STUDY OF PSYCHIATRIC COMORBIDITY AND QUALITY OF LIFE AMONG PEOPLE SUFFERING FROM CHRONIC PAIN

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Abstract
Background- Chronic pain is a debilitating condition associated with stress. It can impair sufferer's functioning and quality of life. This study was done to explore psychiatric comorbidity and quality of life among individuals suffering from chronic pain conditions.
Aims and Objectives- 1. To find out psychiatric comorbidity in individuals suffering from chronic pain. 2. To assess quality of life of these individuals. 3. To determine the impact of severity of pain and psychiatric comorbidity on quality of life of such individuals.
Materials and methods- This observational, cross sectional study was conducted in Psychiatry department of Government medical college and Rajindra hospital. 60 individuals suffering from chronic pain conditions visiting OPD of department of orthopedics were consecutively enrolled into study after obtaining their written informed consent. Permission from institutional ethics committee was obtained before beginning the study. Sociodemographic data was recorded on sociodemographic proforma-1. MINI International Neuropsychiatric Inventory was used to screen patients for presence of psychiatric comorbidity. Psychiatric diagnosis was confirmed by using International Classification of Diseases 10th editions for mental health and behavioral disorders (ICD-10). Mc Gill Pain questionnaire was used to determine severity of pain. Short Form-36 was used to assess quality of life. Impact of severity of pain and psychiatric comorbidity on quality of life was studied using ANOVA. Data was statistically analyzed on SPSS.
Results- 45% individuals suffering from chronic pain were having some or another psychiatric comorbidity. Most common psychiatric comorbidity observed was Major Depressive Episode (MDE) (18.33%, n=11) followed by major depressive episode with melancholia (13.33%, n=8). Quality of life on Short Form-36 (SF-36) was lower in all 8 domains compared to general population. Lowest scores were obtained in Emotion Well Being Domain (EWB). There was significant to highly significant positive correlation of psychiatric comorbidity and severity of

pain on different domains of SF-36 except for domain role limitation due to emotional problems.

Conclusion- There is definitely a lot of stress associated with chronic pain, which leads to psychiatric comorbidity. Consequently, quality of life impairs. We must extend Consultation-Liaison (CL) Psychiatric services to patients suffering from chronic pain.

Abbreviations

SF-36= Short Form -36

ICD-10= International Classification of Diseases 10th edition for mental health and behavioral disorders.

MDE= Major Depressive Episode

Keywords- Chronic pain, psychiatric comorbidity, quality of life.

1. INTRODUCTION

International Association for the study of pain (IASP) subcommittee on taxonomy defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[1] Broadly this experience is divided into two categories- acute and chronic pain. Acute pain is defined as physiological response and experience to noxious stimuli that can become pathologic. It is sudden in onset and lasts for 7 days. It may extend up to 30 days.[2] According to IASP any pain lasting longer than 3 months is chronic pain.[3] Chronic pain can occur due to number of causes. It could be neuropathic in origin (diabetic neuropathy), nociceptive (due to burn), musculoskeletal (radiculopathy), inflammatory (infected wound), mechanical (fracture) or psychogenic (stress headache).[4] At the site of pain many chemicals like histamine, Nerve Growth Factor (NGF), substance P, calcitonin G etc., are released. These chemicals are responsible for generating action potential in free nerve terminals (a delta and C fibers). Afferents from these fibers go to dorsal horn of spinal cord and further up to Thalamus. Here there is relay of sensory information and then it goes to somatosensory cortex.[5] Chronic pain leads to high socioeconomic and public health burden. It impairs quality of life and activities of daily living.[6] Many psychological and environmental factors effect pain perception.[7] Vice versa is also true. There is bidirectional relationship between two.[8] Research shows high prevalence of psychiatric disorders among people suffering from pain. One recent study conducted in Japan on 347 patients suffering from chronic pain presenting to medical institutions reported 94.6% prevalence of mental health disorders.[9] Research has revealed that chronic pain induced depression is common.[10] Henceforth it is important to screen presence of mental health disorders in people suffering from chronic pain conditions. This study is an attempt to explore psychiatric comorbidity and assess quality of life in such individuals.

Aims and Objectives

1. To find out psychiatric comorbidity in individuals suffering from chronic pain.

2. To assess quality of life of these individuals.

3. To determine the impact of severity of pain and psychiatric comorbidity on quality of life of such individuals.

2. MATERIAL AND METHODS

This observational, cross sectional study was conducted in Psychaitry department of Government Medical College and Rajindra hospital. 60 individuals suffering from chronic pain conditions visiting OPD of department of orthopedics were consecutively enrolled into study

after obtaining their written informed consent. Permission from institutional ethics committee was obtained before beginning the study. Sociodemographic data was recorded on sociodemographic proforma-1. MINI International Neuropsychiatric Inventory was used to screen patients for presence of psychiatric comorbidity. Psychiatric diagnosis was confirmed by using International Classification of Diseases 10th editions for mental health and behavioral disorders (ICD-10). Mc Gill Pain questionnaire was used to determine severity of pain. Short Form-36 was used to assess quality of life. Impact of severity of pain and psychiatric comorbidity on quality of life was studied using ANOVA. Data was statistically analyzed on SPSS.

