Further effort is needed to improve management of chronic pain in primary care. Results from the Arkys project

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Abstract

Treatment of chronic pain is challenging. The Arkys project was initiated in Italy to assist general practitioners (GPs) in the management of chronic pain. The main objective of this study was to determine the usefulness of Arkys for selecting new therapeutic strategies. An online interactive questionnaire for assessing pain and guiding therapeutic decisions was made available to GPs participating to Arkys. The GPs were invited to complete the questionnaire for each patient who presented moderate-severe chronic pain, and to decide on a new analgesic treatment based on the information provided by the questionnaire. Two hundred and forty four GPs participated with a total of 3035 patients. Patients (mean age 68.9 years) had mostly chronic non-cancer pain (87.7%). In 42.3%, pain had neuropathic components. Only 53.6% of patients were in treatment with analgesics (strong opioids, 38.9%; NSAIDs, 32.6%; weak opioids, 25.6%; anti-epileptics, 17.3%; paracetamol, 14.9%). Use of the questionnaire resulted in the prescription of analgesics to all patients and in increased prescription of strong opioids (69.7%). NSAID prescription decreased (12.8%), while anti-epileptics use remained stable. These findings show that current management of chronic pain in primary care is far from optimal and that efforts are needed to educate GPs and improve guideline implementation.

Introduction

Chronic pain has a high prevalence in Europe and elsewhere, and is often under-recognized and not adequately treated.[1,2] The burden of under-treated chronic pain on affected individuals, society, and healthcare systems is considerable.[3,4]

Patients suffering from chronic pain usually refer to general practitioners (GPs). A large survey conducted in 13 European countries has revealed that GPs find chronic non-malignant pain a challenging condition to treat.[5] Areas identified by the survey as problematic included pain assessment and diagnosis. Neuropathic pain also poses a serious challenge to GPs.[6] It is frequently misdiagnosed as somatic pain, leading to inadequate pain management in many cases.[7]

Arkys is an Italian project that was prompted by the need to provide guidance to GPs in the diagnosis and treatment of chronic pain. Based on currently available evidence and international/national guidelines, an interactive questionnaire for the assessment of patients with chronic pain was developed within the Arkys project, with the following targets: to improve the accuracy of pain diagnosis and characterization (pain type, cause of pain, identification of neuropathic component); to assist GPs in therapeutic decisions, based on published evidence and guidelines; to establish a link between GPs and pain specialists, so that GPs could easily consult with a pain specialist or refer a patient to a pain specialist, if needed.

The Arkys interactive questionnaire has been recently made available online to Italian GPs to assist them in the management of patients suffering from chronic pain. This article presents the results of an analysis of the data collected by the GPs who used this questionnaire. The objectives of the analysis were: i) to determine to what extent the use of the interactive questionnaire was useful for selecting a new therapeutic strategy, and ii) to gather information with regard to the characteristics of patients with chronic pain, as well as on the analgesic therapy they were receiving at presentation.

Materials and Methods

The interactive questionnaire was developed as an easy-to-use online application accessible via Web site created within the Arkys project. GPs participating in the Arkys project were asked to complete the questionnaire with the data of patients presenting with chronic pain. The questionnaire encompassed various aspects of the pain experience and was aimed to provide a comprehensive description of it. Following data were entered for each patient: demographic data; type of disease causing pain; comorbidities; current treatment of comorbidities; pain intensity (11-point numerical rating scale, NRS-11, with 0 indicating the absence of pain, 10 the worst possible pain, and NRS 1-3 indicating mild pain, 4-6 moderate pain, and 7-10 severe pain);[8] current treatment of pain (drug and daily dose); neurologic assessment (DN4 questionnaire);[9,10] impact of pain on quality of life and daily functioning (Brief Pain Inventory, BPI, questionnaire; impact on QoL measured by NRS-11 with 0 indicating no interference of pain with daily functioning, 10 greatest interference, and NRS 1-3 indicating low interference, 4-6 moderate interference, and 7-10 severe interference).[11] Based on the information entered, an analgesic treatment was suggested by the application according to the recommendations by current guidelines for the treatment of various types of pain.[6,12] GPs had the option to refer patients to a pain specialist. GPs who decided to treat the patient were asked to enter in the questionnaire the analgesic therapy selected (drug and daily dose). After completing the questionnaire, a chart summarizing the data of each patient was produced and saved in a database developed for the Arkys project. GPs could access the charts of their patients only.

