

## 1. LUMBAR SPINE

### Sizes of vertebra

#### Bone

#### Changes in vertebral dimensions in early adulthood – A 10-year follow-up MRI-study

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#### Highlights

- Our results showed a clear increase in all the observed measurements in both sexes.
- We detected some differences between men and women regarding the increase of dimensions.
- We found that vertebral CSA and depth increases more among men than among women.
- A small vertebral size at baseline predicted larger growth in some of our measurements, but not in the CSA.

#### Abstract

Previous studies have shown that vertebral height increases until the early twenties, but very few studies have been conducted on other vertebral dimensions. Growth in vertebral size is believed to take place in elderly age but not in early adulthood. In this study, we wanted to clarify the potential changes in the dimensions of the lumbar vertebrae during early adulthood. We used the Northern Finland Birth Cohort 1986 as our study material, with a final sample size of 375 individuals. We performed lumbar magnetic resonance imaging (MRI) when the participants were 20 and 30 years of age (baseline and follow-up, respectively). We recorded the width, depth, height, and cross-sectional area (CSA) of the fourth lumbar vertebra (L4) using the MRI scans. We used generalized estimating equation (GEE) models to analyse the data. Men had 7.6%–26.5% larger vertebral dimensions than women at both baseline and follow-up. The GEE models demonstrated that all the studied dimensions increased during the follow-up period among both sexes ( $p < 0.001$ ). Men had a higher growth rate in vertebral depth and CSA than women ( $p < 0.001$ ). Among women, small vertebral width ( $p = 0.001$ ), depth ( $p = 0.05$ ) and height ( $p = 0.02$ ) at baseline were associated with a higher vertebral growth rate during the follow-up than among those with large dimensions at baseline. Among men, small baseline width was associated with higher vertebral growth rate ( $p = 0.001$ ). Our results clearly indicate that vertebral dimensions increase after 20 years of age among both sexes.

## 5. SURGERY

### New ozone procedure

#### Comparison of percutaneous intradiscal ozone injection with laser disc decompression in discogenic low back pain

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**Background:** Intervertebral disc herniation with the pressure on the surrounding neural structures is one of the most important causes of chronic low back pain, which sometimes leads to open surgery. Reducing the pressure inside the disc with intradiscal intervention such as laser irradiation or ozone injection is a minimally invasive method and an alternative to surgery with satisfactory results. These two methods were compared with each other in this research.

**Patients and methods:** In this clinical trial, 40 patients with back pain radiating to lower limb due to lumbar intervertebral disc herniation were selected. These patients were randomly divided into two equal groups for percutaneous intradiscal intervention. The Laser Disc Decompression Group (LDG) (n=20) was exposed to 1500 J of laser irradiation into the disc center. In the Ozone Injection Group (OZG) patients (n=20), 6 mL of ozone 30 µg/mL was injected into the center of the disc. Considering the level of neural root involvement, both groups received 20 mg of triamcinolone injection via transforaminal epidural. Patients were followed up for 12 months regarding score on visual analogue scale and life performance improvement based on Oswestry Disability Index (ODI) and satisfaction level.

**Results:** According to the results, no difference was found between the two groups for ODI variable before intervention, whereas OZG showed better ODI scores in the measured time intervals. In LDG, only a significant difference in terms of ODI score was found between the times of before surgery and the first month.

**Conclusion:** Intradiscal ozone injection could be an effective and cost-effective method for treatment of patients with discogenic back pain.

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Breast CA and thyroid

#### Thyroid hormones and breast cancer association according to menopausal status and body mass index

- Carolina Ortega-Olvera, Gabriela Torres-Mejía

*Breast Cancer Research* 2018;20:94

<https://doi.org/10.1186/s13058-018-1017-8>

#### Background

Thyroxine (T4) has been positively associated with tumor cell proliferation, while the effect of triiodothyronine (T3) on cell proliferation has not been well-established because it differs according to the type of cell line used. In Mexico, it has been reported that 14.5% of adult women have some type of thyroid dysfunction and abnormalities in thyroid function tests have been observed in a variety of non-thyroidal illnesses, including breast cancer (BC). These abnormalities might change with body mass index (BMI) because thyroid hormones are involved in the regulation of various metabolic pathways and probably by menopausal status because obesity has been negatively associated with BC in premenopausal women and has been positively associated with BC in postmenopausal women.

#### Methods

To assess the association between serum thyroid hormone concentration (T4 and T3) and BC and the influence of obesity as an effect modifier of this relationship in premenopausal and postmenopausal women, we measured serum thyroid hormone and thyroid antibody levels in 682 patients with incident breast cancer (cases) and 731 controls, who participated in a population-based case-control study performed from 2004 to 2007 in three states of Mexico. We tested the association of total T4 (TT4) and total T3 (TT3) stratifying by menopausal status and body mass index (BMI), and adjusted for other health and demographic risk factors using logistic regressions models.

