ORIGINAL ARTICLE

Relationship between chronic pain and working activities in patients with painful syndromes*

Relação entre dor crônica e atividade laboral em pacientes portadores de síndromes dolorosas

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ABSTRACT

BACKGROUND AND OBJECTIVES: This study aimed at identifying the impact of chronic pain on working activities of patients seen by the Chronic Pain Center of the Teaching Hospital, Federal University of Maranhão.
METHODS: This is a descriptive and transversal study with patients being treated for pain, using two questionnaires. A card-protocol was developed for clinical, sociodemographic, therapeutic and occupational data collection, with questions about gender, age, education, type of pain, interference of pain, proposed treatment and occupational status. Medical Outcomes Study 36-Item Short Form Health Survey (SF 36) was used to evaluate quality of life.
RESULTS: Participated in the study 74 patients, being 25 (34%) males and 49 (66%) females. Approximately 30% had some working activity, while 74.3% were inactive. More than 47% of active patients have stated that pain would always worsen during activities. Among inactive patients, this ratio was 80%. There has been statistically significant difference in "functional capacity", "pain", "vitality" and "social aspects" domains, being that the group of inactive patients had the worst scores.
CONCLUSION: Respondents were predominantly inactive. In addition, most patients have reported that working activities would always worsen pain. It has been observed that the domain contributing the most for low SF36 questionnaire scores was that related to physical limitations to perform daily and working activities.
Keywords: Chronic pain, Quality of life, Working activity.

RESUMO

JUSTIFICATIVA E OBJETIVOS: O presente estudo objetivou identificar a influência da dor crônica no prejuízo da atividade laboral de pacientes atendidos no Serviço de Dor Crônica do Hospital Universitário da Universidade Federal do Maranhão.
MÉTODOS: Realizou-se um estudo descritivo e transversal, com pacientes em tratamento de dor, por meio de dois questionários. Para obtenção dos dados clínicos, sociodemográficos, terapêuticos e ocupacionais foi elaborado uma ficha-protocolo, com questões acerca do gênero, idade, escolaridade, caracterização da dor, interferência da dor, tratamento proposto e *status* ocupacional. Para avaliação da qualidade de vida, foi utilizado o *Medical Outcomes Study* 36- *Item Short-Form Health Survey* (SF36).
RESULTADOS: Foram entrevistados 74 pacientes, dos quais 25 (34%) eram do gênero masculino e 49 (66%) do gênero feminino. Cerca de 30% realizavam atividades de trabalho, enquanto 74,3% estavam inativos. Mais de 47% dos pacientes em atividade afirmaram que a dor sempre piorava durante a realização das atividades. Já no grupo de pacientes inativos, esta porcentagem foi de 80%. Houve diferença estatisticamente significante nos domínios "capacidade funcional", "dor", "vitalidade" e "aspectos sociais", sendo que o grupo de pacientes inativos apresentou os piores valores.
CONCLUSÃO: Os pacientes entrevistados estavam predominantemente afastados de suas atividades de trabalho. Além disso, a maioria relatou que a realização das atividades laborais piora sempre o quadro álgico. Observou-se que o domínio que mais contribuiu para baixos valores no questionário SF36, foi aquele relacionado às limitações físicas no desempenho das atividades diárias e de trabalho.
Descritores: Atividade laboral, Dor crônica, Qualidade de vida.

INTRODUCTION

Complex chronic pain nature impairs the estimate of its prevalence among general population because it requires a multidimensional approach[1] where, in addition to neurophysiologic phenomena, there are psychological, cognitive and behavioral factors[2].
Chronic pain in world population varies from 7% to 40%. Pain affects at least 30% of individuals at some moment of

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their lives and in 10% to 40% of them pain lasts for more than one day[3]. In Brazil, studies have shown high incidence rates. A study has shown prevalence of 41.4%[4] and another has found prevalence of 61.4%[5]. In São Luis, the prevalence is approximately 42%[6].

Approximately 50% to 60% of patients become partially or totally disabled, in a transient of permanent manner, significantly impairing quality of life (QL) with negative social and economic impacts. As a consequence, many working days may be lost by chronic pain individuals[3].

