

## International Quality Standards Greatly Enhance Effectiveness of Spinal Interdisciplinary Chronic Pain Program

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### Abstract

**Introduction:** Chronic pain is an important and costly health problem worldwide. Unfortunately, most traditional medical treatments for chronic pain focus exclusively on reducing or managing pain sensations. If left untreated, pain can lead to serious emotional and physical complaints such as depression, sleeping disorders, immune suppression, eating disorders, cognitive impairments and other long-term deleterious effects. The aim of this study is to describe outcomes observed in patients suffering from chronic pain, treated at the FLENI interdisciplinary outpatient pain rehabilitation program (IOPRP) during an eight-year period, while working under international standards.

**Methods:** We report results of an interdisciplinary, 16-session chronic pain treatment program, in 1176 patients followed as outpatients at our clinic, between January 2006 and December 2014. A battery of self-reported questionnaires was completed at the beginning and end of the program; follow up visits were scheduled three months and one year after discharge. Treatment included pain medication, physical and occupational therapy, as well as cognitive and behavioral techniques for pain and stress management.

**Results:** Patient demographics were as follows: mean age was  $55.76 \pm 0.44$  years (range 18-98 years); 68.9% were females (n=810); 302 patients had chronic cervical pain (25.7%) and 874 chronic lumbar pain (74.3%). IOPRP at baseline showed substantial pain problems (VAS  $5.66 \pm 0.07$ ), poor quality of life (SF36,  $41.9 \pm 0.54$ ), subclinical insomnia (ISI  $11.31 \pm 0.26$ ), mild mood disturbance (BECK  $13.87 \pm 0.24$ ) and excess weight (BMI  $27.52 \pm 0.20$ ). At the end of the program, statistically significant improvement ( $p < 0.05$ ) was observed on SF-36 (8 domains), VAS, RMT, ODI, BECK, HAQ and ISI.

**Discussion:** Results indicated not only that application of an IOPRP is feasible in Argentina, but also that results were uniform and sustained throughout the study period. Based on our experience, we encourage other centers to treat chronic pain in an interdisciplinary fashion, following international quality standards.

**Keywords:** Chronic pain; Rehabilitation; Interdisciplinary outpatient rehabilitation pain program

### Introduction

Chronic pain is a frequent clinical symptom producing not only suffering, and disability, but also poorer quality of life. According to the International Association for the Study of Pain (IASP), it is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage [1]. Chronic pain prevalence is increasing significantly, it is estimated that one in five people suffer from this debilitating chronic condition, more than the total affected by heart disease, cancer and diabetes combined [2]. Furthermore, it has also become a costly health-care problem, not only in terms of work absences, disabilities benefits, and lost productivity but also in terms of medical care expenses [3]. If left untreated, pain can lead to serious emotional and physical complaints such as depression, sleeping disorders, immune suppression, eating disorders, cognitive impairments and other long-term deleterious effects [4].

In Argentina, most health professionals treat chronic pain applying traditional biomedical models targeting its severity and ensuing disability. This approach involves pharmacological interventions, physical therapy, nerve block, or surgery, but outcomes are poor in terms of relieving chronic pain itself or the suffering and disability it causes, mainly because other interrelating physical, psychological, social and occupational factors that integrate the complexities of chronic pain are neglected [5]. A group of Argentine health care professionals working at the FLENI Institute started the first CARF (Commission on Accreditation of Rehabilitation Facilities) accredited interdisciplinary outpatient pain rehabilitation program (IOPRP) in South America, providing rehabilitation treatment for adults with low back pain, neck pain, musculoskeletal disorders, and other chronic pain conditions [6]. Based on D Bosy and Lee JW work where they describe an OIPRP with 338 consecutive patients at Canada, in this study we describe pain improvement outcomes in an 1176 patients treated at the FLENI interdisciplinary outpatient pain rehabilitation program (IOPRP) between January 2006 and December 2014 [7].

