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Pain in patients attending outpatient rehabilitation: results of a pilot study

Francesca Cecchi · Anita Paperini · Raffaello Molino Lova · Guido Pasquini · Roberta Boni · Chiara Castagnoli · Federica Vannetti · Luca Padua · Claudio Macchi

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Abstract The aim of the study was to investigate pain occurrence, characteristics and correlations in an outpatient rehabilitation setting. This was an observational pilot study. The setting was an outpatient rehabilitation facility. The subjects included all patients attending physiotherapy in the week 25th to 29th September 2010 and the interventions were made using self-administered questionnaire. Ongoing pain was assessed by a yes–no question, pain intensity by a numeric rating scale (NRS) ranging 0–10. Pain-related medication was investigated, along with pain characteristics, patient treatment expectations, life satisfaction, and catastrophism. Of the 201 patients, 12 were excluded and 189 enrolled (age 63.6 ± 15.6 ; 70.4 % women). Pain (mean NRS = 5.6 ± 2.4) was reported by 60.9 % patients (66 % orthopedic and 40 % neurological). In 87.8 % cases, pain was chronic (>6 months). According to patients reporting pain, the main objectives of treatment

were both pain relief and functional recovery for 51 %; pain relief for 24.9 %; functional recovery for 22.8 %. Low treatment expectations were reported by 15.3 % patients; catastrophism by 40.7 %; 28.6 % patients were on pain medication: use of drugs was related to age ($p = 0.005$), pain intensity ($p = 0.009$) and catastrophism ($p = 0.0003$). In a multivariate analysis, pain was independently correlated with an orthopedic versus neurological diagnosis ($p = 0.000$), and with reduced treatment expectations ($p = 0.020$), while independent of age ($p = 0.74$) gender ($p = 0.22$), and catastrophism (0.17). A high prevalence of pain was observed in outpatients undergoing rehabilitation. Pain was chronic in most cases. Pain relief was the most desired treatment outcome by patients reporting pain. Pain complaint was independently correlated to orthopedic vs neurological diagnosis and to reduced treatment expectations.

F. Cecchi · A. Paperini (✉) · R. Molino Lova · G. Pasquini · R. Boni · C. Castagnoli · F. Vannetti · L. Padua · C. Macchi
Fondazione Don Carlo Gnocchi, Scientific Institute, Florence, Italy
e-mail: anitapaperini@hotmail.it

F. Cecchi
e-mail: francescacecchi2002@libero.it

R. Molino Lova
e-mail: raffmoli@tin.it

G. Pasquini
e-mail: pasquinifam@hotmail.com

R. Boni
e-mail: boni.roberta@virgilio.it

C. Castagnoli
e-mail: chiara.castagnoli@virgilio.it

F. Vannetti
e-mail: federica.vannetti@unifi.it

L. Padua
e-mail: lpadua@dongnocchi.it

C. Macchi
e-mail: macchiClaudio@libero.it

G. Pasquini
Fondazione Don Carlo Gnocchi, IRCCS, V. di Scandicci snc,
50143 Florence, Italy

L. Padua
Università Cattolica di Roma, Rome, Italy

C. Macchi
Università degli Studi di Firenze, Dept. Medical and Surgical
Critical Area, Florence, Italy

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Introduction

Pain can cause the impairment of physical health and function, and is a common symptom in patients undergoing rehabilitation [1]. Pain is defined by the International Association for the Study of Pain (IASP) as: “an unpleasant sensory and emotional experience, which we primarily associate with tissue damage or describe in terms of such damage, or both;” [2] pain that restricts function may be the main indication for rehabilitation or may often complicate a disabling disease [3].

Pain is reported in many chronic illnesses, and pain may hinder functional recovery. Recent studies suggest that pain may predict a poor rehabilitation outcome [4]. From the patient’s perspective, pain relief is often the most important element of satisfaction after rehabilitation. According to the International Classification of Functioning, Disability and Health (ICF), each individual, depending on the medical condition, physical limitations, personality and style of interaction with the opportunities offered by the environment, develops a personal assessment of what a good quality of life may be, and consequently what are the objectives of a program of rehabilitation [5]. Therefore, early detection and monitoring of a pain complaint in any clinical setting including rehabilitation is universally recognized as a relevant clinical issue [6, 7]. This is also expressed by recent legislation on pain in Italy and Portugal and by the development of European-wide policy strategies and activities for improved pain care in Europe [8].

