ORIGINAL ARTICLE

How Depressing Can Chronic Pain Be?: A Cross-sectional Study in Queen Elizabeth Hospital, Sabah

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ABSTRACT

Introduction: Chronic pain remains a public health issue as patients endure this condition while it affects the patients' life either physically or mentally. Evidence has demonstrated that depression coexist with chronic pain; yet depression is often insufficiently acknowledged, indirectly causing this mental health problem to be undertreated. In this paper we aim to determine the local prevalence of depression among patients with chronic pain in a tertiary hospital in Sabah, East Malaysia. **Methods:** This is a retrospective cross-sectional study. Past patient consultation records of adult patients who attended a tertiary pain clinic in Sabah for the first time are included. Socio-demographic data were collected, as well as scores from painDetect Questionnaire (PD-Q) and 9-item Patient Health Questionnaire (PHQ-9). **Results:** From the 222 individual data collected, more than half (64.9%) were female. 79 (35.6%) were between the age of 18 to 40. The types of pain presented were almost equally distributed between nociceptive pain (38.3%), mixed pain (33.3%) and neuropathic pain (28.4%). Prevalence of depression among chronic pain patients was 15%. Patients with neuropathic pain are significantly associated with signs of depression ($p<0.001$). Female patients are significantly more prone to depression as compared to male ($p = 0.024$). **Conclusion:** The high prevalence of depression among chronic pain patients warrants the attention of physicians. Physicians should be vigilant and actively screen for depression in patients with chronic pain.

Keywords: Chronic Pain, Pain Clinics, Depression, Patient Health Questionnaire, painDetect Questionnaire

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INTRODUCTION

Chronic pain is pain that persists for three months or longer, or the presence of pain even after normal tissue healing (1). Chronic pain brings about tremendous human suffering and disability and remains a major public health problem (2). As diseases associated with chronic pain are not immediately life threatening, patients continue to suffer with pain in their daily living. This phenomenon applies to both developed and developing countries (3).

Approximately 10 to 30% of the adult population in Europe have shown to suffer from chronic pain (3). On the other hand, the prevalence was found to be 12% in Malaysia and is the ninth most common complaint in public healthcare clinics (4).

Chronic pain brings about many debilitating consequences in different aspects. Besides the agonizing emotional turmoil, the perpetual negative mood experienced by the patients can also affect the family and friends in his or her immediate social circle. It is shown repeatedly to have detrimental effects on a patients' lives in terms of physical and mental health, family and social relationships, employment and daily life (5,6).

Although mortality rates caused by chronic pain is unknown, the impact of chronic pain is indubitably far-reaching. Chronic pain incurs both healthcare and economic costs, due to reduced productivity and also from monetary compensation to patients as a result of the pain (7). A study conducted in a large specialty care centre in United Kingdom showed a high prevalence of depression among chronic pain patients. In the same study, depression was also associated with greater usage of the healthcare system, including visits to general practitioners and other doctors, emergency department and hospital admissions (6).

Depression and chronic pain often co-exist, but depression is often not well-recognised and thus

undertreated. A cross-sectional study done in a specialised pain treatment centre in the United Kingdom showed that 60.8% of their patients had probable depression, out of which slightly more than half of them had severe depression (8). Closer to home in Malaysia, the prevalence of depression disorder among patients being treated in a pain management clinic in the Klang Valley is 37.3% (9). As Sabah is culturally and ethnically distinct from peninsular Malaysia, this result is not generalisable.

Shoesmith and Pang quoted from Abdullah (2011) that the treatment gap for common mental health disorders in Kota Kinabalu is over 90% (10,11). Help-seeking rate for mental illnesses is also not high, quoted Ibrahim et al. in a study on mental health literacy on the same study by Abdullah (11,12). Considering the debilitating effects of chronic pain and mental health, there is yet no literature available on the local prevalence of depression among chronic pain patients in the state of Sabah. With that in mind, we embarked on this research project with the objective of filling in this gap in the knowledge.