#### Results

Higher serum total T4 (TT4) concentrations were associated with BC in both premenopausal (odds ratio (OR) <sub>per standard deviation</sub> = 5.98, 95% CI 3.01–11.90) and postmenopausal women (OR <sub>per standard deviation</sub> = 2.81, 95% CI 2.17–3.65). In premenopausal women, the effect of TT4 decreased as BMI increased while the opposite was observed in postmenopausal women. The significance of the effect modification was marginal ( $p = 0.059$ ) in postmenopausal women and was not significant in premenopausal women ( $p = 0.22$ ). Lower TT3 concentrations were associated with BC in both premenopausal and postmenopausal women and no effect modification was observed.

#### Conclusions

There is a strong association between BC and serum concentrations of TT3 and TT4; this needs to be further investigated to understand why it happens and how important it is to consider these alterations in treatment.

**Low thyroid impact on fetus**

J Clin Endocrinol Metab. 2018 Aug 1;103(8):2967-2979. doi: 10.1210/jc.2018-00224.

**Thyroid Function in Early Pregnancy, Child IQ, and Autistic Traits: A Meta-Analysis of Individual Participant Data.**

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**CONTEXT:**

Low maternal free T4 (FT4) has been associated with poor child neurodevelopment in some single-center studies. Evidence remains scarce for the potential adverse effects of high FT4 and whether associations differ in countries with different iodine status.

**OBJECTIVE:**

To assess the association of maternal thyroid function in early pregnancy with child neurodevelopment in countries with a different iodine status.

**DESIGN, SETTING, AND PARTICIPANTS:**

Meta-analysis of individual participant data from 9036 mother-child pairs from three prospective population-based birth cohorts: INMA [Infancia y Medio Ambiente (Environment and Childhood project) (Spain)], Generation R (Netherlands), and ALSPAC (Avon Longitudinal Study of Parents and Children, United Kingdom). The exclusion criteria were multiple pregnancies, fertility treatments, thyroid-interfering medication usage, and known thyroid disease.

**MAIN OUTCOMES:**

Child nonverbal IQ at 5 to 8 years of age, verbal IQ at 1.5 to 8 years of age, and autistic traits within the clinical range at 5 to 8 years of age.

**RESULTS:**

FT4 <2.5th percentile was associated with a 3.9-point (95% CI, -5.7 to -2.2) lower nonverbal IQ and a 2.1-point (95% CI, -4.0 to -0.1) lower verbal IQ. A suggestive association of hypothyroxinemia with a greater risk of autistic traits was observed. FT4 >97.5th percentile was associated with a 1.9-fold (95% CI, 1.0 to 3.4) greater risk of autistic traits. No independent associations were found with TSH.

**CONCLUSIONS:**

Low maternal FT4 was consistently associated with a lower IQ across the cohorts. Further studies are needed to replicate the findings of autistic traits and investigate the potential modifying role of maternal iodine status. FT4 seems a reliable marker of fetal thyroid state in early pregnancy, regardless of the type of immunoassay.

**C section and pre-term births****Previous cesarean delivery associated with subsequent preterm birth in the United States**

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**Objective**

To examine the relationship between previous cesarean delivery and subsequent preterm birth in the second pregnancy among women in the United States with registered birth records.

**Study Design**

We conducted a retrospective cohort study utilizing United States birth certificate data to generate the study population, which consisted of women delivering a singleton infant in their second live birth ( $n = 1,076,517$ ) in the year 2016. Preterm birth and previous cesarean delivery measures were derived from United States birth certificates. Covariates included maternal age, race/ethnicity, education, marital status, payer source for delivery, pre-pregnancy body mass index, previous preterm birth, interpregnancy interval, and factors in the second pregnancy such as hypertensive disorders, diabetes, and cigarette use, trimester prenatal care began, weight gain during pregnancy, and presence of congenital anomalies. Women who experienced a cesarean delivery in the first pregnancy were compared to those who did not.

**Results**

When controlling for all covariates, women who had a cesarean delivery in their first pregnancy were 14% more likely to have a preterm birth in their second pregnancy (OR = 1.137, 95% CI = 1.117–1.158) compared to women who had not previously experienced a cesarean delivery. When risk was analyzed by sub categories of preterm birth based on gestational age, a differential association was noted, with a 10% increased risk of delivering before 34 weeks, a 1% increased risk for delivery between 34–36 weeks and no increased risk for delivery after 36 weeks compared to delivery at 39–40 weeks.

**Conclusion**

This small, but statistically significant association between previous cesarean section and subsequent preterm birth suggests that efforts to reduce the number of index cesarean sections may contribute to reducing the overall preterm birth rate in the United States.

**Men's underwear and infertility**

Hum Reprod. 2018 Aug 8. doi: 10.1093/humrep/dey259.

