

Chronic musculoskeletal conditions and comorbidities in primary care settings

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ABSTRACT

OBJECTIVE To estimate the prevalence of chronic musculoskeletal conditions in primary care. Among patients with these conditions, to estimate the mean number of comorbidities and the prevalence of chronic diseases that could deteriorate with use of nonsteroidal anti-inflammatory drugs (NSAIDs).

DESIGN Secondary analysis of data collected for a study on the prevalence of multimorbidity.

SETTING Twenty-one family medicine practices in the region of Saguenay, Que.

PARTICIPANTS Two-tier sample consisting of family physicians (first tier) and their patients (second tier) recruited during consecutive consultation periods.

MAIN OUTCOME MEASURES Percentage of patients with chronic musculoskeletal conditions. Within this sub-sample, average number of comorbidities and percentage of patients with chronic diseases, such as hypertension, cardiovascular disease, renal disease, and stomach ulcers or reflux, that could deteriorate with use of NSAIDs.

RESULTS Among the 980 patients in the database, 58% had chronic musculoskeletal conditions. Average age of patients was 56 years. Among patients with these conditions, the number of comorbidities ranged from 0 to 11; the average number was 4. About 49% of patients had hypertension; 31% had cardiovascular disease; 31% had urinary problems or renal disease; and 17% had stomach ulcers or reflux. About 70% of patients with chronic musculoskeletal conditions had at least 1 of the 4 comorbidities mentioned.

CONCLUSION More than half the patients who consult in primary care have chronic musculoskeletal conditions. The average number of comorbidities these patients have is high; many present with comorbidities that can deteriorate with use of NSAIDs. Family physicians must, therefore, exercise caution when using NSAIDs for patients with musculoskeletal conditions.

EDITOR'S KEY POINTS

- This research estimates the prevalence of chronic musculoskeletal conditions and associated comorbidities among patients consulting in primary care.
- More than 90% of elderly patients (≥ 65 years) had 1 of the following comorbidities: hypertension, cardiovascular disease, urinary problems or renal disease, and stomach ulcer or reflux.
- The high number of people with musculoskeletal conditions and at least 1 comorbidity that could deteriorate with use of NSAIDs should lead physicians to consider acetaminophen or opioids for managing pain.

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Chronic musculoskeletal conditions are frequently seen in primary care¹⁻³. One Canadian study estimated that the number of visits for musculoskeletal problems over a period of one year (1998-99) was 15.5 million¹. Approximately 24% of Canadian consulted at least once for this type of problem and 88% saw a primary care physician. The pain that comes with chronic musculoskeletal conditions leads to a large number of prescriptions for nonsteroidal anti-inflammatories (NSAIDs), which are among the most widely prescribed drugs. In 1999-2000, 111,400,000 prescriptions were written in the United States⁴. The prevalence of weekly NSAID use in individuals 65 years and over has been estimated at 70%⁵.

NSAID use increases the risk of gastrointestinal events^{6,7}. Thirty-five per cent of patients who take NSAIDs develop dyspepsia requiring treatment⁸. Conventional NSAIDs and selective cyclooxygenase-2 inhibitors must also be taken with caution by patients with cardiovascular disease or cardiorenal disease including hypertension, due to the risk that these chronic conditions will deteriorate⁹.

While there is controversy about the impact of comorbidities on the risk of NSAID-related gastrointestinal events, the presence of a significant comorbid condition increases the risk of mortality in patients who develop gastrointestinal complications^{10,11}. According to several studies, a high percentage of patients who consult a primary caregiver present with several chronic health problems simultaneously¹²⁻¹⁴. In one Italian study, 80% of patients hospitalized with rheumatoid arthritis had comorbidities¹⁵. The most common comorbidities were cardiovascular problems (34.6%), including hypertension (14.5%) and angina (3.5%), and gastrointestinal diseases (24.5%). We did not find any studies on the comorbidities associated with chronic musculoskeletal conditions in patients who consult primary caregivers. The prevalence of chronic musculoskeletal conditions and their associated comorbidities must be evaluated in patients consulting primary caregivers in order to more accurately define the scope of this problem and to make family physicians aware of its importance.

The purpose of this study was to estimate the prevalence of chronic musculoskeletal conditions in primary care and, among patients with these conditions, to estimate the mean number of comorbidities and the prevalence of chronic diseases that could deteriorate with NSAID use (cardiovascular disease, hypertension, renal failure, and upper digestive tract problems).