A relevant issue for correct pain assessment and management is the verification of whether reported pain is acute, subacute or chronic. Chronic pain has been described by the International Society of Interventional Pain Physicians (ASIPP) as: “pain that persists 6 months after the injury and beyond the usual course of an acute disease” [9]. While acute and subacute pain are often related to strictly organic factors, and better treated with drugs and physical therapy, chronic pain is very difficult to treat [9]. Indeed, chronic pain patients become more resistant to therapy, and their use of health services is up to five times higher than the use by the general population [10]. Further, chronic pain ranks among the top three disabling conditions in developed countries [11]. According to the biopsychosocial model, describing chronic pain as the result of a complex interaction of psychological, social and organic determinants, chronic pain management should involve a multidimensional assessment and a multidisciplinary approach [2]. International guidelines recommend

that the biological, psychological and social factors must all be addressed simultaneously, but this multidisciplinary simultaneous approach is not widely diffused in clinical and rehabilitation practice.

The Don Gnocchi Foundation is a no-profit rehabilitation institution including 29 Centers in several Italian Regions. The optimal assessment and treatment of the patient in pain is a highly debated issue, thus in Florence and Rome we developed the project of investigating pain reports, characteristics and management in patients attending different rehabilitation settings. A number of centers were involved throughout Italy as part of a continuous quality improvement process. The pilot study of this multicentric research project describes the study protocol and preliminary results collected, investigating pain reports, characteristics and correlations in patients attending rehabilitation in a large outpatient rehabilitation department in Florence. Possible pain correlations included demographics, clinical diagnosis, use of drugs, and some psychological characteristics, including catastrophism and treatment expectations.

Methods

Study sample

All patients in outpatient rehabilitation in the week 25th to 29th, September 2010 at the Don Gnocchi Foundation Outpatient rehabilitation department of Florence were asked to fill in a self-administered questionnaire. Exclusion criteria were cognitive impairment (Mini Mental State Examination <24/31) [12], and aphasia.

Measures

A self-administered questionnaire was presented to all the patients who consented to be interviewed. The questionnaire included basic socio-demographic information and the first question of the Brief Pain Inventory (BPI), Italian version [13]: for those who answered ‘yes’ (Do you feel any pain at this moment?), two further questions taken from the BPI were put to them: concerning specifically current pain intensity, measured by a numeric rating scale (NRS, range 0–100) [14, 15] and pain-related use of drugs. If the patient reported pain-related use of drugs, we investigated the drug type and prescription. The main goal of undergoing treatment, according to the patient, was investigated with an open question (“what is your main objective in undergoing this rehabilitation treatment?”) Other questions concerned expectations regarding the treatment; life satisfaction [16] and catastrophism, scored with a question taken from the Pain Catastrophizing Scale [17, 18].

Statistical analysis

Statistical analysis was performed using the STATA 7.0 software (Stata Corporation, College Station, Texas, USA). Data are presented as the mean \pm SD or as the absolute number, followed by the percentage in brackets. Baseline differences across groups were compared using the ANOVA, the Chi-square test or the Kruskal–Wallis rank test for continuous, categorical or ordinal variables, respectively. A multivariable logistic analysis was carried out to assess independent correlations of ongoing pain in the study population. Estimates of association are presented as odd ratios (ORs), along with 95 % confidence intervals. Type 1 error was set at the two-sided 0.05 level.

Results

Of the 201 patients, 12 were excluded because of severe cognitive impairment (7) or aphasia. (4) The 189 enrolled patients had a mean age 63.6 years (SD 17.7), 70.4 % women. Patients' characteristics are summarized in Table 1.

A minority of patients (21.2 %) were being treated for a neurological disorder such as hemiplegia/hemiparesis

Table 1 Patients' characteristics

	Patients (<i>n</i> = 189)
Age (Years, M + SD)	63.6 \pm 17.7
Male (<i>n</i>)	56
Female (<i>n</i>)	133
Drug intake (<i>n</i>)	54
Diagnosis	
Neurologic disorder (<i>n</i>)	40
Back pain (<i>n</i>)	77
Trauma (<i>n</i>)	44
Tendinitis (<i>n</i>)	20
Hip or knee replacement (<i>n</i>)	8
Pain complaint (<i>n</i>)	115
Chronic pain \geq 6 months (<i>n</i>)	101
Orthopedic patients (<i>n</i>)	98
Neurological patient (<i>n</i>)	17
NRS (M + SD)	5.6 + 2.4
Aim of treatment	
Pain relief (<i>n</i>)	47
Functional recovery (<i>n</i>)	43
Both (<i>n</i>)	98
Catastrophic thinking	
None of the time (<i>n</i>)	84
Little/some of the time (<i>n</i>)	28
Most or all of the time	77

Parkinson's disease, extrapyramidal syndromes, multiple sclerosis, ataxic syndromes and peripheral neuropathy; the remaining 78.8 % for orthopedic disorders: back pain 40.7 %, trauma 23.3 %, tendinitis 10.6 %, hip or knee replacement 4.2 % (Fig. 1).