MATERIALS AND METHODS

Study Design

This is a cross-sectional study. Past patient consultation records from January 2013 to June 2019 of adult patients who attended a tertiary pain clinic for the first time are included. Queen Elizabeth Hospital (QEH) is the largest tertiary care centre in the state of Sabah, and is one of the two referral centres in the state for pain management.

Data Collection

Socio-demographics data such as age, ethnicity and work intensity as well as characteristics of patients' presenting pains were collected. Scores from painDetect Questionnaire (PD-Q) and 9-item Patient Health Questionnaire (PHQ-9) were also collected. Routine care of pain clinic in QEH requires physicians to fill up PD-Q and PHQ-9 to screen for the nature of patients' presenting pain and depression.

Freynhagen et al. (13) developed PD-Q in 2006 to screen for neuropathic pain in patients with lower back pain. A score of less than 12 indicates less likely neuropathic component whereas a score of 19 or more indicated likely neuropathic pain with a sensitivity of more than 90%. A score between 13 and 18 indicate a possibility of presence of neuropathic pain (13).

The 9-item Patient Health Questionnaire (PHQ-9) is a self-administered questionnaire adapted from the original Patient Health Questionnaire that is specific to diagnose for the presence and severity of depression.
It collates scores from 9 criteria stated in the DSM-IV for depression. Cut-off points of 5, 10, 15 and 20 indicate mild, moderate, moderately severe and severe depression, and serves as a guidance for clinicians whether to refer the patient for further psychiatric evaluation (14). In our setting, the PHQ-9 is used to screen for depression and a score of 15 and above warrants a referral to the psychiatrist.

The Malay version of PHQ-9, translated and tested for validity by Sherina et al., was found to have good internal reliability (Cronbach's alpha = 0.70) with high sensitivity (87%) and specificity (82%) (15). This indicates that PHQ-9 is a good case-finding instrument for depression among Malaysians.

Ethical approval

Ethical approval for this study was obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia with identification number of NMRR-19-2584-50169.

Statistical analysis

The data were analysed using SPSS version 22. The mean, standard deviation and range were calculated for patient demographics. Data that are not normally distributed were analysed using median and interquartile range (IQR). Independent t-test was used to analyse means between two groups, one-way ANOVA test for means between three groups or more, and chi-square test for proportions between two groups or more. Non-parametric tests were used if assumptions for parametric tests were not fulfilled.

RESULTS

Almost two-third of our patients were women (64.9%). The age of most of our patients (35.6%) range between 18 to 40 years old; followed by 41 to 60 years old (34.7%). Chinese-ethnic patients made up 29.3% of our patient pool (Table I).

Table I: Demographic Data

Characteristics	n (%)
Age (mean, SD)	
18 and below	4 (1.8)
19-40	79 (33.8)
41-60	77 (34.7)
61 and above	66 (29.7)
Gender	
Male	78 (35.1)
Female	144 (64.9)
Ethnicity	
Chinese	65 (29.3)
Dusun	21 (9.5)
Kadazan	16 (7.2)
Malay	13 (5.9)
Bajau	11 (5.0)
Others	24 (10.8)
Marital Status	
Single	45 (20.3)
Married	155 (69.8)
Divorced/Widowed	22 (9.9)
Employment Status	
Unemployed	6 (2.7)
Employed/Studying	136 (61.3)
Retired	28 (12.6)

The median duration of chronic pain experienced before seeking treatment in our pain clinic is 66.2 months (IQR 66.77). The type of pain experienced by the patients, according to PDQ, were almost equally distributed between nociceptive pain (38.3%), mixed pain (33.3%) and neuropathic pain (28.4%) (Table II). Out of 222 chronic pain patients, 14.9% of them display signs of moderately severe to severe depression and were referred to the psychiatrist for further management. Female chronic patients in general are significantly more prone to depression as compared to male (p = 0.011) (Table III). Patients who are shown to have neuropathic pain have a higher tendency to score higher in PHQ-9 (p < 0.001, Table V); in other words, more prone to show signs of depression.

