

# **The STOP-PAIN Project:**

## ***The Burden of Chronic Pain: Does Gender Really Matter ?***

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# *Plan*

❧ **Rationale and Background**

❧ **Objectives**

❧ **Statistical Analysis**

❧ **Results**

❧ **Summary and Conclusions**

❧ **Limitations**

❧ **Acknowledgements**

# *Definition of Sex Versus Gender*

## *☞ Sex:*

- ✓ Refers only to the biological, hormonal, anatomical and physiological differences between ♀ and ♂.

## *☞ Gender:*

- ✓ Refers to a broader and more complex psychological, sociological and political framework.
- ✓ Encompasses the characteristics ascribed to each sex that are generally accepted by society.

*Sex Differences in  
Experimentally-Induced Pain*

**Racine et al. (2008) What Have we Learned From  
Laboratory Studies in the Past 10 Years About  
the Sex Differences in Human Pain Perception  
and Influencing Factors? A Systematic Review.**

**In process of being submitted to *Pain***

# *Experimental Pain Studies*

☞ Huge amount of studies have investigated sex differences in responses to experimentally induced-pain.

✓ ♀ exhibit significantly lower pain threshold and tolerance and generally report higher pain scores compared to ♂.

# *Experimental Pain Studies*

- ✧ Although this pattern of results is relatively consistent across studies :
- ✓ The sex differences remain relatively small.
  - ✓ There is substantial variability in the magnitude of sex differences depending of the methods used for pain induction and assessment.
  - ✓ Failure to find sex differences is often the result of insufficient statistical power due to small sample sizes.

*Gender-Related Differences in  
Pain as Evidenced by Population-  
Based and Clinical Studies*

## *Prevalence of CP in Population-Based Studies*

Authors	Years	Country	N	♀	♂	Total
Andersson	1993	Sweden	1 609	55.5 %	54.9 %	55.2 %
Millar	1996	Canada	22 620	20.0 %	15.0 %	17.0 %
Gureje	1998	14 countries	5 438	25.0 %	16.0 %	21.5 %
Elliott	1999	Scotland	3 605	51.8 %	48.9 %	50.4 %
Blyth	2001	Australia	17 543	20.0 %	17.1 %	20.6 %
Smith	2001	Scotland	3 605	15.8 %	12.3 %	14.1%
Moulin	2002	Canada	2 012	31.0 %	27.0%	29.0 %
Eriksen	2003	Denmark	12 333	21.0%	16.0 %	19.0 %
Gerdle	2003	Sweden	7 637	58.7 %	48.2 %	53.7 %
Ohayon	2003	European	18 980	20.7 %	13.2 %	17.1 %
Rustoen	2004	Norwegian	1 912	23.3 %	27.6 %	25.5 %

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# *Literature Reviews on Gender Differences in Clinical Pain*

**Unruh (1996)** Review Article: Gender Variations in Clinical Pain Experience, *Pain*, 65, 123-167.

**Berkley (1997)** Sex Differences in Pain, *Behavioral and Brain Sciences*, 20, 371-380.

**Filligim et Hastie (2006)** Sex, Gender, and Pain: Clinical and Experimental Findings, *Weiner's Pain Management, A Practical Guide for Clinicians*, 7<sup>th</sup> ed.

**Holdcroft and Berkley (2006)** Sex and Gender Differences in Pain and its Relief, *Wall and Melzack's Testbook of Pain*, 5<sup>th</sup> ed.

# *Review of the Epidemiological and Clinical Literature: Major Conclusions*

- ❧ ♀ would be more likely than ♂ to experience a variety of chronic pain syndromes.
- ❧ ♀ tend to report more severe pain at a higher frequency and for a longer duration than ♂.
- ❧ Conflicting result are reported in ♀ and ♂ with respect to restriction of daily activities or disability due to chronic pain.

