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ORIGINAL RESEARCH

Pursuing the Recovery of Severe Chronic Musculoskeletal Pain in Italy: Clinical and Organizational Perspectives from a SIAARTI Survey

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Background: Increased attention to the functional impact of chronic pain (CP), as highlighted by the 11th revision of the International Classification of Diseases (ICD-11) and advocated by the International Classification of Functioning, Disability and Health (ICF), is an important step forward for optimizing its management. Evidence about perspectives of Italian physicians on the relevance of musculoskeletal (MSK) pain care to improve patients' functioning and Quality of Life is scant. The study aimed to investigate the physicians' perception of the value of functional recovery in severe MSK pain patients, their attitude towards its assessment and achievement in Italy.

Methods: A survey was conducted in Italy between October 2020 and January 2021. Specialist centers members of the SIAARTI (n = 395) were sent an online questionnaire encompassing the Italian pain therapy network. Participants rated their agreement to questionnaire items according to a 5-point Likert-type scale.

Results: A total of 305 centers (77%) completed the survey. Most physicians rated the recovery of functioning as very relevant in MSK pain treatment and, when they assessed it, devoted great attention to the ability to perform daily activities, pain, ability to ambulate and sleep quality. Multidimensional questionnaires were less employed in favor of physical examination and pain intensity scales. Pharmacological therapy, rehabilitation and lifestyle changes and/or physical exercise were all rated optimal strategies to pursue the recovery of patients' functioning. When considering pharmacological therapy, weak and strong opioids, either alone or combined with paracetamol, were the most frequently employed analgesics.

Conclusion: Clinicians seem to recognize the recovery of functioning as equally important as pain intensity reduction, but there is a need of streamlining available tools to effectively assess both across different MSK pain patients.

Keywords: chronic musculoskeletal pain, recovery of functioning, pain care models

Introduction

Worldwide musculoskeletal (MSK) pain conditions are increasingly regarded as leading contributors to disability and are associated with a substantial, albeit underestimated, societal burden.[1–4] Although the global prevalence estimates of MSK conditions may be variable with respect to age range, chronic MSK pain (eg, back and neck pain, pain due to arthritis, leg pain, arm pain of >3 months duration) approximately affects between 11 and 24% of the general population, with some estimates as high as 48% for chronic MSK complaints.[5–7] MSK pain severely

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impacts people's quality of life (QoL) by causing sleep interruption, fatigue, depressed mood, activity limitations and participation restrictions.[8,9]

Therefore, it is desirable to pursue an integrated approach that values the physical, psychological and social components of pain and to evolve our mindset by targeting both pain and functional outcomes as complementary means to ensure adequate care. This is in line with the evolving notion of pain as a biopsychosocial issue and the reconsideration of CP within the framework of a disease state, as highlighted by the integration of the International Classification of Functioning, Disability and Health (ICF) into the 11th revision of the International Classification of Diseases (ICD-11).[10–12] Indeed, pain control and improvement in function are the main drivers of patient satisfaction.[13–17] Overall, current evidence suggests the need of exploring whether the significance of functioning properties of CP and its management are fully implemented in daily practice and which tools and strategies clinicians can rely on to adequately provide patient care, which requires a patient-tailored approach and a reappraisal of current management towards a multimodal therapy.[18]

It has not been systematically investigated, which is the most common pain management approach used by clinicians to achieve adequate MSK pain care in Italy. Thus, it would be relevant to know whether and how the 395 specialist centers, encompassing the Italian pain therapy network as established by the national law 38/2010 and providing second-level care across the country, pursue an MSK CP care where pain and functional outcomes should act as complementary management goals. To this end, the Italian Society of Anesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI) organized a national survey to map out the CP care delivered across the country, to investigate CP care pathways and organizational models and potentially unveil gaps to be effectively addressed to optimize patient care. This is important considering the organization of the Italian Pain Network, which includes general practitioners (GPs), spokes and hubs. GPs refer patients to the spoke if treatment is not effective or they do not have the necessary expertise. If the spoke also is not able to treat the patients, they are eventually referred to the hub, where complex patients and more difficult procedures converge. However, this organization follows a patchy fashion, meaning that not all hubs or spoke are the same nor share the same criteria, expertise, or possibilities, and that patients with overlapping clinical features may follow different care paths if treated in different regions, or even in different centers within the same region.[41]

This work therefore aims to share and discuss the findings of this national survey focusing on physicians' perception of the value of functional recovery in severe MSK pain patients, physicians' attitude towards its assessment and the adopted therapeutic strategies to pursue it.