The data entered in the database were analyzed by descriptive statistics. The analysis aimed to make a first assessment of the impact of the Arkys interactive questionnaire on therapeutic decisions, and to provide a comprehensive description of current management of chronic pain in primary care.

Results

Patient and pain characteristics

A total of 244 GPs participated in the Arkys

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project and used the interactive questionnaire for the management of their patients suffering from chronic pain. Overall, the data from 3035 patients were entered in the Arkys database. The characteristics of the patient population and their pain are summarized in Table 1. The mean age of patients was 68.9 years. The majority of patients (2603/2967, 87.7%) whose type of pain could be established had non-cancer pain, 8.0% (238/2967) had cancer pain, and 4.3% had both types of pain. Comorbidities were present in 60.4% (1834/3035) of patients. Of those with comorbidities, the majority (1182/1834, 64.5%) had a single comorbidity, 23.3% (427/1834) had two, and 12.3% (225/1834) had three comorbidities. The types of comorbidities are shown in Figure 1A: the predominant concomitant condition included the group composed by cerebrovascular disease, cardiovascular disease, and peripheral artery disease (PAD) (1190/1834, 64.9%), followed by diabetes (351/1834, 19.1%) and gastrointestinal (GI) diseases (183/1834, 10.0%). Among patients with cardio-/cerebrovascular disease and PAD, 76.1% (906/1190) had hypertension, while 20.8% (247/1190) and 5.5% (65/1190) of patients had heart disease and atrial fibrillation, respectively (Figure 1B).

On average, patients reported pain of moderate to severe intensity (mean pain intensity > 6 on NRS 0-10) (Table 1). Pain intensity was mild in a minority of patients (174/3035, 5.7%), while 37.5% (1138/3035) had moderate pain, and 56.8% (1723/3035) severe pain (Table 1). The neurologic assessment of pain using the DN4 questionnaire revealed that 42.3% (1239/3035) of patients had neuropathic pain (DN4 ≥ 4) (Table 1). The impact of pain on quality of life was substantial, with 68.4% of patients (2077/3035) reporting a severe interference of pain with daily functioning, 27.6% a moderate interference, and 4.0% a low interference.

Analgesic treatments in use at presentation

At presentation to the GPs, only 53.6% (1628/3035) of patients were in treatment with pain medications. Current analgesic treatments included strong opioids (634/1628, 38.9%), non-steroidal anti-inflammatory agents (NSAIDs) (530/1628, 32.6%), weak opioids (416/1628, 25.6%), paracetamol (243/1628, 14.9%), and anti-epileptics (282/1628, 17.3%) (Figure 2). The frequency of use and mean daily dose of individual analgesics are shown in Table 2. Among strong opioids, prolonged-release oxycodone/naloxone [mean (±SD) daily dose, 19.88 (±21.16) mg] was the most frequently used drug (366/634, 57.7%) (Figure 3). Most strong-opioid users were prescribed an oral prolonged- or controlled-release formulation (493/634, 77.8%); 13.9% (88/634) were prescribed a transdermal formulation, and 8.2% an oral immediate-release formulation. Codeine-paracetamol was the most frequently prescribed weak opioid (252/416, 60.6%). Among NSAIDs, the predominantly prescribed molecules were diclofenac (158/530, 29.8%), ibuprofen (121/530, 22.8%), and etoricoxib (79/530, 14.9%).

New analgesic treatments

GPs generally felt comfortable with the selection and prescription of a pain treatment,

Table 1. Demographic and clinical characteristics of patients (N=3035).