Inclusion criteria
1. Age above 18 years
2. Consenting individuals
Exclusion Criteria
1. Subjects having intellectual disability
2. Minor individuals
3. non-consenting individuals
4. Individuals already on psychiatric medications
5. Individuals suffering from acute or subacute pain (less than 3 months duration)
Instruments
1. Sociodemographic proforma-1
2. International Classification of Diseases 10th edition for mental health and behavioral disorders
3. MINI International Neuropsychiatric Inventory (MINI)-It is a short-structured screening tool used internationally to screen out psychiatric disorders. It has good reliability and validity. It hardly takes 15-20 minutes to administer it.[11]
4. Short Form-36 (SF-36)- It is a 36 itemed questionnaire used to assess quality of life Scale is subdivided into eight domains- physical function (PF), role limitations due to physical problems (RLPH), role limitations due to emotional problems (RLEH), pain, Energy and fatigue (E/F), general health (GH), social functioning (SF) and emotional wellbeing (EWB). Each item is scored on a 100-point scale.[12]
5. Mc Gill Pain Questionnaire- It is self-reporting instrument used to measure pain. It is composed up of 78 words. Subject chooses words which describe their pain better. Seven words are divided into pain descriptor (D1-D10), three words in affective components (D11-D15), one word into evaluation of pain (D16), one word into miscellaneous (D17-D20). Scores are tabulated by summing up the values associated with the words. Scores range from 0-78. 0 being no pain and 78 being severe pain. Test-retest reliability is around 0.95-0.96. It has good content and construct validity.[13]

Observations

Table-1: Sociodemographic data of individuals suffering from chronic pain.

Demographic Information		Patients (N=60)	Percentage
Age Group (Years)	11-30 Years	16	26.67%
	31-50 Years	23	38.33%
	51-70 Years	21	35%
	Mean±SD	42.37±14.14	
	Median	46.50	
	Range	15-64	
Sex	Female	16	26.67%

	Male	44	73.33%
Religion	Hindu	57	95%
	Muslim	3	5%
Education	Illiterate	20	33.33%
	Primary	8	13.33%
	HSC	8	13.33%
	SSC	11	18.33%
	Graduate	13	21.67%
Marital Status	Married	50	83.33%
	Unmarried	10	16.67%
Income (Rs)/m	≤10000 Rs	42	70%
	10000-20000 Rs	16	26.67%
	21000-25000 Rs	2	3.33%
	Mean±SD	9900.00±4757.51	
	Median	8000.00	
	Range	5000-23000	
Type of Chronic Pain	LBA	12	20%
	OA	20	33.33%
	Chronic fracture Pain	15	25%
	Radiculopathies	13	21.67%
Occupation	Skilled	4	6.67%
	Unskilled	1	1.67%
	Self Employed	6	10%
	House Wife	7	11.67%
	Student	4	6.67%
	Unemployed	38	63.33%
	Total	60	100%

Table-2: Psychiatric comorbidity in individuals suffering from chronic pain

Psychiatric Comorbidity	Patients	Percentage
Alcohol Dependence	1	1.67%
Generalised Anxiety Disorder	3	5%
Major Depressive Episode	11	18.33%
MDE with Melancholic Features	8	13.33%
Panic Disorder	1	1.67%
Suicidality	3	5%
No Comorbidity	33	55%
Total	60	100%

Table-3: Quality of life of individuals suffering from chronic pain

Variable	PF	RLPH	RLEH	E/F	EWB	SF	Pain	GH
Mean	71.67	69.58	58.28	49.42	43.33	60.20	59.96	29.83
SD	7.85	16.65	18.01	3.33	16.88	10.91	12.73	6.70
Median	70.00	75.00	66.60	50.00	52.00	62.50	67.50	30.00
Range	60-90	25-100	0-66.60	40-55	16-72	25-75	22.50-77.50	15-40