Methods

The survey was conducted across Italy between October 2020 and January 2021. All centers members of the SIAARTI were asked to participate by an email invitation, that was sent to all directors of complex operative units, and by further advertising through the SIAARTI newsletter and its social media platforms. Participating centers were required to select one participant as representative physician of each given center. The representative physicians were administered an online questionnaire through a Computer-Aided Web Interview (CAWI) using the free software SurveyMonkey. No specific exclusion/inclusion criteria were established as the scope of the survey is to provide an as-much-comprehensive-as-possible overview of the Italian pain centers' scenario. Answers were collected on an anonymous basis. A data clean procedure was also performed to remove duplicate answers within the same center.

The survey was organized by SIAARTI and conducted in compliance with the EphMRA code of conduct. All participants in the survey provided voluntary, informed consent to data collection and use, based upon a clear understanding of the purpose of the data collection.

Questionnaire and Item Assessment

The questionnaire comprised 58 questions addressing the following items: center organization, clinical activity, chronic non-cancer pain management, the relevance of recovery of functioning in severe chronic MSK pain patients and its management, level of education of clinicians within the pain therapy units, clinical governance, availability of pain care protocols and research activity. The questionnaire was developed to be answered within 30 minutes. Here, we report the findings stemming from 20 out of 58 questions, which are reported in Supplementary Materials. In brief, questions included a mix of single and multiple responses, as well as scalar items. This questionnaire was not an international and validated one, since it was created ad hoc for the Italian reality, and with an exploratory intent.

Participants were asked to rate their agreement to items regarding the relevance of recovery of functioning in severe chronic MSK pain patients and its management from 0 to 4 (0, complete disagreement; 4, complete agreement) on a 5-point Likert-type scale. Furthermore, participants were asked to rate the frequency of use of specific parameters, tools and/or pharmacological interventions from 0 to 4 (0, never; 4, always) on a 5-point Likert-type scale. An agreement index was calculated to assess the agreement among participants towards a specific item ranging from 0 (not at all) to 1.0 (very much).

Statistical Analysis

The findings of the survey are presented with standard descriptive statistics: mean and standard deviation (SD), or median and interquartile range (IQR) or proportion for categorical variables as appropriate. Analyses were performed using the RStudio software.

Results

In total, 363 out of 395 questionnaires were initially registered, with a response rate of 91%. A total of 41 records were removed as they were partially filled and 34 records, stemming from individuals working within the same center, were aggregated when the answers were overlapping if appropriate. After the data clean procedure, the final dataset described the data collected from 305 pain centers. Table 1 illustrates the demographics and organizational features of the surveyed pain centers including volume of clinical activity, clinical performance indicator (eg, minimum waiting time for a first visit, number of pain visits carried out annually), the composition of pain professional teams, as well as the origin of patients referred to pain centers based on the most frequent specialist requiring patient referral. Approximately 73% (n = 224) of pain centers belonged to the pain therapy network; northern and central Italy had a greater proportion of centers belonging to the pain therapy network (76–77%) compared with southern Italy (66%). Only one in five centers acted as a hub with the majority of the surveyed centers acting as spoke or other. Annually, the surveyed centers carried out about 6113 pain visits with the majority being performed in hub centers (3830/year). Every year, about 106 patients with non-cancer CP were hospitalized per center and about 220 patients have been hospitalized for pain-related diagnostic or interventional procedures. Before being taken care of, patients waited on average 2–3 weeks for their first pain visit. With regard to the specialists who refer patients to the surveyed pain centers, participants indicated in a decreasing ranking that the general practitioners (GPs) refer patients the most, followed by orthopedists, neurosurgeons, oncologists, surgeons and rheumatologists. On average, three physicians work within each pain therapy unit with most of them being anesthesiologists and only one-third declaring the attendance to a Master's course or advanced training courses in pain management following their board certification as specialists. Regardless of the centers' geographical location and organization, the most frequent CP patients clinicians encounter were represented by low back pain (range: 45–55%) followed by those suffering from osteoarthritis (range: 30–32%) and neuropathic pain (range: 18–24%) and fibromyalgia (8–13%).

