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PHYSIOLOGY & REHABILITATION | RESEARCH ARTICLE

Pain therapy in patients with musculoskeletal disorders in outpatient setting: A cohort study

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Abstract: *Objectives:* The aim was to determine the habits of physical medicine and rehabilitation specialists (PRM) in the prescription of analgesics and application of different physical modalities in outpatients, and to investigate if there are any differences with respect to doctors age. *Methods:* We performed a retrospective study of outpatients treated at the Clinic for Physical Medicine and Rehabilitation, Clinical Center Serbia, for 3 month period. The assessment was performed by patient reports analysis. We investigated the age of doctors, the diagnosis, whether pain intensity was measured using validated pain scale, if analgesics, physical modalities, or the combination were prescribed. We also examined the type of prescribed analgesics. *Results:* Out of 340 outpatients (192 males, 148 females, mean 45.2 ± 15.89 years) treated by 19 PRM specialists were included in the study. PRM specialists did not measure pain intensity by any valid scale in 296 patients (87.1%). NSAIDs were most used analgesic in 90 patients (26,5%). Opioids were used in only five patients (1.5%). Our results revealed that younger doctors prescribed more often analgesics than older (47.4 vs. 30.2%). Younger doctors also prescribe more often the combination of analgesics and different physical modalities (42.7 vs. 29.2%). *Conclusions:* We found that the most often prescribed are different physical modalities. The intensity of pain was measured by any validated pain scale in low percentage. Among prescribed analgesics, NSAIDs had the highest percentage, while the opioids were prescribed very little. Younger specialists prescribed analgesics more often as well as the combination of analgesics and different physical modalities.

Subjects: Physiotherapy; Rehabilitation Medicine; Rheumatology

Keywords: analgesics; physical modalities; prescription; habits

ABOUT THE AUTHORS

Authors key research activities are all activities from the field of clinical research with an emphasis on physical medicine and rehabilitation, cardiovascular pathology and clinical kinesitherapy as well.

For better treatment efficacy of musculoskeletal pain, especially in developing countries, is necessary intensive training of specialists as well as quality of analgesics prescriptions, to which its conclusions to this paper indicates. This work emphasizes the use of opioids in a lesser extent, and points to new, modern trends in the wider application of these analgesics.

PUBLIC INTEREST STATEMENT

This paper informs about the use of analgesics for the treatment of musculoskeletal pain and the most common types of which are prescribed. It suggests what type of analgesic is prescribed unjustifiably little. This paper highlights the differences in analgesic prescribing in relation to the economic situation of countries, compares treatment and thus points to the need to follow the latest trends of treatment for more efficient therapy of musculoskeletal diseases, and to better inform the patients themselves.

1. Introduction

Musculoskeletal pain is a pain of a nociceptive or neuropathic nature with influence by psychological and socio-environmental factors (Furlan, Sandoval, Mailis-Gagnon, & Tunks, 2006). Study in United Kingdom shows that 46.5% of the general population, reported chronic musculoskeletal pain, mostly with degenerative spine disease (Elliott, Smith, Penny, Cairns Smith, & Alastair Chambers, 1999).

Today, it is well known and accepted that use of analgesics and physical modalities reducing pain and rehabilitation period. Analgesics are most commonly prescribed drugs among physicians. Prevalence of different pain conditions increases rapidly so the costs of therapy as well (Abbott & Fraser, 1998). Rehabilitation of patients with musculoskeletal problems in the last few decades has changed significantly in terms of new techniques and early initiation of the process of rehabilitation.

Therapy of musculoskeletal disorders progressed substantially in recent years. Corticosteroids were excluded from the newer generation of NSAIDs and opioids, now and in developing countries, too. Steps in rehabilitation are primarily education, evaluation of the patient and to create a specific plan of rehabilitation programs comprising administering medications, physical modalities (Veljković, 2001; Vesović Potić, 2011).

The aim of this study was to determine the habits of physical medicine and rehabilitation specialists (PRM) in the prescription of analgesics in outpatients, and to investigate if there are differences in analgesics prescription with respect to doctors age.

2. Materials and methods

We performed a retrospective study that included all outpatients treated at the Clinic for Physical Medicine and Rehabilitation, Clinical Center Serbia in Belgrade, during a 3 month period (from April to July 2014). The study was approved by the Ethical Committee of the Clinical Center of Serbia. The assessment was performed by patient reports analysis. Only initial reports were included in the study. 340 outpatients (192 males, 148 females with a mean age of 43.2 ± 3 , 45 years) treated by 19 PRM specialists were included in the study.