Moderate to severe chronic pain affects 19% of adult Europeans, severely affecting their professional lives[7]. In Brazil, a study carried out with chronic pain patients has observed that 94.9% had their professional lives impaired[8].

A recent study carried out in the city of São Luis to analyze pain intensity in active patients and patients in medical leave has shown severe pain in 48.6% and 60.9%, respectively. This minor difference evidences that pain intensity per se would not define the incapacity of such individuals with regard to labor activities[9].

Pain-related absenteeism brings consequences to country's economy, because it predisposes to high expenditures with disability compensation and disability retirement. According to the Statistical Bulletin of the Social Security, in 2012, total amount of benefits granted has reached more than 4.5 billion reals, and in 2013, from January to July, it exceeded 2.9 billion. In July 2013, total amount of benefits granted was 437 million, being that more than 44% of these were disability compensations and 3.9% represented disability retirements[10].

At the Chronic Pain Service of the Teaching Hospital, Federal University of Maranhão (HUUFMA), it is observed a large number of patients needing medical certificates to get medical leaves, arguing that chronic pain interferes with their labor activities. So, there is the need to develop studies relating chronic pain to absenteeism. Results may contribute to reveal causes and factors influencing absenteeism allowing the development of preventive and therapeutic interventions.

This study aimed at identifying the influence of chronic pain on labor activities of patients seen by the Chronic Pain Service, HUUFMA, by describing their occupational situation, worsening of pain during activities, working absence and leave, as well as at evaluating the impact of chronic pain in their QL.

METHODS

This was a descriptive and transversal study carried out from January to May 2013, with patients being treated in the Chronic Pain Service, HUUFMA. A convenience sample was used. Participated in the study patients with pain for more than six months and with minimum age to enter any professional activity, defined by the Ministry of Labor as 16 years or above. Patients were selected through the treatment schedule of the Chronic Pain Outpatient Setting, which is weekly prepared. Data were collected while patients were waiting for consultation.

All subjects were informed about the objectives of the study and the volunteer and confidential character of their participation. Their agreement was recorded with the signature of the Free and Informed Consent Term, signed in two copies, of which one remained with the patient and the other with the investigator.

A tool specifically developed for this objective was used to collect clinical, sociodemographic, occupational and therapeutic data. The card-protocol consisted of information on pain characterization and its interferences, proposed treatment and occupational status. Pain intensity was classified through the verbal scale in mild, moderate and severe. Pain duration was recorded in months and diagnoses, when not reported by patients, were obtained from medical records.

Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), which is a generic and multidimensional tool validated to the Portuguese language by Ciconelli[11] in 1997, was used to evaluate QL. It has 36 items grouped in 8 domains: functional capacity (daily life activities, such as care of oneself, get dressed, take bath and climb stairs); physical aspects (impact of physical fitness on daily and/or professional activities); general health status (subjective perception of general health status); vitality (subjective perception of health status); social aspects (impact of physical health status on social activities); emotional aspects (impact of emotional status on daily and/or professional activities); mental health (mood and well-being scale). Scores vary from zero to 100, where zero means a more severe QL impairment and 100 a mild QL impairment.

A database was developed with the software Microsoft Office Excel 2013. Stata 10.0 (Stata Corp., College Station, USA) was used for statistical analysis. Results of sociodemongraphic, clinical, therapeutic and occupational questions were expressed by frequencies with percentages and means ± standard deviation. Student *t* test was used to compare numerical variables and Chi-square test was used for categorical variables. Dependent variable of the study was occupational status.

SF-36 answers were re-codified according to SF-36 work group instructions. For each of the eight domains, mean scores were obtained with values varying from zero to 100. After data descriptive analysis, Student *t* test was used to compare means of each SF-36 domain with regard to occupational status, considering statistically significant $p < 0.05$.

This study was approved by the Ethics Committee for Research with Human Beings of the Teaching Hospital, Federal University of Maranhão, under opinion 275.495.