**Type of underwear worn and markers of testicular function among men attending a fertility center.**

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**STUDY QUESTION:** Is self-reported type of underwear worn associated with markers of testicular function among men at a fertility center?

**SUMMARY ANSWER:** Men who reported most frequently wearing boxers had higher sperm concentration and total count, and lower FSH levels, compared to men who did not.

**WHAT IS KNOWN ALREADY:** Elevated scrotal temperatures are known to adversely affect testicular function. However, the epidemiologic literature on type of underwear, as a proxy of scrotal temperature, and male testicular function is inconsistent.

**STUDY DESIGN, SIZE, DURATION:** This is a cross-sectional study including 656 male partners of couples seeking infertility treatment at a fertility center (2000-2017).

**PARTICIPANTS/MATERIALS, SETTING, METHODS:** Self-reported information on type of underwear worn was collected from a take-home questionnaire. Semen samples were analyzed following World Health Organization guidelines. Enzyme immunoassays were used to assess reproductive hormone levels and neutral comet assays for sperm DNA damage. We fit linear regression models to evaluate the association between underwear type and testicular function, adjusting for covariates and accounting for multiple semen samples.

**MAIN RESULTS AND THE ROLE OF CHANCE:** Men had a median (interquartile range) age of 35.5 (32.0, 39.3) years and BMI of 26.3 (24.4, 29.9) kg/m<sup>2</sup>. About half of the men (53%; n = 345) reported usually wearing boxers. Men who reported primarily wearing boxers had a 25% higher sperm concentration (95% CI = 7, 31%), 17% higher total count (95% CI = 0, 28%) and 14% lower serum FSH levels (95% CI = -27, -1%) than men who reported not primarily wearing boxers. Sperm concentration and total count were inversely related to serum FSH. Furthermore, the differences in sperm concentration and total count according to type of underwear were attenuated after adjustment for serum FSH. No associations with other measured reproductive outcomes were observed.

**LIMITATIONS, REASONS FOR CAUTION:** Our results may not be generalizable to men from the general population. Underwear use was self-reported in a questionnaire and there may be misclassification of the exposure. The cross-sectional design limits causal inference, and residual confounding is still possible owing to lack of information on other modifiable life styles that can also modify scrotal heat (e.g. type of trousers worn, textile fabric of the underwear). Blood sampling was not limited to the morning and, as a result, we may have missed associations with testosterone or other hormones with significant circadian variation despite statistical adjustment for time of blood draw.

**WIDER IMPLICATIONS OF THE FINDINGS:** Certain styles of male underwear may impair spermatogenesis and this may result in a compensatory increase in gonadotrophin secretion, as reflected by higher serum FSH levels among men who reported most frequently wearing tight underwear. Confirmation of these findings, and in particular the findings on FSH levels suggesting a compensatory mechanism, is warranted.

**STUDY FUNDING/COMPETING INTEREST(S):** The project was financed by Grants (R01ES022955, R01ES009718, P30ES000002, and K99ES026648) from the National Institutes of Health. None of the authors has any conflicts of interest to declare.

**Hormone replacement does not impact mortality**

BJOG. 2018 Aug 14. doi: 10.1111/1471-0528.15433.

**Pattern of mortality after menopausal hormone therapy: long-term follow-up in a population based cohort.**

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*OBJECTIVE:*

To investigate long-term pattern of mortality in menopausal women according to different modalities of hormone therapy.

*DESIGN:*

Population based prospective cohort study.

*SETTING:*

Denmark 1993-2013.

*POPULATION:*

29,243 women aged 50-64 years at entry into the Diet, Cancer, and Health Cohort, enrolled 1993-1997 and followed through December 31, 2013.

*METHODS:*

Cox' proportional hazards models for increasingly longer periods of follow up time were used to estimate mortality pattern according to baseline hormone use adjusted for relevant potential confounders.

*MAIN OUTCOME:*

All cause and cause specific mortality. Outcome information was obtained from the Danish Causes of Death Registry (linkage 99.6%).

*RESULTS:*

4,098 women died during a median follow-up of 17.6 years. After adjustment for relevant lifestyle risk factors, hormone use had no impact on all-cause mortality, regardless of modality. Among baseline users lower CVD mortality was only evident after 5 years (HR 0.54; 95% CI: 0.32-0.92), but dissipated with additional follow-up. Reversely, lower colorectal cancer mortality (HR 0.64; 95% CI 0.46-0.89), and higher breast cancer mortality (HR 1.34; 95% CI 1.05-1.72) only became evident after 15 years follow-up. There were no significant associations for mortality from other types of cancer or from stroke.

*CONCLUSIONS:*

In this long-term follow-up study, taking hormones during menopause was not associated with overall mortality among middle-aged women. Investigating cause-specific mortality revealed significant albeit weak associations differential according to both causes of death and over time underlining the importance of carefully considering individual risks and duration of treatment when making decisions on hormone therapy. This article is protected by copyright. All rights reserved.