## Materials and Methods

A retrospective analysis of patients with non-malignant chronic pain treated at an IOPRP between January 2006 and December 2014 was conducted. Data was collected from patient questionnaires and medical records. A total of 9344 patients consulted during this period (8 years), 1270 patients received some form of treatment at the IOPRP and 1176 chronic pain patients completed the program and comprise the sample for which results are presented. Treatment consisted in a sixteen-session program (five-hour sessions twice a week), as well as working at home. This allowed patients to detect difficulties on the implementation of daily habits and work together with treating staff to introduce changes and improve outcomes. Interventions were performed individually and in groups of 6 to 9 patients. Physical and emotional stability were measured by several interdisciplinary professionals. Body Mass Index (BMI) was registered at the beginning and at the end of the program. Medication was registered on 473 patients. Chronic pain patients over 18 years of age were eligible to participate. Patients with known history of drug abuse, psychiatric disorders or cognitive impairment, or unable to speak or understand Spanish were excluded.

### Outcome measure questionnaires:

- **Quality of life:** SF36 [8], HAQ (Health assessment questionnaire) [9].
- **Insomnia:** Insomnia Severity Index (ISI) [10].
- **Pain intensity:** Visual Analogue Scale (VAS).
- **Mental Health:** Beck Depression Inventory (BDI) [11].
- **Physical therapy:** Oswestry Disability Index (ODI) [12], low back pain disability Roland Morris test (RMT), Back Performance Scale (BPS) [13].
- **Weight:** Body Mass Index (BMI).
- Patients Global Impression of Change (PGIC)

During follow up, questionnaires were completed at 3 months and 1 year after ending the program. Battery administered on these occasions included: SF 36, ODI, HAQ and PGIC. A satisfaction questionnaire was administered after completing IOPRP.

## Statistics

Quantitative data was expressed as mean  $\pm$  SEM. Normally distributed data were tested using one way ANOVA, and repeated measures ANOVA to compare beginning and end of the study. For non-normally distributed data, Wilcoxon matched pair test was used to compare variables and Mann-Whitney U test to compare diagnosis and sex. CSS/Statistica package version 7.0 (StatSoft, Tulsa, USA) was used in the analyses, and  $P < 0.05$  regarded as statistically significant.

## Ethical considerations

This study was conducted in accordance with Declaration of Helsinki principles, and informed written consent obtained from participating individuals, as required by our Institutional Ethics Committee.

## Results

Study participant demographics are shown in Table 1. At baseline, substantial pain problems and poor overall quality of life were identified, including subclinical insomnia, mild mood disturbances

