RESEARCH ARTICLE

The Link between Chronic Pain and Depression in Low Income Country, Pakistan

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Abstract

Objective: To examine the relationship of subjective and physiological variables of pain in relation to depression among patients with chronic pain.

Method: The cross-sectional study was conducted at the Centre for Clinical Psychology in Lahore, Pakistan, from January to June 2016, and comprised patients with organic, identifiable chronic pain presenting at various government, semi-government and private hospitals. Data was collected using a personal history questionnaire, West Haven-Yale Multidimensional Pain Inventory and the depression subscale of the Symptom Checklist Revised. Data was analysed using SPSS 20.

Results: There were 186 subjects with a mean age of 46.92±13.92 years. All variables related to chronic pain had significant relationship with depressive symptoms ($p<0.05$).

Conclusion: The relationship between chronic pain and depressive symptoms was found to be significant, and females were at a higher risk than males.

Keywords: Chronic pain, Depression, Support, Relationships. (JPMA 71: .2535; 2021)

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Introduction

Chronic pain is a type of pain which persists for a longer period than is expected for healing.[1] Depression is a psychiatric illness that disturbs the way one feels, thinks and behaves; it gives rise to persistent low mood and loss of interest in previously enjoyable activities.[2] Depression is a frequent partner of chronic pain in patients.[3]

Chronic pain may result in psychological distress and reduced enjoyment of life; and patients often start fulfilling the diagnostic criteria for major depression.[4] This co-morbidity is a very prevalent phenomenon; as, according to an estimate, the prevalence of chronic pain is almost 50% in Pakistani elderly population, with 92.5% experiencing stress, 84.2% experiencing anxiety, and 80.1% experiencing depression.[5] The relationship between the two conditions is not limited to the prevalence of their co-morbidity. It has been established that the two conditions are also interlinked in the actual experience and expression of pain as well.[6] This intricate relationship requires research to focus on several possible chronic pain-related variables, like interference, support, pain severity, life control, affective distress, spouse's responses to pain and general activity level, and assess their relationship with depressive symptoms.

Literature suggests associations between various chronic pain-related variables and depressive symptoms cited above.[7-11] Moreover, women are more likely to report depressive symptoms than men.[12]

The current study was planned to examine the relationship of subjective and physiological variables of pain in relation to depression among patients with chronic pain.

Subjects and Methods

The cross-sectional study was conducted at the Centre for Clinical Psychology, University of the Punjab, Lahore, Pakistan, from January to June 2016, and comprised patients with organic, identifiable chronic pain presenting at various government, semi-government and private hospitals. After approval from the institutional ethics review board, the sample size was calculated using G-Power[13] calculator. The sample was raised using purposive sampling technique from among the patients visiting the outpatient departments (OPDs) of the various hospitals for any reason. Those included were individuals of either gender aged >18 years with diagnosed history of chronic pain and who had been experiencing chronic pain for at least six months. Cancer patients, those who had gone through surgery during the preceding six months, those who had lost a loved one in the preceding three months, diabetics, and those with physical disability were excluded.

Diagnoses of the participants included disorders, like sciatica, migraine, osteoarthritis, rheumatoid arthritis, fibromyalgia, trigeminal neuralgia, chronic cholecystitis, spinal stenosis, cervical radiculopathy, myofascial pain syndrome, and injuries. They were asked for their diagnosis

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and it was also confirmed from their medical records. After taking informed consent from the participants and permission of respective hospital administrations, data was collected using a questionnaire that had three sections; socio-demographic and chronic pain history, chronic pain experience, and symptoms of depression.

The first part collected demographic information as well as history of chronic pain including perceived severity of pain, duration of pain, and treatment-related information.

Chronic pain experience was assessed using the West Haven-Yale Multidimensional Pain Inventory (WHYMPI)[14] comprising 12 scales with a total of 52 items. The current study used the Urdu version of WHYMPI[15] with due permission from the author. It has three components. The first component is related to the actual experience of pain itself and has five sections: perceived pain-related interference in occupational, social, recreational and family/marital functioning; pain-related support or concern from significant other or spouse; pain severity; perceived life-control; and affective distress. The second component measures the perceived responses of the spouse or significant other to the individual's verbal or non-verbal expressions of pain and has three sections: negative responses; solicitous responses; and distracting responses. The third component assesses the participation in four kinds of common daily activities on four scales: household chores; outdoor work; activities away from home; and social activities.[16] The general activity score was calculated for all the participants. Responses are recorded on a 7-point Likert scale and the total scores for individual scales were computed by averaging out the scores on all the items in the respective scales. Higher scores depicted high pain severity and vice versa. The internal consistency values for all the WHYMPI scales ranged from 0.70 to 0.90 and the test-retest reliabilities after two-week duration ranged from 0.62 to 0.91.[15]