We investigated the age of the doctors, the diagnosis (degenerative spine disease, extra-articular rheumatism, post operative conditions, soft tissue injuries, fractures and osteoarthritis of the peripheral joints), whether pain intensity was measured using a validated pain scale, and the treatment method (analgesics, physical modalities, or combination of two). If analgesics were prescribed, we also examined the type of prescribed analgesics: (1) acetaminophen (2) non-steroidal anti-inflammatory drugs (NSAIDs), (3) opioids (4) topical therapy and (5) co-analgesics. We compared prescription habits of two groups of doctors (under 45 vs. over 45).

All observed variables were categorical. Chi-square test was used to test categorical variables that were expressed as numbers and percentages of the patients.

3. Results

In our study, 340 outpatients (192 males, 148 females with a mean age of 45.2 ± 15.89 years) were included. Among them, 75 (22%) were acute and 265 (78%) were chronic patients. The average age of the doctors in our study was 47.2 ± 8.53 years. Among 19 PRM specialists, 14 (73.68%) were under 45 years.

Our patients suffered most frequently from degenerative spine disease 111 (32.6%), and out of this group, 65 of them reported radicular pain, followed by extra-articular rheumatism with 50 patients (14.7%), post-operative conditions with 50 patients (14.7%), soft tissue injuries in 49 (14.4%) of the cases, fractures with 45 (13.2) and osteoarthritis of peripheral joints with 35 patients (10.3%). PRM specialists did not use any validated pain scale in 296 patients (87.1%) to measure pain intensity.

Table 1. Analgesics and physical modalities prescribed to outpatients

Number of patients 340	Frequency (%)
Doctors	
<45	234 (68.8)
≥45	106 (31.2)
Dg	
Degenerative spine diseases	111 (32.6)
Extraarticular rheumatism	50 (14.7)
Post operative conditions	50 (14.7)
Soft tissue injuries	49 (14.4)
Fractures	45 (13.2)
Osteoarthritis of peripheral joints	35 (10.3)
Measured pain intensity by validated pain scale	
Yes	44 (12.9)
No	296 (87.1)
Physical modalities	
Yes	303 (89.1)
No	37 (10.9)
Analgesics	
Yes	143 (42.1)
No	197 (57.9)
Physical modalities + analgesics	
Yes	131 (38.5)
No	209 (61.5)
Acetaminophen	
Yes	33 (9.7)
No	307 (90.3)
NSAIDs	
Yes	90 (26.5)
No	250 (73.5)
Opioids	
Yes	5 (1.5)
No	335 (98.5)
Co-analgesics	
Yes	8 (2.4)
No	332 (97.6)
Topical therapy	
Yes	51 (15)
No	289 (85)
Analgesics optionally	
Yes	8 (2.4)
No	332 (97.6)

In most of the patients 303 (89.1%) physical modalities (electro therapy, ultra sound, laser therapy, magnetic field therapy, thermo and hydro-procedures) were prescribed, while only 143 (42.1%) received an analgesic. Among our patients, 131 (38.5%) received a combination of analgesics and physical modalities (Table 1).

We examined the prescription of individual types of analgesics. The most often prescribed group of analgesics were NSAIDs in 90 patients (26.5%). Topical analgesics were prescribed in 51 patients (15%), followed by acetaminophen in 33 patients (9.7%). Co-analgesics were prescribed in eight of the cases (2.8%), while opioids were used in only five patients (1.5%). Among our patients, 8 (2.4%) were advised to use analgesics optionally (Table 1).

We also wanted to investigate if the age of PRM specialists plays a role in analgesic and physical modalities prescription habits. Our results showed that younger PRM specialists prescribe analgesics more often separately or in combination with physical modalities compared to their older colleagues. NSAIDs were the most common prescribed analgesics. There was no difference regarding to prescription habits of other groups of analgesics. We found no evidence from literature to compare our findings (Table 2).