Physician Perspective of the Relevance of the Recovery of Functioning in the Treatment of MSK Pain Patients and Attitude to Assess It

Figure 1 shows that the majority (>90%) of the clinicians agreed on the importance, for both the physician (Figure 1A) and the patient (Figure 1B), of the recovery of functioning (intended as physical, psychological and social well-being) in the treatment of severe chronic MSK pain.

As shown in Figure 2A, clinicians most frequently took advantage of specific parameters to assess the recovery of functioning, namely ability to perform daily activities, pain, ability to ambulate and sleep quality. Less attention was observed towards productivity or social relationships as parameters, as well as the ability to lift and carry objects. Despite the consideration given to parameters that closely related to the psychosocial sequelae of CP, multidimensional questionnaires, such as Short Form-36, EQ5D, Brief Pain Inventory (BPI) and the Roland-Morris scale, were less employed in favor of physical examination, pain intensity scales (Numerical Rating Scale and Visual Analogue Scale) and tools assessing motor control (Figure 2B).

Therapeutic Approaches Adopted by Clinicians to Promote the Recovery of Functioning

Clinicians mostly rated pharmacological therapy, rehabilitation and lifestyle changes and/or physical exercise as optimal approaches to achieve the recovery of functioning. Less importance has been attributed to alternative medicine. About 93% of clinicians rated very

Table 1 Sample Characteristics (n = 305 Pain Centers)

Characteristic	
Affiliation to the national pain therapy network:	
• Yes	73%
• No	27%
Center organization:	
• Hub	22%
• Spoke	58%
• Other	20%
Median number of beds/center	266
Median annual number of pain visits/center stratified according geographical location:	
• Northern Italy	1774 (95% CI: 1302–2246)
• Central Italy	1847 (95% CI: 1774–2520)
• Southern Italy	1945 (95% CI: 1100–2790)
Median annual number of pain visits/center stratified to center organization:	
• Hub	3830 (95% CI: 2580–5079)
• Spoke	1381 (95% CI: 1073–1688)
• Other	902 (95% CI: 569–1234)
Median number of severe chronic non cancer pain patients treated every month	70
Median number of patients admitted to hospital for pain-related reasons per year	220
Minimum waiting time for a first visit (days)	17
Median number of physicians working within each pain therapy unit	3
Median number of highly specialized physicians working within each pain therapy unit*	1
Median number of nurses working within each pain therapy unit	3
Specialists who most refer patients to the pain center (% of referral frequency):	
General practitioner	75
Orthopedist	58
Neurosurgeon	53
Oncologist	45
Surgeon	42
Rheumatologist	39
Neurologist	39
Physiatrist	38
Geriatrician	24

Notes: *Highly specialised physicians refer to specialists who attended master courses or advanced training course in pain management following their board certification as anesthesiologists.

and very much relevant the analgesic therapy to pursue the recovery of functioning. Furthermore, the majority of clinicians (98.5%) agreed upon the fact that continuity of pharmacological treatment in severe chronic MSK pain would promote better therapy outcomes and the psycho-physical integrity of the patients. Furthermore, clinicians agreed that weak and strong opioids, both as single agents and combined with paracetamol, are pharmacological approaches that can promote the recovery of functioning. Less frequent use was observed for anti-depressants, anticonvulsants, corticosteroids and non-steroidal anti-inflammatory drugs (NSAIDs)/opioid combinations (Figure 3). Finally, the data emerged as being quite similar when stratified according to the centers' geographical location and organization.