**Fear avoidance and pf function**

Clin J Pain. 2018 Sep;34(9):804-810. doi: 10.1097/AJP.0000000000000604.

**Fear-avoidance and Pelvic Floor Muscle Function are Associated With Pain Intensity in Women With Vulvodynia.**

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**OBJECTIVE:**

To investigate the association between fear-avoidance variables, pelvic floor muscle (PFM) function, pain intensity in women with provoked vestibulodynia (PVD), as well as the moderator effect of partner support.

**MATERIALS AND METHODS:**

A sample of 173 women diagnosed with PVD participated in the study. Fear-avoidance variables were assessed with validated self-administered questionnaires: pain catastrophizing (Pain Catastrophizing Scale), pain-related fear (Pain Anxiety Symptoms Scale), and partner support (Partner Support Questionnaire). Pain intensity was evaluated using a numerical rating scale. PFM function, including maximal strength, speed of contraction, flexibility, and muscle tone, was evaluated with a dynamometric speculum.

**RESULTS:**

Pain catastrophizing was significantly associated with pain intensity ( $\beta=0.310$ ,  $P<0.001$ ), partner support ( $\beta=0.194$ ,  $P=0.004$ ), and PFM flexibility ( $\beta=-0.255$ ,  $P<0.001$ ). Fear-avoidance, PFM variables, and partner support explained 28.3% of the variance in pain during intercourse ( $P<0.001$ ). The addition of PFM was of particular interest as it explained a significant addition of 9% of the variance in pain intensity. Partner support was found to moderate the association between pain intensity and catastrophizing. Among women with high partner support, catastrophizing was not significantly related to pain ( $b=0.150$ ,  $P=0.142$ ). When partner support was low, catastrophizing was significantly related to pain ( $b=0.068$ ,  $P<0.001$ ).

**DISCUSSION:**

Findings of this study support that the symptomatology of PVD can be explained partly by fear-avoidance variables and PFM function. This study supports the significant role of PFM function and its importance in the pathophysiology of PVD. It also sheds light on the role of partner support and its moderating effect on pain catastrophizing.

**13 C. AIRWAYS/SWALLOWING/SPEECH****Adolescent sleep quality**

BMJ Open. 2018 Jul 13;8(7):e021902. doi: 10.1136/bmjopen-2018-021902.

**Associations between sleep quality and its domains and insufficient physical activity in a large sample of Croatian young adults: a cross-sectional study.**

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*OBJECTIVES:*

The main purpose of the present study was to explore the associations between sleep quality and insufficient physical activity.

*DESIGN:*

Cross-sectional.

*SETTING:*

Faculties in Croatia.

*PARTICIPANTS:*

2100 university students (1049 men and 1051 women) aged 18-24 years were recruited.

*PRIMARY OUTCOME:*

To assess the domains of sleep quality (independent variables) and 'insufficient' physical activity (dependent variable), we used previously validated Pittsburgh Sleep Quality Index and International Physical Activity questionnaires. Logistic regressions were used to calculate the associations between the sleep quality and 'insufficient' physical activity.

*RESULTS:*

When sleep quality domains were entered separately into the model, very bad subjective sleep quality (OR 3.09; 95% CI 1.50 to 6.56), >60 min of sleep latency (OR 2.17; 95% CI 1.39 to 3.39), <7 hours of sleep (OR 1.56; 95% CI 1.24 to 1.96), <65% of habitual sleep efficiency (OR 2.26; 95% CI 1.26 to 4.05), sleep disturbances >1/week (OR 1.61; 95% CI 1.03 to 2.52), use of sleep medication >1/week (OR 3.35; 95% CI 1.83 to 6.10), very big daytime dysfunction problem (OR 2.78; 95% CI 1.57 to 4.93) and poor sleep quality (1.53; 95% CI 1.23 to 1.91) were associated with 'insufficient' physical activity. When all sleep quality domains were entered simultaneously into the model, the same significant associations remained, except for sleep disturbances. Both models were adjusted for gender, body mass index, self-rated health, life satisfaction, socioeconomic status, presence or absence of chronic diseases, smoking status, binge drinking and psychological distress.

*CONCLUSIONS:*

Our results show that 'poor' sleep quality is associated with 'insufficient' physical activity in young adults. In order to improve, special strategies and policies that leverage 'good sleep' quality are warranted.

## 16. CONCUSSIONS

## Suicide and TBI

JAMA Psychiatry. 2014 Feb;71(2):149-57. doi: 10.1001/jamapsychiatry.2013.3080.

**Association between traumatic brain injury and risk of posttraumatic stress disorder in active-duty Marines.**

Yurgil KA<sup>1</sup>, Barkauskas DA<sup>2</sup>, Vasterling JJ<sup>3</sup>, Nievergelt CM<sup>4</sup>, Larson GE<sup>5</sup>, Schork NJ<sup>6</sup>, Litz BT<sup>3</sup>, Nash WP<sup>7</sup>, Baker DG<sup>4</sup>, Marine Resiliency Study Team.