Table 2. Analgesics prescription habits with respect to PRM specialists age

Number of patients 340	PRM specialists < 45, number (%)	PRM specialists ≥ 45, number (%)	p
Number of treated patients	234 (68.8)	106 (31.2)	0.116
Measured pain intensity by vas			
Yes	34 (14.5)	10 (9.4)	0.195
No	200 (85.5)	96 (90.6)	
Physical modalities			
Yes	204 (87.2)	99 (93.4)	0.088
No	30 (12.8)	7 (6.6)	
Analgesics			
Yes	111 (47.4)	32 (30.2)	0.003
No	123 (52.6)	74 (69.8)	
Physical modalities + analgesics			
Yes	100 (42.7)	31 (29.2)	0.018
No	134 (57.3)	75 (70.8)	
Acetaminophen			
Yes	22 (9.4)	11 (10.4)	0.778
No	212 (90.6)	95 (89.6)	
NSAIDs			
Yes	78 (33.3)	12 (11.3)	0.000
No	156 (66.7)	94 (88.7)	
Opioids			
Yes	4 (1.7)	1 (0.9)	0.587
No	230 (98.3)	105 (99.1)	
Co-analgesics			
Yes	8 (3.4)	0 (0.0)	0.054
No	226 (96.6)	106 (100.0)	
Topical			
Yes	41 (17.5)	10 (9.4)	0.053
No	193 (82.5)	96 (90.6)	
Analgesics optionally			
Yes	5 (2.1)	3 (2.8)	0.696
No	229 (97.9)	103 (97.2)	

Our results revealed statistically significant difference prescription habits between the two compared group of doctors (under 45 vs. over 45) regarding general analgesic prescription (47.4 vs. 30.2%; $p = 0.003$), as well as prescription of the combination of analgesics and physical modalities (42.7 vs. 29.2%; $p = 0.018$).

Our results also showed that doctors under 45 prescribe statistically significant more NSAIDs (33.3 vs. 11.3%), compared to their older colleagues. There was no difference in respect to prescription habits of other investigated variables (measured pain by any validated pain scale, different physical modalities, acetaminophen, opioids, co-analgesics, topical therapy and optional analgesic use).

4. Discussion

In this study, we focused on the analgesics prescription habits of PRM specialists in treating outpatients. This study showed a very low percentage of pain intensity measurement by any valid scale. Our results also revealed that PRM specialists generally use most frequently physical modalities (electro therapy, ultra sound, laser therapy, magnetic field therapy, thermo and hydro-procedures) to treat their outpatients in 89.1 of the cases. Analgesics are used less frequently (42.1%) to treat painful conditions in this group of patients. The two treatment methods are combined in 38.5% of the cases. NSAIDs were most frequently prescribed (26.5%) medication, followed by topical therapy (15%). Acetaminophen, opioids, and co-analgesics were prescribed to a lesser extent.

Previous studies conducted in the USA in both acute and chronic outpatients demonstrates the use of analgesics from 40 to 55% (Daubresse et al., 2013; Wilson, 2009). In analgesic prescribing groups, NSAIDs were used from 21 to 36%, followed by co-analgesics and topical therapy 7–10% and these findings are similar to our results. Opioids were used up to 27% in these studies which is significantly more in comparison to our results. It has been noticed increased opioids use every year because of the good educational system and controlled misuse. Acetaminophen was prescribed in only 1.8–3.15% of the cases and these findings are unusual and lesser than in our study also. We know that acetaminophen is the first choice of analgesic treatment because of the minimum costs and side effects as well.

Another study conducted in Sweden in both acute and chronic outpatients shows similar results of opioids use to previously mentioned two studies in the USA but highest percentage of NSAIDs use, up to 80%. The price cost of NSAIDs apparently is not problem in high resource settings like this (Brattwall, Turan, & Jakobsson, 2010). On the other hand, NSAIDs are one of the most common causes of reported adverse drug reactions in many clinical studies. The most affected is gastrointestinal system with dyspepsia and bleeding. COX-2 inhibitors is associated with increase of systolic blood pressure and cardiovascular morbidity, but only in long term use (Jain, Gupta, Malhotra, & Pandhi, 2005; Malhotra, Karan, Pandhi, & Jain, 2001; Mukherjee, Nissen, & Topol, 2001).

Different studies from the USA have shown a significantly higher analgesic prescription rate in treating chronic pain (Clark, 2002; Rasu, Sohraby, Cunningham, & Knell, 2013). Clark (2002) reported analgesic prescribing in a general medical population with chronic pain up to 75%. NSAIDs were the most commonly prescribed class of analgesics with 67% of the cases. However, 44% of those receiving an analgesic were prescribed opioids, which is significantly higher in comparison to our results. Acetaminophen (29%) and co-analgesics (7%) were also prescribed more often. In contrast to our results, topical agents were prescribed to a lesser extent (3%).