Sex, n (%)	
Female	1819 (59.9)
Male	1216 (40.1)
Age, years, mean (±SD)	68.9 (31.0)
Type of pain, n (%)[a]	
Cancer pain	2603 (87.7)
Non-cancer pain	238 (8.0)
Both	126 (4.3)
Comorbidities, n (%)	
Yes	1834 (60.4)
No	1201 (39.6)
Number of comorbidities, n (%)[b]	
1	1182 (64.4)
2	427 (23.3)
> 2	225 (12.3)
Pain intensity (NRS 0-10), mean (±SD)	6.5 (1.6)
Mild pain, n (%)	174 (5.7)
Moderate pain, n (%)	1138 (37.5)
Severe pain, n (%)	1723 (56.8)
Impact of pain on quality of life, n (%)[c]	
Mild	121 (4.0)
Moderate	837 (27.6)
Severe	2077 (68.4)
Neuropathic pain, n (%)[d]	
Yes	1239 (42.3)
No	1693 (57.7)
Ongoing analgesic treatment, n (%)	
Yes	1628 (53.6)
No	1407 (46.4)

[a]Type of pain was defined in 2967/3035 (97.8%) patients. Percentages were calculated based on this subpopulation. [b]Percentages were calculated based on the population with comorbidities. [c]Measured on a 11-point NRS. [d]Presence of neuropathic pain defined by DN4 score ≥ 4. NRS, numerical rating scale.

Table 2. Analgesic therapies in use at presentation (N=1628).

Analgesic	Frequency of use, n (%)	Mean (±SD) daily dose, mg
Paracetamol	243 (14.93)	1,855.37 (726.89)
NSAIDs		
Aceclofenac	11 (0.68)	136.36 (51.64)
Aspirin	22 (1.35)	na
Celecoxib	24 (1.47)	208.33 (40.82)
Coxib (not specified)	2 (0.12)	na
Dexibuprofen	9 (0.55)	800.00 (352.77)
Diclofenac	158 (9.70)	119.82 (48.27)
Etoricoxib	79 (4.85)	74.81 (19.73)
Ibuprofen	121 (7.43)	937.38 (446.36)
Indomethacin	2 (0.12)	125.00 (35.36)
Ketoprofen	49 (3.01)	174.52 (97.85)
Ketorolac	15 (0.92)	35.00 (20.42)
Meloxicam	8 (0.49)	22.50 (12.52)
Naproxen	8 (0.49)	962.50 (254.60)
Nimesulide	1 (0.06)	162.50 (69.83)
Piroxicam	21 (1.29)	22.65 (12.52)
Weak opioids		
Codeine/paracetamol	252 (15.48)	72.42 (32.23)
Tramadol	127 (7.80)	113.85 (61.14)
Tramadol/paracetamol	37 (2.27)	83.75 (45.52)
Strong opioids		
Buprenorphine, TD	18 (1.11)	35.00 (12.90)
Fentanyl, TD	70 (4.30)	na
Hydromorphone, CR	6 (0.37)	31.67 (20.02)
Methadone	1 (0.06)	na
Morphine, CR	11 (0.68)	24.54 (13.68)
Oxycodone, CR	36 (2.21)	33.57 (24.25)
Oxycodone/naloxone, CR	366 (22.48)	19.88 (21.16)
Oxycodone/paracetamol, IR	52 (3.19)	14.74 (10.63)
Tapentadol	74 (4.55)	138.36 (83.47)
Anti-epileptics		
Gabapentin	113 (6.94)	471.08 (363.25)
Pregabalin	169 (10.38)	161.23 (124.55)

CR, controlled release; IR, immediate release; na, not available; NSAIDs, non-steroidal anti-inflammatory drugs; TD, transdermal.