**Abstract**

**IMPORTANCE:** Whether traumatic brain injury (TBI) is a risk factor for posttraumatic stress disorder (PTSD) has been difficult to determine because of the prevalence of comorbid conditions, overlapping symptoms, and cross-sectional samples.

**OBJECTIVE:** To examine the extent to which self-reported predeployment and deployment-related TBI confers increased risk of PTSD when accounting for combat intensity and predeployment mental health symptoms.

**DESIGN, SETTING, AND PARTICIPANTS:** As part of the prospective, longitudinal Marine Resiliency Study (June 2008 to May 2012), structured clinical interviews and self-report assessments were administered approximately 1 month before a 7-month deployment to Iraq or Afghanistan and again 3 to 6 months after deployment. The study was conducted at training areas on a Marine Corps base in southern California or at Veterans Affairs San Diego Medical Center. Participants for the final analytic sample were 1648 active-duty Marine and Navy servicemen who completed predeployment and postdeployment assessments. Reasons for exclusions were nondeployment (n = 34), missing data (n = 181), and rank of noncommissioned and commissioned officers (n = 66).

**MAIN OUTCOMES AND MEASURES:** The primary outcome was the total score on the Clinician-Administered PTSD Scale (CAPS) 3 months after deployment.

**RESULTS:** At the predeployment assessment, 56.8% of the participants reported prior TBI; at postdeployment assessment, 19.8% reported sustaining TBI between predeployment and postdeployment assessments (ie, deployment-related TBI). Approximately 87.2% of deployment-related TBIs were mild; 250 of 287 participants (87.1%) who reported posttraumatic amnesia reported less than 24 hours of posttraumatic amnesia (37 reported  $\geq$  24 hours), and 111 of 117 of those who lost consciousness (94.9%) reported less than 30 minutes of unconsciousness. Predeployment CAPS score and combat intensity score raised predicted 3-month postdeployment CAPS scores by factors of 1.02 (P < .001; 95% CI, 1.02-1.02) and 1.02 (P < .001; 95% CI, 1.01-1.02) per unit increase, respectively. Deployment-related mild TBI raised predicted CAPS scores by a factor of 1.23 (P < .001; 95% CI, 1.11-1.36), and moderate/severe TBI raised predicted scores by a factor of 1.71 (P < .001; 95% CI, 1.37-2.12). Probability of PTSD was highest for participants with severe predeployment symptoms, high combat intensity, and deployment-related TBI. Traumatic brain injury doubled or nearly doubled the PTSD rates for participants with less severe predeployment PTSD symptoms.

**CONCLUSIONS AND RELEVANCE:**

Even when accounting for predeployment symptoms, prior TBI, and combat intensity, TBI during the most recent deployment is the strongest predictor of postdeployment PTSD symptoms.

## 33. MENISCUS

### Predictions of tears

Knee Surgery, Sports Traumatology, Arthroscopy  
pp 1–9|

#### **Predicting meniscal tear stability across knee-joint flexion using finite-element analysis**

- Angela E. Kedgley Teng-Hui Saw Neil A. Segal Ulrich N. Hansen Anthony M. J. Bull Spyros D. Masouros

**Purpose** To analyse the stress distribution through longitudinal and radial meniscal tears in three tear locations in weight-bearing conditions and use it to ascertain the impact of tear location and type on the potential for healing of meniscal tears.

**Methods** Subject-specific finite-element models of a healthy knee under static loading at 0°, 20°, and 30° knee flexion were developed from unloaded magnetic resonance images and weight-bearing, contrast-enhanced computed tomography images. Simulations were then run after introducing tears into the anterior, posterior, and midsections of the menisci.

**Results** Absolute differences between the displacements of anterior and posterior segments modelled in the intact state and those quantified from in vivo weight-bearing images were less than 0.5 mm. There were tear-location-dependent differences between hoop stress distributions along the inner and outer surfaces of longitudinal tears; the longitudinal tear surfaces were compressed together to the greatest degree in the lateral meniscus and were most consistently in compression on the midsections of both menisci. Radial tears resulted in an increase in stress at the tear apex and in a consistent small compression of the tear surfaces throughout the flexion range when in the posterior segment of the lateral meniscus.

#### **Conclusions**

Both the type of meniscal tear and its location within the meniscus influenced the stresses on the tear surfaces under weight bearing. Results agree with clinical observations and suggest reasons for the inverse correlation between longitudinal tear length and healing, the inferior healing ability of medial compared with lateral menisci, and the superior healing ability of radial tears in the posterior segment of the lateral meniscus compared with other radial tears. This study has shown that meniscal tear location in addition to type likely plays a crucial role in dictating the success of non-operative treatment of the menisci. This may be used in decision making regarding conservative or surgical management.

