Original article:

Comparing SociodemographicPredisposing Factors in Major Depressive Disorders (MDD) and Controlsin Kelantan, Malaysia

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Abstract

Introduction: Major Depressive Disorder (MDD) isexpected to become the second leading cause of worldwide disability by the year 2020 and the major contributor to the overall global burden of disease. ***Objective:*** This study was done to compare sociodemographicpredisposingfactors in MDD patients and controls in Kelantan, Malaysia. ***Methods:*** A total of 47 MDD patients and 47 healthy controls participated in this study. MDD patients were recruited from Psychiatric Clinic, HUSM and they were diagnosed according to DSM-V criteria. Patients' biodata, medical and psychiatric history were taken by physician. Data were analysed using Pearson Chi-square and multiple logistic regression. ***Results:*** In MDD group, 61.7% were females and 38.3% were males. Forty two percent of MDD were in the age group of 45 to 65 years old and almost 12.8% of MDD patients had family history of depression, while all healthy controls were in good general health and had no family history of depression. Pearson Chi-square revealed that there were significant associations between smoking status (P=0.027), marital status (P=0.007) educational level (P=0.022) and area of living (P=0.0.036) with MDD. The results showed that unmarried person were less likely to have MDD compared to those married with adjusted odds ratio (OR) of 0.31. Smoker were 5.16 at odds of having MDD as compared to non-smoker, while individuals with a low education were more likely to have MDD compared to those highly educated with adjusted OR of 2.04. The result also showed those living in urban area were less likely to have MDD compared to those living in rural area with adjusted OR of 0.48. ***Conclusion:*** Higher age, female and positive family history possess a higher tendency of having MDD. In addition, smokers, married, less educated and living in rural area were more likely to have MDD compared to healthy controls.

Keywords: sociodemographic, predisposing factor, major depressive disorder

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Introduction

Major Depressive Disorder (MDD) is a common mental disorder characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration. It is a serious condition that can cause a variety of physical and emotional problems.

MDD can affect all people regardless of age, geography, demography, or social position. According to the World Health Organization (WHO), an estimated 350 million people of all ages suffer from depression. MDD is projected to be the second leading cause of worldwide disability by the year 2020 and major contributor to the overall global burden of disease.[3]

In 2014, about 6.7% of the U.S population aged 18 and older had MDD. Across the Asia Pacific region, the rates of current to 1-month MDD ranged from 1.3 to 5.5%, while in the previous year ranged from 1.7 to 6.7% . The lifetime occurrence of MDD worldwide is between 8 to 10% . In Malaysia, MDD is expected to affect about 2.3 million people irrespectiveof the geographical

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differences of the study setting. While in the primary care population, the prevalenceranged from 6.7 to 14.4%.[2]

Numerous studies have demonstrated that sociodemographic factors that may contributed to the development of this disease.This study was done to compare sociodemographicpredisposing factorsof MDD patients with healthy controls in Kelantan, Malaysia.

Methodology

This was a cross-sectional study which was conducted among adult (aged between 18 to 65 years old) MDD patients and healthy controls. MDD patients were recruited from psychiatric out-patient clinic, Hospital UniversitiSains Malaysia. The diagnosis of all eligible subjects were confirmed by a psychiatrist, according to the Diagnostic and Statistical Manual for Mental Disorder V (DSM-V) and all those who consented and met the inclusion and exclusion criteria were enrolled into this study. All participating subjects continued to receive standard pharmacological and non-pharmacological treatments for MDD from the treating doctors at the clinic.

Control subjects were randomly recruited from hospital employees and students.All subjects were asked to complete Depression Anxiety Scoring System (DASS 21) questionnaire in order to ensure that they were in good general health and had no depressive symptoms.

After getting the written consent, subject's demographic data such as age, sex, race, family history, smoking status,marital status, educational level, and area of living were obtained through individual interview and from the patients' medical record. All sociodemographic data were recorded in a study form.

Data were analysed using Pearson Chi-square and multiple logistic regression.This study was approved by Research and Ethics Committee, UniversitiSains Malaysia.

