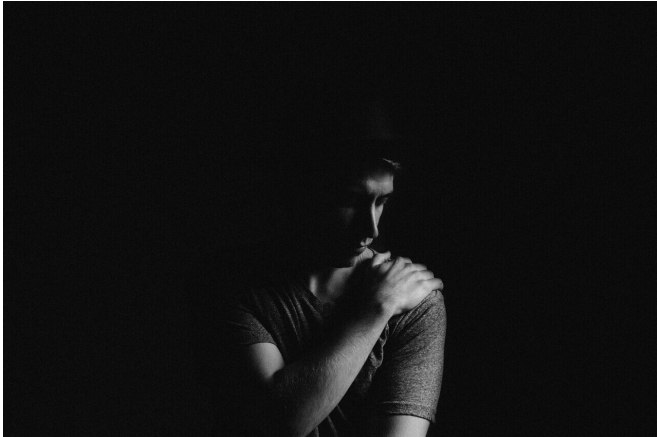


Research identifies gender bias in estimation of patients' pain

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"On a scale of one to 10, how much pain are you in?"

In a recent study published by the *Journal of Pain*, co-authored by Elizabeth Losin, assistant professor of psychology and director of the Social and Cultural Neuroscience lab at the University of Miami, researchers found that a patient's [pain](#) responses may be perceived differently by others based on their gender.

According to "Gender biases in estimation of others' pain," when male and female patients expressed the same amount of pain, observers viewed female patients' pain as less intense and more likely to benefit from psychotherapy versus medication as compared to men's pain, exposing a significant patient gender bias that could lead to disparities in treatments.

The study consisted of two experiments. In the first, 50 participants were asked to view various videos of male and female patients who suffered from shoulder pain performing a series of range of motion exercises using their injured and uninjured

shoulders. Researchers pulled the videos from a database that contains videos of actual shoulder injury patients, each experiencing a range of different degrees of pain. The database included patients' self-reported level of discomfort when moving their shoulders.

According to Losin, the study likely provides results more applicable to patients in clinical settings compared to previous studies that used posed actors in their stimuli videos.

"One of the advantages of using these videos of patients who are actually experiencing pain from an injury is that we have the patients' ratings of their own pain," she explained. "We had a ground truth to work with, which we can't have if it's a stimulus with an actor pretending to be in pain."

The patients' facial expressions were also analyzed through the Facial Action Coding System (FACS)—a comprehensive, anatomically based system for describing all visually discernible facial movements. The researchers used these FACS values in a formula to provide an objective score of the intensity of the patients' pain facial expressions. This provided a second ground truth for the researchers to use when analyzing the data.

The study participants were asked to gauge the amount of pain they thought the patients in the videos experienced on a scale from zero, labeled as "absolutely no pain," and 100, labeled as "worst pain possible."

In the second experiment, researchers replicated the first portion of this study with 200 participants. This time, after viewing the videos, perceivers were asked to complete the Gender Role Expectation of Pain questionnaire, which measures gender-related stereotypes about pain sensitivity, the endurance of pain, and willingness to report pain.

Perceivers also shared how much medication and

psychotherapy they would prescribe to each patient and which of these treatments they believed would be more effective in treating each patient.

The researchers analyzed the results of the participants' responses to the videos compared to the patient's self-reported level of pain and the facial expression intensity data. The ability to analyze observers' perceptions relative to these two ground truth measures of the patients' pain in the videos allowed the researchers to measure bias more accurately, Losin explained. That is because bias could be defined as different ratings for male and female patients despite the same level of responses.

Overall, the study found that female patients were perceived to be in less pain than the male patients who reported, and exhibited, the same intensity of pain. Additional analyses using participants' responses to the questionnaire about gender-related pain stereotypes allowed researchers to conclude that these perceptions were partially explained by these stereotypes.

"If the stereotype is to think women are more expressive than men, perhaps 'overly' expressive, then the tendency will be to discount women's pain behaviors," Losin said. "The flip side of this stereotype is that men are perceived to be stoic, so when a man makes an intense pain facial expression, you think, 'Oh my, he must be dying!' The result of this gender stereotype about pain expression is that each unit of increased pain expression from a man is thought to represent a higher increase in his pain experience than that same increase in pain expression by a woman."

What's more, psychotherapy was chosen as more effective than medication for a higher proportion of female patients compared to male patients.

Additionally, the study concluded that the gender of the perceivers did not influence pain estimation. Both men and women interpreted women's pain to be less intense.

The idea to study disparities in the perception of pain based on a patient's gender was derived from previous research, Losin said, that found women

are often prescribed less treatment than men and wait longer to receive that treatment as well.

"There's a pretty wide literature showing demographic differences in pain report, the prevalence of clinical pain conditions, and then also a demographic difference in pain treatments," Losin pointed out. "These differences manifest as disparities because it seems that some people are getting undertreated for their pain based on their demographics."

Moving forward, Losin and her fellow researchers hope this study is a step in identifying and addressing gender disparities in health care. Co-authors of the study included the study's lead author, Lanlan Zhang, Guangzhou Sport University; Yoni K. Ashar, Weill Cornell Medical College; Leonie Koban, Paris Brain Institute; and senior author Tor D. Wager, Dartmouth College.

"I think one critical piece of information that could be conveyed in medical curricula is that people, even those with medical training in other studies, have been found to have consistent demographic biases in how they assess the pain of male and [female patients](#) and that these biases impact treatment decisions," Losin remarked. "Critically, our results demonstrate that these gender biases are not necessarily accurate. Women are not necessarily more expressive than men, and thus their pain expression should not be discounted."

More information: Lanlan Zhang et al, Gender Biases in Estimation of Others' Pain, *The Journal of Pain* (2021). [DOI: 10.1016/j.jpain.2021.03.001](https://doi.org/10.1016/j.jpain.2021.03.001)

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