after patient assessment using the interactive questionnaire, and rarely referred patients to a pain specialist. Therefore, the majority of patients (2788/3035, 91.9%) were managed by GPs, while only 8.1% of them (247/3035) were referred to a pain specialist. The frequency of use and the mean daily dose of individual analgesics prescribed after completing the interactive questionnaire are shown in Table 3. Strong opioids were the prevalent class of analgesics prescribed (1943/2788, 69.7%) followed by anti-epileptics (598/2788, 21.5%), weak opioids (373/2788, 13.4%), NSAIDs (356/2788, 12.8%), and paracetamol (193/2788, 6.9%) (Figure 2). With regards to strong opioids, oral prolonged- and controlled-release formulations were those mostly prescribed (1781/1943, 91.7%), while immediate-release and transdermal formulations were prescribed to a minority of patients (95/1943, 4.9% and 67/1943, 3.5%, respectively). Prolonged-release oxycodone-naloxone [mean (±SD) daily dose, 15.83 (±13.14) mg] was the most frequently prescribed strong opioid (1641/1943, 84.5%) (Figure 3) and codein-paracetamol was the most frequently prescribed weak opioid (213/373, 57.1%). The NSAIDs molecules most frequently used were ibuprofen (88/356, 24.7%), diclofenac (78/356, 21.9%), and etoricoxib (67/356, 18.8%).

Discussion

The present report provides an overview of therapeutic approaches used in Italy by primary care physicians for the treatment of chronic pain. The analysis of the data of the over 3000 patients treated by the GPs who participated in the Arkys project shows that, on average, patients were >65 years old, had comorbidities with a prevalence of those belonging to the cardio-/cerebro-vascular disease/PAD-group, and were suffering from non-cancer pain of moderate to severe intensity. Pain had a neuropathic component in more than 40% of patients. Almost 70% of patients reported a severe interference of pain with daily functioning. Despite these clinical and pain characteristics, 46.4% of patients were not receiving any pain medication at presentation to the GP. Of those receiving a treatment for their pain, approximately 40% had been prescribed a strong opioid, while more than 30% were using NSAIDs. In contrast, anti-epileptics were used by less than 20% of patients despite a relatively high prevalence of neuropathic pain.

The substantial proportion of patients not receiving any analgesic for their chronic pain, despite moderate to severe pain intensity and a negative impact on quality of life and daily functioning, shows that the management of

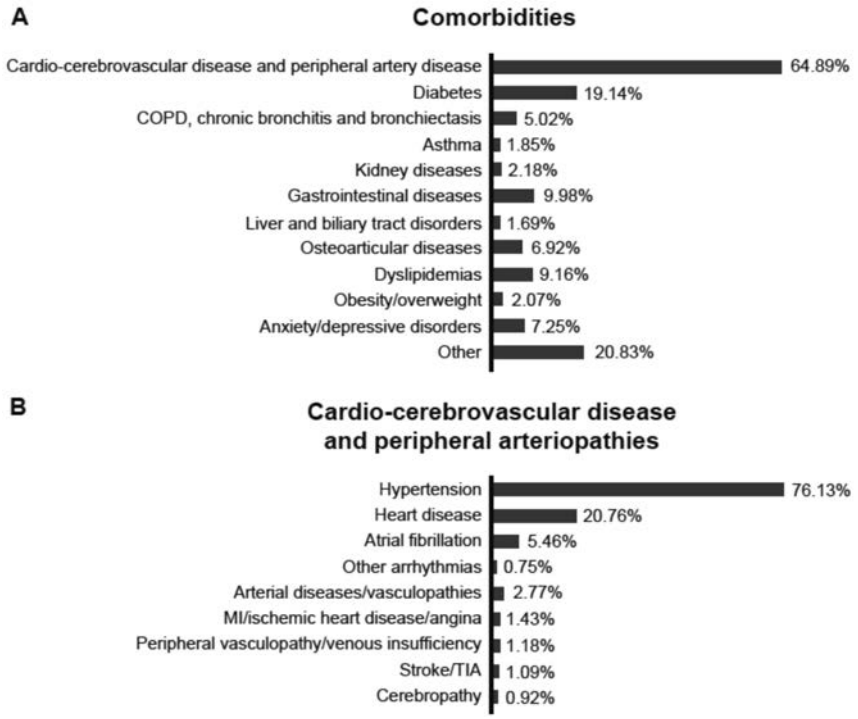

Figure 1. Overall comorbidities (A) and types of vascular comorbidities (B). COPD, chronic obstructive pulmonary disease; MI, myocardial infarction; TIA, transient ischemic attack.