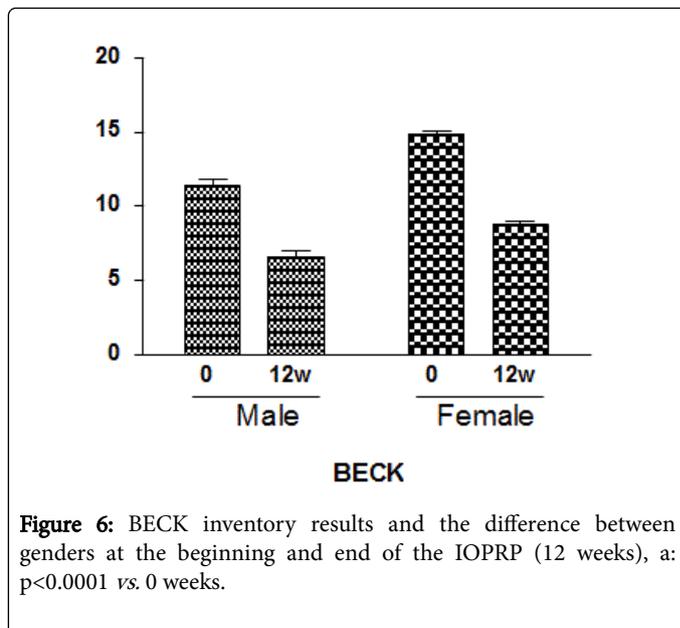
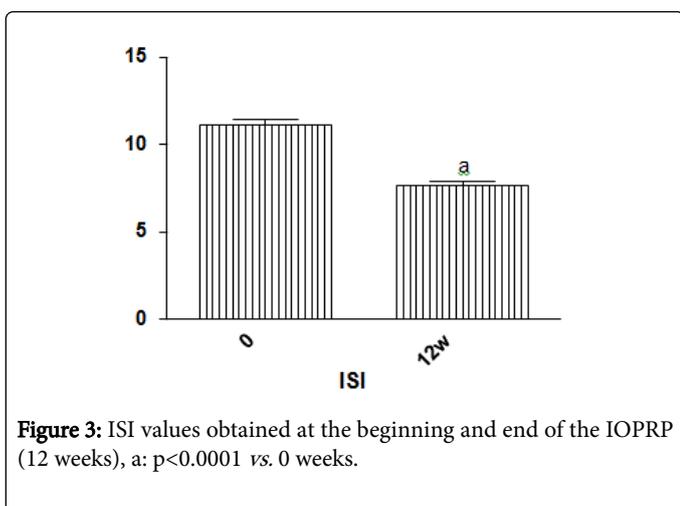
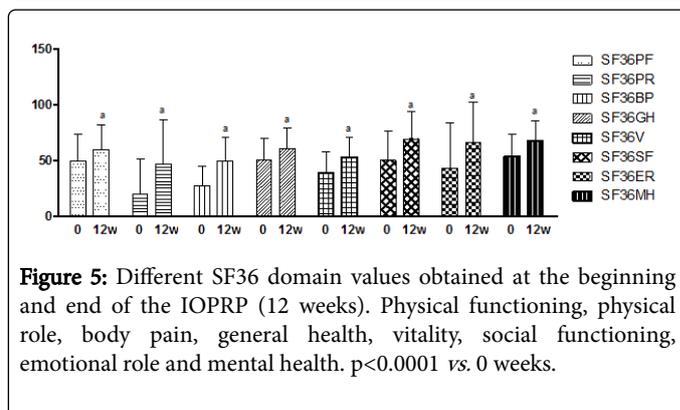
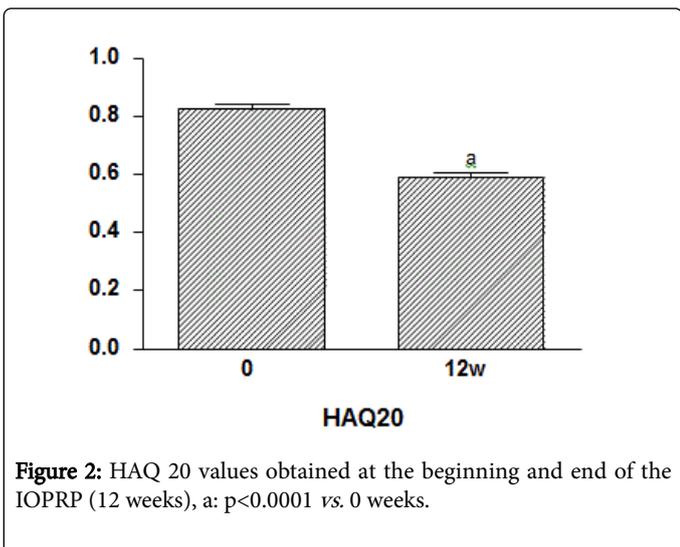
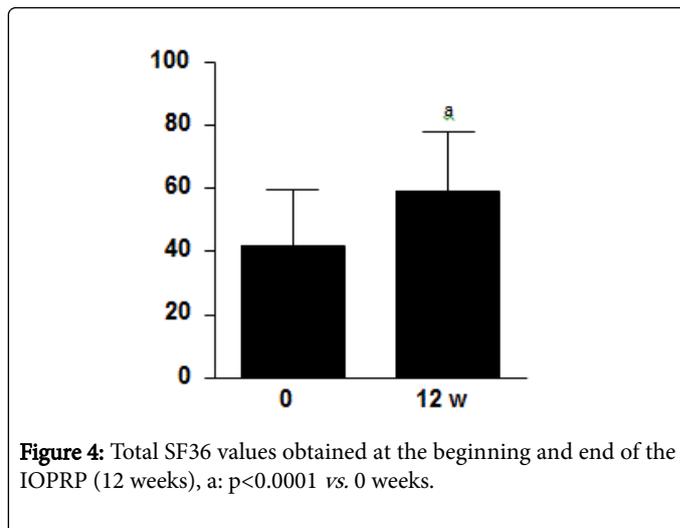
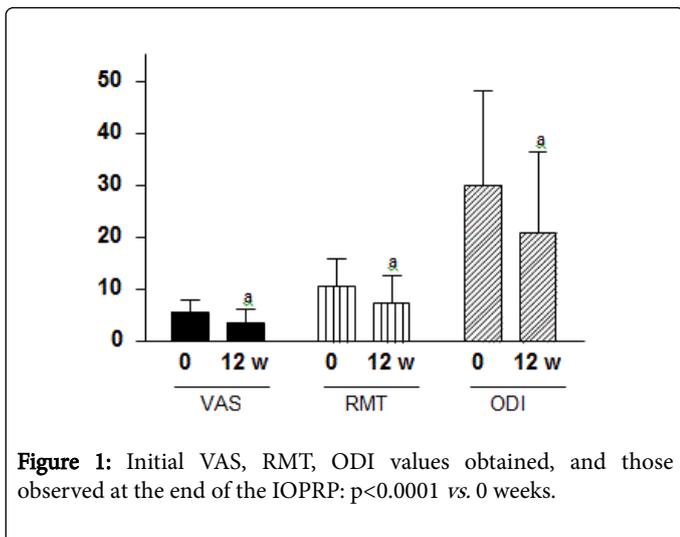
and excess weight. By the end of the program, statistically significant improvements ( $p < 0.05$ ) were found on SF-36 variables (at 8 domains), as well as VAS, RMT, ODI, BECK, HAQ, ISI test results (Table 2 and Figures 1-5).

