Published in final edited form as:

AIDS Care. 2016 ; 28(4): 432–435. doi:10.1080/09540121.2015.1100704.

Pain-Related Anxiety in Relation to Anxiety, Depression, Perceived Health, and Interference in Daily Activities among Persons Living with HIV/AIDS

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Abstract

Persons living with HIV/AIDS (PLHA) experience clinically-significant pain as a result of HIV and such pain is often related to increased levels of anxiety/depression. Pain-related anxiety has been identified as a mechanism in the onset and progression of pain experience and associated affective distress. However, there has not been empirical study of pain-related anxiety in relation to affective processes among PLHA. To address this gap, hierarchical multiple regressions were conducted using SPSS v.21 to examine pain-related anxiety (as measured using the Pain Anxiety Symptoms Scale) in relation to anxiety and depressive symptoms (as measured using the Mood and Anxiety Symptoms Questionnaire) among 93 PLHA (10.8% female; Mean age = 49.63, $SD = 8.89$). Pain-related anxiety was significantly related to anxious arousal symptoms ($\beta = .43$) and anhedonic depressive symptoms ($\beta = .25$); effects were evident beyond the variance accounted for by CD4 count, race, sex, income level, and current level of bodily pain. The present results suggest that pain-related anxiety may play a role in the experience of anxiety and depressive symptoms among PLHA.

Introduction

Persons living with HIV/AIDS (PLHA) often experience clinically-significant pain as a result of HIV, and the prevalence of pain among HIV+ individuals ranges from 30% – 90% (Krashin, Merrill, & Trescot, 2012). This pain is often related to increased anxiety and depression and lower quality of life (Tsao, Plankey, & Young, 2012). Yet, there is little

understanding of mechanistic factors in the etiology, progression, and maintenance of HIV/AIDS, pain, and anxiety/depressive symptoms.

Pain-related anxiety is one factor that appears to be of theoretical and clinical importance to the understanding of affective distress among PLWHA. Pain-related anxiety reflects the tendency of an individual to respond with anxiety or fear to actual or potential pain experiences (McCracken, Zayfert, & Gross, 1992). Pain-related anxiety is related to, but distinct from, other cognitive-affective constructs, including *anxiety sensitivity* and *fear of pain* (Carleton, Abrams, Asmundson, Antony, & McCabe, 2009; Zale, Lange, Fields, & Ditre, 2013; Zvolensky, Goodie, McNeil, Sperry, & Sorrell, 2001). There is limited study of pain-related anxiety among PLHA. In the only study on this topic, changes in pain-related anxiety were related to decreases in pain-related impairment (Huggins et al., 2012).

Although these findings are promising, it is unclear whether this construct is related to a broader array of emotional symptoms among PLHA, particularly anxiety and depressive symptoms. The current study examined the effects of pain-related anxiety on anxiety and depression among PLHA. It was hypothesized that pain-related anxiety would be related to anxiety and depressive symptoms.

Material and Methods

Participants

Cross-sectional data from a study originally focused on affective distress among PLHA was employed. Participants were 93 adults living with HIV/AIDS. The data collection protocol was approved by the Institutional Review Board of a New York AIDS Service Organization (IRB; #VC IRB 2010-3). Eligible participants were between 18 and 65 years old, had a self-reported diagnosis of HIV/AIDS, and had the ability to give informed, written consent. Participants (89.2 %) were largely male, 52.7% identified as Black, and the mean age was 49.63 ($SD = 8.89$). Approximately 72% of participants earned less than \$10,000 annually and participants reported an average CD4 t-cell count of 496.39 ($SD = 300.67$; *range* = 0–1400).

Measures

Demographic and medical information was self-reported by participants.

Pain Anxiety Symptoms Scale (PASS; McCracken et al., 1992)—The PASS is a 40-item self-report measure in which respondents indicate, on a 6-point Likert-type scale (0 = *never*, 5 = *always*), how often they feel anxiety in relation to pain (e.g., nausea) and pain eliciting activity. The PASS has four subscales indexing 1) cognitive anxiety symptoms related to the experience of pain (PASS-cog), 2) escape and avoidance related to reducing pain (PASS-avoid), 3) fearful appraisals of pain (PASS-fear), and 4) physiological anxiety symptoms related to pain (PASS-phys). The total and subscale scores demonstrated good internal consistency (Chronbach α 's range = .67–.91).

