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Patients with shoulder complaints in general practice: consumption of medical care

Oscar Dorrestijn¹, Kim Greving², Willem Jan van der Veen², Klaas van der Meer², Ron L. Diercks¹, Jan C. Winters² and Martin Stevens¹

Abstract

Objective. To describe the medical consumption [general practitioner (GP) consultation, referrals, medication consumption] of patients with shoulder complaints in general practice.

Methods. Data were obtained from a primary-care medical registration network. All patients aged ≥18 years with new shoulder complaints who consulted their general practitioner in 1998 were included, and were followed 10 years beyond the initial consultation.

Results. A total of 526 incident cases were identified (average age 47 years, 65% women and average follow-up 7.6 years). Nearly half of the patients consulted their GP only once. For 79% of those patients, a wait-and-see policy or a prescription for NSAIDs sufficed. During follow-up, 65% of all patients were prescribed medication. Medication consumption was significantly higher among men than women, and higher for the 45- to 64-year age group compared with the younger group. A total of 199 patients were referred, of which 84% was to a physiotherapist and 16% to secondary care. Only two patients had surgery, performed by an orthopaedic surgeon. The GP recorded a diagnosis in only 14% of patients; rotator cuff disorder being the most common.

Conclusions. Nearly half of patients with a new shoulder complaint consult their GP only once. Medical consumption in general practice is highest for male shoulder patients and the 45- to 64-year age group. Shoulder problems are mainly an issue for primary care.

Key words: Shoulder, Consultation, Primary care, Referral, Medical consumption.

Introduction

Many studies have focused on incidence and prevalence densities of shoulder complaints in general practice [1–4], yet little is known about the long-term course of shoulder complaints and its management in this setting. Different articles have described a follow-up, ranging from 6 months [5–7] to 12 months [8], 18 months [9, 10] and 3 years [1], but longer term follow-up data are missing. Besides, information about prescribed treatments and patterns of referrals for shoulder conditions in primary care is still limited.

In The Netherlands, nearly everybody is registered with a general practitioner (GP), and there are no private clinics for self-referring patients. Dutch GPs have had exclusive authority to refer patients—even the privately insured—to other practitioners in primary and secondary care (private insurance however was eliminated in 2006). Hence, GP consultation and referral rates do reflect the number of people seeking medical care.

The choice of treatments for shoulder complaints in general practice in The Netherlands is proposed by the National Guidelines for Shoulder Problems, published by the Dutch College of General Practitioners [11, 12]. These guidelines recommend giving information on the prognosis of shoulder pain, advice on provoking activities and stepwise treatment consisting of acetaminophen, NSAIDs, CS injections or referral to physiotherapy. This stepwise approach is most cost-effective in terms of limiting the increase of costs by moving on one step at a time.

Although these are guidelines, gaining insight into how patients and their GPs really deal with shoulder
complaints in the long term is valuable for GPs as a reflection of their management, and can guide decision-making for the future. Medical data registration networks in primary care are very useful in providing these data.

The aim of this study was to describe the consumption of medical care in Dutch general practice, including GP consultation rates, medication consumption and referral to other care providers for patients with shoulder complaints in the age group 18 years for a period of 10 years after initial presentation.

**Methods**

**Design and setting**

To select patients with shoulder complaints in Dutch general practice, this retrospective cohort study uses data from the morbidity and medication Registration Network Groningen (RNG) [13, 14]. The database contains anonymized medical information like consultation date, date of birth, gender, prescribed medication, referrals and comorbidity, from 18 GPs in the northern Netherlands. Data were used for the 10-year period 1998–2007, which will henceforth be addressed as the follow-up period. The average consulting patient population was approximately 30,000 persons per year (all ages). The registering GPs work in three group practices: one in the university city of Groningen and two in the smaller towns of Hoogezaand-Sappemeer and Hoogeveen. All GPs use electronic medical records in their daily practice. During each consultation, symptoms and/or diagnoses were registered according to the International Classification of Primary Care (ICPC) [15]. This classification is designated by the World Organization of Family Doctors as the ordering principle of the family practice domain. The ICPC codes are based on a simple biaxial structure consisting of a letter followed by a number. The letter represents a body system (e.g. L = musculoskeletal system), numbers 1–29 provide rubrics for symptoms and complaints, and numbers 70–99 represent a diagnosis/disease. Prescribed medication was coded according to the Anatomical Therapeutic Chemical Classification System developed by the World Health Organization [16]. This classification is designated by the World Organization of Family Doctors as the ordering principle of the family practice domain. The ICPC codes are based on a simple biaxial structure consisting of a letter followed by a number. The letter represents a body system (e.g. L = musculoskeletal system), numbers 1–29 provide rubrics for symptoms and complaints, and numbers 70–99 represent a diagnosis/disease. Prescribed medication was coded according to the Anatomical Therapeutic Chemical Classification System developed by the World Health Organization [16].