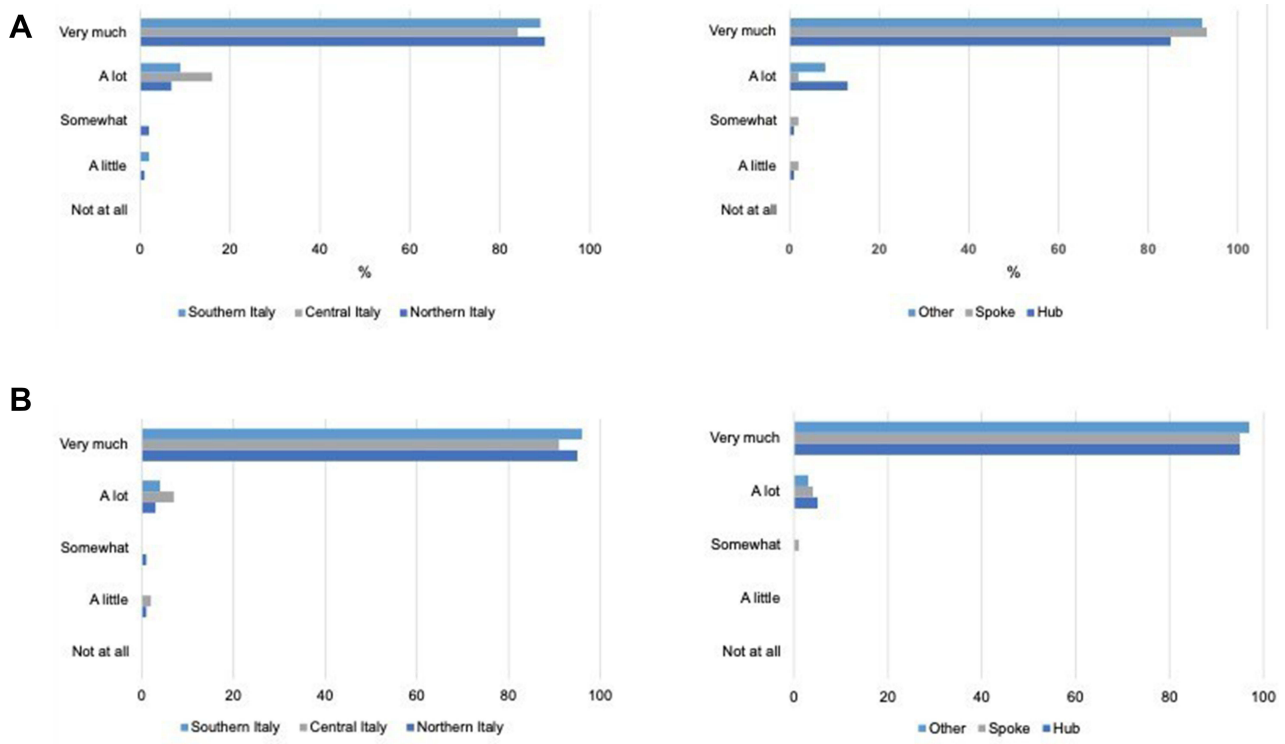

Figure 1 Rate of agreement observed among clinicians on the relevance of the recovery of functioning (here meant as physical, psychological and social well-being) in the treatment of severe chronic musculoskeletal pain. The rate of agreement to the question "Based on your experience how much relevant for the clinician and for the patient is the recovery of functioning (meant as physical, psychological and social well-being) in the treatment of severe chronic musculoskeletal pain?" was indicated in a range from 0 to 4 (0, not at all; 4, very much) in a 5-point Likert-type scale. (**A**) Relevance for the physician. (**B**) Relevance for the patient.
Note: Original.

Discussion

Management strategies and therapeutic interventions should aim at both pain relief and amelioration of functional disability. Of note, a description of functioning as the ability to ambulate, function cognitively, return to work, complete activities of daily living and sleep has been recently proposed.[19,20] Indeed, guidelines recommend encouraging strategies that address psychosocial factors and focus on improvement in function when it comes to both LBP[21–24] and OA patients.[25] As strongly advocated by Mallick-Searle et al, it is of utmost importance to elevate the conversation around chronic MSK pain management beyond that of just pain, to encompass the meaningful benefits that improvement in functional outcomes brings to patients.[26] A future, full implementation in everyday clinical practice of the coding introduced by ICD-11 and ICF along with a greater clinicians' awareness of the relevance of recovering patients' functioning may successfully optimize MSK pain care. In this perspective, we have performed a national survey to investigate the physicians' perception of the value of functional recovery in severe MSK pain patients, their attitude towards its assessment and the adopted therapeutic strategies to pursue it. Our findings, which stem from a comprehensive mapping of over 300 specialist pain centers encompassing the Italian pain therapy network, provide the first evidence in the Italian setting.

Empowering GPs?