Mood and Anxiety Symptoms Questionnaire (MASQ; Clark & Watson, 1991)—The MASQ was employed to assess levels of anxiety and depression symptoms. The MASQ

is a 62-item self-report measure in which participants rate on a 5-point Likert-type scale (1 = *not at all*, 5 = *extremely*) how much they have experienced symptoms of anxiety and depression in the past month. In the current study, the anxious arousal subscale, which measures somatic hyperarousal (MASQ-AA; Chronbach $\alpha = .89$), and anhedonic depression subscale, which measures low positive affect (MASQ-AD; Chronbach $\alpha = .92$), were utilized and evidenced good internal consistency.

Short Form Health Survey Revised (SFHS; Ware et al., 1996)—The SFHS was used in the current study to index current bodily pain. The SFHS is a 9-item self-report measure indexing multiple health concepts including bodily pain, limitations due to health, and general medical health. The item reflecting current pain (“How much bodily pain have you had during the past 4 weeks”) was employed (scored on a 5-point Likert-type scale [1 = *none*, 5 = *severe*]).

Data Analytic Strategy

Zero-order correlations were conducted to examine the relations between study variables. Thereafter, hierarchical linear regression analyses were employed utilizing bootstrapping to assure normal distribution of the data given the relatively small sample size. The covariates were entered at step 1 and pain-related anxiety global score was entered at step 2 (see Table 2). Covariates included sex, age, race, CD4 cell count, income level, and current pain. SPSS Version 21 was used for all analyses.

Results

See Table 1 for descriptive statistics and zero-order correlations among the study variables, including all covariates, total score and subscales of the PASS, and MASQ outcome variables. As expected, PASS total score was significantly positively related to MASQ-AA ($r = .51, p < .001$) and MASQ-AD ($r = .36, p < .001$).

See Table 2 for the results of the regression analyses examining the effect of overall pain-related anxiety on MASQ-AA and MASQ-AD. Regarding MASQ-AA, the covariates at Step 1 accounted for 17.1% of the variance. CD4 cell count ($\beta = -.26, p < .05$) and race ($\beta = .29, p < .05$) independently significantly predicted MASQ-AA. At Step 2, PASS total score was significantly positively related to MASQ-AA and accounted for an additional 15.5% variance in MASQ-AA scores ($\beta = .43, p < .001$).

Regarding MASQ-AD, the covariates at Step 1 accounted for 12.7% of the variance. Here, only CD4 cell count ($\beta = -.28, p < .05$) independently predicted MASQ-AD. At step 2, the PASS total score was significantly positively related to MASQ-AD and accounted for an additional 4.4% variance in MASQ-AD scores ($\beta = .25, p < .05$).

Post-Hoc Tests

As specific subfactors of pain-related anxiety may maintain stronger relations to the dependent variables than the total score, post hoc analyses were conducted in which all four of the PASS subscales were entered simultaneously at step 2 of the analysis in place of

PASS-total scores (Table 3). Regarding the effects of pain-related anxiety subscales in relation to MASQ-AA, physiological anxiety symptoms related to pain was a significant predictor ($\beta = .44, p < .01$), whereas the other subscales showed nonsignificant relations (range of β 's = $-.19$ to $.33, p$'s $> .05$)

Regarding the effects of pain-related anxiety subscales on MASQ-AD, escape and avoidance related to reducing pain ($\beta = -.48, p < .001$), and fearful appraisals of pain ($\beta = .62, p < .001$) were significant predictors, whereas cognitive anxiety symptoms related to the experience of pain ($\beta = .02, p > .05$) and physiological anxiety symptoms related to pain ($\beta = .07, p > .05$) indicated nonsignificant relations.

