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One thing leads to another: Untangling the relationship between depression and pain in outpatients with serious illness

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One thing leads to another: Untangling the relationship between depression and pain in outpatients with serious illness

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Abstract

Depression and pain are commonly experienced by patients with serious illness, such as cancer and heart disease. We conducted a secondary analysis of the UAB Supportive Care and Survivorship Clinic dataset of outpatients with serious illnesses treated from 2012-2016 to determine the relationship between depression severity (measured by the PHQ-9, scaled 0-27) and pain intensity (measured by the Brief Pain Inventory or BPI, scaled 0-10). We found positive correlations between depression total scores and "least", "worst", and "pain now" pain individual-item scores. One-way ANOVA and post hoc tests demonstrated that the "least" ($p=.009$) and "pain now" ($p=.027$) pain scores were significantly higher in the patients with severe depression compared to those with mild depression. This finding is consistent with other literature describing an association between depression and pain but adds specificity to the relationship between depression severity and pain intensity. Research and practice implications include considering depression severity and pain intensity assessment for effective management of their co-occurrence in patients with serious illness.

Introduction

Depression is one of the most common psychiatric disorders with a lifetime occurrence of 15% in the general population¹. This disorder is even more common among patients with serious, chronic illnesses such as cancer and heart disease². According to Massie, it is a generally accepted as a "rule of thumb" that one-in-four people with cancer will experience major depressive symptoms during the progression of the disease, warranting evaluation and treatment; an even higher prevalence of cancer patients will report minor depressive disorders^{3,4}. This is seen as a bidirectional relationship as the symptoms and biological deviations caused by serious illness may facilitate depressive symptoms and the changes in the body and mind caused by depression can increase the risk of serious illness. When looking at cancer in particular, depressions along with the biological and somatic components of the serious illness exacerbate the pain felt by patients, according to Spoletini and colleague⁴. Pain is frequently associated with depression, with which it also shares a bidirectional relationship, due to the two ailments sharing several brain regions, such as the insular cortex, amygdala, and prefrontal cortex⁵. In fact, Kroenke and colleagues estimated that depression and pain co-occur 30%-50% of the time in patients⁶. Less has been reported, however, in regards to the difference in the intensity of pain with an increase in the severity of depression of patients with serious illness. Thus, the aim of this study was to examine the relationship between depression severity and pain intensity.

Methods

We conducted a secondary analysis of the UAB Supportive Care and Survivorship Clinic dataset of outpatients with serious illnesses treated from 2012-2016. Depression was measured by the PHQ-9 Depression assessment, with scores ranging from 0-27 (higher scores equal higher depression). Level of depression was categorized as "no symptoms" (0-4), "mild" (5-9), "moderate" (10-14), "moderately severe" (15-19), and "severe" (20-27). Pain was measured by the Brief Pain Inventory (BPI), with scores ranging from 0-10 (higher scores = more pain). Items in the BPI included the following: "What is your pain at its least in the last 24 hours?", "What is your pain at its worst in the last 24 hours?", "What is your pain on average?", and "What is your pain right now?" We hypothesized that depression severity would be positively associated with pain intensity. Data were analyzed using linear correlation, one-way ANOVA, and post hoc Tukey tests.

Results

The sample ($n = 120$) was mean age 51.27 years, 58.3% female, 24.2% black/African-American, 74.2% white/Caucasian, and 52.5% married. Diagnoses included cancer (72.5%), heart disease (13.3%), and other diagnoses (14.2%) (Table 1). On average, patients reported being moderately depressed (12.43 ± 6.21). Significant positive correlations were found between depression total scores and "least" (mean = 4.07 ± 2.86 , $r = 0.347$, $p = 0.001$), "worst" (mean = 7.48 ± 2.45 , $r = 0.285$, $p = 0.012$), and "pain now" (mean = 4.89 ± 3.27 , $r = 0.312$, $p = 0.002$) pain scores (Table 2). One-way ANOVA and Tukey post hoc tests showed significant differences in the "least" ($p = 0.009$) and "pain now" ($p = 0.027$) pain scores when comparing the mild and severe depression levels (Table 3).

Discussion

Depression and pain often co-occur in patients with serious illness. Significant positive correlations were found between depression total scores and "least", "worst", and "pain now" pain scores. We also found significant associations between depression severity and pain intensity, such that patients with severe depression reported significantly higher pain at its least within the last 24 hours compared to those who reported mild depression. They also reported significantly higher current pain than patients with mild depression. This suggests that patients with severe depression experience more consistent levels of pain and less relief from pain when compared with those with mild depression. While the magnitude of these associations was small, our findings raise important questions for future research, including identifying subsets of individuals for whom co-occurrence may be particularly pernicious. These findings are consistent with other literature describing a close relationship between pain and depression but add specificity regarding the relationship between depression severity and pain intensity⁶.

Conclusions

Among UAB Supportive Care and Survivorship Clinic patients, those with severe depression report higher current pain and higher pain intensity at its least than those with mild depression. Research and practice implications include considering depression severity and pain intensity assessment for effective management of co-occurrence in patients with serious illness and finding what specific group of people with serious illness are most at risk for co-occurring depression and pain.

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Tables

Characteristics		n = 120 n (%)
Age		51.27 ± 13.04
Gender	Female	70 (58.3)
	Male	50 (41.7)
Race	Black/African Amer.	29 (24.2)
	White	89 (74.2)
	Decline/refuse	1 (.8)
	Unknown	1 (.8)
Marital Status	Married	63 (52.5)
	Divorced	16 (13.3)
	Separated	4 (3.0)
	Single	33 (27.5)
	Widowed	3 (2.5)
Disease Status	Cancer	87 (72.5)
	Heart Disease	16 (13.3)
	Other	17 (14.2)
Depression (PHQ-9)	None	15 (12.5)
	Mild	29 (24.2)
	Moderate	27 (22.5)
	Moderately severe	33 (27.5)
	Severe	16 (13.3)

Table 1. Characteristics of patients.

Pain Intensity in the Last 24 Hours	mean ± sd	r*	p
"What is your pain at its LEAST in the last 24 hours?"	4.07 ± 2.86	.347	.001
"What is your pain at its WORST in the last 24 hours?"	7.48 ± 2.45	.285	.012
"What is your pain on AVERAGE?"	5.62 ± 3.35	.184	.080
"What is your pain right NOW?"	4.89 ± 3.27	.312	.002

Table 2. Correlation between depression & pain.

Pain Intensity (0-10) in Last 24 Hours				
Depression Severity (n)	"LEAST"	"WORST"	"AVERAGE"	"NOW"
None (15)	2.88 ± 2.10	5.86 ± 3.23	5.13 ± 3.68	3.13 ± 3.04
Mild (29)	2.62 ± 2.13	6.84 ± 2.36	5.00 ± 2.95	3.86 ± 2.74
Moderate (27)	4.25 ± 2.55	7.68 ± 2.49	6.36 ± 2.98	5.83 ± 3.11
Moderately severe (33)	4.72 ± 2.99	7.95 ± 2.28	6.00 ± 3.53	5.45 ± 3.31
Severe (16)	5.77 ± 2.92	8.55 ± 1.69	7.15 ± 2.44	7.08 ± 2.53
F*	3.809	1.930	1.188	3.540
p	.007	.115	.322	.010

Table 3. Depression severity vs. pain intensity.