Depression among chronic pain patients at Hospital Tengku Ampuan Rahimah, Klang

Hon Fei Seed, MD*,, Hazli Zakaria, MBBS*, Muralitharan Perumal, MD***, Azlin Baharudin, MD***

*Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia, **Department of Psychiatry and Mental Health, Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia, ***Department of Anesthesiology and Intensive Care, Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia

ABSTRACT

Introduction: Despite the high prevalence rates of depression amongst chronic pain patients reported globally, the condition is often under-recognised and under-treated. Depression frequently complicates the effective management of pain and is associated with poor quality of life. This study aimed to explore the incidence of depression and its' associated factors in a sample of chronic pain patients in Malaysia.

Materials and methods: This descriptive cross-sectional study was conducted amongst clinically diagnosed chronic pain patients from the pain management clinic of Hospital Tengku Ampuan Rahimah over a period of seven months. Socio-demographics and clinical data were obtained from patients' interview and medical records. The validated Depression Anxiety Stress Scale-21 (DASS-21) was used for screening and Mini International Neuropsychiatric Interview (MINI) was used to establish the depression diagnoses among the patients. Numeric pain intensity scale was used to assess the severity of pain.

Results: Eighty-three patients with a mean age of 50.4±12.50 years participated in this study. The majority of the patients were females (56.6%), married (85.5%) and being employed (49.4%). The percentage of depression was 37.4%. Depression was significantly associated with severity of pain (p<0.001) and the duration of pain (p <0.05).

Conclusion: Almost one third of chronic pain patients in this study have depression. Depression was significantly associated with the severity and duration of pain. Depression should be regularly screened among patient with chronic pain.

KEY WORDS:
Chronic pain, depression, Malaysia, pain, prevalence

INTRODUCTION

Depression is a significant mental health problem among chronic pain patients. It is often under-recognised and under treated. The prevalence of depression among chronic pain patients varied tremendously between 1.5% and 87% depending upon the assessment method used.[1] Depression frequently complicates effective pain management and is associated with poorer outcome.[2] It may lead to deterioration in social and occupational functioning with reduction in activity levels, as well as increased pain behaviour and use of medical services.[1] A study in 2003 that looked into the association between depression, chronic pain, and quality of life showed that the prevalence of major depressive disorder was 52% and the severity of depression was highly correlated with the quality of life.[3] The level of education and marital status were among the demographic variables found to be related to depression, where younger women, older men, longer duration of pain and unemployment were associated with increased depression.[4] On the other hand, another study showed that the added morbidity of depression among chronic pain patients is significantly associated with more severe pain, poorer health related quality of life and greater disability.[5]

Many studies have been done abroad with regards to the prevalence of depression in chronic pain patients and its associated factors. This study aimed to determine the percentage of depression among chronic pain patients in our community, its associated factors and to identify the high-risk groups. There was scarce research on the exploration of depressive disorders amongst chronic pain patients in Malaysia. This study was the first in Malaysia that explored the percentage of depression amongst chronic pain patients to create awareness among local researchers and relevant authorities to initiate aggressive planned health care reforms.

MATERIALS AND METHODS

Study Design and Subjects

Universal sampling technique was employed to select all 110 eligible chronic pain patients that acquired treatment from the Pain Management Clinic of Hospital Tengku Ampuan Rahimah (HTAR) Klang during the study period from December 2013 till June 2014. Interviews were conducted by the principal investigator alone. Eighty-three patients with chronic pain were recruited. HTAR is one of the main referral centres for pain management. Limited time and budget were behind the conduction of this study in one hospital. Inclusion criteria include age 18 years old and above, suffering from chronic pain of more than 12 weeks,[1, 6] their ability to converse in English or Bahasa Malaysia and fit to give informed consent. Patients who were not able to cooperate with the assessment for example, sufferers of severe psychosis, severe psychomotor agitation, severe psychomotor retardation and mental retardation were excluded.

This article was accepted: 28 July 2015
Corresponding Author: Seed Hon Fei, Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif,Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia
Email: seed_tabo@yahoo.com / seedhonfei@gmail.com

The estimated sample size of this study is 83 patients based on formula by Lwanga and Lemeshow.[7]

$n = [z/d]^2 p(1-p)$

The z value is 1.96, for the level of confidence of 95%, d value is the absolute precision taken at 0.05% and prevalence, p, at 5.6% according to Malaysia Clinical Practice Guidelines for Major Depressive Disorder.[8]

Study Instruments

All patients were given the study information sheet and briefed about the study. After the patient consented to participate, they were given three self-report scales which were i) Socio-demographic data of the patient, ii) the Depression Anxiety Stress Scale 21 (DASS-21) (Malay or English Version) and iii) Numeric Pain Intensity Scale.