We were able to compare our case mix to that of all the 2008 patients treated in the same facility for the whole of the year 2010, finding no significant difference in terms of age (mean 66.5, SD 26.6, p = 0.140), gender (69.1 % women, p = 0.716) and orthopedic vs neurological diagnosis (79.2 % vs 20.8 %, p = 0.699).

Table 1 also shows pain reports and patients' aims and expectations regarding treatment, as well as catastrophism. Of all patients, 60.9 % complained of ongoing pain (mean NRS = 5.6 \pm 2.4). In 95.8 % of cases, the ongoing pain had been persistent for more than 3 months, in 87.8 % for more than 6 months. Ongoing pain was reported by 66 % of patients in orthopedic rehabilitation, but also by 40 % of patients in neurological rehabilitation. According to 51 % of patients answering to an open question, the main aims of undergoing treatment were both pain relief and functional recovery, while for 24.9 % patients the main objective of undergoing treatment was pain relief, and for 22.8 %, functional recovery. For 50 % of neurological patients, pain relief was the main goal of undergoing treatment, either included with functional recovery (40 %) or as the sole reason (10 %). Little or no confidence in treatment was reported by 15.3 % of patients (11 neuromuscular, 10 spinal, 4 implants, 2 tendinitis, 1 trauma); catastrophic thinking was reported by 40.7 % of patients; 28.6 % of the patients were on pain medication during treatment (70.3 prescribed by a physician, 29.7 taken independently). Of those reporting chronic pain, only 10 persons had adhered to the psychological support group for patients with chronic pain available in the Department at the time of the interview (data not shown). Regarding the pain-related use of drugs (Fig. 2), 28.57 % patients reported ongoing medication, divided into the following categories: paracetamol 7.41, 5.55 % specific drugs for neuropathic pain, 25.93 % opiates and 61.11 % anti-inflammatory; 70 % were taking drugs under medical prescription, while 30 % were taking them on a self-prescribed basis (data not shown).

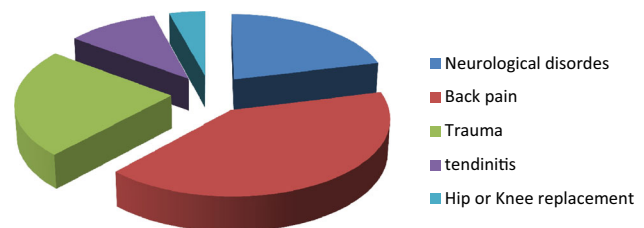


Fig. 1 Patients' diagnosis

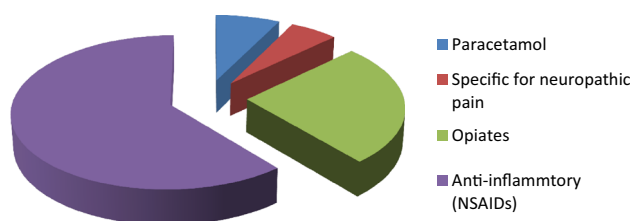


Fig. 2 Pain-related use of drugs

Table 2 Drug intake correlations

Drug intake correlations	<i>P</i>
Current pain	0.007
Higher pain intensity (NRS score)	0.009
Catastrophism	0.009
Advanced age	0.0055
Female gender	0.724
Reduced treatment expectations	0.1

Table 2 shows drug intake correlations. The use of drugs was related to advanced age ($p = 0.005$), to more intense pain ($p = 0.009$), and to the presence of catastrophism ($p = 0.0003$), but not to treatment expectations ($p = 0.10$) or gender ($p = 0.72$).

Pain was more frequently reported in tendinitis (16/20) and back pain (62/87), less frequently in trauma (26/44), joint replacement (5/8), and neurological patients (16/40).