In agreement with previous MSK pain conditions prevalence estimates,[27] the majority of patients referred to second-level pain centers suffer from LBP and OA, with GP being the main responsible of patients' referral. This observation is in line with the high frequency of primary care consultations for a chronic MSK pain-related problem as also documented in other European countries.[28] Nevertheless, this finding may highlight the need of pursuing interventions aimed at empowering GPs in the management of MSK conditions through the promotion of risk-stratification tools to facilitate patients' profiling while avoiding inappropriate referrals and freeing up second-level pain center capacity. In this perspective, a tool such as telemedicine could be useful, since it would allow adequate screening of patients and better data

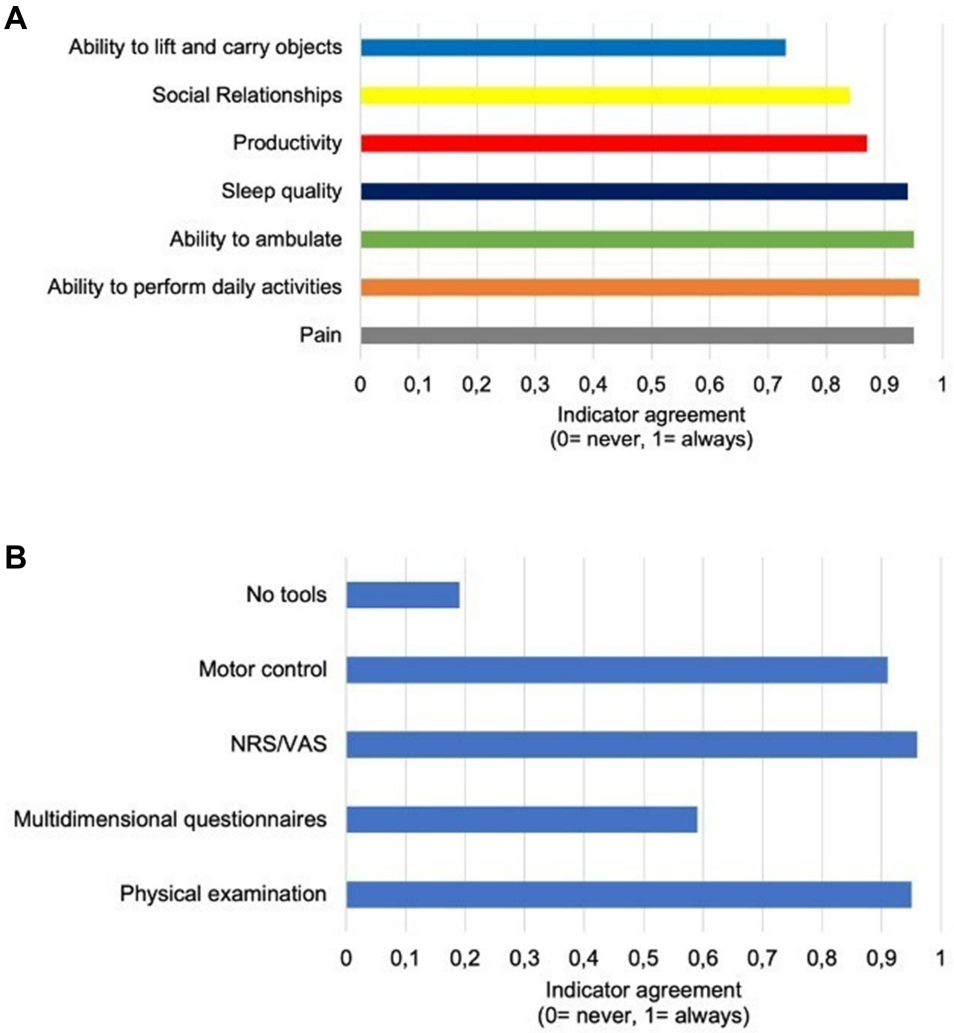

Figure 2 Parameters and tools to assess the recovery of functioning. Participants were asked which parameters and tools use more frequently to assess the recovery of functioning. The results are expressed by an agreement index calculated to assess the agreement among participants towards a specific item ranging from 0 (never) to 1.0 (always). The lowest value (0) means the greatest agreement towards the worst rating while the highest value (1) means the greatest agreement towards the best rating. (**A**) Parameters used to assess the recovery of functioning. (**B**) Tools used to assess the recovery of functioning.
Note: Original.

sharing between spoke and hub centers. Furthermore, telemedicine can collect useful data for the correct definition of functionality such as distance traveled on foot, sleep quality and cardiovascular parameters.