## 59. PAIN

## COPD and chronic pain

**Prevalence of Pain in COPD Patients and Associated Factors: Report From a Population-based Study**

de Miguel-Díez, Javier, PhD<sup>\*</sup>; López-de-Andrés, Ana, PhD<sup>†</sup>; Hernandez-Barrera, Valentín, MsD<sup>†</sup>; Jimenez-Trujillo, Isabel, PhD<sup>†</sup>; del Barrio, José L., PhD<sup>†</sup>; Puente-Maestu, Luis, PhD<sup>\*</sup>; Martínez-Huedo, María A., PhD<sup>†</sup>; Jimenez-García, Rodrigo, PhD<sup>†</sup>

The Clinical Journal of Pain: September 2018 - Volume 34 - Issue 9 - p 787–794

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## Original Articles

**Objectives:** To assess the prevalence of chronic neck pain (CNP), chronic low back pain (CLBP), and migraine among Spanish adults with chronic obstructive pulmonary disease (COPD) compared with non-COPD patients matched by age and sex; and to identify predictors for each of these types of pains among COPD sufferers.

**Materials and Methods:** A cross-sectional study conducted with data collected from the European Health Interview Surveys for Spain (EHSS) conducted in years 2009/2010 (n=22,188) and 2014 (n=22,842). Data were analyzed using multivariable logistic models.

**Results:** The prevalence of COPD among patients aged 35 years or above were 7.6% (n=1328) for the EHSS 2009 and 5.4% (n=1008) for the EHSS 2014. We matched 2251 COPD patients with age and sex controls. The prevalence of all types of pain were significantly higher among those suffering COPD than those without COPD. For CNP the figures were 40.5% versus 26.1%, for CLBP 44.8% versus 28.4%, and for migraine 22.5% versus 13.2%. Multivariable analysis showed that COPD was associated to a 1.21 (95% confidence interval [CI], 1.02-1.45) higher risk of CNP, 1.38 (95% CI, 1.16-1.64) of CLBP, and 1.36 (95% CI, 1.12-1.65) of migraine. Associated factors with the presence of these types of pain among COPD patients included younger age (not for CLBP), female sex (not for CLBP), “fair/poor/very poor” self-rated health (not for migraine), high blood pressure (not for CNP), mental disorders, obesity (not for migraine), and use of pain medication.

**Discussion:** The prevalence of CNP, CLBP, and migraine was significantly higher among COPD patients in comparison with controls. Associated factors to suffering these types of pain in patients with COPD included age, sex, self-rated health, certain comorbidities including mental disorders, obesity, and using pain medication.

**New division of chronic pain**

J Pain. 2018 Aug 7. pii: S1526-5900(18)30358-4. doi: 10.1016/j.jpain.2018.07.006.

**Prevalence and profile of High Impact Chronic Pain in the United States.**

Pitcher MH<sup>1</sup>, Von Korff M<sup>2</sup>, Bushnell MC<sup>3</sup>, Porter L<sup>4</sup>.

The multidimensional nature of chronic pain is not reflected by definitions based solely on pain duration, resulting in high prevalence estimates limiting effective policy development. The newly proposed concept of High Impact Chronic Pain (HICP) incorporates both disability and pain duration to identify a more severely impacted portion of the chronic pain population, yet remains uncharacterized at the population level. As such, we used the 2011 National Health Interview Survey (NHIS; n=15,670) to (i) assess the likelihood of disability in the overall chronic pain population, (ii) to estimate the prevalence of HICP, and (iii) to characterize the disability, health status and health care use profile of this population in the United States.

Overall, chronic pain, defined as pain experienced on most or every day in the last three months, was strongly associated with an increased risk of disability after controlling for other chronic health conditions (OR=4.43, CI=3.73-5.26), where disability was more likely in those with chronic pain than in those with stroke or kidney failure, among others. HICP affected 4.8% of the U.S. adult population, or approximately 10.6 million individuals in 2011. The HICP population reported more severe pain, mental health and cognitive impairments than persons with chronic pain without disability, and was also more likely to report worsening health, more difficulty with self-care and higher health care use. HICP clearly represents a more severely impacted portion of the chronic pain population. Understanding this heterogeneity will contribute to developing more effective legislation promoting safe and cost-effective approaches to prevention and treatment of chronic pain.

***PERSPECTIVE:***

High Impact Chronic Pain is a powerful new classification that differentiates those with debilitating chronic pain from those with less impactful chronic pain. By addressing the multi-dimensionality of chronic pain, this classification will improve clinical practice, research and the development of effective health policy.