Table-4:- Impact of severity of pain and psychiatric comorbidity on quality of life using ANOVA in individuals suffering from chronic pain.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		F value	p value
						Lower Bound	Upper Bound		
PF	Alcohol Dependence	1	70.00	0.00	0.00	0.00	0.00	2.863	0.017 (S)
	Generalised Anxiety Disorder	3	76.67	11.55	6.67	47.98	105.35		
	Major Depressive Episode	11	66.36	5.05	1.52	62.97	69.75		
	MDE with Melancholic Features	8	67.50	4.63	1.64	63.63	71.37		
	Panic Disorder	1	60.00	0.00	0.00	0.00	0.00		
	Suicidality	3	73.33	5.77	3.33	58.99	87.68		
	No	33	74.24	7.92	1.38	71.43	77.05		
	Total	60	71.67	7.85	1.01	69.64	73.69		
RLPH	Alcohol Dependence	1	75.00	0.00	0.00	0.00	0.00	3.772	0.003 (S)
	Generalised Anxiety Disorder	3	83.33	14.43	8.33	47.48	119.19		
	Major Depressive Episode	11	59.09	12.61	3.80	50.62	67.56		
	MDE with Melancholic Features	8	56.25	17.68	6.25	41.47	71.03		
	Panic Disorder	1	50.00	0.00	0.00	0.00	0.00		
	Suicidality	3	66.67	14.43	8.33	30.81	102.52		

	No	33	75.76	14.64	2.55	70.57	80.95		
	Total	60	69.58	16.65	2.15	65.28	73.89		
RLEH	Alcohol Dependence	1	66.60	0.00	0.00	0.00	0.00	2.054	0.075 (NS)
	Generalised Anxiety Disorder	3	55.50	19.23	11.10	7.74	103.26		
	Major Depressive Episode	11	51.46	17.39	5.24	39.78	63.15		
	MDE with Melancholic Features	8	45.79	30.51	10.79	20.28	71.29		
	Panic Disorder	1	33.30	0.00	0.00	0.00	0.00		
	Suicidality	3	66.60	0.00	0.00	66.60	66.60		
	No	33	63.57	12.80	2.23	59.03	68.11		
	Total	60	58.28	18.01	2.32	53.62	62.93		
E/F	Alcohol Dependence	1	50.00	0.00	0.00	0.00	0.00	5.973	0.001 (HS)
	Generalised Anxiety Disorder	3	51.67	2.89	1.67	44.50	58.84		
	Major Depressive Episode	11	46.82	2.52	0.76	45.12	48.51		
	MDE with Melancholic Features	8	46.25	4.43	1.57	42.54	49.96		
	Panic Disorder	1	45.00	0.00	0.00	0.00	0.00		
	Suicidality	3	51.67	2.89	1.67	44.50	58.84		
	No	33	50.76	2.21	0.38	49.97	51.54		
	Total	60	49.42	3.33	0.43	48.56	50.28		

EWB	Alcohol Dependence	1	32.00	0.00	0.00	0.00	0.00	12.853	0.001 (HS)
	Generalised Anxiety Disorder	3	54.67	16.17	9.33	14.51	94.82		
	Major Depressive Episode	11	24.36	6.05	1.83	20.30	28.43		
	MDE with Melancholic Features	8	28.00	7.41	2.62	21.81	34.19		
	Panic Disorder	1	20.00	0.00	0.00	0.00	0.00		
	Suicidality	3	52.00	20.00	11.55	2.32	101.68		
	No	33	52.61	12.21	2.13	48.28	56.94		
	Total	60	43.33	16.88	2.18	38.97	47.69		
SF	Alcohol Dependence	1	62.50	0.00	0.00	0.00	0.00	2.290	0.049 (S)
	Generalised Anxiety Disorder	3	66.67	14.43	8.33	30.81	102.52		
	Major Depressive Episode	11	54.55	6.31	1.90	50.31	58.78		
	MDE with Melancholic Features	8	51.56	16.95	5.99	37.39	65.74		
	Panic Disorder	1	62.50	0.00	0.00	0.00	0.00		
	Suicidality	3	66.67	7.22	4.17	48.74	84.59		
	No	33	62.88	9.10	1.58	59.65	66.11		
	Total	60	60.21	10.91	1.41	57.39	63.03		
Pain	Alcohol Dependence	1	55.00	0.00	0.00	0.00	0.00	4.229	0.002 (S)
	Generalised Anxiety Disorder	3	70.83	5.77	3.33	56.49	85.18		