The Recovery of Functioning and Multimodal Questionnaires

The majority of clinicians rated the recovery of functioning as very relevant for both the physician and the patient in the treatment of chronic MSK pain.[29] This finding underlies the recognition of functioning as an important parameter to take into account when managing MSK pain patients, as much as pain intensity measurement to obtain a comprehensive patient assessment. However, clinicians mostly relied on physical examination and pain intensity scales as tools to assess the recovery of functioning rather than carrying out a comprehensive evaluation with multidimensional questionnaires. In this regard, it is important to highlight that these multidimensional questionnaires have been developed to assess limitations in physical, social activities, psychological distress, sleep, enjoyment of life, and functioning in LBP patients in the clinical trial setting (eg, SF-36, BPI, RMDQ).[30] Thus, their limited use in clinical practice by the Italian clinicians may unveil their potential pitfalls, such as being time-consuming (eg, BPI) or not closely correlating to physical function (eg, RMDQ). Such observation should prompt us to develop

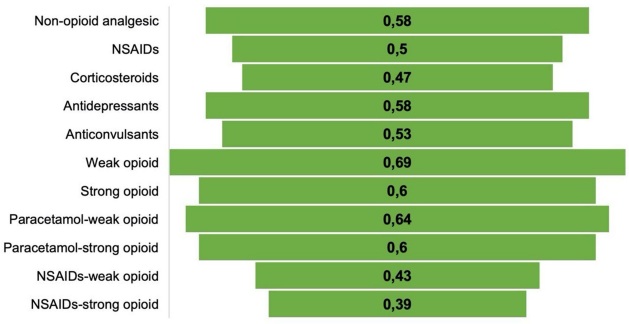

Figure 3 Use of the analgesics employed to promote the recovery of functioning. Participants were asked which medications use more frequently to promote the recovery of functioning. The results are expressed by an agreement index calculated to assess the agreement among participants towards a specific item ranging from 0 (never) to 1.0 (always). The lowest value (0) means the greatest agreement towards the worst rating while the highest value (1) means the greatest agreement towards the best rating.
Note: Original.

new tools and/or shorter versions of existing questionnaires that should be easier to use and suitable with the time constraints often allocated to physicians by the practice organization.

On the other hand, the limited use of multidimensional questionnaires might also be related to the restricted number of physicians highly specialized in pain medicine (ie, holding a Master's degree or advanced training course in pain management following their board certification as anesthesiologists), thus raising the question of whether further efforts towards a pain management-oriented education should be made in the future. In line with this, only 14.2% of the units encompassing the participating pain therapy centers are represented by a second-level pain therapy clinic, while almost 30% of the units are held by first-level physicians without specific care duties.

Management Options and Opioids

Clinicians may rely on a wide range of management options, including pharmacological and non-pharmacological approaches (eg, physical exercise, rehabilitation, psychological support), as well as invasive procedures (eg, neurolysis, infiltrations), to promote recovery of functioning in the treatment of a severe chronic MSK pain. In line with multimodal management of MSK pain patients, the surveyed clinicians rated both pharmacological therapy and rehabilitation as optimal approaches, thus supporting the notion that such strategies can prove to be effective when pursued in a synergic manner where physical, psychological and social dimensions are equally targeted. Furthermore, continuity of pain treatment has been fully regarded as crucial for therapy efficacy by the majority of physicians. However, it has been reported that adherence to the prescribed pain medications might be very variable in CP patients with a median rate of adherent patients ranging between 8 and 62%.[31,32] Of note, multiple factors were found to impact adherence including a perceived benefit from treatment, tolerability, comorbidities such as depression, and dosing frequency.[33] To this end, it is paramount to identify and target the factors able to foster adherence thus ensuring treatment continuity.