**Numeric rating scale****The Journal of Pain****Measurement properties of Visual Analogue Scale, Numeric Rating Scale and Pain Severity subscale of the Brief Pain Inventory in patients with low back pain: a systematic review**panel Alessandro Chiarotto<sup>ab</sup>LaraJ. Maxwell<sup>c</sup>Raymond Ostelo<sup>ab</sup>Maarten Boers<sup>ad</sup>Peter Tugwell<sup>ce</sup>Caroline B. Terwee<sup>a</sup><https://doi.org/10.1016/j.jpain.2018.07.009> Get rights and content**Highlights**

- Evidence quality on content validity of VAS, NRS and BPI-PS in LBP is (very) low.
- High quality evidence shows that NRS measurement error is too large.
- Head-to-head measurement comparisons of VAS, NRS and BPI-PS are missing in LBP.
- Content validity, reliability and responsiveness should be further assessed.

**Abstract**

Visual Analogue Scale (VAS), Numeric Rating Scale (NRS), and Pain Severity subscale of the Brief Pain Inventory (BPI-PS)] are the most frequently used instruments to measure pain intensity in low back pain (LBP). However, their measurement properties in this population have not been systematically reviewed. The goal of this study was to provide such systematic evidence synthesis. Six electronic sources (MEDLINE, EMBASE, CINAHL, PsycINFO, SportDiscus, Google Scholar) were searched (July 2017). Studies assessing any measurement property in patients with non-specific LBP were included. Two reviewers independently screened articles and assessed risk of bias using the COSMIN checklist. For each measurement property: evidence quality was rated as high, moderate, low, or very low (GRADE approach); results were classified as sufficient, insufficient or inconsistent. Ten studies assessed the VAS, 13 the NRS, four the BPI-PS. The three instruments displayed low or very low quality evidence for content validity. High quality evidence was only available for NRS insufficient measurement error. Moderate evidence was available for: NRS inconsistent responsiveness, BPI-PS sufficient structural validity and internal consistency, and BPI-PS inconsistent construct validity. All VAS measurement properties were underpinned by no, low or very low quality evidence, likewise the other measurement properties of NRS and BPI-PS.

**Opioid use in chronic pain**

Clin J Pain. 2018 Sep;34(9):878-884. doi: 10.1097/AJP.0000000000000603.

**Depression Effects on Long-term Prescription Opioid Use, Abuse, and Addiction.**

Sullivan MD<sup>1</sup>.

*OBJECTIVES:*

Treatment guidelines discourage long-term opioid treatment for patients with chronic pain and major depression, but this treatment occurs commonly, producing higher daily doses, longer duration, and more adverse events.

*MATERIALS AND METHODS:*

Review of prospective cohort, retrospective cohort, and other observational studies of the relation between depression and opioid use, abuse, and addiction.

*RESULTS:*

Depressed patients initiate opioid therapy slightly more often than nondepressed patients, but are twice as likely to transition to long-term use. This adverse selection of high-risk patients with depression into long-term high-dose opioid therapy seems to be a process of self-selection. Opioids may be used by patients with chronic pain and depression to compensate for a reduced endogenous opioid response to stressors. Depressed patients seem to continue opioid use at lower pain intensity levels and higher levels of physical function than do nondepressed patients. In studies that carefully control for confounding by indication, it has been shown that long-term opioid therapy increases the risk of incident, recurrent, and treatment-resistant depression. Depressed patients may tend to overuse opioids because they use them to treat insomnia and stress. Depression also seems to increase the risk of abuse or nonmedical use of prescription opioids among adults and adolescents. This increased rate of nonmedical opioid use may be the path through which depression increases the risk of opioid use disorder among patients with chronic pain.

*DISCUSSION:*

It is not possible to understand long-term opioid therapy for chronic pain without understanding the close and multifaceted relationship of this therapy with depression.

**PT pain training**

Clin J Pain. 2018 Sep;34(9):838-857. doi: 10.1097/AJP.0000000000000601.

**A Systematic Review and Meta-Analysis of the Effectiveness of Psychological Interventions Delivered by Physiotherapists on Pain, Disability and Psychological Outcomes in Musculoskeletal Pain Conditions.**

Silva Guerrero AV<sup>1,2</sup>, Maujean A<sup>1,3</sup>, Campbell L<sup>1</sup>, Sterling M<sup>1,3</sup>.

**OBJECTIVE:**

This systematic review and meta-analysis examined the effectiveness of physiotherapist delivered psychological interventions combined with physiotherapy on pain, disability, and psychological outcomes for patients with musculoskeletal pain conditions.

**METHODS:**

The review was conducted in accordance with the (PRISMA) guidelines. Five databases were systematically searched for randomized controlled trials from inception to May 2016. Studies were required to compare a psychological intervention delivered by physiotherapists combined with physiotherapy to physiotherapy alone or usual care. Physiotherapists delivering the interventions must have undergone training by a psychologist or a health professional trained in the delivery of psychological interventions.