Socio-demographic and clinical data [age, sex, ethnicity, employment status, educational level, marital status, duration of pain and medical conditions (diabetes mellitus, hypertension, ischemic heart disease, dyslipidaemia, thyroid disease and others)] were obtained from all the subjects.

A Numeric Pain Intensity Scale was used to evaluate the intensity of pain. The timing of the evaluation was done regardless of the duration since the pain medication started. It is a visual analog scale ranging from 0-10. The correspond pain levels were as followed: 1-3 mild pain, 4-6 moderate pain, 7-10 severe pain.[9]

Depression was screened by self-report questionnaire using the Depression Anxiety Stress Scale (DASS-21). The Malay version of DASS-21 has been validated in Malaysia.[10] Scoring of 9 or less in the DASS-21 depression scale were considered 'normal', 10-13 were considered 'mild', 14-20 were considered 'moderate', 21-27 were considered 'severe' and scores greater than 28 were considered 'extremely severe'.[11]

The Mini-International Neuropsychiatric Interview (M.I.N.I.), a brief standardised diagnostic interview was carried out to diagnose depression in patients scoring more than 9 for depression scale in their DASS-21 by the principal investigator for all patients. The M.I.N.I. was designed as a structured diagnostic tool for the major Axis 1 psychiatric disorders in DSM-IV and ICD-10.[12]

Statistical Analysis and Ethical Consideration

Statistical Package for the Social Sciences (SPSS), version 22.0 was used to analyse the collected data. Categorical outcomes were described by using the frequencies and percentages whereas numerical outcome were presented using the mean and standard deviation. Patients were divided into two defined group, with or without depression (according to the cut off points) for comparison. The associations between patients' socio-demographic characteristics and depressive disorder were analysed using Chi-square Test or Fischer's exact test for categorical outcomes. The normality of continuous variables was explored and accordingly we used the independent-t test for normally distributed variables and the non-parametric (Mann-Whitney test) if the variable was not normally distributed (severity, duration of pain and depressive disorder). The significant level was chosen at 5 % (α=0.05).

Multivariate logistic regression analysis was performed on the data to examine the degree of the independent variables in this study on the study outcome. All the independent variables with $p<0.05$ were selected. Those patients who were found to be depressed were offered referral services to the Psychiatry and Mental Health Clinic HTAR.

The National University of Malaysia Ethics Committee and the Malaysia Research Ethic Committee, Ministry of Health, Malaysia approved the research project.

RESULTS

Eighty-three patients were evaluated and thirty one patients were diagnosed with depression disorder by using M.I.N.I. Depressive disorder included major depressive episode, current or recurrent, major depressive episode with melancholic features and dysthymia. Table I summarised the number of cases diagnosed with different type of depressive disorder. With respect to the past history of patients, three patients had been previously diagnosed with major depressive disorder after they suffered from chronic pain. All three of them are under psychiatry follow up.

Total of 47 females (56.6%) and 36 males (43.4%) with a mean age of 50.4±12.50 years were examined. Table II summarised the sociodemographic characteristics of the subjects. Age, sex, ethnicity, employment status, educational level, marital status and other medical conditions were not statistically significant to predict the outcome of depression.

Table III showed that clinical factors such as severity of pain and duration of pain were both significantly associated with the outcome of depression with $p<0.001$ and $p<0.05$ respectively.

Multivariate logistic regression analysis was performed to adjust the confounding factors to determine the most significant associative factors for the outcome of depression in this study. The variables used were patient's ethnicity, employment status, medical conditions, and duration and severity of pain. It was found that only the severity of pain was significantly associated with the outcome of depression with $p<0.01$, Odds Ratio (OR) of 1.58 and 95% confidence interval (CI) 1.19 to 2.10.

The total number of subjects in these three different groups was 16 (19.3%) for the mild pain group, 26 (31.3%) for the moderate pain group and 41 (49.4%) for the severe pain group. Using Pearson's Chi-Square Test, it was found that the pain scores in these three categories were significantly associated with the outcome of depression with $p<0.01$.