# *Review of the Epidemiological and Clinical Literature: Major Conclusions*

- ❧ **Stress and depression may be more closely related to pain in ♀ than ♂ but not all clinical studies report these observations.**
- ❧ **It seems that there is some gender variation in the ability to cope with pain where ♀ had a broader repertory than ♂ but it is difficult to draw a clear pattern of differences in terms of the types of coping strategy used.**

# *Review of the Epidemiological and Clinical Literature: Major Conclusions*

## *∞* In Summary:

- ✓ This literature shows rather inconsistent results although it appears that ♀ would be more inclined to experience persistent pain than ♂.
- ✓ Whether chronic pain is more severe and disabling in ♀ is unclear as are the factors which may influence and/or mediate sex-related differences in chronic pain.

# *Review of the Epidemiological and Clinical Literature: Major Conclusions*

## *🌀 In Summary:*

- ✓ **The majority of the clinical studies are based on small sample sizes, and further research involving large number of patients is clearly needed to understand how ♀ and ♂ differ in their pain experience in order to establish treatment strategies which meet their specific needs.**

# *Plan*

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# Objectives

☞ To examine if ♀ and ♂ with chronic pain on waiting list of multidisciplinary pain treatment clinics present a distinctive pattern regarding their :

- ✓ Pain condition,
- ✓ Emotional well-being,
- ✓ Health-related quality of life and
- ✓ Beliefs/attitudes towards pain including negative coping.

# *Statistical Analysis*

## *∞ Dependent Variables:*

- ✓ **Average pain in the past 7 days (0-10 scale)**
- ✓ **Impact on daily functioning (interference items of BPI)**
- ✓ **Sleep (5 questions from the MOS Sleep subscale)**
- ✓ **Quality of life (SF36v2)**

# *Statistical Analysis*

## *∞ Dependent Variables:*

- ✓ **Depression (BDI)**
- ✓ **Anxiety and Anger (0-10 scales)**
- ✓ **Tendency to catastrophize (PCS)**
- ✓ **Beliefs / attitudes towards pain (Survey of Pain Attitude, 7 subscales)**

# *Statistical Analysis*

## *∞ Independent Variable:*

- ✓ **Gender**

## *∞ Selected covariables:*

- ✓ **Age**
- ✓ **Education level**
- ✓ **Circumstances surrounding the onset of pain**
- ✓ **Duration of pain**
- ✓ **Disability status**

# *Statistical Analysis*

## **☞ Multivariate analysis of covariance (MANCOVA)**

- ✓ **Test significance of differences between ♀ and ♂ on the various dependant variables.**

## **☞ Multiple Logistic Regression Analysis**

- ✓ **To identify the categories of variables which best differentiated ♀ and ♂. In other words, sex was used as the dependent variable while the pain measures and psychosocial factors were used as the independent variables to predict the sex of the patients.**

# Results

## Sociodemographic Variables

	♀ (N= 441)	♂ (N=287)
Age : mean (SD)	51.01 (13.3)	50.60 (11.4)
Education levels < 12 yrs :	44.8 %	48.6 %
Civil Status : married/common law :	62.6 %	66.2 %

# Results

## Pain History Variables

	♀ (N= 441)	♂ (N=287)
<b>Pain duration (years) (median) :</b>	<b>5.0</b>	<b>5.0</b>
<b>Disability (% of yes) :</b>	<b>36.6 %</b>	<b>50.0 %</b>
<b>Circumstances surrounding the onset of pain</b>		
<b>Trauma :</b>	<b>35.4 %</b>	<b>51.6 %</b>
<b>Illness :</b>	<b>8.6 %</b>	<b>10.1 %</b>
<b>Surgery :</b>	<b>20.9 %</b>	<b>13.2 %</b>
<b>No precise events :</b>	<b>29.9 %</b>	<b>20.2 %</b>
<b>Other :</b>	<b>5.2 %</b>	<b>4.9 %</b>

# Results-*MANCOVA* Analysis

Variables	♀	♂	<i>P</i>	Effect size
Pain intensity	6.92 (1.97)	6.71 (1.91)	.024	.084
BPI- General activity	7.23 (2.31)	7.00 (2.27)	.016	.095
BPI- Normal work	7.57 (2.29)	7.39 (2.51)	.021	.089
Sleep-Awaked by pain in the morning	2.96 (1.02)	2.89 (1.01)	.018	.089
BDI-Depression Score	19.07 (10.24)	18.16 (9.80)	.015	.095
SOPA-Emotional Score	2.55 (1.23)	2.43 (1.22)	.043	.078
SOPA- Solicitude Score	2.11 (1.24)	1.89 (1.19)	.014	.095