Discussion

As expected, pain-related anxiety was significantly and incrementally related to greater anxiety and depressive symptoms above and beyond the variance accounted for by CD4 T-cell count and current pain level. These findings are consistent with existing findings regarding pain-related anxiety and the experience of pain (Huggins et al., 2012) and uniquely extend such work to anxiety and depression among PLHA. Post-hoc tests examining the subscales of the PASS indicated that physiological symptoms related to pain significantly positively predicted anxious arousal, fearful appraisals of pain significantly positively predicted anhedonic depression, and avoidance related to reducing pain was significantly negatively related to anhedonic depression. Here, it is noteworthy that avoidance related to reducing pain was the only PASS subscale not associated with depression at the bi-variate level (Table 1). Therefore, there is a strong likelihood that the negative relation observed in the regression models is attributable to statistical suppression.

Several limitations of the current investigation warrant comment. First, the study utilized a cross-sectional design. Therefore, causality cannot be inferred. Second, although the sample was highly diverse in terms of race, it was limited to an older adult, primarily male group of PLHA. Third, the present investigation was based on community-recruited PLHA, and extension of these findings to populations of PLHA seeking treatment for mental health concerns is necessary. Finally, the current analyses were based upon self-report data, and therefore, a multi-method assessment could usefully be employed in future work.

Overall, the present study found empirical evidence that pain-related anxiety is associated with anxiety and depression among PLHA. These results converge with a growing body of literature indicating the importance of pain-related anxiety in psychological and physical health in general (Peters et al., 2005; Strahl et al., 2000) and among PLHA in particular (Huggins et al., 2012). Accordingly, there is potential promise of the assessment and targeted intervention of pain-related anxiety among PLHA in efforts to improve mental health among this population.

References

- Carleton R, Abrams M, Asmundson G, Antony M, McCabe R. Pain-related anxiety and anxiety sensitivity across anxiety and depressive disorders. *Journal of Anxiety Disorders*. 2009; 23(6):791–798. DOI: 10.1016/j.janxdis.2009.03.003 [PubMed: 19362446]

- Clark LA, Watson D. Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*. 1991; 100(3):316–336. DOI: 10.1037/0021-843X.100.3.316 [PubMed: 1918611]
- Huggins JL, Bonn-Miller MO, Oser ML, Sorrell JT, Trafton JA. Pain anxiety, acceptance, and outcomes among individuals with HIV and chronic pain: A preliminary investigation. *Behaviour Research and Therapy*. 2012; 50(1):72–78. DOI: 10.1016/j.brat.2011.10.008 [PubMed: 22088609]
- Krashin DL, Merrill JO, Trescot AM. Opioids in the management of HIV-related pain. *Pain Physician*. 2012; 15(3):157–168.
- McCracken LM, Zayfert C, Gross RT. The Pain Anxiety Symptoms Scale: Development and validation of a scale to measure fear of pain. *Pain*. 1992; 50(1):67–73. DOI: 10.1016/0304-3959(92)90113-P [PubMed: 1513605]
- Peters ML, Vlaeyen JWS, Weber WEJ. The joint contribution of physical pathology, pain-related fear and catastrophizing to chronic back pain disability. *Pain*. 2005; 113:45–50. DOI: 10.1016/j.pain.2004.09.033 [PubMed: 15621363]
- Strahl C, Kleinknecht RA, Dinnel DL. The role of pain anxiety, coping, and pain self-efficacy in rheumatoid arthritis patient functioning. *Behaviour Research and Therapy*. 2000; 38(9):863–873. DOI: 10.1016/S0005-7967(99)00102-3 [PubMed: 10957821]
- Tsao JI, Planeky MW, Young MA. Pain, psychological symptoms, and prescription drug misuse in HIV: A literature review. *Journal of Pain Management*. 2012; 5(2):111–118. [PubMed: 23826434]
- Ware J, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care*. 1996; 34(3):220–233. [PubMed: 8628042]
- Zale EL, Lange KL, Fields SA, Ditte JW. The relation between pain-related fear and disability: A meta-analysis. *The Journal Of Pain*. 2013; 14(10):1019–1030. DOI: 10.1016/j.jpain.2013.05.005 [PubMed: 23850095]
- Zvolensky MJ, Goodie JL, McNeil DW, Sperry JA, Sorrell JT. Anxiety sensitivity in the prediction of pain-related fear and anxiety in a heterogeneous chronic pain population. *Behaviour Research And Therapy*. 2001; 39(6):683–696. DOI: 10.1016/S0005-7967(00)00049-8 [PubMed: 11400712]