**Patient selection and electronic medical records**

Patients 18 years of age who consulted their GP for shoulder problems in 1998 were selected from the RNG database by using ICPC codes L08 (shoulder symptom/complaint) and L92 (shoulder syndrome). Following this selection, all GPs were visited to retrieve the same registered information in the electronic medical records and in the RNG database to check for correctness. The affected site is also reported in the electronic medical records. Episodes concerning the contralateral site and those patients with documented previous complaints of the same shoulder were excluded. Additional information like diagnosis, if noted, was enlisted.

**Medical care consumption**

Every GP visit and out-of-hours service was counted as a consultation. Telephone requests for prolonging prescriptions without a doctor’s visit were excluded from this count. Per-case prescriptions and referrals were recorded and attached to the specific visit; data on doses and number of tablets were not available. Data on treatments for the different subgroups will be described, as well as the treatment initiated at the first GP consultation.

**Procedures**

The incident patients were followed up for 10 years beyond initial presentation. However, during follow-up several patients left GP practices (moving, death, etc.); therefore, the average follow-up is calculated for the study population, which is expressed in person-years. For data presentation, subgroups were defined of men and women and of three age groups: 18–44 years (young working population), 45–64 years (older working population) and 65 years (retired). Patients stayed within the same subgroup they were assigned to at initial presentation.

**Statistical analysis**

Microsoft Access 2003 was used to organize and select data from the RNG database. All calculations were made using the statistical package SPSS for Windows (SPSS Inc., version 16.0, 2007, Chicago, IL). Statistical analyses were performed using a Pearson chi-square test for comparing proportions and a Mann–Whitney test for comparing means (P < 0.05).

**Results**

**Patient selection**

Nine hundred and five patients aged 18 years were selected from the RNG database (Fig. 1). Information provided by the electronic medical records was used for patient exclusion. A total of 526 patients visited their GP in 1998 because of a new shoulder complaint. Their mean (s.d.) age at presentation was 47 (17) years and 65% were women (n = 341). Of these patients, 199 were lost to follow-up for various reasons (Fig. 1).

**Consultations**

The patient cohort consulted their GPs 1331 times for shoulder complaints in 10 years. Figure 2 shows the number of patients still consulting their GP during follow-up. Their average follow-up was 7.6 (3.0) years. Corrected for person-years, patients had 0.33 (0.22) consultations on average per year [men 0.36 (0.31), women 0.32 (0.28)]. Corrected for person-years, the 18- to 44-year group had 0.30 (0.28) consultations per year on average, and the 45- to 64-year group as well as the 65-year group had 0.36 (0.30) consultations per year. Three hundred and ninety-two patients (75%) consulted their GP,
once or repeatedly, only within the first year after initial presentation.

Treatment—first consultation
Management at the first GP consultation is presented in Table 1. A wait-and-see policy was recommended for 32% of the patients, and 50% received a prescription for oral NSAIDs. In the oldest age group, a wait-and-see policy was the most common practice. During the 10 years of follow-up, 253 (48%) patients consulted their GP only once for shoulder problems; 40% of these patients had been recommended a wait-and-see policy, 39% received a prescription for oral NSAIDs and 16% were referred to a physiotherapist.

Treatment—medication
During 10 years of follow-up, medication was prescribed in 53% of the GP visits (701/1331) to a total of 343 (65%) patients. Corrected for person-years, this is 1.7 prescriptions per person on average. In 74% of the cases, the prescription was an oral NSAID, in 13% a CS injection, in 6% acetaminophen, in 5% a benzodiazepine, in 1% an opiate and in 1% of the cases different medication. Prescription consumption was significantly higher for men (71%) than for women (62%; \( P = 0.047 \)), and the highest for the 45- to 64-year age group (Table 2) compared with the 18- to 44-year age group (\( P = 0.001 \)) and the ≥65-year age group.