	Major Depressive Episode	11	48.64	5.05	1.52	45.25	52.03		
	MDE with Melancholic Features	8	51.56	18.85	6.66	35.81	67.32		
	Panic Disorder	1	67.50	0.00	0.00	0.00	0.00		
	Suicidality	3	63.33	7.22	4.17	45.41	81.26		
	No	33	64.39	10.53	1.83	60.66	68.13		
	Total	60	59.96	12.73	1.64	56.67	63.25		
GH	Alcohol Dependence	1	30.00	0.00	0.00	0.00	0.00	5.191	0.001 (HS)
	Generalised Anxiety Disorder	3	36.67	5.77	3.33	22.32	51.01		
	Major Depressive Episode	11	23.64	5.05	1.52	20.25	27.03		
	MDE with Melancholic Features	8	26.88	5.94	2.10	21.91	31.84		
	Panic Disorder	1	20.00	0.00	0.00	0.00	0.00		
	Suicidality	3	36.67	5.77	3.33	22.32	51.01		
	No	33	31.67	5.68	0.99	29.65	33.68		
	Total	60	29.83	6.70	0.86	28.10	31.56		
Mcgill Pain Questionnaire	Alcohol Dependence	1	44.00	0.00	0.00	0.00	0.00	5.736	0.001 (HS)
	Generalised Anxiety Disorder	3	32.67	8.08	4.67	12.59	52.75		
	Major Depressive Episode	11	44.09	2.77	0.84	42.23	45.95		
	MDE with Melanchol	8	44.50	3.34	1.18	41.71	47.29		

ic Features								
Panic Disorder	1	32.00	0.00	0.00	0.00	0.00		
Suicidality	3	41.33	4.62	2.67	29.86	52.81		
No	33	35.61	6.56	1.14	33.28	37.93		
Total	60	38.57	6.90	0.89	36.78	40.35		

3. DISCUSSION

This cross-sectional observational study conducted on 60 individuals suffering from chronic pain revealed some significant findings

Maximum individuals (35%, n=21) were in the age group of 51-70 years. At this age body starts undergoing senescence. Physiological functions start deteriorating. Individual becomes prone to diseases. An addition of chronic pain can be overwhelming.

73.33% (n=44) individuals were males. In Indian patriarchal culture males are considered as bread winners for the family. Their being affected by chronic pain can affect financial situation of the family.

It was seen that 33.33% of individuals (n=20) were illiterate. Lack of education reduces a person's understanding about nature and etiology of pain and importance of seeking professional treatment for their condition.

63.33% of individuals (n=38) were unemployed. 70% of individuals (n= 42) were earning less than 10,000 INR per month. It can be said that without proper source of income a person cannot afford appropriate treatment for any physical or mental illness. With increasing cost of living availing treatment for diseases is becoming difficult for economically weaker people. Government must strengthen and revise schemes like Aayushman Bharat to provide affordable health services to people living below poverty line.

Maximum individuals (n=20, 33.33%) were suffering from osteoarthritis. This finding is similar to a recent study where prevalence of knee osteoarthritis was 28.7%.[14] Osteoarthritis commonly effects elderly population above the age of 45 years. Increasing age, obesity, female gender, low educational status, prolonged squatting, poor muscular strength, decreasing bone density, trauma to joints and repetitive movements of the joint are common risk factors.[15]

In our study 45% of individuals (n= 27) were suffering from one or another psychiatric illness. Most common psychiatric disorder observed was Major Depressive Episode (MDE) (18.33%, n=11) followed by major depression with melancholia (13.33%, n=8). Our finding is consistent with meta-analysis performed by Brendon Stubbs et al., in 2016on prevalence of depression and anxiety in osteoarthritis. They reported it to be 19.9%.[16]

Pain and depression have a deeper molecular relationship with each other. When a person suffers from pain, many chemicals like BDNF, inflammatory factors, monoamine neurotransmitters and glutamate are released. Chronic pain has ability to destroy dopamine activity in midbrain. There is reduced expression of Dopamine 2 receptors. This leads to low moods and motivation. These inflammatory factors lead to critical changes in functional areas of brain.[17] Chronic pain also leads to certain epigenetic modifications like change in structure of chromatin. This effects gene expression and gene regulation. Chronic pain also alters

neurogenesis in hippocampus. This all leads to depression.[18] Serotonin and nor adrenaline pathways are commonly affected in depression.[19]

During this study it was observed that quality of life of individuals suffering from chronic pain was lower than general population in all domains of SF-36.[20] Lowest scores were obtained in Emotional Well Being (EWB) domain. Similar findings were reported by Elliot TEs et al., in December 2003 in their study in which quality of life index was lower on SF-36 in all domains.[21]

In this study impact of severity of pain and psychiatric comorbidity on quality of life was assessed using ANOVA. It was observed that in all domains except role limitations due to emotional problems domain (RLEH), there was significant to highly significant positive correlations. Similar kind of positive correlation between was reported by Elliot TE et al., in 2003 (r=0.567, p<0.001).[21]

Similarly, highly significant positive correlation was observed between severity of pain and quality of life.

These findings imply that when people suffer from chronic pain, they tend to suffer from mental health disorders. Their quality of life deteriorates further.

4. CONCLUSION

There is definitely a lot of stress associated with chronic pain, which leads to psychiatric comorbidity. Consequently, quality of life impairs. We must extend Consultation-Liaison (CL) Psychiatric services to patients suffering from chronic pain.

Limitations

It was a hospital-based study.

Sample size was small.

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