For the symptoms of depression, the Symptom Checklist-Revised (SCL-R) was used, which is an indigenous checklist[17] that has been subsequently revised.[18] It has 148 items and six sub-scales: depression, somatoform, anxiety, obsessive-compulsive, schizophrenia, and level of frustration tolerance. Responses are recorded on a 4-point Likert scale (0-3) and the total score of each subscale is calculated by simple summation. The total scores are then interpreted against the mean and standard deviation of 17±10 of the depression subscale, where 2SDs above the mean is considered the cut-off for depression. In the present study, only the depression subscale, having (24 items, was used to assess depressive symptoms. It has a test-retest reliability of 0.88 for non-psychiatric population, and 0.96 for psychiatric population.[18]

Data was analysed using SPSS 20. The Cronbach's alpha for WHYMPI subscales in the current study ranged from 0.36 to 0.93, and for the depression subscale of SCL-R it was 0.95. Further, the assumption of normality was checked and the skewness lied between the acceptable 0.04-0.48 range. Continuous variables were expressed as mean values and SDs, while categorical variables were expressed as frequencies and percentages. Pearson Product Moment Correlation Coefficient was employed to investigate the relationships between chronic pain and depression. The independent sample t-test was used to find gender differences in depressive symptoms. Multiple regression analysis with backward elimination method was used to test the predictive relationship between chronic pain-related variables and depressive symptoms. Beta coefficients were reported and $p<0.05$ was considered significant.

Results

There were 186 subjects with a mean age of 46.92±13.92 years. Majority of the participants were suffering from osteoarthritis (20%; f=38), myofascial pain syndrome (20%; f=37) or sciatica (15%; f=28). Moreover, 61% subjects (n=113) were living in a nuclear family system. The participants had experienced chronic pain for five years on average and majority all participants (99%; f=184) were using some medication for pain.

The mean scores of the participants on the dimensions of chronic pain were: interference 3.54±0.84, support 4.26±1.13, pain severity 4.24±0.79), life control 3.52±1.26,

Table-1: Pearson Product Moment Correlation Coefficients of chronic pain-related variables and depressive symptoms (n=186).

Measures		1	2	3	4	5	6	7	8	9	10	Mean±SD
I	Int	-	-0.11	0.54**	-0.28**	0.50**	0.11	0.01	-0.07	-0.05	40**	3.54±0.84
	Sup		-	-0.06	0.52**	-0.27**	-0.37**	0.61**	0.53**	0.29**	-0.35**	4.26±1.13
	PS			-	-0.14*	0.23**	-0.12	0.01	-0.10	-0.01	0.16*	4.24±0.79
	LC				-	-0.52**	-0.24**	0.30**	0.31**	0.45**	-0.59**	3.52±1.26
	AD					-	0.23**	-0.21**	-0.21**	-0.21**	0.58**	3.31±0.96
II	NR						-	-0.47**	-0.18*	-0.07	0.41**	1.35±1.30
	SR							-	0.54**	0.25**	-0.21**	3.87±1.02
	DR								-	0.42**	-0.17*	3.20±1.02
III	GA									-	-0.29**	2.22±0.78
	DS										-	34.68±18.65

Int: Interference scale; Sup: Support scale; PS: Pain severity scale; LC: Life-control scale; AD: Affective distress scale; NR: Negative responses scale; SR: Solicitous responses scale; DR: Distracting responses scale; GA: General activity scale; DS: Depression subscale; **$p<.01$ (one tailed), *$p<.05$ (one tailed)

Table-2: Chronic pain-related predictors of depressive symptoms (n=186).

Variables	Depressive Symptoms B	Model	β	95% CI
Constant	31.49***			[15.65, 47.33]
Interference	2.98*		0.14	[.49, 5.39]
Life Control	-5.12***		-0.35	[-6.48, -3.89]
Affective Distress	5.25***		0.27	[2.54, 7.24]
Negative Reponses	3.66***		0.26	[2.23, 5.27]
R2		.68		
F		41.28***		
ΔR2		-.008		
ΔF		1.67		