Treatment—referrals
A total of 199 (38%) persons were referred during 10 years of follow-up. They represent 274 referrals, which means that a patient was referred in 21% of all GP consultations. The largest proportion of referrals was to a physiotherapist (84%), followed by referral to rehabilitation medicine (8%) and an orthopaedic surgeon (6%), and the remainder (4%) represented another type of secondary care. Only two patients had surgery, performed by an orthopaedic surgeon. The distribution of referrals for men and women was about equal, in 21 and 20% of the GP consultations, respectively. The oldest age group (≥65 years) had a significantly lower rate of referral per consultation (15%) throughout the follow-up period compared with the 45- to 64-year age group (21%; \( P = 0.046 \)) and the 18- to 44-year age group (22%; \( P = 0.024 \)).
Diagnosis
In just 74 (14%) of the 526 shoulder patients, a diagnosis was recorded in the electronic medical records. The most common diagnosis was rotator cuff disorder, representing 61 patients. The other diagnoses were acromioclavicular joint pathology (six patients), frozen shoulder (five patients) and glenohumeral instability (two patients).

Discussion
Main findings
Our study is the first report on medical consumption of patients with a new shoulder complaint in primary care with a follow-up of 7.6 years. Nearly half of the patients consulted their GP only once for shoulder problems during 10 years of follow-up. For 8 out of 10 of those patients a wait-and-see policy or a prescription for NSAIDs sufficed.

At the end of the follow-up period, 65% of all patients had medication prescribed, an oral NSAID in most cases. Medication consumption was significantly higher in men than women, and higher for the 45- to 64-year age group. Nearly 40% of the patients, the largest proportion, were referred to a physiotherapist. A diagnosis was recorded among a minority of patients the most common being rotator cuff disorder.

Relationship to other research
The demographic characteristics of patients in our study are similar to those of other studies reporting on shoulder disorders in primary care, with a female predominance and a wide age range of patients [6, 10, 17]. In our study, 50% of the initial treatments at first consultation were an oral NSAID prescription, 32% a wait-and-see policy, 15% a referral for physiotherapy and 3% a CS injection. These numbers are different from those presented by van der Windt et al. [8], who conducted a prospective follow-up study in general practice; 48% of their reported initial treatments were a wait-and-see policy or medication only, 29% a referral to physiotherapy and 23% local injection of an anaesthetic or steroid. This difference might be explained by the two different study designs. In the prospective study, GPs might have been more aware of the study setting, thus treating their patients more aggressively compared with the doctors participating in our study. Another explanation could be sought in the study population. Van der Windt et al. included patients who had a symptom-free interval of 1 year. In our study, patients were included who had never consulted for shoulder issues before. Therefore, Van der Windt et al. will have included patients who had a recurrence after a symptom-free interval longer than 1 year. Patients who have a recurrence following (failed) previous treatments are likely to be treated more aggressively (e.g. more

Table 1: Management for different subgroups at first consultation

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total, n (%)</th>
<th>Men, n (%)</th>
<th>Women, n (%)</th>
<th>18–44 years, n (%)</th>
<th>45–64 years, n (%)</th>
<th>&gt;65 years, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS Injection</td>
<td>14 (3)</td>
<td>4 (2)</td>
<td>10 (3)</td>
<td>5 (2)</td>
<td>4 (2)</td>
<td>5 (5)</td>
</tr>
<tr>
<td>Oral NSAIDs</td>
<td>262 (50)</td>
<td>104 (56)</td>
<td>158 (46)</td>
<td>115 (46)</td>
<td>113 (61)</td>
<td>34 (37)</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>13 (2)</td>
<td>3 (2)</td>
<td>10 (3)</td>
<td>6 (2)</td>
<td>4 (2)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Remainder</td>
<td>10 (2)</td>
<td>1 (1)</td>
<td>9 (3)</td>
<td>5 (2)</td>
<td>2 (1)</td>
<td>3 (1)</td>
</tr>
<tr>
<td>Referrals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>78 (15)</td>
<td>30 (16)</td>
<td>48 (14)</td>
<td>41 (16)</td>
<td>26 (14)</td>
<td>11 (12)</td>
</tr>
<tr>
<td>Secondary care</td>
<td>4 (1)</td>
<td>2 (1)</td>
<td>2 (1)</td>
<td>2 (1)</td>
<td>1 (1)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Wait-and-see policy</td>
<td>168 (32)</td>
<td>49 (26)</td>
<td>119 (35)</td>
<td>86 (34)</td>
<td>42 (23)</td>
<td>40 (43)</td>
</tr>
<tr>
<td>Total number of treatments</td>
<td>549</td>
<td>193</td>
<td>356</td>
<td>260</td>
<td>192</td>
<td>97</td>
</tr>
<tr>
<td>Total number of patients</td>
<td>526</td>
<td>185</td>
<td>341</td>
<td>250</td>
<td>192</td>
<td>92</td>
</tr>
</tbody>
</table>