Results

A total of 47 MDD patients and 47 healthy controls were recruited in the study within January 2015 to February 2016.The mean age (SD) of MDD patients was 39.7 (13.07) years old with 42.5% of them were in the age group of 45 to 65 years old. While for healthy control, the mean age was 28.0 (8.69) years old and 46.8% of them were in the age group of 18 to 24 years old. The mean age (SD) of onset of MDD was 36.26 (11.88) years old.

In MDD group, 29 (61.7%) were females and 18 (38.3%) were males, while in healthy control, 32 (68.1%) were females and 15 (31.9%) were males. Majority of MDD patients and healthy controls were Malays which accounted for 95.7% of study population, while the other 4.3% were Chinese. Almost 12.8% of MDD patient had family history of depression, while all healthy controls were in good general health and had no family history of depression.

Table 1: Sociodemographic characteristics of MDD patients and healthy control

		MDD (n=47)	Healthy Control (n=47)
Age			
mean (SD)		39.7 (13.07)	28.0 (8.69)
Age group, n (%)			
	18-24	9 (19.2)	22 (46.8)
	25-44	18 (38.3)	21 (44.7)
	45-65	20 (42.5)	4 (8.5)
Gender, n (%)			
	Male	18 (38.3)	15 (31.9)
	Female	29 (61.7)	32 (68.1)
Race, n (%)			
	Malay	45 (95.7)	45 (95.7)
	Chinese	2 (4.3)	2 (4.3)
	Indian	0 (0.0)	0 (0.0)
Family history of DD, n (%)			
	Yes	6 (12.8)	0
	No	41(87.2)	47 (100)
Age of onset of MDD			-
	mean (SD)	36.26 (11.88)	

Chi-square analysis showed that sociodemographics factors including marital status (p = 0.007), smoking status (p = 0.027), educational level (p = 0.022) and area of living (p=0.036) were significantly associated with MDD.Further analysis using multiple logistic regression revealed thatonly marital status (p = 0.011) was significantly associated with MDD after OR (odds ratio) adjustment, while smoking status (p = 0.150) educational levels (p = 0.132) and area of living (p=0.174) were not significantly associated.

The results also showed that unmarried individuals were less likely to have MDD compared to those married with adjusted OR of 0.31. Smokers were 5.16 at odds of having MDD as compared to non-smoker, while lower educated individuals were

more likely to have MDD compared to higher educated with adjusted OR of 2.04. The result also showed urban residents were less likely to have MDD compared to those living in rural area with adjusted OR of 0.48.

Table 2: Predisposing factors of Major Depressive Disorder

	MDD n (%)	Control n (%)	Crude OR (95% CI)	*p-value*[a]	Adjusted OR (95% CI)	*p-value*[b]
Marital Status						
Unmarried	19 (37.25)	32 (62.75)	0.32 (0.14,0.74)	0.007*	0.31 (0.13,0.77)	0.011*
Married	28 (65.12)	15 (34.88)	1.00		1.00	
Smoking Status						
Smoker	7 (87.5)	1 (12.5)	8.05 (0.95,68.26)	0.027*	5.16 (0.55,48.04)	0.150
Non-smoker	40 (46.51)	46 (53.49)	1.00		1.00	
Educational Level						
Low	26 (63.41)	15 (36.59)	2.64 (1.14,6.12)	0.022*	2.04 (0.81,5.14)	0.132
High	21 (39.62)	32 (60.38)	1.00		1.00	
Area of Living						
Urban	30 (43.48)	39 (56.52)	0.36 (0.14,0.91)	0.036*	0.48 (0.17,1.39)	0.179
Rural	17 (68.00)	8 (32.00)	1.00			

[a] Pearson Chi-square, [b]Multiple Logistic Regression (Wald statistic), OR: odds ratio, Cl: confidence interval

*Results was significant as $p<0.05$

Discussion

In this study, the age of MDD patients range from 18 to 65 years old andthe rates was highest in those aged 45 to 65 years. Few studies suggestedthat the age group may varies with sex[8,9]. Rait *et al.* (2009) reported that the highest incidence for MDD was 25 to 44 years old for women and 44 to 65 years old for men.[8] This finding was consistent with our study which also showed that the highest incidence rate for men was 44 to 65 year old, while for women was between 25 to 44 years old.