In a multivariate regression analysis, pain was independently correlated with orthopedic versus neurological diagnoses ($p = 0.000$), and to reduced treatment expectations ($p = 0.020$), while it was independent of age ($p = 0.74$) gender ($p = 0.22$), and catastrophism (0.17) (Table 3).

Discussion

This study allowed the investigation of pain reports, the characteristics and correlations of the patients attending rehabilitation in the chosen outpatient department in the

week of investigation; except for the few patients with severe cognitive impairment or aphasia, all persons attending rehabilitation were able and willing to answer the proposed self-administered questionnaire.

Our patients in outpatient rehabilitation reported a high occurrence of pain, reported in 61 % of the cases, moderate in intensity on average, and, in the vast majority of cases, pain was lasting for more than 6 months (chronic pain). Indeed, by the less strict definition of chronic pain, lasting 3 months or more, almost all our patients reporting ongoing pain resulted in being affected by chronic pain [19].

Epidemiological data show that pain has an incidence of about 25–30 % in the general European population. Italy is the country with the third highest prevalence of chronic pain (26 % of the whole Italian population) in Europe, after Norway and Belgium, and the country with the highest prevalence of severe chronic pain (13 %) [20]: one-fifth of the Italian population reports pain lasting for over 20 years, and one-third of these report pain as an ongoing basis that led them to leave work [21]. As expected, our results show that in our selected population of patients undergoing rehabilitation, reports of chronic pain are much higher than in the general population.

A rather unexpected finding was that their pain was almost invariably chronic. As chronic pain requires specific treatment, this finding, if confirmed in the multicentric study, would have relevant implications as to the appropriate means of pain management, including the possible implementation of a multidisciplinary rehabilitation team in outpatient rehabilitation facilities [22, 23]. Population studies show a higher prevalence of chronic pain in older persons [24] and in women, who complain of pain that is more severe, more frequent and longer lasting compared to men. This probably depends on some pain syndromes being age associated or gender associated. [25] In fact, in our population of patients attending rehabilitation, pain reports and severity were found to be independent of gender and age.

Despite pain being significantly more frequent among patients attending orthopedic rehabilitation (back pain, trauma, tendinitis, hip and knee implants), pain was also

Table 3 Independent correlations of current pain reports in the study population

	Odds Ratio	Std. Err	<i>z</i>	<i>p</i> > <i>z</i>	[95 % Conf. Interval]
Age	0.9966275	0.0103119	−0.33	0.744	0.9766201–0.107045
Gender	0.6426114	0.2331941	−1.22	0.223	0.3155441–1.30869
Diagnosis neurological	0.2262941	0.093295	−3.60	0.000	0.1008661–0.5076927
Catastrophic thinking	158.339	0.5308322	1.37	0.170	0.8207716–3.054595
Expectations	0.2912362	0.1541109	−2.33	0.020	0.1032339–0.8216146

N. obs = 189 LR $\chi^2(5) = 19.44$ Prob. $\chi^2 = 0.0016$ pseudoR² = 0.0783 Log likelihood = −114.42279

Bold values are statistically significant at $p < 0.05$

reported by 42.5 % of neurological patients. Indeed, chronic pain in neurological patients is a common symptom, but still very much neglected [26]. Our results are consistent with studies reporting as many as 39.8 % of patients with multiple sclerosis having major pain that can have serious repercussions on their quality of life [27]. A study conducted in Norway reports that 83 % of patients with Parkinson's disease suffer pain, and that they had an increased level of pain compared to the general population [28], while a Danish study reports chronic pain in 55 % of patients who survive a stroke [29]. These results, if confirmed in the multicentric study, would imply a recommendation that more attention be devoted to pain treatment and management in neurological rehabilitation. A declared objective of our investigation was to focus on patients' perspectives and expectations: the relief from pain, alone or in combination with functional recovery, was considered to be the main therapeutic goal of the rehabilitation treatment by most patients reporting pain, including also half of the patients with a neurological disorder. This result stimulates a reflection on the importance of pain assessment and monitoring during the whole rehabilitation process [30]. Indeed, a study of Elizabeth et al. concerning patient attitudes regarding pain in a rehabilitation hospital shows that pain is judged by about half of the patients to be a significant negative factor impeding rehabilitation efforts [31]. However, despite the introduction of the biopsychosocial model of the ICF (International Classification of Functioning, Disability and Health), [5] the dominant therapeutic approach is still very often problem-centered rather than patient-centered. In Italy, Law No. 38 dated 15 March 2010 upholds the right not to suffer, and for all citizens to have access to pain relief. This law represents a real revolution in the understanding and management of pain in that it imposes an obligation for detecting and monitoring the patient's pain when being admitted to a health facility [32]. Concerning pain management, a treatment goal for some rehabilitation programs is a reduction in the use of pain-related medication [33]. In our sample, 28.57 % of patients took drugs divided into the following categories: paracetamol 7.41, 5.55 % specific drugs for neuropathic pain, 25.93 % opiates and 61.11 % anti-inflammatory. Such a distribution shows a seemingly disproportionate use of anti-inflammatory drugs or opiates, rather than paracetamol, which is indicated as the first-choice drug for treatment of chronic pain [34], but our sample is indeed rather heterogeneous in terms of diagnosis, and such numbers do not allow a separate analysis. Use of drugs was related to more intense pain, to catastrophism, and to advanced age. As both non-steroid anti-inflammatory drugs and opiates have been reported to show more frequent and more serious side effects in the elderly [35], the relationship with pain medication intake and