***p<.001, **p<.01, *p<.05; CI: Confidence interval.

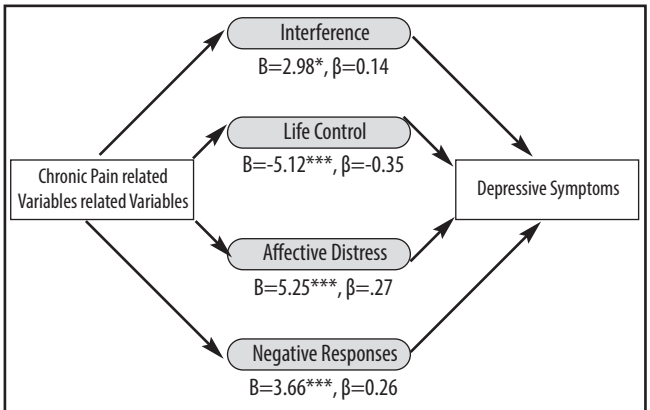

Figure-1: Emerged model representing predictive relationships of chronic pain-related variables with depressive symptoms.

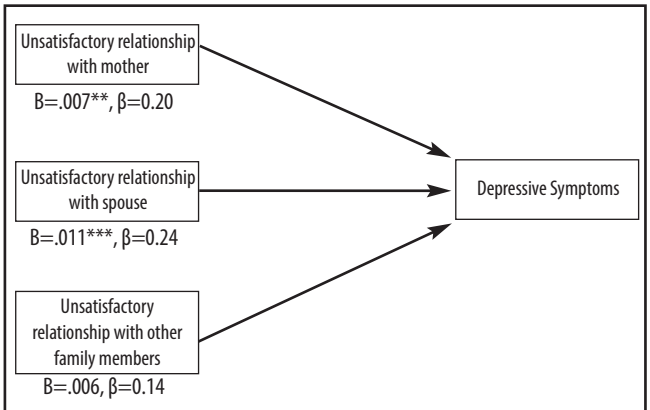

Figure-2: Emerged model representing predictive relationships of the personal history variables, including relationships with mother, spouse and other family members, with depressive symptoms.

affective distress 3.31+/-0.96), negative responses 1.35±1.30, solicitous responses 3.87±1.02, distancing responses 3.2±1.02), household chores 2.20±1.51, outdoor work 0.91±0.98, activities away from home 3.29±1.28, social activities 2.79±1.10, general activity 2.22±0.78 and depression 34.68±18.65. The scores on depression for 43% (f=80) of the participants fell in the category of mild to moderate depression.

All variables related to chronic pain had significant relationship with depressive symptoms (p<0.05) (Table 1).

The interference, affective distress and negative responses subscales of WHYMPI were positive predictors, while life-control was the negative predictor of depressive symptoms (Table 2). The model [F (4, 181) = 50.05, p<0.001] accounted for 53% of the total variance in depressive symptoms (Figure 1).

Support by significant others and their responses to participants' pain yielded significant results (p<0.05). Unsatisfactory relationship with mother, spouse, or with any other family member predicted high degree of depression, and the model accounted for 9% of the total variance in depressive symptoms (Figure 2). There was no multicollinearity between the variables.

Discussion

In the current study, pain severity and pain-related interference were positively, while general activity level was negatively related with depressive symptoms. This is in accordance with literature.[7,10]

Life-Control was also found to be negatively related with depressive symptoms, which is backed by earlier studies.[5,7] It can be concluded that chronic pain patients who feel more in control of their lives and feel an ability to solve their own life problems are less likely to develop depressive symptoms.

Affective distress had a positive relationship with depressive symptoms and the results are supported by literature.[9,11] Significant others' distracting responses to participants' pain had a significant negative relationship with depressive symptoms. Though limited, available literature, however, supports a positive relationship between distracting responses from partner or spouse and patient's depressive symptoms.[9,11] This might be partially explained by the fact that these studies were undertaken in the individualistic Western cultures which are quite different from collectivistic cultures, with strikingly different social values, familial expectations and setups.

Solicitous responses of the significant other to participant's pain and pain-related support from the significant other were negatively related with depressive symptoms. This is again supported by past studies.[8,9] Interference, affective distress and the significant others' negative responses to participants' pain emerged as the positive predictors of depressive symptoms. There is empirical research evidence which suggests that both interference[10] and significant others' negative responses to participants' pain[11] were

positive predictors of depression. Life control and the significant others' solicitous responses to participants' pain emerged as the best negative predictors of depressive symptoms.

It is empirically established that depression is almost twice as prevalent in women in the general population[3] and it is more evident that it is more common in women within the population of chronic pain patients as well.[12,19,20] Women are believed to be more inclined to develop depressive symptoms because of high level of hormonal fluctuation, greater genetic predisposition (confirmed by twin studies)[21] high level of emotional distress following disruption in relationships, longer life-span compared to men, implicating additional problems of old age, and a higher tendency to seek medical and psychological help which may lead to depression diagnosis.[21]

Conclusion

Chronic pain has been empirically established to have a link with depressive symptoms in both their rate of co-morbidity as well as their integrated experience and expression. Significant results were revealed which particularly highlighted the importance of the significant other's support and response to participant's pain.