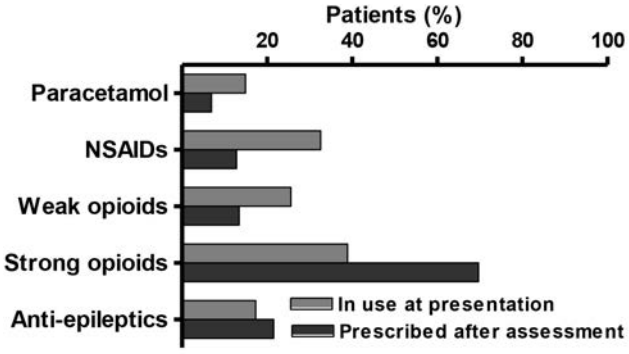

Figure 2. Analgesic therapies in use at presentation and analgesic therapies prescribed after patient assessment using the interactive questionnaire. NSAIDs, non-steroidal anti-inflammatory agents.

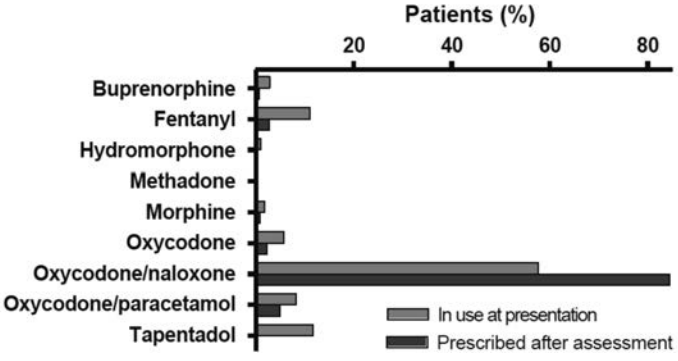

Figure 3. Strong opioids in use at presentation and prescribed after patient assessment using the interactive questionnaire. Percentages calculated on the populations using strong opioids at presentation (N=634) and after assessment (N=1943).

chronic pain in primary care is far from optimal in Italy. The findings are striking, in view of the considerable international and national effort in recent years to increase pain awareness among healthcare professionals and to improve pain management. Such notable efforts include a law (Legge 38/2010), approved by the Italian government in March 2010, to ensure the right to palliative care and pain therapy.[13] According to several studies on cancer pain, major causes of under-treated pain in Italy include administration of pain medication on demand instead of around the clock, prolonged use of NSAIDs, preferential use of weak opioids, use of low doses of strong opioids, and limitation of strong opioids to metastatic and advanced disease stages to avoid physical or psychological dependence, tolerance, or safety issues.[14-16]

The findings of the present analysis also show that patients who did receive pain medications did not seem to be treated as recommended by current guidelines, according to which opioid analgesics should be offered to all patients, including older individuals, with moderate to severe pain, or pain that affects functioning and the quality of life.[17,18] Furthermore, according to current guidelines, NSAIDs should be used at the lowest effective dose for the shortest time possible and, in the elderly, they should be considered rarely and with caution.[17,18] An insufficient implementation of guidelines has been reported also by other authors.[19-21] Indeed, almost one-third of our patients were in treatment with NSAIDs at presentation. Perhaps more striking is the fact that these patients were mostly >65 years old, had pain of moderate to severe intensity and comorbidities, with a prevalence of cardio- and cerebro-vascular comorbidities.

The inappropriate use of NSAIDs in elderly patients with chronic pain has been reported by other authors as well. An Italian study addressing NSAID patterns of use in patients with rheumatoid arthritis and osteoarthritis found that approximately 40% in both groups were taking more than one NSAID concomitantly.[22] Insufficient pain control and headache were the prevalent causes for additional NSAID treatment, which were prescribed by the treating physician or obtained over the counter. This finding suggests that the contribution of over the counter medication to the misuse of NSAIDs may be relevant. NSAIDs prescription to older patients (≥65 years) for persistent pain was recently analyzed also in the US outpatient setting, based on the data of the National Ambulatory Medical Care Survey.[23] The study found that NSAIDs were prescribed in 89.6% of the visits (mean age of patients, 75.4 years), confirming that the use of NSAIDs for chronic pain in the elderly population is widespread and alarming, according to the authors.