*More than one treatment modality may have been offered to a patient; therefore, the total frequency may exceed 100%. The number of treatments is expressed as a percentage of the total patient group. Highest percentages are marked in bold.

Table 2: Medication consumption for different subgroups during 10 years of follow-up

<table>
<thead>
<tr>
<th>Medication</th>
<th>Total, n (%)</th>
<th>Men, n (%)</th>
<th>Women, n (%)</th>
<th>18–44 years, n (%)</th>
<th>45–64 years, n (%)</th>
<th>&gt;65 years, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>343 (65)</td>
<td>131 (71)</td>
<td>212 (62)</td>
<td>146 (58)</td>
<td>136 (74)</td>
<td>61 (66)</td>
</tr>
<tr>
<td>No</td>
<td>183 (35)</td>
<td>54 (29)</td>
<td>129 (38)</td>
<td>104 (42)</td>
<td>48 (28)</td>
<td>31 (34)</td>
</tr>
<tr>
<td>Total</td>
<td>526</td>
<td>185</td>
<td>341</td>
<td>250</td>
<td>184</td>
<td>92</td>
</tr>
</tbody>
</table>

Highest percentages are marked in bold.
physiotherapy and more CS injections) according to Feleus et al. [18], who published an article on management decisions for amongst others non-traumatic complaints of the shoulder in general practice. They found that long duration of complaints, high complaint severity, many functional limitations and recurrent complaints were negatively associated with watchful waiting.

Medication consumption was highest in men and the 45- to 64-year age group. One other study presented data on NSAID consumption and found the highest consumption in a comparable age group [1]. A wait-and-see policy was recommended the least often to such groups—they generally have more physically demanding work, which might explain the higher medication consumption.

Just a few studies have reported on referrals for shoulder patients. In UK primary care, 14% of patients were referred to a physiotherapist within 3 years after initial presentation and 6% to an orthopaedic or rheumatology clinic [1]. In a Dutch study, 29% of patients were referred to a physiotherapist and 10% to a rheumatologist or orthopaedic surgeon during the first year following presentation [8]. In our study, 32% of patients were referred to a physiotherapist during the 10 years of follow-up and 5% to rehabilitation medicine or an orthopaedic surgeon. It thus appears that GPs in our study are quite selective when referring shoulder problems to a specialist. However, compared with UK primary care, Dutch GPs are more likely to refer to a physiotherapist. In agreement with findings presented in a US study, older patients are less likely to be referred to a physiotherapist or secondary care practitioner than younger patients [17]. Although in The Netherlands, self-referral to a physiotherapist is possible since 2006, we did not see a decrease in our database of referrals by GPs, but an increase. For this reason, we do not expect the option of self-referral to influence our study data greatly.