RESULTS

Participated in this study 74 patients, of whom 25 (34%) were males and 49 (66%) were females. Mean age was 45.24 ± 9.89 years. Sample was divided in two groups for better presentation of results: a group of patients with remunerated activities and a group of inactive patients. There has been pre-

dominance of male patients with lower income in the group of inactive patients, with statistically significant difference. Sociodemographic data are shown in table 1.

Table 1 – Comparison of sociodemographic characteristics of active and inactive patients.

Variables	Active n = 19 (25.7%)	Inactive n = 55 (74.3%)	p value
Age (years, mean ± SD)	46.3 ± 9.3	44.8 ±10.1	0.587
Gender (%)			
Male	10.6	58.2	0.013*
Female	89.4	41.8	
Origin (%)			
Capital	42.1	29.1	0.296
Interland	57.9	70.9	
Marital status (%)			
Married	31.5	52.7	
Single	57.8	41.8	0.141
Divorced	0	3.6	
Widower	10.5	1.8	
Education (%)			
Illiterate	0	5.4	
Basic education	26.3	40	0.255
High school	47.3	43.6	
College	26.3	10.9	
Monthly income (%)			
No income	10.5	29.1	
Up to 1 MW	47.3	45.4	0.013*
Up to 3 MW	26.3	25.4	
Up to 5 MW	15.7	0	

MW = minimum wage(s); SD = standard deviation; *p<0.05.

More frequent diagnoses found in the group of active patients were low back pain and neuropathic pain, both with 26.3% of total, and the majority of inactive patients (49%) had low back pain as primary diagnosis.

Considering separately patients with remunerated activities, corresponding to a total of 19 patients, mean pain duration was 95.1 ± 49 months. Most patients referred moderate pain (52.6%), with irradiation (63.1%) and continuous (57.9%). Major pain characteristic was "heavy" pain (57.9%). Approximately 26.3% have reported that almost always they had changes during movement and with regard to sleep, 42.1% have reported having sometimes difficulties to sleep.

In the group of inactive patients, corresponding to a total of 55 patients, mean pain duration was 109.8 months. More than half (60%) have reported moderate pain according to the verbal scale. Approximately 62% had continuous pain and 80% had pain with irradiation. Burning pain was mentioned by approximately 56.3%, followed by "heavy" pain (52.7%). Movement and sleep were always impaired in 40% and 41.8%, respectively. There has been statistically significant difference only in pain interfering with sleep, which was more significant among inactive patients (Table 2).

Only 5.2% of active patients did not use painkillers. With regard to those under pharmacological treatment, it was observed that most common drugs were non-opioid analgesics (47.3%), followed by anticonvulsants and antidepressants, both with 36.8%. Among patients under non-pharmacological treatment, physiotherapy was mentioned by 31.5%, followed by hydrotherapy (15.8%). Only 21% of this group had undergone some invasive procedure. Most patients were loyal to proposed treatment (68.4%) and have referred severe pain (84.2%) before starting the proposed treatment. In this group, approximately 73.6% totally agreed with the statement that the proposed treatment would improve their pain.

Among inactive patients, 16.3% did not use drugs. Most common drugs were antidepressants (40%), followed by opioids and anticonvulsants, both with 32.7%. Approximately 33% would not perform any non-pharmacological treatment modality and among those performing it, physiotherapy was mentioned by more than half the patients (52.7%), and 38.2% had undergone some invasive treatment. Loyalty to treatment was 69%; and 90.9% have reported severe pain before proposed treatment. Approximately 47.2% totally agreed with the statement that the proposed treatment would improve their pain. Active patients performed less non-pharmacological treatments as compared to inactive patients, with statistically significant difference (Table 3).

Approximately 47.3% of active patients stated that pain in-

Table 2 – Comparison of pain characteristics and its interference with active and inactive patients.