Over the past decade, considerable effort has been devoted to the characterization of the toxicities associated with NSAIDs. A meta-analysis of 138 randomized, controlled studies with a total of 145 373 participants confirmed that selective COX2 inhibitors are associated with a moderately increased risk of vascular events [mostly due to a twofold increased risk of myocardial infarction (MI)], but revealed that also high dose regimens of traditional NSAIDs (diclofenac and ibuprofen) were associated with a similarly increased risk of vascular events.[24] Findings highlighting the elevated cardiovascular risk associated with diclofenac, also when used at doses available without prescription, were obtained by a systematic review of community-based observational studies.[25] The analysis of a nationwide cohort of healthy individuals found that the use of rofecoxib, diclofenac, and high doses of ibuprofen was associated with increased cardiovascular morbidity and mortality even in healthy subjects.[26] A study addressing the relationship between treatment duration and risk of cardiovascular disease showed that even short-term treatment (<1 week) with most NSAIDs was associated with increased risk of death and recurrent MI in patients who had previously suffered a MI.[27] Diclofenac was associated with the highest risk (hazard ratio, 3.26; 95% confidence interval, 2.57 to 3.86 for death/MI at day 1 to 7 of treatment). Finally, a meta-analysis of 280 trials of NSAIDs versus placebo (124 513 patients) and 474 trials of one NSAID versus another NSAID (229 296 patients) conducted by the Coxib and traditional NSAID Trialists' (CNT) Collaboration found that coxibs or diclofenac increased the risk of major cardiovascular events by about one-third, an effect to be mostly attributed to an increase in major coronary events.[28] Ibuprofen also significantly increased major

Table 3. Analgesic therapies prescribed by the general practitioners after patient assessment using the interactive questionnaire (N=2788).

Analgesic	Frequency of use, n (%)	Mean (±SD) daily dose, mg
Paracetamol	193 (6.92)	1862.30 (836.76)
NSAIDs		
Aceclofenac	6 (0.21)	166.67 (51.64)
Aspirin	1 (0.04)	na
Celecoxib	23 (0.83)	193.64 (49.81)
Coxib (not specified)	1 (0.04)	na
Dexibuprofen	14 (0.50)	800.00 (406.54)
Diclofenac	78 (2.80)	119.61 (91.21)
Etoricoxib	67 (2.40)	73.64 (21.63)
Flurbiprofen	1 (0.04)	na
Ibuprofen	88 (3.16)	976.54 (408.95)
Indomethacin	2 (0.07)	112.50 (53.03)
Ketoprofen	25 (0.09)	221.05 (158.93)
Ketorolac	14 (0.50)	32 (20.16)
Meloxicam	3 (0.11)	15.00 (8.66)
Nimesulide	15 (0.54)	123.08 (59.36)
Piroxicam	15 (0.54)	17.14 (6.32)
Propyphenazone	1 (0.04)	na
Rofecoxib	2 (0.07)	na
Weak opioids		
Codeine	5 (0.18)	na
Codeine/paracetamol	213 (7.64)	67.21 (27.87)
Tramadol	101 (3.62)	124.13 (58.99)
Tramadol/paracetamol	54 (1.94)	105.06 (98.28)
Strong opioids		
Buprenorphine, TD‡	14 (0.50)	31.54 (14.92)
Fentanyl, TD	53 (1.90)	
Hydromorphone, CR	3 (0.11)	26.00 (33.04)
Morphine, CR	15 (0.54)	21.79 (13.43)
Oxycodone, CR	42 (1.51)	23.11 (22.04)
Oxycodone/naloxone, CR	1641 (58.86)	15.83 (13.14)
Oxycodone/paracetamol, IR	95 (3.41)	15.32 (10.49)
Tapentadol	80 (2.87)	139.61 (77.78)
Anti-epileptics		
Gabapentin	246 (8.82)	401.05 (319.54)
Pregabalin	352 (12.63)	155.10 (102.10)