MDD patients consists of 61.7% females and 38.3% males. Epidemiological studies had consistently shown that women have greater incidence rates of MDD than men with a 2:1 female to male ratioregardless of racial, ethnicity or economic background[10-12]. The cause of this sex differences remain unclear. However, several hypotheses have been proposed. Some studies suggested that biological factors such as genetic differences and hormonal changes may account for the sex difference[13]. Other studies stated that psychosocial factors such as relationship issues, lack of social support and adverse experiences in life especially during childhood may have a greater impact in women than men, thereby increasing the incidence rate for MDD[14,15], Women also reported to have more depressive symptoms than men[16].

Majority of our MDD patients were Malays. However, a study on the prevalence of MDD in Selangor, Malaysia reported that the prevalence was highest among minority ethnic groups (e.g. Iban, Kadazan, Orang Asli, Siam) (17.6%), followed by Chinese (13.8%), Malays (10.8%) and Indians (6.1%).The fact that MDD patients and controls in this study population consists of mostly Malays (95.7%) merely reflects the racial distribution in Kelantan, where majority of the population are Malay ethnicity.

In this study, 12.8 % of MDD patients had family history of depression. It has been found that individuals with a first-degree depressivefamily memberswill experiencedtwo to tenfold greater risk of developing MDD[18,19]. Perris and colleagues

stated that patients without family history of depression would be genetically less vulnerable and, consequently that such patients would need more massive traumatic events to trigger depression than the patients with a family history of the disorder[20].

Marital status has been found to be highly associated with the prevalence of MDD. This study showed that married person were at higher risk of having MDD compared to those unmarriedperson which include divorced/separated or single. Few studies examine marital status differences in MDD in few countries showed different finding. A study in Kangwha Island,South Korea, reported higher risk of MDD in married person compared to unmarried[21], which is parallel with our study. However, survey studies in Western countries like Canada, Netherland and United States showed that unmarried persons were more likely to have MDD[22]. Stegenga *et al.* (2012) suggested that marital disruption enhance the risk of MDD among women, while being unmarried was a crucial risk factor for men[23].

Our result showed that smokers were more likely to develop MDD compared to non-smokers. Our results are in agreement with previous studies which also reported an increased odds of depression in smokers[24,25]. A population-based longitudinal Norwegian studydemonstrateda dose-dependent relationship between smoking and depression; heavy smokers (>20 cigarettes per day) showedfourfold greater risk compared to those who had never smoked[26]. Meanwhile, a retrospective Australian study (10 years) found that the risk for developing MDD among heavy smokers were doubled[25]. These findings have shown that smoking is infact a major risk factor in the causal network leading to development of depression. A researcher indicated that nicotine use may increase susceptibility to depression because it influences several neurochemical systems (e.g acetylcholine and catecholamine systems)[27], which may play an etiological role in depression[28]. Futhermore, tobacco smoke generates free radicals, causing protein oxidationand subsequently,tissue damage[29]. Depression has also been characterized byelevated levels of oxidative stress that are positively correlated with the severity of the depression[30].

Epidemiological studies of MDD support an inverse association between the prevalence of MDD and the educational level[31,32]. In pan-European study, higher education was associated with lower risk of mood disorder. The findings were consistent with our study which indicated that patients with lower educational level (primary and secondary school) have higher risk for MDD compared to those with higher educational level (diploma and above). In some developing countries, educational level were recognized as an important element that determine socioeconomic position and income obtained in later life[33]. People with a lower educational level generally have lower socioeconomic position and faced economic hardship like unemployment,financial strain and poverty. These standard of living were associated with an increase risk of MDD[33,34].

Urban vs. rural residence was commonly cited as a risk factor for MDD and was identifiedas an etiology of this disorder[35]. Rural area is defined as area with population less than 10 000 people, agriculture area, forests and water bodies. While urban area is characterized by higher population density of more than vast human features in comparison to area surrounding it. Similar to Breslau *et al.* (2014) and Probst *et al.* (2006), our study showed that people living in rural area have higher risk for MDD compared to those living in urban area[36,37], Probst*et al.* (2006) suggested that rural communities were more likely to experienced MDD because of the circumstances, conditions, and behaviors that challenge their health[37].

Conclusion

Higher age, female and positive family history possess a higher tendency of having MDD. In addition, smokers, married, less educated and living in rural area were significantlywere more likely to have MDD compared tohealthy control.

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Conflict of interest: none

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