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METHOD

Design and Setting

This study involved a secondary analysis of data collected in a prior study on the prevalence of multimorbidity in adults seen by family physicians in the region of Saguenay, Quebec, between December 2002 and July 2003¹². This region has a population of approximately 150,000 people who live in one city and several smaller satellite communities. Their age, level of education, median household income, and socioeconomic status are comparable to those of other Canadians, with the exception of their unemployment rate (8.5% compared to 6.2%)^{16,17}.

The Saguenay region has approximately 130 family physicians; 80% have a general medicine practice and work either in a private practice or in an institutional setting. The ratio of family physicians to patients (8.7 per 10,000) is comparable to the regions in which 47% of Canadians live¹⁸.

Methods of Sampling and Selecting Participants

We used a two-tier sampling plan. The first tier consisted of the population of family physicians contacted; the second tier of the patients of the physicians recruited. Our methodology and sampling strategies are described in detail in another publication¹². In all, 119 family physicians considered eligible were contacted; 86 responded; and 27 agreed to participate. The final sample consisted of 21 physicians (16 in private practice and 5 with an institutional practice). Six withdrew before data collection began. To be eligible, the physicians had to have a primary care general practice in either a private setting or an institutional setting that included adults of all ages with medical records that were readily accessible. **Table 1** summarizes the characteristics of participating and non-participating physicians. Adult patients (18 years and over) were recruited during consecutive consultation periods. Patients who were unable to provide consent or read the consent form and pregnant women were excluded. The study was approved by the ethics board at Centre de santé et de services sociaux de Chicoutimi, Qué.

Table 1. Characteristics of physicians

CHARACTERISTICS	PARTICIPATING N = 21	NON-PARTICIPATING N = 98	P VALUE
Male (%)	57.1	50.0	.63*
Private Practice (%)	76.2	84.7	.35*
Urban Area (%)	90.5	81.6	.52*
Years in Practice	17.4	16.6	.30 [†]
*Fisher Exact Test			
[†] Student's t Test			

Data Collection

A research nurse reviewed the medical record of each participant in order to extract a list of chronic conditions diagnosed by the family physician, using the World Health Organization definition, i.e., “problems that require ongoing management over a period of years or decades¹⁹. The chronic musculoskeletal conditions included arthritis, rheumatism, osteoarthritis, chronic lumbago or cervicgia, osteoporosis, fibromyalgia, capsulitis and any other significant problem affecting the bones, joints, muscles or tendons. **Table 2** lists the comorbidities that were extracted from the medical records. The data extraction process had been validated in other studies^{12,20}.

Statistical Analyses

All of the statistical analyses were performed using SPSS Version 13.0. The level of significance was set at 0.05. The characteristics of the physicians who participated and those who did not were compared using Fisher’s exact test or Student’s t test. Because the intra-class correlation coefficient calculated for the physicians was very low (0.03), prevalence analysis was performed for the patients only. 95% confidence intervals were calculated.

Table 2. Comorbidities taken from medical record

Anemia
Skin diseases
Rhinitis
Neurological impairment (cerebral paralysis, disability following loss of a limb, paralysis following an accident or stroke or intellectual impairment)
Type 1 or 2 Diabetes
Lung disease (emphysema, chronic bronchitis, persistent cough, asthma)
Psychiatric disorder (depression, highly nervous state, irritability, visions, voices or paranoia for periods in excess of 6 months)
Epilepsy
Hypertension
Cardiovascular disease
Urinary disorders or renal disease
Stomach ulcer, reflux, other digestive disorders
Thyroid disorders
Migraines or frequent headache
Cognitive disorders (periods of confusion, significant memory loss)
Obesity
Eye problems (cataracts, retinal disease or glaucoma)
Hyperlipidemia
Any other chronic health problem (physical or mental) or disability

RESULTS

Recruiting and data collection took place from December 2002 to July 2003. Of the patients of the participating physicians, 1,085 were approached and 980 (90.3%) agreed to participate. The profile of the patients who refused to participate in the study could not be determined. The number of patients per physician ranged from 17 to 111 and the average was 46.7 patients. The average age of the patients was 58.2 years for males and 54.9 for females¹².

The prevalence of chronic musculoskeletal conditions was 58% in the sample as a whole (78% for females 65 years and over). **Figure 1** shows the prevalence according to age and sex.

Of the patients with musculoskeletal conditions, the number of comorbidities ranged from 0 to 11 and the average was 4. The average number of comorbidities was 3 in male and female patients between the ages of 18 and 64 years and 6 and 5 respectively in male and female patients 65 years and over.

In this sample of patients with chronic musculoskeletal conditions, 49% presented with hypertension, 31% with cardiac disease, 31% with urinary problems or renal disease, and 17% with stomach ulcers or reflux (**Table 3**). **Figure 2** presents these prevalences, according to age and sex. Over 90% of patients 65 years and over presented with at least one of these 4 comorbidities; 89% of male patients and 56% of female patients had 2 or more of these comorbidities.