Sex	N	%
Male	366	31.1
Female	810	68.9
<b>Pain Diagnosis</b>		
Cervical	302	25.7
Lumbar	874	74.3
	Mean	Standard Error
Age (range 18-98 years)	55.8	0.4
<b>Baseline</b>		
VAS	5.6	0.1
SF36 total	42	0.6
ISI	11.1	0.3
BECK	13.8	0.3
BMI	27.6	0.2

**Table 1:** Patient demographics.

Outcome	Initial		Final		N	% Variation	p<
	Mean	SEM	Mean	SEM			
VAS	5.6	0.1	3.7	0.1	919	-66	0.0001
RMT	10.6	0.2	7.5	0.2	730	-71	0.0001
ODI	29.9	0.6	20.9	0.6	743	-70	0.0001
SF36PF	50.0	0.8	60.1	0.8	863	20	0.0001
SF36PR	19.9	1.1	47.5	1.4	864	138	0.0001
SF36BP	28.2	0.6	49.9	0.7	863	77	0.0001
SF36GH	50.0	0.7	60.7	0.6	864	21	0.0001
SF36V	38.9	0.7	53.0	0.6	864	36	0.0001
SF36SF	50.8	0.9	69.7	0.8	864	37	0.0001
SF36ER	43.7	1.4	66.5	1.2	864	52	0.0001
SF36SMH	53.8	0.7	67.3	0.6	863	25	0.0001
SF36 total	42.0	0.6	58.9	0.6	926	40	0.0001
BECK	13.8	0.3	8.1	0.2	928	-59	0.0001
BPS	6.6	0.1	5.0	0.1	817	-76	0.0001
HAQ20	0.8	0.0	0.6	0.0	856	-71	0.0001
ISI	11.1	0.3	7.6	0.3	513	-69	0.0001

**Table 2:** Wilcoxon matched pairs test.



No gender-related differences were found except for the Beck inventory and for BMI, in which results were better for women than for men (Figure 6). For the PGIC, 67.8% of patients reported improvements; and of the total number of patients on pain medication (473 individuals), 58.77% (278 patients) reported intake reduction.