In just a minority of cases, the GPs recorded a specific diagnosis for the shoulder symptoms. This is in accordance with the findings of Linsell et al. [1], who concluded that, in UK primary care, GPs may lack confidence in applying precise diagnoses to shoulder conditions. Besides the complexity of the shoulder joint, the extensive differential diagnosis and the frequent coexistence of other disorders, the diagnosis is often complicated by symptoms that are not restricted to a single site [3, 19]. Previous studies have shown that even more specialized practitioners than GPs, like rheumatologists and physiotherapists, have difficulty distinguishing different diagnoses in the shoulder region [20, 21]. Furthermore, most Dutch GPs follow the clinical guidelines for treatment of shoulder complaints issued by the Dutch College of General Practitioners in 1990 [11]. These guidelines introduce a classification of shoulder complaints based largely on the concepts of Cyriax, describing four intrinsic shoulder syndromes: subacromial syndrome, capsular syndrome, acute bursitis and acromioclavicular syndrome. Research has revealed, however, that these concepts are not useful for daily practice though [12]. In the present study, it also became clear that GPs tend not to record a specific diagnosis. The research information and the restricted therapeutic options for GPs resulted in a revised version of these guidelines in 1999, which stated that a specific diagnosis is not required to treat shoulder patients [12].

When looking at the treatments initiated at first consultation in this study (Table 1), for most patients the management decisions followed the Dutch Guidelines for Shoulder Problems, which advise being based at least on available knowledge on preferable outcomes or, when unavailable, on costs, as stated by Feleus et al. [18]. However, there is little evidence to support or refute the efficacy of common interventions for shoulder complaints. For CS injections for shoulder pain, Buchbinder et al. [22] conducted a Cochrane review and found a small and poorly maintained effect of subacromial CS injections for rotator cuff disease and IA injections for adhesive capsulitis. No benefit of subacromial CS injections over NSAIDs was found. Another Cochrane review published on physiotherapeutic interventions for shoulder pain [23]. Exercise was demonstrated to be effective in terms of short-term recovery from rotator cuff disease and long-term benefit with respect to function. There is also some evidence that CS injections are superior to physiotherapy for rotator cuff disease and no evidence that physiotherapy alone is of benefit for adhesive capsulitis. Although these Cochrane studies were published after the introduction of the Dutch Guidelines, the latter are in accordance with this evidence. Furthermore, as there is little evidence of one treatment modality being superior to another (except for CS injections for rotator cuff disease compared with physiotherapy), treatment costs should be a determining factor in management decisions.

A good estimation of direct health-care costs of this patient cohort is not possible due to a lack of information about treatment details (e.g. number of physiotherapy treatments, kind of NSAIDs, etc.). However, to illustrate the costs involved, a study published by Kuijpers et al. [24] can be used, which gives a detailed overview of costs of primary-care consulters for shoulder pain (n = 587) [24]. During the 6 months after first consultation for shoulder pain, the mean total costs a patient generated were €689. A small part (12%) of the population accounted for 74% of the total costs. Almost 50% of these costs involved indirect costs, caused by sick leave from paid work. Treatment by a therapist accounted for 37% of the total direct costs of the 587 patients, although only few patients were referred. An explanation for the modest health-care costs could be that many GPs stick to the interventions recommended in the Dutch Guidelines (wait-and-see policy with pain medication, followed by injections), which are relatively inexpensive [11, 12].

Strengths and limitations of this study
The primary-care database RNG was very suitable for selecting shoulder patients by ICPC codes, but this method has some limitations. First of all, the reliability of the RNG database is determined by the GPs’ accuracy.
of registration. This objection was solved with the data check in the electronic medical records. Six of the initially selected 905 patients appeared to be wrongly coded and were removed from the database. A second limitation consists in the database being a representation of a dynamic population. Registered patients can die or move and can therefore leave the database at any time. A considerable number of patients were lost to follow-up (n = 199). The cohort nonetheless represented an average follow-up of 7.6 years. Furthermore, the database does not provide information about when a patient is cured. When there is a long period between two consecutive consultations, a patient could have recovered in the meantime and have consulted the doctor the second time for a new shoulder symptom or a relapse. However, when looking at the consultation frequencies this seems very unlikely for most patients.

A major strength of this study is its design. Most other studies presenting information about prescribed treatments and patterns of referrals for shoulder conditions in primary care have prospective research settings in which the GPs’ management decisions might have been influenced. Therefore, this study is more likely to provide a true representation of the medical consumption of shoulder patients in primary care.

### Rheumatology key messages

- Nearly half of patients with a new shoulder complaint consult their GP only once.
- Medical consumption in general practice is highest for male shoulder patients and the 45- to 64-year age group.
- Shoulder complaints are mainly an issue for primary care.

### Acknowledgements

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