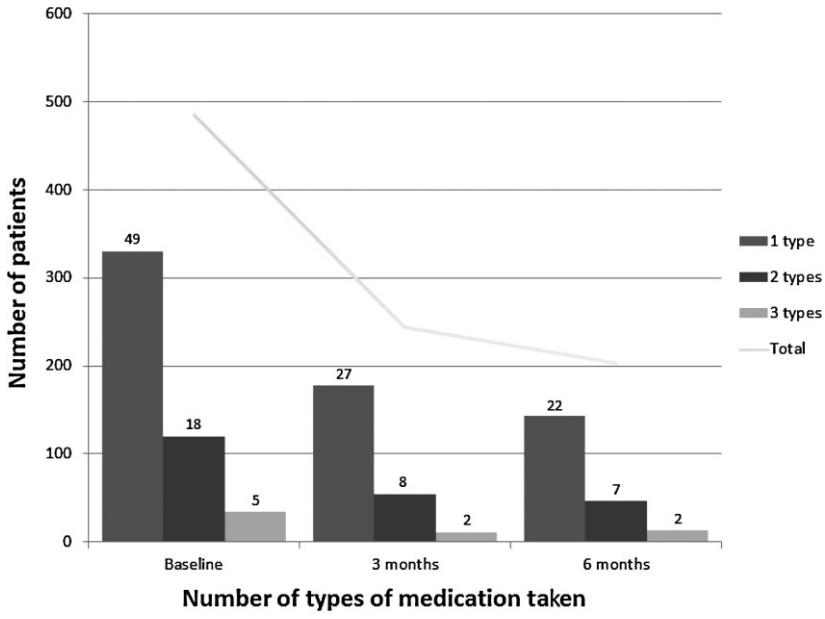

Figure 2 Number of types of medications used by the patients during the study period. Numbers on top of bars are percentages. Line indicates total of patients using at least one type of pain medication.

The frequency of medication use at 6-month follow-up was similar to the usage at 3-month follow-up. Other medications reported at 6-month follow-up were glucosamine (2 patients), prednisolone (1 patient), and NSAID cream (4 patients).

Of the 484 patients who reported use of pain medication for their back pain at baseline, 146 patients still reported use of pain medication at 3- and 6-month follow up. Of the 191 patients not using pain medication at baseline, 31 had started using pain medication for their back pain at 3-month follow-up. Of these 31 patients, 11 patients still used pain medication at 6-month follow-up.

Among patients using paracetamol at baseline, 7% also reported use of paracetamol at 3- and 6-month follow-up. A similar percentage was found in patients reporting NSAID use. Of these patients, 14 reported daily use of paracetamol and 9 reported daily use of NSAIDs. Also, 15 patients (2%) reported opioid use at all three measurement points, 7 of whom reported daily use.

Medication use at baseline was compared between the age groups (Table 3). Paracetamol was more often used by patients aged ≥75 years (60%) compared with relatively younger patients (46%), while NSAIDs were more often used by patients aged 55–74 years (61% vs 40%). Patients with severe back pain (NRS ≥7) more often used paracetamol, opioids, and muscle relaxants. Patients with chronic pain (≥3 months) more often used paracetamol (58% vs 45%), while patients with acute complaints more often used NSAIDs (61% vs 43%).

At 3-month follow-up, there were no longer any differences between the age groups in analgesic usage. However, patients with severe back pain (NRS ≥7) at baseline still more often used opioids (27% vs 14%) and muscle relaxants (7% vs 2%) at 3-month follow-up compared with patients with less severe back pain.

At 6-month follow-up, no difference in muscle relaxant usage was reported; however, opioids were still used more often by patients with severe back pain at baseline compared with those with less severe back pain at baseline.

Fifty-four percent of all patients also reported at least one (additional) visit to their GP, a physiotherapist, or a medical specialist in the 6 months after baseline. Of the 484 patients reporting medication use at baseline, 33% visited their GP vs 22% of the patients who did not use analgesics at baseline ($P < 0.001$), and 40% of the 484 visited a physiotherapist; in the patients who did not use medication at baseline, the rate was 69% (p 0.74). Medical specialists were visited by 17% of the patients taking medication at baseline and by 8% of those who did not use any medication at baseline ($P < 0.01$).