Table II: Characteristics of depression among pain clinic patients

Characteristics	n (%)
Median duration of chronic pain (months) (IQR)	66.2 (66.77)
Types of Pain based on PDQ	
Nociceptive	85 (38.29)
Mixed	74 (33.33)
Neuropathic	63 (28.34)
Depression Status based on PHQ-9	
Minimal depression	80 (36.36)
Mild	63 (28.64)
Moderate	44 (20.0)
Moderately severe	20 (9.09)
Severe	13 (5.91)
Requirement for Psychiatric Referral	
No	187 (85.0)
Yes	33 (15.0)

PDQ: painDetect Questionnaire; PHQ-9: Patient Health Questionnaire-9

Table V: Association of median PHQ scores (IQR) vs types of pain

Types of pain	n	PHQ-9 score		
		Median (IQR)	χ^2 statistics (df)	*p*-value
Nociceptive	85	5 (9)	29.99 (2)	<0.001[a]
Neuropathic	63	11 (11)		
Mixed	72	6 (9)		

[a] Kruskal-Wallis test was used instead of one-way ANOVA because the homogeneity of variance test was statistically significant.

DISCUSSION

The prevalence of depression among patients with chronic pain in our setting is 15%, which is less than half of what was found in another study by Seed et al. that was conducted in another tertiary centre in Malaysia (9). The difference in prevalence may be due the ethnicity composition of the two populations. Majority of chronic pain patients diagnosed with depression were of Indian ethnicity (67.7%), which is a population that is lacking in our setting. The National Health and Morbidity Survey 2015 has shown that Indians are more likely to be depressed compared to Chinese (16).

Extensive scientific evidence has revealed chronic pain is highly associated to poor quality of life particularly negative emotional status such as anger, anxiety and depression (14,17). Patients suffering from chronic pain have greater risk of psychiatric disorders compared to the general population (14). In Canada, prevalence of major depression among patients with chronic pain is three times greater compared to those without pain

Table III: Factors associated with depression level

Factors	n	Depression level				χ^2 statistics (df)	*p*-value
		Minimal	Mild	Moderate	Moderately severe to severe		
Gender							
Male	77	36	25	10	6	11.14 (3)	0.011[a]
Female	143	44	38	34	27		
Types of pain							
Nociceptive pain	85	42	22	16	5	30.96 (6)	< 0.001[a]
Neuropathic pain	63	11	18	13	21		
Mixed	72	27	23	15	7		

[a] Chi-square test for independence

Table IV: Factors associated with requirement for psychiatric referral

Factors	n	Require psychiatric referral (n, %)	Do not require psychiatric referral (n, %)	χ^2 statistics (df)	*p*-value
Gender					
Male	77	6	71	4.83 (1)	0.028[a]
Female	143	27	116		
Type of pain					
Nociceptive pain	85	5	80	23.72 (2)	< 0.001[a]
Neuropathic pain	63	21	42		
Mixed	72	7	65		

[a] Chi-square test for independence

(18). Depression and chronic pain share many common neurobiological pathways that can affect one another (19) which may account for this phenomenon.

According to Trivedi (20), depression itself may lead to chronic pain, hence identification of depression in patients with chronic pain can aid in establishment of better management of pain. If both physicians and patients only discuss about the patients' physical symptoms but not their psychological problems, patients may not be aware of their depression status (21,22).

Besides that, our study shows that patients with neuropathic pain, on average, have double the PHQ score compared to those having nociceptive pain, indicating possibility of depression. This is in line with findings of a previous study where depression is positively correlated with chronic neuropathic pain (23). This might be attributable to the fact that neuropathic pain is characterized by sensory disturbances, possibly indicating that pain and mental disorders share some common pathogenetic mechanisms (24).