Variables	Active n = 19 (25.7%)	Inactive n = 55 (74.3%)	p value
Pain duration (months)	95.1 ± 49	109.8 ± 80	0.454
Pain verbal scale (%)			
No pain	0	1.8	
Mild	21	9.0	0.536
Moderate	52.6	60	
Severe	26.3	29	
Irradiation (%)			
Yes	63.1	80	0.140
No	36.8	20	
Periodicity (%)			
Continuous	57.9	61.8	0.763
Intermittent	42.1	38.2	
Pain characteristics (%)**			
Weight	57.9	52.7	0.697
Squeeze	0	7.2	0.227
Burning	42.1	56.3	0.283
Sting	36.8	41.8	0.703
Twinge	31.5	40	0.514
Shock	42.1	50.9	0.508
Throbbing	31.5	36.3	0.706
Movement change (%)			
Never	15.7	3.6	
Seldom	21	10.9	0.137
Sometimes	21.0	25.4	
Almost always	26.3	20	
Always	15.7	40	
Sleep disorders (%)			
Never	15.7	7.2	
Seldom	5.2	9	0.043*
Sometimes	42.1	14.5	
Almost always	5.2	27.2	
Always	31.5	41.8	

*p<0.05
**Here, more than one item could be scored by patient.

Table 3 – Comparison of therapeutic characteristics of active and inactive patients.

Variables	Active n = 19	Inactive n = 55	p value
Current pharmacological treatment (%)			
None	5.2	16.3	0.222
Non-opioid analgesics	47.3	29	0.146
Opioids	26.3	32.7	0.603
Antidepressants	36.8	40	0.808
Anticonvulsants	36.8	32.7	0.206
Other	15.7	21.8	0.573
Non-pharmacological treatment (%)			
None	63.1	32.7	0.020*
Physiotherapy	31.5	52.7	0.111
Hydrotherapy	15.8	23.6	0.474
Psychotherapy	5.2	9.09	0.598
Acupuncture	0	7.2	0.227
Other	26.3	12.7	0.166
Invasive treatment (%)			
Yes	21	38.2	0.174
No	79	61.8	
Loyalty to treatment (%)			
Yes	68.4	69.1	0.957
No	31.6	30.9	
VS before proposed treatment (%)			
Mild	5.2	1.8	0.645
Moderate	10.5	7.3	
Severe	84.2	90.9	
Improvement with proposed treatment (%)			
Totally disagree	0	3.6	
Partially disagree	0	1.8	0.362
Neither agree nor disagree	5.2	9.1	
Partially agree	21	38.2	
Totally agree	73.6	47.2	

VS = pain verbal scale; *p < 0.05.

Table 4 – Comparison of occupational characteristics of active and inactive patients.

Variables	Active	Inactive	p value
Pain worsening with labor activities (%)	15.8	1.8	0.002*
Seldom	26.3	3.6	
Sometimes	10.5	7.2	
Almost always	47.3	80	
Always			
Absence from work (%)			
Never	10.5	9	
Seldom	10.5	3.6	0.011*
Sometimes	47.3	12.7	
Almost always	26.3	34.5	
Always	5.2	29.1	
Retirement due to pain (%)			
Totally disagree	21	14.5	
Partially disagree	15.8	9	
Neither agree nor disagree	31.5	18.2	0.429
Partially agree	15.8	16.3	
Totally agree	5.2	31	

*p<0.05.

Table 5 – Characteristics of patients on medical leave.

Patients on medical leave	n = 29
Mean leave time	35.14 ± 27.61
Suspension of leave (%)	
Yes	34.4
No	65.6
Adaptation when returning to work (%)	
Immediate pain return	55.5
Pain intensification	44.4
No change in pain	0
Had no pain	0

tensity would always worsen during professional activities, 47.3% have referred that sometimes they would miss work due to pain, and 31.5% have neither agreed nor disagreed when asked whether their pain was reason for retirement. The group of inactive patients, when asked about the frequency with which working activities would worsen pain, 80% have stated that always. Approximately 34.5% have referred that when they were active, they always missed work due to pain and the majority (31%) has totally agreed that their pain was reason for retirement. Inactive patients had expressive pain worsening when performing labor activities as well as would miss more work due to pain, with statistically significant difference (Table 4).