Discussion

Summary of Results

The present study explores over-the-counter and prescribed analgesic use in older adults with back pain in general practice; ≥70% of these patients reported the use of analgesics. Medication use declined during the 6 months post-baseline. At baseline, NSAIDs were more often used by the relatively younger patients (55–74 years); this may indicate that GPs take into account possible adverse drug reactions related to NSAIDs, especially among older adults. Nevertheless, 40% of those aged ≥75 years used NSAIDs at baseline and at 3- and 6-month follow-up. Patients with severe back pain at baseline more frequently used paracetamol, opioids, and muscle relaxants at baseline and at 3-month follow-up

Table 3 Analgesic use at baseline and at 3- and 6-month follow-up classified by severity of back pain, age, and duration of back pain

		Severity of Back Pain			Age			Duration of Back Pain		
	Overall	No Severe Pain (NRS <7)	Severe Pain (NRS ≥7)	*P* Value	55–74 Years	≥75 Years	*P* Value	<3 Months	≥3 Months	*P* Value
Baseline										
N	484	265	216		404	80		331	104	
Medication										
Paracetamol	235 (49)	119 (45)	116 (54)	0.04*	187 (46)	48 (60)	0.02*	149 (45)	60 (58)	0.03*
NSAID	277 (57)	157 (59)	117 (54)	0.48	245 (61)	32 (40)	< 0.001*	203 (61)	45 (43)	< 0.01*
Opioid	82 (17)	34 (13)	48 (22)	< 0.01*	67 (17)	15 (19)	0.59	62 (19)	13 (13)	0.13
Muscle relaxant	37 (8)	14 (5)	23 (11)	0.02*	34 (8)	3 (4)	0.16	31 (9)	4 (4)	0.07
Antidepressant	5 (1)	2 (1)	3 (1)	0.66†	3 (1)	2 (3)	0.19†	2 (1)	2 (2)	0.24†
Anticonvulsant	4 (1)	3 (1)	1 (1)	0.63†	3 (1)	1 (1)	0.51†	1 (1)	2 (2)	0.14†
Other	10 (2)	5 (2)	5 (2)	0.76†	7 (2)	3 (4)	0.21†	9 (3)	1 (1)	0.46†
3-month follow-up										
N	245	119	125		197	48		136	76	
Medication										
Paracetamol	126 (51)	58 (49)	68 (54)	0.45	100 (51)	26 (54)	0.64	67 (49)	39 (51)	0.71
NSAID	106 (43)	57 (47)	48 (38)	0.16	87 (44)	19 (40)	0.71	66 (49)	27 (36)	0.06
Opioid	51 (21)	17 (14)	34 (27)	0.01*	40 (20)	11 (23)	0.69	28 (21)	18 (24)	0.60
Muscle relaxant	11 (5)	2 (2)	9 (7)	0.04*	8 (4)	3 (6)	0.44†	10 (7)	0 (0)	0.02*†
Antidepressant	7 (3)	4 (3	3 (2)	0.72†	6 (3)	1 (2)	1.00†	4 (3)	3 (4)	0.70†
Anticonvulsant	4 (2)	2 (2)	2 (2)	1.00†	2 (1)	2 (4)	0.17†	1 (1)	3 (4)	0.13†
Other	10 (4)	4 (3)	6 (5)	0.75†	8 (4)	2 (4)	1.00†	4 (3)	3 (4)	0.70†
6-month follow-up										
N	204	99	104		156	48		112	64	
Medication										
Paracetamol	115 (56)	54 (55)	60 (58)	0.71	84 (54)	31 (65)	0.20	62 (55)	35 (55)	0.88
NSAID	89 (44)	48 (49)	40 (39)	0.15	71 (46)	18 (38)	0.44	49 (44)	25 (39)	0.57
Opioid	35 (17)	10 (10)	25 (24)	< 0.01*	27 (17)	8 (17)	1.00	19 (17)	13 (20)	0.58
Muscle relaxant	12 (6)	4 (4)	8 (8)	0.28	9 (6)	3 (6)	1.00†	9 (8)	2 (3)	0.33†
Antidepressant	4 (2)	2 (2)	2 (2)	1.00†	4 (3)	0 (0)	0.58†	1 (1)	3 (5)	0.14†
Anticonvulsant	5 (3)	2 (2)	3 (3)	1.00†	3 (2)	2 (4)	0.32†	2 (2)	3 (5)	0.36†
Other	7 (3)	5 (5)	2 (2)	0.27†	6 (4)	1 (2)	1.00†	3 (3)	2 (3)	1.00†

* $P < 0.05$.

† Fisher's exact test.

NRS = numerical rating scale; NSAID = nonsteroidal anti-inflammatory drug.

All results are presented as numbers (%).

Missing values ranged from 0% to 14%.

compared with patients with less severe pain at baseline; there was no difference in NSAID use between these groups. All differences in medication use between the age groups and between groups with different durations of complaints had disappeared at 3 months post-baseline.

Interpretation of Findings

Previous studies reported that NSAIDs are the most often prescribed medication for low back pain [16,31]; however, these studies did not take into account over-the-counter medication. We hypothesized that because patients frequently use over-the-counter paracetamol, it was probably underrepresented in these types of studies. However, the present study showed that (at baseline) NSAIDs were the most frequently used analgesics in older patients (85% obtained by prescription and 11% over the counter). During the study period, paracetamol was mostly obtained over the counter (69%). The Dutch guidelines for acute low back pain recommend that when medication is prescribed, it should be done on a time contingency basis, with paracetamol as first-choice medication. If there is insufficient pain relief with paracetamol alone, the second step is the use of NSAIDs [32,33]. This is in line with international guidelines [5]. However, patients in the present study most often used NSAIDs, which may not be in line with guideline recommendations. For patients with chronic back pain, the Dutch and European guidelines recommend NSAIDs and (weak) opioids for short-term pain relief [32–34]. The European guideline complements this with the recommendation to consider antidepressants as comedication [34]. In the present study, most patients with chronic pain at baseline used paracetamol, followed by NSAIDs and then by opioids. Antidepressants were used by very few patients (2%) with chronic back pain. In the present study, because details on comorbidity, comedication and other considerations possibly taken into account by the GPs were unknown, it is difficult to draw conclusions about whether analgesic use was in line with current guideline recommendations.

