The Relationship Between Chronic Pain and Stress, Anxiety, and Depression in College Students

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Abstract

The purpose of this study was to measure chronic pain levels as they relate to stress, anxiety, and depression in college students. This is a non-experimental, correlational research design, using a survey methodology. Eighty-four participants, under the age of 18, were recruited (men = 33.3%, women = 66.6%) to participate in this study. The participants were asked to complete a questionnaire which was compiled of the *Chronic Pain Grade Questionnaire* (CPGQ) (Von Korff et al., 1992), the *Perceived Stress Scale* (Wickrama et al, 2013), the *Beck Anxiety Inventory* (BAI) (Beck et al., 1988), the *Beck Depression Inventory-II* (BDI-II) (Beck et al., 1996), and several demographic questions. The hypotheses for this study predicted that chronic pain would have a significant correlation with stress, anxiety, and depression. The results showed that chronic pain had a significant positive correlation with anxiety and depression, but not stress. Women reported higher chronic pain, stress, and anxiety on average when compared to men. Chronic pain, stress, anxiety, and depression's dependence on participant age did not show any significance. The results were inconclusive, and more research is needed.

Introduction

- Chronic pain affected 20.4% of the adult U.S. population in 2016(Dahlhamer et al, 2018).
- Menta illness affected around 46.6 million adults in 2017 (National Institute of Mental Health, 2019)
- Some causes of chronic pain have psychological origins (Dahlhamer et al, 2018).
- Depression and anxiety were shown to be the two mental disorders that correlated the most with chronic pain (Birgenheir et al, 2013).
- Worry and rumination had a partial correlation to the depression/anxiety-chronic pain comorbidity (Rogers et al, 2018).
- Anxiety can serve as a causal factor for chronic pain through avoidance, maladaptive cognitions, and attentional biases (Jordan & Okifuji, 2011).
- A study on the onset relationship between chronic pain and depressive disorders, specifically major depressive disorder and dysthymic disorder, found that both variables are risk factors for each others onset (Schmaling & Nounou, 2019)
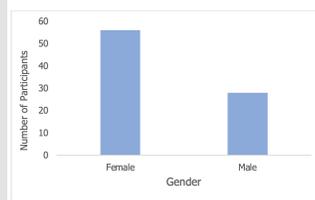
Hypothesis & Research Question

Hypothesis 1: There will be a significant correlation between chronic pain levels and stress.
Hypothesis 2: There will be a significant correlation between chronic pain levels and anxiety.
Hypothesis 3: There will be a significant correlation between chronic pain levels and depression.
Research Question 1: What are students' average chronic pain levels?
Research Question 2: Are there chronic pain, stress, anxiety, and depression differences as a function of gender?
Research Question 3: Are there chronic pain, stress, anxiety, and depression differences as a function of age?

Methods

- Total of 84 participants (Male = 33.3%, Female = 66.6%) from Southern Adventist University
- Participants responded to a questionnaire consisting of 5 sections:
  - Demographic Information
  - Chronic Pain Grade Scale Questionnaire
  - Perceived Stress Scale – Revised
  - Beck Anxiety Inventory
  - Beck Depression Inventory II

- Participants were given the incentive of being entered in a drawing to win a $25 gift card if they chose to participate and complete the questionnaire
- Participants were given a score for each of the following variables: chronic pain, stress, anxiety, and depression

Figure 1

Demographic results for gender

Note. Percentage of participants that were male or female.

Results

- 84 participants participated in the study.
- Results did not support hypothesis 1 as no significant correlation was found between chronic pain and stress levels [$r_{(82)}$= .111, p = .314, ns.]
- Results supported hypothesis 2 as a significant positive correlation was found between chronic pain and anxiety levels [$r_{(82)}$= .542, $p < .01$]
- Results supported hypothesis 3 as a significant positive correlation was found between chronic pain and depression levels [$r_{(82)}$= .317, $p < .01$]
- Results for research question 1 found the average chronic pain level to be 25.04 (SD = 21.701)
- Results for research question 2 found that women had a significant difference compared to men for all factors except depression.
  - Chronic pain: men had average of 15.14 (SD = 12.373) and women had average of 29.98 (SD = 23.682)
  - Stress: men had average of 28.25 (SD = 5.18991) and women had average of 31.7875 (SD = 3.87868)
  - Anxiety: men had average of 12.14 (SD = 9.447) and women had average of 22.05 (SD = 11.935)
  - Depression: men had average of 14.86 (SD = 11.491) and women had average of 19.18 (SD = 9.986)

Table 1

Descriptive statistics for the variables measured

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	84.00	1.00	2.00	1.67	0.47
Age	84.00	18.00	24.00	20.00	1.44
CPG	84.00	0.00	130.00	25.04	21.70
PSS	84.00	14.00	43.00	30.61	4.64
BAI	84.00	0.00	52.00	18.75	12.06
BDI	84.00	0.00	46.00	17.74	10.64

- Results for research question 3 did not demonstrate any significance for chronic pain, stress, anxiety, and depression's dependency on participant age [$F_{(24)}$ = .939, p = .549, ns.]

Figure 2

Demographic results for age
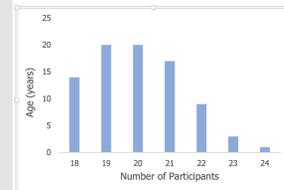
Note. Measurement of participant ages ranging from 18-24

Discussion

- The correlation between chronic pain and the subsequent variables (stress, anxiety, and depression) may indicate that chronic pain is a risk factor for anxiety or depression
- It could also indicate that anxiety or depression are risk factors for chronic pain
- Students who are diagnosed with chronic pain may wish to get screened for anxiety or depression or vice versa. Students diagnosed with one of the variables may also wish to take precautions to decrease the risk of developing a co-occurring variable
- Results also showed that women had higher ratings in chronic pain, stress, and anxiety. This may indicate they are at a higher risk for developing these disorders
- Because sample size was small and collected in a convenience style, future research should focus on expanding the sample size and using random assignment to recruit participants
- Because this questionnaire relied on self-report, it is possible participants answered inaccurately. Some responses were guesses or ranges, which prevented the results from making accurate conclusions about certain relationships

Table 2

Data from independent samples t-test

	F	Sig.	t	df	Sig. (2 tailed)
CPG	2.42	0.12	-3.10	82.00	0.00
BAI	2.25	0.14	-3.83	82.00	0.00
BDI	0.80	0.37	-1.78	82.00	0.08
PSS	4.31	0.04	-3.19	42.56	0.00

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