DISCUSSION

This study reports the first Canadian data on the prevalence and comorbidity of chronic musculoskeletal conditions seen in primary care settings, taken from an exhaustive review of medical records. Over half of patients who consult in primary care present with chronic musculoskeletal conditions. Among women 65 years and over, this figure is over 75%. The average number of all comorbidities is high in patients with musculoskeletal conditions. Many present with one or more chronic diseases that can deteriorate with NSAID use. This is particularly true of older patients.

The prevalence of musculoskeletal conditions is higher than that noted in other studies using the reason for the consultation^{21,22} as the source of the data. There are many possible explanations for this discrepancy. A review of medical records provides a very thorough picture of reality. In addition, we included in the definition of the term “musculoskeletal condition” all relevant diagnoses including chronic pain (chronic cervicgia or lumbago) because these problems often lead to a prescription for an NSAID. Furthermore, a sampling

performed on consecutive visits may select more patients who consult frequently and who are therefore more likely to have different health problems²³.

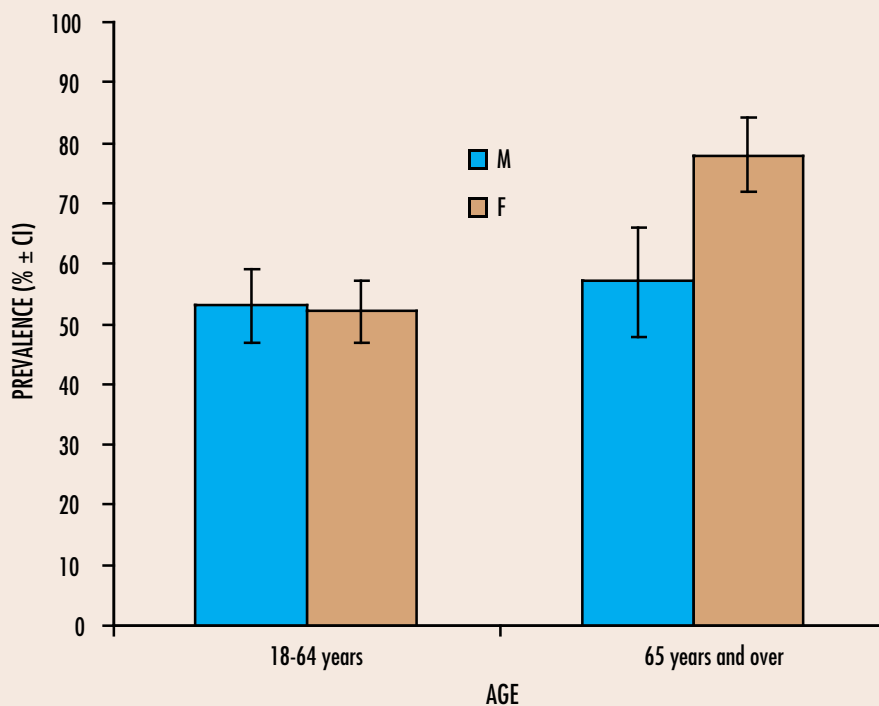
Lastly, the shortage of specialists, particularly in rheumatology and orthopedics may explain part of this high prevalence of musculoskeletal conditions in primary care. This problem is probably common in other semi-urban or rural regions of Canada where there is a shortage of medical professionals¹⁸.

These results pose a challenge to family physicians in their management of patients with musculoskeletal conditions. They must have the training required to provide this clientele with adequate care. An American study conducted in a rural setting showed a gap between the physician's level of comfort and the prevalence of these

diseases²¹. When several comorbidities are present, the assessment, treatment, and impact of musculoskeletal problems becomes more complex, increasing psychological distress²⁴ and affecting a patient's ability to function, pain, and quality of life²⁵.