96.86% of patients reported being satisfied or very satisfied at the satisfaction questionnaire.

## Discussion

Chronic pain causes widespread suffering, interfering substantially with many aspects of daily functioning by restricting activities, generating feelings of ill-health, helplessness, depression and anxiety, which further magnify its intensity. More than a symptom of disease, if untreated, pain can develop into an illness itself; furthermore, many individuals suffering from chronic pain are undertreated [11]. The need to recognize the true complexity of pain has given rise to a great deal of research seeking more effective ways to adequately treat chronic pain conditions. Today, many experts in the field agree that IOPRPs applying a bio-psychosocial approach, going beyond traditional medical and functional conceptions are needed [14].

In line with this concept, both in relation to understanding and treating chronic pain, we developed the first CARF accredited interdisciplinary outpatient pain rehabilitation program (IOPRP) in South America, providing a holistic treatment program for adults.

The staff includes: physicians, psychologists, nurses, physical therapists, occupational therapists and nutritionists. Our goal is to increase self-efficacy in pain management, reduce need for medication, improve psychosocial wellbeing and sleeping patterns, achieve independence and return to regular daily activities.

Prior to enrolling in FLENI's IOPRP most patients had already received other pain treatments such as medication, global postural reeducation or local anesthetic block with little or no pain relief or function improvement. Patients enrolled are adults with high education level, good income and health insurance plan. The place where it takes place is one hour driving from the city.

Our results showed improved on quality of life outcomes, pain was reduced by 55%, insomnia by 30% and curiously, depression, which initially was higher in women, improved by the end of the program, to levels similar to those observed in men. These results were achieved by working on an interdisciplinary program.

Most of our interdisciplinary success resides in teaching patients: cognitive restructuring, psychosocial training, occupational therapy, physical exercise and relaxation techniques directed to change habits, promote active involvement in coping with pain and develop a sense of control and a positive attitude towards their chronic condition.

Controversy persists in the literature over whether intensive programs with more than 100 hours therapy are more effective than twice-weekly programs with less than 30 hours. In our experience, intensive IOPRPs are more expensive and require longer commitment, which is not always possible for patients who work. We therefore decided to implement a less intensive program encouraging patients to do homework in order to increase incorporation of new health habits.

After the IOPRP ended, patients expressed satisfaction not only with services offered during treatment, but also with outcomes obtained. Managing to adopt cognitive-behavioral strategies for pain management seems to correlate with reduction in the need for medication, maximizing of function by addressing wellness, and the opportunity to create a healthy lifestyle.

Since CARF accreditation, we have faced many challenges related to therapy implementation and data recollection for research purposes. We also introduced several innovations to improve outcomes. Working

under international standards has demanded great effort, including goal-oriented actions and meeting of objectives.

## Strengths and limitations of the study

This is a large sample study on chronic pain, in which an innovative form of working interdisciplinary is shown. In Argentina we have several health accessibility problems to medical consults. This type of program allows patients to spend less time on medical consults having all the different professionals in one place.

Control group (traditional treatment) was not taken into account on this work. During follow-up, response rate at 12 weeks was 43%, but only 10% at one year. This lack of adherence to follow up must be taken into account for further research.

For future we are thinking of including reminders, or using some other system to remain in closer contact with patients who have completed the program. Patients described in this study do not represent the average pain population in Argentina.

## Conclusion

Our work on interdisciplinary pain rehabilitation program shows positive outcomes in quality of life, functional independence, pain intensity and mental health. Our results demonstrate that IOPRPs can be implemented in countries like Argentina, and that it is possible to work under international standards.

## Conflict of interest

Authors have no conflicts of interest to declare.

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