‡ mg/^{n} days. CR, controlled release; IR, immediate release; na, not available; NSAIDs, non-steroidal anti-inflammatory drugs; TD, transdermal.

coronary events. Furthermore, coxibs and diclofenac significantly increased vascular death. The risk of heart failure was roughly doubled by all NSAIDs. As a result of the strong evidence produced by the comprehensive risk/benefit analysis NSAIDs have undergone in recent years, a number of warnings and new indications have been issued by international and national agencies.[29-31] The Nota 66 (2007) and its 2012 update from the Italian medications agency (AIFA) was aimed to limit the use of nimesulide and other NSAIDs, including commonly used diclofenac, ibuprofen, and naproxen.[30] The note also emphasizes the fact that all NSAIDs should be used with caution in the elderly, due to the increased risks of severe adverse events, including death, in this population. In 2013, the AIFA in agreement with the European Medicines Agency (EMA) published new contraindications for the use of diclofenac.[31] Diclofenac is now contraindicated in patients with established congestive heart failure, ischaemic heart disease, PAD, and cerebrovascular disease. In addition, the treatment with diclofenac should be considered with caution in patients with risk factors for cardiovascular events (hypertension, hyperlipidemia, diabetes mellitus, and smoking). All patients should be treated with the minimum effective dose for the shortest possible period.

Considering that only a minority of patients (5.7%) reported pain of mild intensity, the proportion of patients in treatment with paracetamol at presentation (17%) is perhaps also surprising. In recent years paracetamol, as well, has undergone a process of extensive risk/benefit reconsideration. Safety issues and the lack of efficacy have been reported in a number of studies. A randomized controlled study comparing the combination paracetamol-ibuprofen versus monotherapy with either analgesic in 892 patients with chronic knee pain found only a modest benefit of the combination.[32] Of note, paracetamol was found to cause a similar degree of blood loss as ibuprofen, and the combination of the two drugs had an additive effect. A recent systematic review and network meta-analysis comparing the effectiveness of commonly used medications for knee osteoarthritis (137 studies, 33 243 patients) found that paracetamol was the least efficacious treatment.[33] Finally, in an attempt to protect consumers from severe liver injury caused by paracetamol overdose, the FDA issued, in 2014, the recommendation to discontinue prescribing combination drug products with more than 325 mg of paracetamol.[34]

A substantial proportion of patients (more than one-fourth) were using, at presentation, weak opioids (codeine and tramadol and combinations of either drug with paracetamol). The effectiveness of weak opioids, or step-II medications according to the WHO analgesic ladder,[35] has been brought into question in recent years.[36-38] In particular, current guidelines suggest that the second step of the WHO ladder may be skipped and that low-dose strong opioids are a feasible alternative for the treatment of moderate to severe pain inadequately controlled by step-I analgesics (paracetamol and/or NSAIDs).[36-38] This alternative is possible also in elderly patients.[36-38] Of note, in 2013 the EMA issued new limitations concerning the use of codeine. Although the EMA document addressed the use of codeine in pediatric patients, one of the new contraindication listed included patients of any age, known to be ultra-rapid CYP2D6 metabolizers (up to approximately 10% of Caucasians).[39] Of note, according to current label information, the duration of the treatment with codeine should be limited to 3 days.[40] Strong opioids were the predominant class of analgesics used by patients at presentation, an indication perhaps of some improvement in the management of chronic pain of moderate to severe intensity. However the fact that strong opioids were used by approximately 38.9% of patients, while 94.3% of patients had pain of moderate to severe intensity suggests that GPs were still reluctant to prescribe strong opioids as recommended. Following pain assessment using the interactive questionnaire, the proportion of patients prescribed strong opioids increased to 69.7%. It is also possible that treatment with strong opioids was unable to control pain effectively at presentation, due to a tendency to use low doses of strong opioids, as shown for example by the reported mean daily doses of prolonged release oxycodone-naloxone (19.9 mg), controlled release morphine (24.5 mg), and immediate-release oxycodone-paracetamol (14.7 mg), which might have been inadequate in many cases. Another indication of a possibly suboptimal use of strong opioids is the prescription of inadequate formulations, although in a minority of patients. For example, immediate-release formulations (oxycodone-paracetamol), which are generally indicated for the treatment of acute pain, were used in a few patients. Transdermal formulations were also used. According to the guidelines by the European Association for Palliative Care (EAPC) the transdermal route should be used for patients who are unable to swallow, or have compliance problems, and when opioid use is stable, a requirement that did not seem to be found in most patients of the present study.[41,42] According to a recent article that reviewed the administration routes of strong opioids in elderly patients, the transdermal route may not be optimal due to the skin and immunological changes associated with aging that may impair correct drug dosing, as well as cause tolerability problems.[43]