**RESULTS:**

A total of 34 articles met the eligibility criteria, of those, 30 were suitable for meta-analysis. There was low to high quality evidence that physiotherapist delivered psychological intervention combined with physiotherapy decreased pain in the short (26 studies, mean difference=-0.37; 95% confidence interval [CI], -0.65 to -0.09) and long term (22 studies, mean difference=-0.38; 95% CI, -0.67 to -0.10) and decreased disability in the short term (29 studies, standardized mean difference =-0.14; 95% CI, -0.26 to -0.01). Effect sizes were small. Low to high quality evidence demonstrated small to medium effects for some psychological outcomes at short-term and long-term follow-ups.

**DISCUSSION:**

The results indicate that psychological interventions delivered by physiotherapist show promise to improve health outcomes, particularly psychological outcomes, in musculoskeletal pain conditions.

## On-line pain course

## The Journal of Pain

**The Pain Course: 12 and 24 month outcomes from a randomised controlled trial of an internet-delivered pain management program provided with different levels of clinician support**Milena Gandy<sup>1</sup> Eyal Karin<sup>1</sup> Rhiannon Fogliati<sup>1</sup> Vincent J Fogliati<sup>1</sup> Lauren G Staples<sup>1</sup> Bethany M Wootton<sup>2</sup> Louise Sharpe<sup>3</sup> Nickolai Titov<sup>1</sup>

## Highlights

- There is growing interest in the internet-delivery of pain management programs
- However little long-term outcome data has been reported to date
- The study reports the long-term outcome data for an established program
- Clinical outcomes were maintained at 12 and 24-month follow-up
- The current findings indicate that these programs can produce lasting improvements

## Abstract

Little is known about the long-term outcomes of emerging internet-delivered pain management programs. The current study reports the 12-month and 24-month follow-up data from a randomised controlled trial ( $n = 490$ ) of an internet-delivered pain management program, the *Pain Course*. The initial results of the trial to 3-month follow-up have already been reported elsewhere. Significant improvements in disability, depression, anxiety and pain levels across three treatment groups receiving different levels of clinician support, compared with a treatment-as-usual control. No marked or significant differences were found between the treatment groups at either post-treatment or 3-month follow-up. The current study obtained long term follow-up data from 78% and 79% of participants ( $n = 397$ ) at 12-month and 24-month follow-up, respectively. Clinically significant reductions (average % reduction; Cohen's  $d$  effect sizes) were maintained at 12 and 24-month follow-up for disability (avg. reduction  $\geq 27\%$ ;  $ds \geq 0.67$ ), depression (avg. reduction  $\geq 36\%$ ;  $ds \geq 0.80$ ), anxiety (avg. reduction  $\geq 38\%$ ;  $ds \geq 0.66$ ) and average pain levels (avg. reduction  $\geq 21\%$ ;  $ds \geq 0.67$ ). No marked or consistent differences were found between the three treatment groups. These findings suggest the outcomes of internet-delivered programs may be maintained over the long-term.

Perspective: This article presents the long-term outcome data of an established internet-delivered pain management program for adults with chronic pain. The clinical improvements observed during the program were found to be maintained at 12 and 24-month follow-up. This indicates that these programs can have lasting clinical effects.

### 63. PHARMACOLOGY

#### Adult use of opioids from childhood use

#### Journal Summaries in Pain Management

##### **Associations between adolescent chronic pain and prescription opioid misuse in adulthood**

The Journal of Pain — Groenewald CB, et al. | August 17, 2018

Researchers focused on the longitudinal link between history of adolescent chronic pain and odds of misusing prescription opioids in adulthood, using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) (n = 14,784). They used multivariate models that controlled for known risk factors of opioid misuse, including sociodemographics (sex, race and ethnicity), adolescent mental health symptoms (anxiety, depression), adolescent self-reported physical health status, adolescent substance use/abuse, childhood trauma, and adult legitimate opioid use. According to findings, in addition to other known risk factors, chronic pain during adolescence was identified as an independent risk factor for opioid misuse in adulthood. Also, they noted that substance use, exposure to trauma, and race were related to opioid misuse in individuals with adolescent chronic pain.

### Depression and opioid use

#### Journal Summaries in Pain Management

##### **Depression effects on long-term prescription opioid use, abuse, and addiction**

Clinical Journal of Pain | August 17, 2018

Sullivan MD –

In this review of prospective cohort, retrospective cohort, and other observational studies, the researcher examined the association between depression and opioid use, abuse, and addiction. Depression was found to be related to slightly more often initiation of opioid therapy and to double risk of transitioning to long-term use, compared with nondepressed patients. In depressed patients vs nondepressed patients, opioid use was seemed to be continued at lower pain intensity levels and higher levels of physical function. The risk of incident, recurrent, and treatment-resistant depression was shown to be increased by long-term opioid therapy in studies that carefully controlled for confounding by indication. Overall, understanding the close and multifaceted relationship of long-term opioid therapy with depression is important to understand this therapy for chronic pain.