☞ All covariables significant at  $p = 0.003$ , Gender:  $p = .018$

☞ Effect size: Small=.15, medium=.30, large=.50

# *Results-MANCOVA Analysis*

❧ No significant differences were found on the following variables:

- ✓ Pain-interference items on the BPI :
  - mood, walking, relations, sleep, self-care, recreational, social scales
- ✓ Sleep-Medical Outcome Study :
  - Questions 1, 2, 3 and 5
- ✓ SF-36v2 :
  - physical and mental scores

# *Results-MANCOVA Analysis*

❧ No significant differences were found on the following variables:

- ✓ Anxiety and Anger (0-10 scales)
- ✓ Pain Catastrophizing Scale :
  - rumination, magnification and helplessness subscales
- ✓ Survey of Pain Attitudes :
  - pain control, disability, harm, medication, & medical cure subscales

# Results

## *B Logistic regression:*

- ✓ **Method: stepwise forward**
- ✓ **Number of variables: 30**
- ✓ **Global model: 2 variables,  $p=.005$ , Cox Snell .022**

Variable	P level	Odds ratio	95% CI for odds ratio
SOPA-Disability Harm	.016	1.17	1.03-1.33
SOPA-Solicitude	.014	1.17	1.03-1.33

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# *Summary and Conclusions*

- ❧ **Contrary to expectation, the present study did not reveal a really distinctive pattern between ♀ and ♂ terms of pain severity.**
- ❧ **♀ tended to report slightly more intense pain and a greater impact of their pain on certain aspects of their daily living but the clinical significance of these differences is highly questionable.**
- ❧ **It is therefore tempting to conclude that the pain experience was comparable in both groups.**

# *Summary and Conclusions*

- ❧ Perceived health-related quality of life was comparable in the groups of ♀ and ♂.
- ❧ They did not differ either in terms of their anger or anxiety levels.
- ❧ A slight but statistically significant difference emerged in their depression scores but this difference does not appear as clinically significant.

# *Summary and Conclusions*

- ❧ **Contrary to some previous laboratory and clinical studies, ♀ were not found to be more inclined than ♂ to catastrophize in face of their pain.**
- ❧ **Finally, ♀ and ♂ patients were not found to really differ in their pain beliefs/attitudes.**

# *Summary and Conclusions*

❧ In summary, the present study did not reveal a clear distinctive pattern between ♀ and ♂ chronic sufferers in terms of pain severity, perceived quality of life, psychological well-being and attitudes/beliefs toward pain.

# *Study Limitations*

- ❧ **The main limitation of our study is the lack of diagnostic data.**
- ❧ **All our participants were selected among patients awaiting for assessment and treatment in multidisciplinary pain treatment clinics.**
- ❧ **Therefore no diagnosis date were available so that it was not possible to examine gender differences in subgroups of patients suffering from particular pain syndromes.**
- ❧ **Important gender differences may not emerge when patients with different pain diagnosis are grouped altogether.**

# *More Statistical Analyses to Come*

- ❧ To investigate if the nature of the relationship between pain severity and emotional well-being differs in ♀ and ♂ .
- ❧ To explore if pain attitudes/beliefs and tendency to catastrophize affect patients pain experience in a gender-dependent manner.
- ❧ To examine the impact of waiting for pain treatment according to gender.

# *Future Research Directions*

- ❧ To examine gender differences in patients suffering from particular pain syndromes using large sample sizes.
- ❧ To compare responses to various types of analgesic treatment (including medication) in ♀ and ♂ .
- ❧ To develop measurement tools that overcome the limitations of our current instruments, and are more sensitive to gender differences in chronic pain perception and treatment.

# *Acknowledgments*

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*Thank You!*