increasing age is a relevant issue in rehabilitation. Another issue is the source of prescription-type drugs for pain relief. Patients may consume self-prescribed medications because of unrealistic expectations for pain relief, increased reliance on medications, and inadequate pain education [36]. Indeed, habituation and failure of previously effective medications may even lead to drug overuse [37]. A recent American study suggests that up to 55.9 of those using painkillers reported having received the drug from a relative or friend rather than receiving a specific medical prescription [38]. Our data seem to suggest a lower ratio of non-medically prescribed drug intake, but still, even if these figures are confirmed in the multicentric study, the risk of drug abuse and of uncontrolled exposure to drug side effects is a serious issue that also should be taken into account in a rehabilitation setting.

As we were focused on performing a rapid screening of pain occurrence and characteristics at this stage of the project, we did not perform a thorough assessment of disability nor of the psychosocial factors known to be associated with chronic pain, such as anxiety, depression, and low socioeconomic status, and this is definitely a limitation of our study [8]. Further, we did not investigate the possible correlation of pain with the functional outcome of the rehabilitation intervention. However, we did find that 40 % of our patients report catastrophic thinking. Thus, introducing a biopsychosocial perspective to pain, and operating within a framework of multidisciplinary pain rehabilitation, may improve the effectiveness of rehabilitation programs in patients experiencing chronic pain with pain relief as their primary objective [30]. Nevertheless, only 10 patients were attending the psychological support group that was offered to all patients with chronic pain attending the facility, thus suggesting that this kind of treatment is not always easily accepted by patients seeking physical rehabilitation.

This study presents some limitations. First and foremost, our results are limited to the case mix of patients attending the outpatient department in a given time frame, so they cannot be considered representative of the general patient population undergoing outpatient rehabilitation. Even so, this case mix was representative of the age, gender and diagnosis of the general population attending the department in the same year. More generalizable results should be obtained by a multicentric study involving inpatients and more facilities.

Our purpose was to investigate pain by posing a short set of questions that could be self-administered and widely used in clinical practice. Indeed, excluding only patients with dementia and aphasia who require a specific pain assessment [39], we were able to enroll 189 out of 210 outpatients, none of whom refused to answer the self-administered questionnaire. This led us to select only the first

three questions from the BPI, instead of adopting the whole questionnaire or using another multimodal tool. In accordance with the BPI, we measured pain severity by a numeric rating scale, that has been shown to have the same psychometric properties as the Visual Analog Scale, and that we found easier to record and measure [40]. For the same reason, we did not include in our assessment a screening tool for neuropathics vs nociceptive pain, which could be introduced as a second-level assessment.

Finally, as already mentioned, we did not thoroughly investigate the occurrence of anxiety and depression and life satisfaction that may have provided us more insight into a correlation with pain [41]. Moreover, while exploring catastrophism, which has been shown to be strongly associated with pain as well as with a poor rehabilitation outcome [42], we used only a single question rather than the complete tool [18], thus possibly limiting the sensitivity and specificity of our findings in this respect.

Conclusion

A very high prevalence of chronic pain was observed in this sample of patients undergoing outpatient rehabilitation. Pain relief, with or without functional recovery, is considered the main goal of treatment by 75 % of all patients in pain (50 % of neurological patients). The use of pain medication is related to pain intensity, old age and catastrophism, while the pain complaint is independently correlated with an orthopedic vs neurological diagnosis, and to reduced treatment expectations, but not to age or gender.

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