Among inactive, 7 patients (12.7%) were already retired, 29 (52.7%) were in medical leave and 19 patients (34.6%) were inactive for other reasons, such as unemployment or not having any labor activity.

Mean medical leave time was 35.14 ± 27.61 months and, among patients under leave, 34.4% have referred that at some moment of the treatment they had their licenses suspended and when they returned to work, pain has returned or worsened for all of them (Table 5).

As to quality of life, mean values obtained have varied a lot among SF-36 domains. To better understand results, values of active and inactive patients were calculated separately.

Worst scores were observed in the domains "limitation by physical aspects", "pain" and "general health status" for both groups. In the group of active patients, the best score was in the domain "limitation by emotional aspects" (68.4%). For the group of inactive patients, the best score was in the domain "mental health" (56). There has been statistically significant difference in domains "functional capacity", "pain", "vitality" and "social aspects" and the group of inactive patients has presented the worst values (Table 6).

Table 6 – Comparison of values of each domain according to occupational situation.

SF-36 Domain	Active	Inactive	p value
Functional capacity	50.2 ± 31.06	35 ± 23.7	0.030*
Limitation by physical aspects	11.8 ± 25.5	7.2 ± 17.1	0.383
Pain	35 ± 13.1	26.4 ± 14.2	0.024*
General health status	39.5 ± 18.2	30 ± 18.1	0.052
Vitality	54.2 ± 23.8	39.8 ± 25.6	0.036*
Social aspects	61.8 ± 25.5	45.2 ± 29.9	0.034*
Limitation by emotional aspects	68.4 ± 45	55.7 ± 48.4	0.358
Mental health	63.5 ± 19.1	56 ± 25.7	0.248

*p<0.05.

DISCUSSION

As shown by this study, there is a strong interference of pain with the occupational life of chronic pain patients, since 74% of respondents were away from their working activities. A study carried out at a pain outpatient clinic in Bahia has also evidenced similar values, where 70% were inactive[12].

Both active and inactive patients have reported that labor activities would worsen pain, but missing work was more predominant among inactive patients. This idea is shared by Saastamoinen et al.[13] in a study carried out in an European city, where 20% of chronic pain patients have referred incapacity and moderate to severe limitation to perform activities. A different study carried out in Canada has evidenced even higher results, because more than 60% of respondents would often present such limitations[14]. Breivik et al.[7], in an European study, have found mean of 8.6 lost working days among chronic pain patients.

Mean age for both groups was the fourth decade of life. This result is very similar to that found in a study at the same pain service from 2006 to 2010, with active patients and inactive patients on medical leave, where mean was 46 and 45 years, respectively[9]. This age group is in productive age and chronic pain interference with occupational life of these patients generates severe economic problems, such as high medical leave and disability retirement rates.

The highest prevalence of chronic pain was found among females when considering total studied patients (66%). These values are compatible with a study carried out at a chronic pain center in the city of São Paulo, which has found 62.4% prevalence of pain among females[15], as well as a study carried out in the city of São Luis, with prevalence of 66.4%[6]. However, in the inactive group, there has been higher prevalence of males (58.2%). This difference may be attributed to occupational distribution among genders, since males are more frequently submitted to different labor exposures, especially with regard to physical strength.

Some authors report that pain among patients performing activities requiring hard physical work may be more pronounced than in those performing less demanding physical work[13] and this fact is closely related to income and education; patients with low education levels in general resort to jobs requiring more physical effort. Our study has observed lower income among inactive patients, however there has been no difference in education.

Our study, similar to other authors[9], could not establish that pain intensity was reason for withdrawing from work. Severe pain was observed in similar percentages for both active and inactive groups.

Low back pain was the most frequent diagnosis among inactive patients. This result is in line with a study carried out in Ireland by Raftery et al.[16] where low back pain was present in 47.2% of chronic pain patients. Similarly, Ramage-Morin in Canada has found 33.6%. A study reports that low back pain is among major disease-induced absenteeism causes, together with depression and hypertension[17]. Meziat Filho and Silva have concluded that back pain was the first cause of disability and medical allowance in Brazil in 2007, causing an extremely high economic loss for society[18].