Table 1

Descriptive Data and Zero-Order Relations among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Sex ¹	–	-.20*	.16*	-.04	.21**	.20*	.20*	.18*	.12	.08	.19*
2. Race		–	.08	.13	.23**	.16*	.08	.20*	.30**	.22**	.06
3. CD4 T-cell Count			–	-.15	-.05	-.05	-.02	.02	-.10	-.17*	-.14
4. Bodily Pain ²				–	.18	.22	.01	.05	.30**	.27**	.23*
5. PASS-total ³					–	.89**	.85**	.76**	.85**	.51**	.36**
6. PASS-fear ³						–	.73**	.54**	.70**	.46**	.41**
7. PASS-cog ³							–	.57**	.59**	.33**	.35**
8. PASS-avoid ³								–	.48**	.26**	.07
9. PASS-phys ³									–	.61**	.34**
10. MASQ-AA ⁴										–	.44**
11. MASQ-AD ⁴											–
Mean (or n)	89.2% Male	52.7% Black	496.39	3.23	93.22	21.04	26.43	27.41	18.32	32.48	62.24
SD (or %)			300.67	1.20	29.28	9.06	8.05	7.88	9.94	11.51	16.86

Note:

*
 $p < .05$,**
 $p < .01$.¹ Sex coded as 0=male, 1=female;² Short Form Health Survey Revised (SFHS; Ware, Kosinski, & Keller, 1996).³ Pain Anxiety Symptoms Scale (McCracken et al., 1992);

Mood and Anxiety Symptom Questionnaire (Watson et al., 1995)

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Table 2

Main Effects of Pain-Related Anxiety

Parameter	β	p	sr^2
<i>MASQ-AA</i> ³			
Step 1. ($R^2 = 17.1, p < .01$)			
Sex	.15	ns	.02
Race	.29	<.01	.07
CD4 T-Cell	-.26	<.05	.06
Bodily Pain ¹	.20	ns	.04
Step 2. ($R^2 = 15.5; p < .001$)			
PASS-Total ²	.43	<.001	.15
<i>MASQ-AD</i> ³			
Step 1. ($R^2 = 12.7, p < .001$)			
Sex	.14	ns	.02
Race	.17	ns	.03
CD4 T-Cell	-.28	<.05	.07
Bodily Pain ¹	.17	ns	.02
Step 2. ($R^2 = 5.2, p < .05$)			
PASS-Total ²	.25	<.05	.05

Note: sr^2 is the squared partial correlation coefficient.

¹ *Short Form Health Survey Revised (SFHS; Ware, Kosinski, & Keller, 1996);*

² *Pain Anxiety Symptoms Scale (McCracken et al., 1992);*

³ *Mood and Anxiety Symptom Questionnaire (Watson et al., 1995)*

Table 3

Main Effects of Pain-Related Anxiety Subscales

Parameter	β	p	sr^2
<i>MASQ-AA</i> ³			
Step 1. ($R^2 = 17.1, p < .01$)			
Sex	.15	ns	.02
Race	.29	<.01	.07
CD4 T-Cell	-.26	<.05	.06
Bodily Pain ¹	.20	ns	.04
Step 2. ($R^2 = 26.0; p < .001$)			
PASS-Fear ²	.33	ns	.02
PASS-Cognitive ²	-.19	ns	.01
PASS-Avoid ²	-.04	ns	.00
PASS-Phys ²	.44	<.001	.08
<i>MASQ-AD</i> ³			
Step 1. ($R^2 = 12.7, p < .001$)			
Sex	.14	ns	.02
Race	.17	ns	.03
CD4 T-Cell	-.28	<.05	.07
Bodily Pain ¹	.17	ns	.02
Step 2. ($R^2 = 27.2, p < .001$)			
PASS-Fear ²	.26	<.001	.09
PASS-Cognitive ²	.02	ns	.00
PASS-Avoid ²	-.48	<.001	.13
PASS-Phys ²	.07	ns	.00

Note: sr^2 is the squared partial correlation coefficient.

¹ Short Form Health Survey Revised (SFHS; Ware, Kosinski, & Keller, 1996);

² Pain Anxiety Symptoms Scale (McCracken et al., 1992);

³ Mood and Anxiety Symptom Questionnaire (Watson et al., 1995)