

# Does gender affect self-perceived pain in cancer patients? A systematic review and meta-analysis

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## Introduction

- Pain is one of the most common (50-70% prevalence) and feared symptoms of cancer.<sup>1</sup>
- There has been a considerable increase in research investigating gender differences in pain since 1990. The majority of studies report higher pain scores in females or insignificant differences in pain between genders.<sup>2,3</sup>
- In the cancer setting, there appears to be sparse and inconclusive evidence for a gender difference in pain intensity for oncology patients.
- Physiological sex differences<sup>2</sup> and gender roles/stereotypes<sup>4</sup> may mediate self-reported pain ratings to favour greater pain scores in females.

## Materials & Methods

- MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials (1946-2016) were used to search for studies investigating gender differences in self-perceived pain in cancer patients.
- The search consisted of keywords for sex factor and sex difference, pain severity and cancer.
- Studies reporting baseline pain scores as continuous values specific to each gender were included.

### Pain Measurement Tools in Included Studies

- Visual Analogue Scale (VAS):** conveys pain intensity via 100mm line on a 0 (no pain) – 100 (most pain) scale. Scores were standardized to 0 – 10 ratings.
- Numerical Rating Scale (NRS):** measures pain intensity on scale of 0 (no pain) – 10 (most pain)
- Edmonton Symptom Assessment scale (ESAS):** measures pain intensity on scale of 0 (no pain) – 10 (most pain). Grouped with NRS.
- Brief Pain Inventory (BPI):** 0 – 10 scale calculated by averaging four pain quality scale scores.

### Analysis Strategy

- Using random-effects modeling, weighted mean differences and 95% confidence intervals (CI) were used to estimate the effect of gender on pain severity in cancer patients.
- P-value  $\leq 0.05$  considered statistically significant.

## Results

- Of the 1914 articles searched, 15 total study arms from 13 articles met all inclusion criteria and were included.
- 11 study arms used NRS/ESAS/VAS scales. Four arms within this group examined pain in advanced cancer patients, 4 arms used BPI.
- Figure 1 shows forest plots summarizing weighted mean difference in pain intensity

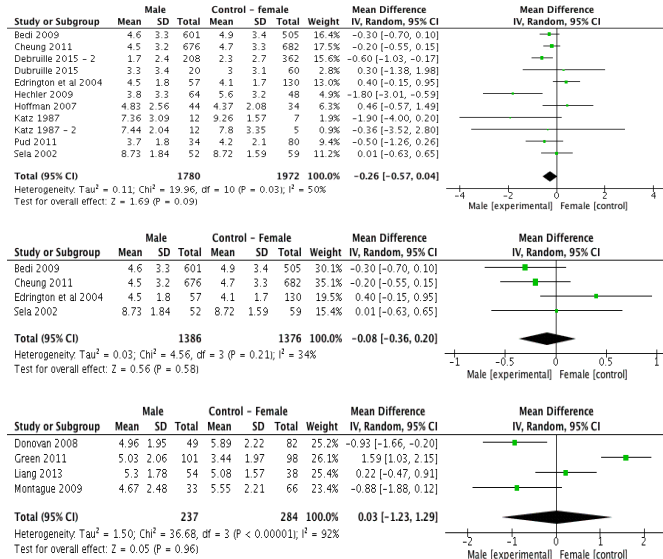


Figure 1. Forest plot of mean sex difference in pain scores in studies examining patients with A) NRS/VAS/ESAS scales B) advanced cancer C) BPI tool.

## Discussion

- Results from meta-analyses demonstrated no significant differences in self-perceived pain between genders in oncology patients.
- Results are supported by reviews conducted by Fillingim<sup>2</sup> and Vallerand<sup>3</sup> which convey the general theme that gender difference pain studies report an inclination of greater pain prevalence or severity in female patients with varying degrees of significance.
- The primary objective of advanced cancer treatment is palliative care. Advanced cancer subgroup analysis showed no significant sex differences in pain intensity (Fig. 1B.), thus results do not necessitate modifications in analgesic administration and cancer treatments for different genders.
- The main response variable measured in the majority of cancer related pain studies was pain prevalence (%). Pain intensity provides a multi-dimensional measure of pain suitable for analyses.<sup>2</sup>

## Conclusions

- There does not appear to be a significant difference in gender-specific self-reported pain scores in cancer patients.
- Conflicting reports in existing literature warrant supplementary investigation into gender-specific pain severity differences in the cancer setting.
- Examination into gender differences in pain based on primary cancer type and stage is recommended.

## References

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