The percentage of patients not using painkillers was higher in the inactive group. These values are lower than those found by a study carried out in The Netherlands, where the rate of patients receiving no treatment has varied from 24.8% to 43%[19]. It was expected that, because pain would impair their working activities, more analgesics would be used to control pain, what has not been observed in this study.

It was also observed that a large part of patients were not under non-pharmacological treatment, reaching more than 60% among active patients. This fact is in line with Dellaroza et al.[20], who reported that although effective and safe, these therapies are seldom used by chronic pain individuals. It is known that pharmacological therapy is more effective and, in some situations, mandatory for pain control; however it has already been proven that the association of non-pharmacological therapies decreases the need for drugs, which may minimize the risk of adverse effects, as well as the dependence on analgesics, being able to improve quality of life of patients[21].

Invasive treatment rates were higher among inactive patients as compared to active patients, probably due to refractoriness to therapy. In the United States, costs with epidural injections and steroids, opioids for back pain, lumbar magnetic resonance and spinal fusion surgery have grown, respectively, 629%, 423%, 307% and 220% in last decades. However, this increase in costs was not followed by lower labor incapacity rates among low back pain patients[18].

In our study, some patients only returned to their labor activities when their leaves were suspended and all patients returning to work have reported worsen or immediate return of pain. Employees referred to the Brazilian Social Security (INSS) return to their jobs as a consequence of cancellation of their sickness allowance, being discharged even without conditions to work with health and dignity[22]. It would be interesting to reevaluate the granting of benefits by the Social Security[9], to prevent unnecessary leaves as well as undue suspensions.

SF-36 questionnaire results have indicated that in domains addressing impact of pain, general health status and, especially, the reflex of physical status on daily and/or professional activities, are the most affected among chronic pain patients. Other studies have found very similar results, especially in the domains "pain" and "limitation by physical aspects"[12,23].

The lowest score for both groups was in the domain "physical aspects", showing how chronic pain affects patients' performance, expressively worsening their quality of life and labor activity. However, limitation by "emotional aspects" was high for both groups. Still in our study, although being recognized that chronic pain directly affects social life of patients shortening their leisure moments[6], the domain "social aspects" had also high values for both groups, indicating that, in spite of pain, patients maintain their social activities.

It was to be expected that lowest scores would be found among inactive patients. These data raise the hypothesis of

the relevant role of possible secondary gains with the maintenance of pain among inactive patients.

All SF-36 scores were better for the group of active patients; this result is in line with a study carried out with elderly patients where respondents with some labor activity after retirement had higher scores in all domains evaluated by SF-36[24]. This is an uncommon study comparing labor activity and QL through SF-36.

It is interesting to observe that, similar to the study by Brasil et al.[23], the domain "mental health", which refers to mood and well-being scale, had the highest score (56) among inactive patients as compared to remaining domains and the second highest score among active patients (63.5) suggesting that, in spite of pain and its reflexes, individuals are able to cope with the situation, once more supporting the possibility of secondary gains with pain.

This way, problems originated by chronic pain in the occupational level, imply decrease in productivity, increased absenteeism and financial restrictions. For better control and prevention of pain-related absenteeism, in addition to adequate treatment and follow up, it is necessary to understand involved social, behavioral and labor factors.

CONCLUSION

Interviewed patients were predominantly away from their labor activities due to pain. In addition, most have reported that performing labor activities would always worsen pain, and absence from work was more significant in the inactive group. Only patients who had their leaves cancelled have returned to work and all those returning to their working activities have reported worsening or immediate return of pain. It has been observed that the domain contributing the most for low SF-36 questionnaire values was that related to physical limitation to perform daily and working activities. This reinforces the idea that chronic pain impact on labor activities considerably affects QL.

So, we understand that this subject is very important for the academic society and the general population. The development of new studies in this area is needed, especially long term studies with patients' follow up, treatment optimization, return to professional activities and measurement of quality of life indicators during different treatment moments.

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