Disclaimer: The text is based on an academic thesis.

Conflict of Interest: One of the co-authors also signed the ethical review statement being a member of the institutional review board at the Centre for Clinical Psychology.

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References

1. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. Chronic pain as a symptom or a disease: The IASP Classification of Chronic Pain for the International Classification of Diseases (ICD-11). Pain. 2019; 160:19-27.
2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-5 (R)). 5th ed. Arlington, TX: American Psychiatric Association Publishing, 2013.
3. Sheng J, Liu S, Wang Y, Cui R, Zhang X. The link between depression and chronic pain: Neural mechanisms in the brain. Neural Plast. 2017; 2017:1-10.
4. Humo M, Lu H, Yalcin I. The molecular neurobiology of chronic pain-induced depression. Cell Tissue Res. 2019; 377:21-43.
5. Akram MJ, Malik AN. "Frequency of chronic neuropathic pain and its association with depression in the elderly in Pakistan." J Pak Med Assoc. 2019; 69:1907-9.
6. Coronado RA, Brintz CE, McKernan LC, Master H, Motzny N, Silva FM, et al. Psychologically informed physical therapy for musculoskeletal pain: current approaches, implications, and future directions from recent randomized trials. Pain Rep. 2020; 5:e847.
7. de Waal MWM, Hegeman JM, Gussekloo J, Verhaak PFM, van der Mast RC, Comijs HC. The effect of pain on presence and severity of depressive disorders in older persons: The role of perceived control as mediator. J Affect Disord. 2016; 197:239-44.
8. Damush TM, Kroenke K, Bair MJ, Wu J, Tu W, Krebs EE, et al. Pain self-management training increases self-efficacy, self-management behaviours and pain and depression outcomes. Eur J Pain. 2016; 20:1070-8.
9. Tate AM, Martire LM, Zhaoyang R. Spousal understanding and marital satisfaction in pain patients and their spouses. Pers Relatsh. 2019; 26:42-53.
10. Cuff L, Fann JR, Bombardier CH, Graves DE, Kalpakjian CZ. Depression, pain intensity, and interference in acute spinal cord injury. Top Spinal Cord Inj Rehabil. 2014; 20:32-9.
11. Khazaeipour Z, Ahmadipour E, Rahimi-Movaghar V, Ahmadipour F, Vaccaro AR, Babakhani B. Association of pain, social support and socioeconomic indicators in patients with spinal cord injury in Iran. Spinal Cord. 2017; 55:180-6.
12. Sagheer MA, Khan MF, Sharif S. Association between chronic low back pain, anxiety and depression in patients at a tertiary care centre. J Pak Med Assoc. 2013; 63:688-90.
13. Franz F, Erdfelder E, Lang AG, Axel Buchner. "G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences." Behav Res Methods. 2007; 39:175-91.
14. Kerns RD, Turk DC, Rudy TE. The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). Pain. 1985; 23:345-56.
15. Zainab A, Naz H. Pain severity, illness perception, and psychological well-being in patients with rheumatoid arthritis. (Unpublished thesis). University of the Punjab, Lahore. 2012.
16. Dworkin RH, Bruehl S, Fillingim RB, Loeser JD, Terman GW, Turk DC. Multidimensional diagnostic criteria for chronic pain: Introduction to the ACTTION–American pain society pain taxonomy (AAPT). J Pain. 2016; 17:T1-9.
17. Rahman NK, Sitwat A. Development of an indigenous psychiatric symptom checklist. (Unpublished thesis). Lahore: University of the Punjab, 1990.
18. Rahman NK, Dawood S, Rehman N, Mansoor W, Ali S. Standardization of Symptom Checklist-R on psychiatric and non-psychiatric sample of Lahore city. Pak J Clin Psychol. 2009; 8:21-32.
19. Anyfanti P, Gavriilaki E, Pyrpasopoulou A, Triantafyllou G, Triantafyllou A, Chatzimichailidou S, et al. Depression, anxiety, and quality of life in a large cohort of patients with rheumatic diseases: common, yet undertreated. Clin Rheumatol. 2016; 35:733-9.
20. Jain R, Rishi R, Sharma B, Kiyawat V. Role of depression and its associating factors in indoor orthopaedic patients. Asian J Med Sci. 2015; 6:70-6.
21. Albert PR. Why is depression more prevalent in women? J Psychiatry Neurosci. 2015; 40:219-21.