DISCUSSION

Chronic pain and depression frequently occur together. A study in Brazil found that 42% of chronic pain patients have depression by using the M.I.N.I.[13] Another study done using Structured Clinical Interview for DSM-IV (SCID) Axis I disorders that look into the prevalence of depression and its

Table I: Number of cases diagnosed with different type of depressive disorder

Type of Depression	n
Recurrent major depressive episode with melancholic features and dysthymia	1
Recurrent major depressive episode and dysthymia	6
Recurrent major depressive episode	4
Major depressive episode with melancholic features	2
Major depressive episode and dysthymia	2
Major depressive episode	12
Dysthymia	4

Table II: The association between patients' sociodemographic characteristics and depressive disorder (N=83)

Variable	n	No depression (n=52)	Depression (n=31)	p-value
Age , years [Mean (SD)]†		51.56(12.57)	49.00(12.33)	0.831
Sex (%)‡				0.477
Male	36	21 (40.4)	15 (48.4)	
female	47	31 (59.6)	16 (51.6)	
Ethnic (%)§				0.261
Malay	27	20 (38.5)	7 (22.6)	
Chinese	10	7 (13.5)	3 (9.7)	
Indian	45	24 (46.2)	21 (67.7)	
Others	1	1 (1.9)	0(0.0)	
Educational Level (%)‡				0.731
Primary	11	7 (13.5)	4 (12.9)	
Secondary	55	33 (63.5)	22 (71.0)	
Tertiary	17	12 (23.1)	5 (16.1)	
Occupation (%)‡				0.228
Unemployed	33	17 (32.7)	16 (51.6)	
Employed	41	29 (55.8)	12 (38.7)	
Retired	9	6 (11.5)	3 (9.7)	
Marital Status (%)§				0.881
Married	71	44 (84.6)	27 (87.1)	
Single	6	4 (7.7)	2 (6.5)	
Divorced	1	1 (1.9)	0 (0.0)	
Widowed	5	3 (5.8)	2 (6.5)	
Medical Condition (%)‡				0.243
Yes	44	25 (48.1)	19(61.3)	
No	39	27 (51.9)	12(38.7)	

† Independent T-test, ‡ Chi-square Test, § Fischer's Exact Test
SD = Standard Deviation

Table III: The association between the severity, duration of pain and depressive disorder (N=83)

Variable	No Depression Median (Interquartile Range)	Depression Median (Interquartile Range)	Z Statistic (df) †	p-value
Pain Score	6.00(3.00-7.00)	8.00(6.00-9.00)	-3.522	< 0.001
Duration of Pain (years)	4.00(2.00-6.00)	5.00(3.00-10.00)	-1.964	< 0.05

† Mann-Whitney Test

factors associated with psychiatric morbidity in chronic pain patients found that prevalence of major depressive disorder was 31.5%.[14]

This current study revealed findings that are quite similar. This study used a brief structured interview for the major Axis 1 psychiatric disorders in DSM-IV and ICD-10, the M.I.N.I., to assess the prevalence of depression among chronic pain patients at HTAR. The M.I.N.I. revealed that 37.4% of the study subjects were depressed.

This study has shown that the majority of patients with chronic pain who has depression were from the Indian ethnicity (67.7%) and with medical condition (61.3%). These results were clinically significant but not statistically significant. All other sociodemographic data that were looked into in this study were shown to be not statistically significant to predict the outcome of depression as well. Larger study is needed for further evaluation. There were many previous studies that showed depression was significantly affected by gender, age, educational level, marital and employment status.[4,15,16]

Depressive disorder and chronic pain frequently occur together.[17] It is shown that greater severity of pain is associated with increase severity of depression.[18,19] This study showed that severity of pain was significantly associated with the outcome of depression. The rate of major depression

increased with greater pain severity. This finding was consistent with previous studies that looked into the relationship between pain severity and depression.[2, 20, 21]

Physical disability in chronic pain patients lead to chronic fatigue and inability to be involved in meaningful activities and therefore leading to depressed mood.[22] A depressive episode can be precipitated by the physical and mental distress of chronic pain that interact with social and individual vulnerability.[17]

As this is a cross-sectional study carried out with the objective of assessing chronic pain patients attending the pain management clinic at HTAR, there were several limitations. Small sample size is one of the limitations. An important concern of the small sample size issue was the small number of cases attending the clinic as the total number of new cases and follow up cases in pain management clinic is about 300 cases per year. Due to the small number of cases in clinic and limited time of data collection, larger sample size is not feasible in this current study. A larger sample size is recommended in future study. Other possible contributing factors that may affect the outcome of depression in chronic pain patients such as family support[23] and family history of psychiatric disorder[17] were not looked into in this study.

Pain is a common symptom of depression, in which painful condition and depression frequently coexist. The presence of pain always negatively affects the recognition and treatment of depression.[5] In addition, depression frequently complicates the effective management of pain. Chronic pain patients with added morbidity of depression had significantly poorer health-related quality of life (HRQOL) and greater somatic symptom severity.[24] More research is required to determine whether relief of depressive symptoms improves pain.[5]

As a conclusion, depressive disorder is prevalent in patients who suffered from chronic pain and it was significantly associated with the severity of pain. Therefore, chronic pain patients should be regularly screened for depression during their clinic visit.