Numerous studies revealed that chronic pain occurs twice as common in people aged above 60 (25). However our data contradict with the above studies as most of the patients presented to our clinic range between ages 18 to 40 years. This might be due to older adults having experienced coping with other stressors in the past, such as changes in social support and health decline. This in turn allows them to cope better with the chronic pain in later life, which is consistent with this observation presented by Molton et al. (26). It would appear that beliefs of "normalcy" of pain is one of the reasons lesser older population attend the clinic setting, according to Riley et al. (27) and Sofaer et al. (28). Pain was seen as part and parcel of ageing instead of something that warrants attention; thus they choose not to report it. As a result, pain in the elderly often remain untreated and misdiagnosed (25).

Female preponderance in terms of pain complaints from our study also align with that of the literature. The female population is known to have a higher prevalence of chronic pain, both in community and in treatment seeking cohorts (29). This is in line with a prevalence study conducted in Australia where chronic pain is significantly associated with the female gender (30). Women are also shown to be more sensitive to pain, mostly show higher pain intensity and widespread pain compared to male (31). Hormonal changes such as menstrual cycle, pregnancy and oral contraceptive use may have affected the pain response of women. However, these evidences were either from laboratory-based research or that the results are not conclusive. So far, a consistent pattern for pain sensitivity from sex differences has not yet emerged (32). The few well-known clinical studies for differences in chronic pain response between male and female showed that women are more sensitive to types of analgesic and its dosage (33). Despite the advances of knowledge derived from research on chronic pain and sex differences, there is no effective pain rehabilitation programme to date.

Marriage is associated with better health and emotional condition in both men and women, based on a study conducted in five countries throughout Asia (34). Hence we believed that marital status is associated with chronic pain and hypothesized that patients who are single or divorced will suffer more due to chronic pain compared to their married counterparts. However, our results showed in Table I revealed most of our patients are married (69.8%). Only 9.9% are divorced or widowed. An interesting study from Wade et al. (35) demonstrated that subjects who have experienced the loss or death of spouse did not suffer as much in chronic pain compared to all other marital categories due to possible "emotional inoculation".

We found that most of our patients suffered from nociceptive pain as scored on Pain Detect Questionnaire (PDQ). In a study done by Yoon et al. (36) among patients with cancer pain, pure nociceptive pain had the highest prevalence of 59%. This finding draws similarity to our results, however, etiology of chronic pain in our participants are not captured fully.

Mixed pain is the second highest type of pain detected with 33.3% which is comparable to nociceptive pain at 38.3%. This might be due to the poorly defined condition of "mixed pain" whereby its pathophysiological category of pain is neither purely nociceptive nor neuropathic. Clinicians categorize patients to mixed pain in an extensive array of contents such as transition of pain category from nociceptive to neuropathic, pain occurring at multiple sites or ambiguous scores on pain scoring tools and so on (37). This imprecise and over-simplified categorization makes diagnosis a challenge to clinicians (38).

The limitation of the study include we did not collect data on possible factors that may affect perception of pain or depression status such as psychosocial factors, non-communicable disease such as cancer and menopausal or hormone status. For instance, if the patients are diagnosed with cancer, our study is unable to prove whether the pain is caused by the disease, treatment or other biological factors such as autoimmune antibodies (25).

There are also evidences showing association of incidence of pain and socioeconomic status such as educational level (39,40). With a paucity of information on participants' socioeconomic status in our study, this is a potential confounding factor that we did not take into account. We also did not perform a formal sample size calculation. This may affect the representation of our local population.

During the data collection stage, we found that there were a number of missing data from the case sheet likely to be attributed to insufficient consultation time possibly due to immense patient load. Incomplete pain diagnosis and no documentation of location of pain were the common findings. As such, we recommend the use of Patient Health Questionnaire-2 (PHQ-2). PHQ-2 only comprises of two of the nine questions from PHQ-9, which is suitable for busy settings. It has a comparable sensitivity of 85–90% to screen for depression status and shorten consultation time at the same time (40).

CONCLUSION

With 15% of our patients with chronic pain show signs of depression, it is paramount that all patients visiting the chronic pain clinic receive screening for depression. Physicians should be aware of the psycho-emotional aspect of chronic pain and pick up the signs promptly. In a nutshell, a comprehensive and holistic approach addressing both physical and psychological aspects is the crux to achieving better pain management.

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