Another study performed on outpatients with chronic pain in USA showed that physical modalities were used very rarely to treat pain (2.7%). Topical therapy (2%), acetaminophen (2.1%) were also used infrequently, NSAIDs were used in 90% of the patients and 14.3% of the patients were prescribed opioids (Rasu et al., 2013). We can conclude based on this results, that the old methods of treating pain with physical modalities and topical therapy vanishing in high recourse setting, and the emphasis is on NSAIDs, opioids and acetaminophen.

Exception is meta-analysis from the United States showing the safe and effective use of topical NSAID therapy, as well as any difference in the effectiveness of deployment compared to oral use, in conditions of chronic musculoskeletal pain (Mason, Moore, Edwards, Derry, & McQuay, 2004).

Studies performed in low resource setting on both acute and chronic outpatients, revealed that the most prescribed analgesics were acetaminophen and NSAIDs (Bawazir, 1993; Chou et al., 2009; Gupta, Malhotra, Jain, Aggarwal, & Pandhi, 2005; Liu, Chen, & Hwang, 2001). Kamaldeen, Omuya, Buhari, Saka, & Saka (2012) revealed that the most prescribed analgesic was acetaminophen with 46.6%, followed by NSAIDs (40.1%), while opioids were prescribed only in 13.3%.

Gupta et al. (2005) reported 62.5% of NSAIDs use in orthopedic outpatients in North India, followed by acetaminophen in 12.2% of the cases, but topical therapy in 82.4% of the cases which suggests that in this setting, there is often some of the minimum cost therapy form. This may explain with easy availability and low price of acetaminophen and topical therapy as well as the avoidance of complicated modern procedures of treatment. Our results in comparison to previously mentioned low resource setting studies, revealed even lesser use of all analgesic. Jui-Yao Liu in Taiwan reported NSAIDs use in combination with other analgesics on outpatients in rehabilitation in 90% of the cases which is an example of low resource setting with extensive use of NSAIDs (Liu et al., 2001). Study in Saudi Arabia showed analgesics use in 14.1% of the cases, followed by acetaminophen with 11.2% of the cases and these findings are even lower in comparison to our results (Bawazir, 1993).

The results in our study can be explained in several ways:

- Our PRM specialists largely continue to treat pain with physical modalities because the old approach to treatment is still part of education systems.
- Analgesics are prescribed to a lesser extent. Among them, opioids are prescribed minimally. Safe opioids use should be based on good clinical skills and on the assessment and management for opioid diversion. Patients must be educated that some recommendations are not good for all and that individual approach is key for opioid use (Chou et al., 2009).

In low resource setting, many medical professionals have or no access to basic and practical information. The disparity of theoretical and practical availability of information is due to several factors, including unequal distribution of Internet access and a failure of international initiatives (Kopf & Patel, 2010). PRM specialist afraid of the side effects of opioids, though often only constipation and nausea were statistically significant side effects if the use is proper (Deyo, Mirza, Turner, & Martin, 2009). When pain management does feature in government health priorities, there are fears of opioid addiction, the high cost of certain drugs, and in some cases, poor patient compliance. However, it is a sad reality that the medicines that are essential for relieving pain often are not available or accessible. There are numerous published reports about the deficits of adequate pain management, predominantly in developing countries in all regions of the world (Kopf & Patel, 2010).

Unfortunately, a large number of those with musculoskeletal problems do not receive treatment for acute and chronic pain. There are various reasons for this problem, which include a lack of adequately trained health professionals, the unavailability of drugs, especially opioids, and a fear of using opioids because there is an erroneous belief that inevitably the use of these drugs will cause addiction. The first major step in improving services for pain patients is to provide an educated workforce, not only doctors and nurses, but other health workers.

The future of pain management in both high and low-resource environments will depend on access to opioids and on the integration of palliative care as a priority in health care systems (Kopf & Patel, 2010).

In our results, we found that for the therapy of musculoskeletal pain, the most prescribed are physical modalities. The intensity of pain was measured by any validated pain scale in a lesser extent. Among transcribed analgesics, NSAIDs had the highest percentage, while the opioids were prescribed minimally. Younger PRM specialists prescribing more often analgesics and combination of analgesics and physical modalities.

To improve analgesics prescription, we suggest increasing professional trainings and seminars. This will secure clinical knowledge and better results in patient rehabilitation.

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Competing Interests

The authors declare no competing interest.

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