The neurologic assessment of pain using the DN4 questionnaire identified a neuropathic component of pain in a substantial proportion of patients (42.3%). The appropriate pharmacological treatment of neuropathic pain is another pending issue in the management of chronic pain.[6,44] Attempts have been made to develop an evidence-based pharmacological approach to neuropathic pain. Currently recommended medications include anti-epileptics, tricyclic antidepressants, serotonin-noradrenalin reuptake inhibitors, topical lidocaine, tramadol, and strong opioids (oxycodone, morphine, methadone).[6] At presentation to the GPs, only 17.3% of our patients were in treatment with anti-epileptics. After assessment using the interactive questionnaire, the increase in the proportion of patients receiving anti-epileptics (21.5%) was modest, suggesting that GPs might still have an insufficient knowledge of pharmaceutical options available for neuropathic pain.

Overall, the use of the interactive questionnaire helped to improve the management of patients with chronic pain. This is suggested, first of all, by the fact that after Arkys-guided pain assessment all patients received analgesic treatment, either prescribed by the GP or by a pain specialist. A trend towards the implementation of current guidelines for the treatment of moderate to severe chronic pain was also observed as shown, for example, by an increased use of strong opioids paralleled by a decrease in the use of NSAIDs. The GPs participating in the Arkys project felt comfortable with the assessment required by the questionnaire and with the prescription of a new treatment. Only a minority of GPs directed the patients to a pain specialist. Clearly, a number of barriers to the effective treatment of chronic pain still exist. As outlined by Breivik and colleagues in a recent review article, the awareness of chronic pain among healthcare professionals, patients, and the public needs to be further improved and chronic pain should be regarded by decision makers as a condition of established priority, similarly to cancer or cardiovascular disease.[4] Education of healthcare professionals about state-of-the art options for pain management is crucial. Equally important are multidisciplinary approaches encouraging the collaboration between GPs, pain specialists, and other professionals when pain is uncontrolled despite analgesic therapy and implementation of treatment guidelines.

Despite its preliminary and exploratory nature, this analysis provided useful information about current approaches to chronic pain used by GPs in Italy. In addition, the large patient population assessed, with a mean age >65 years, comorbidities, pain of various eti-

ologies including neuropathic components, reduced quality of life, and impaired daily functioning was well representative of patients with chronic pain typically encountered in primary care.

Conclusions

This study shows that therapeutic decisions guided by the Arkys interactive questionnaire resulted in an increased prescription of strong opioids, in agreement with current recommendations for the treatment of moderate to severe pain. At the same time, it also shows that patients with chronic pain continue to be under-treated or inadequately treated. Despite the large body of evidence clearly documenting major safety issues associated with NSAIDs as a class, and despite a variety of initiatives to promote the appropriate use of NSAIDs, these analgesics are still widely used for chronic pain. Weak opioids are also frequently prescribed, although their effectiveness on moderate to severe pain is not supported by strong evidence. It has to be underlined that National/International guidelines suggest to skip the second step of the WHO ladder, and to use low-dose strong opioids.

Therefore, despite some progress over the past decade, much remains to be done to improve the management of chronic pain. In particular, educational efforts to increase the awareness among GPs of available state-of-the art strategies and evidence-based guidelines for the diagnosis and treatment of chronic pain are urgently needed.

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