ACKNOWLEDGMENT

The authors would like to thank the Clinical Research Centre of Hospital Tengku Ampuan Rahimah Klang for their guidance in statistical analysis.

The authors declared that there was no conflict of interest.

REFERENCES

1. Poole H, White S, Blake C, *et al.* Depression in chronic pain patients: prevalence and measurement. Pain Pract 2009; 9(3): 173-80.
2. Bair MJ, Wu J, Damush TM, *et al.* Association of depression and anxiety alone and in combination with chronic musculoskeletal pain in primary care patients. Psychosom Med 2008; 70(8): 890-7.
3. Elliott TE, Renier CM, Palcher JA. Chronic pain, depression, and quality of life: correlations and predictive value of the SF-36. Pain Med 2003; 4(4): 331-9.
4. Averill PM, Novy DM, Nelson DV, *et al.* Correlates of depression in chronic pain patients: a comprehensive examination. Pain 1996; 65 (1): 93-100.
5. Bair MJ, Robinson RL, Katon W, *et al.* Depression and pain comorbidity: a literature review. Arch Intern Med 2003; 163 (20): 2433-45.
6. Asmundson GJG, McMillan KA, Carleton RN. Understanding and managing clinically significant pain in patients with an anxiety disorder. FOCUS 2011; 9(3): 264-72.
7. Naing N N. Determination of sample size. Malays J Med Sci 2003; 10(2): 84-6.
8. Clinical Practice Guidelines: Management of major depressive disorder. 2007. Medical Development Division, Ministry of Health, Malaysia.
9. Jones KR, Vojir CP, Hutt E, *et al.* Determining mild, moderate, and severe pain equivalency across pain-intensity tools in nursing home residents. J Rehabil Res Dev 2007; 44(2): 305-14.
10. Ramli M, Ariff MF, Zaini Z. Translation, validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS). ASEAN Journal of Psychiatry 2007; 8 (2): 82-9.
11. Shamsuddin K, Fadzil F, Ismail WS, *et al.* Correlates of depression, anxiety and stress among Malaysian university students. Asian J Psychiatr 2013; 6(4): 318-23.
12. Sheehan DV, Lecrubier Y, Sheehan KH, *et al.* The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry 1998; 59 (Suppl 20): 22-33.
13. Castro M, Kraychete D, Daltro C, *et al.* Comorbid anxiety and depression disorders in patients with chronic pain. Arq Neuropsiquiatr 2009; 67(4): 982-5.
14. Ho PT, Li CF, Ng YK, *et al.* Prevalence of and factors associated with psychiatric morbidity in chronic pain patients. J Psychosom Res 2011; 70 (6): 541-7.
15. Blyth FM, March LM, Brnabic AJ, *et al.* Chronic pain in Australia: a prevalence study. Pain 2001; 89(2-3): 127-34.
16. Munce SE, Stewart DE. Gender differences in depression and chronic pain conditions in a national epidemiologic survey. Psychosomatics 2007; 48(5): 394-9.
17. Holmes A, Christelis N, Arnold C. Depression and chronic pain. Med J Aust 2013; 199 (6 Suppl): 17-20.
18. Trivedi MH. The link between depression and physical symptoms. Prim Care Companion J Clin Psychiatry 2004; 6 (Suppl1): 12-16.
19. Munoz RA, McBride ME, Brnabic AJ, *et al.* Major depressive disorder in Latin America: the relationship between depression severity, painful somatic symptoms, and quality of life. J Affect Disord 2005; 86(1): 93-8.
20. Currie S, Wang J. Chronic back pain and major depression in general Canadian population. Pain 2004; 107 (1-2): 54-60.
21. Wong WS, Chen PP, Yap J, *et al.* Chronic pain and psychiatric morbidity: A comparison between patients attending specialist orthopedics clinic and multidisciplinary pain clinic. Pain Med 2011; 12(2): 246-59.
22. Hawker GA, Gignac MA, Badley E, *et al.* A longitudinal study to explain the pain-depression link in older adults with osteoarthritis. Arthritis Care Res (Hoboken) 2011; 63(10): 1382-90.
23. Stice E, Ragan J, Randall P. Prospective relations between social support and depression: differential direction of effects for parent and peer support? J Abnorm Psychol. 2004 Feb; 113(1): 155-9.
24. Arnow BA, Hunkeler EM, Blasey CM, *et al.* Comorbid depression, chronic pain, and disability in primary care. Psychosom Med 2006; 68(2): 262-8.