The high proportion of patients with musculoskeletal problems and at least one comorbidity that could deteriorate with the NSAID use supports the recommendations for the treatment of moderate to severe musculoskeletal pain. These recommendations are for the use of acetaminophen as the base treatment for pain. When additional analgesia is required, weak opioids are suggested because their gastrointestinal and cardiovascular profile is better than that of NSAIDs⁹. Family physicians must bear in mind that the presence of one significant

Figure 1. Prevalence of chronic musculoskeletal conditions by age and sex



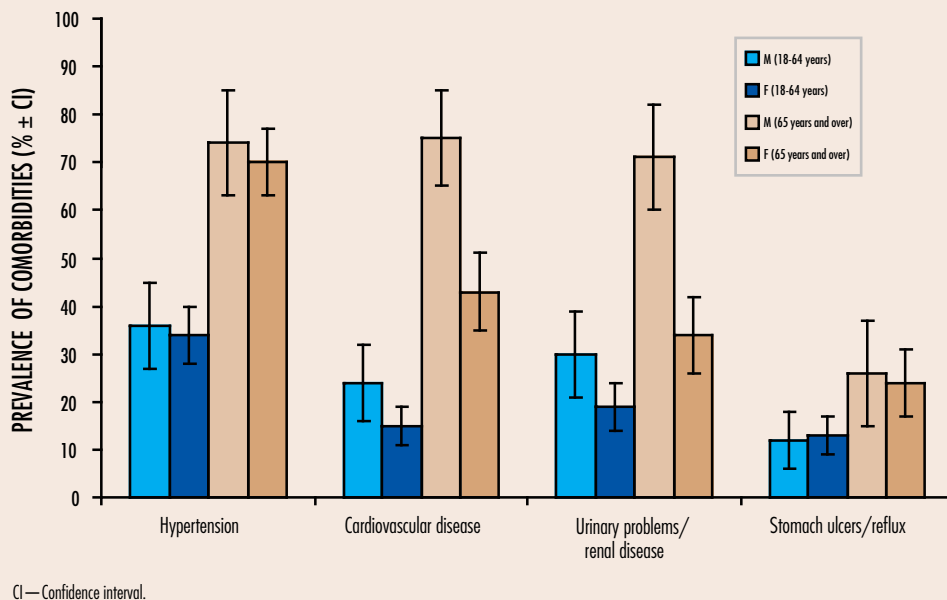
CI—Confidence interval.

Table 3. Presence of the following comorbidities: hypertension, cardiovascular disease, urinary disorders or renal disease, stomach ulcer or reflux, according to age and sex

COMORBIDITY	MALE 18-64 YRS N = 108 % (95% CI)	FEMALE 18-64 YRS N = 242 % (95% CI)	MALE 65 YRS AND OVER N = 65 % (95% CI)	FEMALE 65 YEARS AND OVER N = 149 % (95% CI)
No comorbidity	41 (31-50)	44 (38-50)	0	11 (6-17)
1 or more	59 (50-69)	56 (50-62)	100	89 (83-94)
2 or more	32 (24-41)	22 (17-28)	89 (82-97)	56 (48-64)
3 or more	9 (4-15)	3 (1-6)	48 (36-60)	24 (17-30)
4 comorbidities	1 (0-3)	0,4 (0-3)	9 (2-16)	3 (0,3-6)

CI—confidence interval

Figure 2. Prevalence of comorbidities that may deteriorate with NSAID use by age and sex



comorbid condition increases the risk of mortality in patients who develop gastrointestinal complications^{10,11}. These precautions are all the more important when the patient is elderly. Other studies are necessary in order to more accurately determine the level of comfort of physicians and their need for training in the care of patients with musculoskeletal problems, particularly patients who present with comorbidities. It would also be relevant to determine how widely the recommendations for the treatment of musculoskeletal pain in the presence of comorbidities are disseminated and applied.

Limitations

The data that we obtained represent estimates of actual prevalence. A random sampling of the patients of each physician would have been necessary in order to measure prevalence more accurately in the consulting population. With sampling during consecutive visits, there is a risk of selecting more patients who consult frequently²³. Including physicians who were willing to participate may also have introduced a selection bias. Other factors such as the limited number of participating physicians or a female-male ratio that exceeded that of the general population could reduce the potential for generalizing the results of this study.

Because this was a secondary analysis of databases, the prevalence of each of the chronic musculoskeletal conditions could not be determined. Furthermore, the definition of some of the comorbidities was limited. For example, renal problems also included urinary problems that have little or no impact on NSAID use. The measure

of comorbidity was limited to a number of chronic health problems and did not take into account the severity of these conditions. The data that was available did not make it possible to reliably report on the use of NSAIDs or opioids in this population. In spite of these limitations, this study does provide a good overview of the prevalence of musculoskeletal conditions and comorbidity in primary care settings.

Conclusion

Over half of patients who consult in primary care present with chronic musculoskeletal conditions. The average number of comorbidities in this patient population is high; many present with chronic diseases that can deteriorate with NSAID use. Family physicians must therefore exercise caution when using NSAIDs with this clientele.

Contributors

Drs Hudon, Fortin and Soubhi collaborated on the development and design of this study, the collection, analysis, and interpretation of the data, and the preparation of this article for publication.

Competing interests

None declared

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