Pharmacotherapy, specifically with analgesics, has been rated as a relevant contributor to the achievement of recovery of functioning, and a greater trend towards a larger use of opioids (both weak and strong) alone or in combination with paracetamol than NSAIDs, corticosteroids or antidepressants/anticonvulsants was observed. This finding seems to suggest that the majority of patients referred to pain therapy centers were experiencing a severe CP, poorly relieved by previous treatments and associated with limited functional recovery. This is in line with a common time lapse between onset of pain and seeking treatment, with 37% of patients waiting months before consulting a pain therapy center and almost 40% waiting years in Italy.[34] Thus, it can be expected that pain could become chronic and that a potential failure of first-line recommended approaches over time (namely non-pharmacological and non-opioid analgesics) would require considering opioid treatment.

Opioids may achieve improvements in pain and function in MSK patients; nevertheless, caution should be exercised when selecting the opioids as they differ in terms of tolerability.[35–37] To date, opioids should be used for some selected and supervised non-cancer CP patients if established non-pharmacological and pharmacological treatment options have failed as part of a multi-modal, multi-disciplinary approach to treatment.[35] To this end, several initiatives have been recently supported by SIAARTI, to proactively prevent the development of situations that might favor opioid abuse, such as the Italian translation of the Opioid Risk Tool.[38] Of note, current evidence suggests that the majority of Italian patients taking opioids for CP do not undergo meaningful dosage increases over time,[39] thus suggesting that tight surveillance has been carried out by the Italian clinicians. This is in line with the recent observation that Italian pain specialists are particularly interested in opioid-related issues.[40]

Limitations

We acknowledge that our work has several limitations. While achieving a response rate of 91%, we are missing data from about 90 pain therapy centers whose answers may have biased our findings towards a different estimate of pain management practices. This is a convenience sample of physicians working in second-level care centers across Italy and may not be generalizable to other countries where patterns of treatment and care, as well as medication availability, may vary.

In conclusion, our work shows how GPs are the main responsible of patients' referral to second-level pain centers, and provides the first evidence that Italian clinicians seem to recognize functional recovery as equally important as pain intensity reduction, despite difficulties in its assessment through multimodal questionnaires. However, physicians recognize the need to streamline available tools to effectively measure both, in conjunction with the need to support chronic pain patients in the best way.

We hope our work and other initiatives which may stem from it will help expand and reinforce the Italian Pain Network. This would allow researchers to be able to find and collect precise data more easily – thus permitting an advance in our knowledge – while clinicians would be able to network, share experiences and opinions and access to high-grade training and information. This would result in a more unified organization of the Italian Pain Network, better and more effective therapies, more trained staff, and ultimately better patients' care.

Abbreviations

BPI, Brief Pain Inventory; CAWI, Computer-Aided Web Interview; CP, chronic pain; GP(s), general practitioner(s); HRQoL, health-related quality of life; ICD-11, 11th International Classification of Diseases; ICF, International Classification of Functioning, Disability and Health; IQR, interquartile range; LBP, lower back pain; MSK, musculoskeletal; NSAIDs, non-steroidal anti-inflammatory drugs; OA, Osteoarthritis; QoL, quality of life; SD, standard deviation; SIAARTI, Italian Society of Anesthesia, Analgesia, Resuscitation and Intensive Care (Società Italiana di Anestesia, Analgesia, Rianimazione e Terapia Intensiva).

Data Sharing Statement

Raw data from surveys will be available upon reasonable request to SIAARTI at info@siaarti.it.

Ethics Approval and Informed Consent

This is an exploratory survey on pain therapy centers and does not investigate on therapies or pathologies relating to the individual patient. It also does not collect sensitive or personal or clinical data. For all these reasons, according to the current legislation for non-interventional or observational studies (MINISTERIAL CIRCULAR No. 6, SEPTEMBER 2nd 2002), it is necessary to submit a survey for approval by an Ethics Committee only if "the study focused on problems or pathologies in the within which medicinal products are prescribed in the usual way in accordance with the conditions set out in the marketing authorization. The inclusion of the patient in a specific therapeutic strategy is not decided in advance by the trial protocol, but is part of normal clinical practice and the decision to prescribe the medicine is completely independent from that of including the patient in the study." Our survey was administered to about non-patient 15,000 contacts, voluntarily registered on the SIAARTI platforms. In addition, all participants agreed to participate in the survey and accepted informed consent.

Consent for Publication

All authors agreed to submit this version of the manuscript. This manuscript does not contain any images, videos, recordings, or similar for which a "Consent to publish statement" must be provided.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to

which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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