The finding that over 70% of our patients consulting their GP reported use of analgesics is similar to that of Cherkin et al., who reported that about 80% of patients used medication after visiting their GP [31]. Cherkin et al. also reported a similar (but slightly greater) decrease; after 7 weeks, only 13% of their patients used any medication, whereas in our study, after 3 months, 36% of the patients reported analgesic usage. However, patients in the study of Cherkin et al. were younger (mean age 43 years) than our study population.

In a study by Luo et al., older adults (≥65 years) were also less likely to be prescribed traditional NSAIDs compared with younger patients, while there was no prescription difference in cyclooxygenase-2 (COX-2) inhibitors [15]. Federman et al. found that patients aged ≥75 years in an outpatient setting were more likely to use NSAIDs, but mostly used COX-2 inhibitors [14]. However, Federman et al. excluded patients with a contraindication for NSAIDs, which might explain the difference compared with the study of Luo et al. and with the present study. Federman et al. also reported that opioids were less frequently used by older adults [14], whereas we found no difference in opioid use between our younger and older age categories.

An Australian study in the open population found that analgesics (opioids and combination analgesics) were more often used in those with the highest scores for low back pain [35].

Another study showed that patients (in primary and secondary care settings) with chronic low back pain who reported increased severity of back pain had increased numbers of prescriptions for opioids and decreased numbers of prescriptions for NSAIDs [18]. This is similar to our finding that there was no difference in NSAID use between the subgroups, while there was a difference in opioid use between the subgroups.

Older patients with back pain are more likely to be prescribed analgesics than younger patients [4,16]. This is remarkable, because older patients are more prone to adverse drug reactions, especially in the case of comedication or of comorbidities such as liver or kidney failure. An Australian study found that for over-the-counter medication, 1.9% of paracetamol users and 23.1% of ibuprofen users had contraindications for these analgesics [36]. In another open population, it was shown that 10% of older patients with low back pain used NSAIDs while they were also using a diuretic and an angiotensin-converting enzyme inhibitor or angiotensin II receptor antagonist [35]; such patients are at increased risk of acute renal failure [37]. In our study population, we did not ask about other types of medication use and therefore cannot judge whether our patients were at risk for adverse drug reactions. Also, because we did not ask about the analgesic dose, we could not determine whether the dosage used might potentially cause an adverse drug reaction. We did record that 5 patients at baseline and 3 patients at 3-month follow-up used NSAIDs obtained both by prescription and over the counter. However, because we asked about medication use during the previous 3 months, we cannot evaluate whether these medications were used simultaneously. Nevertheless, it should be noted that patients are not always aware of the risks of using over-the-counter medication [8].

Strengths and Limitations

We used questionnaires to ask patients which analgesics they used for their back pain; this enabled us to report on both prescribed and over-the-counter analgesics. Although this provides more information than data derived from medical records alone, there is a possibility of recall bias. However, it has been reported that patients with chronic disease (including low back pain) generally show good concordance between self-reported medication use and data in the patient's medical record [38]. For ethical reasons, we could not ask patients who did not participate in the study any questions. Therefore, we could not make

any comparisons between patients who did and did not participate in the study regarding generalizability.

Conclusions

In this group of patients aged ≥55 years who consulted their GP with back pain, 72% used analgesics at baseline, paracetamol and NSAIDs being the most frequently used. Although a decrease in medication use was seen during follow-up, a substantial proportion of these older adults still used analgesics at 3- and 6-month follow-up (36% and 30%, respectively).

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Appendix: Question Regarding Used Medication

Did you use medication in the past 3 months for your back complaints, for example pain killers or muscle relaxants?

☐ Yes; fill in below the name of the medication, how frequently you use it, and whether your medication was prescribed or bought on your own initiative.
☐ No

Medication	Average Use	Obtained
☐ Medication name:	☐ lLess than 1 time per week ☐ 1–2 times per week ☐ 3–5 times per week ☐ Daily	☐ Prescribed ☐ Own initiative
☐ Medication name:	☐ Less than 1 time per week ☐ 1–2 times per week ☐ 3–5 times per week ☐ Daily	☐ Prescribed ☐ Own initiative
☐ Medication name:	☐ Less than 1 time per week ☐ 1–2 times per week ☐ 3–5 times per week ☐ Daily	☐ Prescribed ☐ Own initiative