

SOCIO-DEMOGRAPHIC CORRELATES OF UNIPOLAR MAJOR DEPRESSION AMONG THE MALAY ELDERLY IN KLANG VALLEY, MALAYSIA AN INTENSIVE STUDY

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Received: 14 Jan 2014 Revised and Accepted: 30 Jan 2014

ABSTRACT

Objectives: The present study was carried out with the following aims: To determine the prevalence of unipolar major depression among the Malay elderly in Klang Valley, Malaysia; To study the socio-demographic correlates of unipolar major depression in Malay ethnic group; and To study the chronic co-morbid conditions associated with unipolar major depression in Malay ethnic group.

Methods: A cross-sectional study was conducted within Klang Valley region, Malaysia, and subjects recruited were elderly Malay aged 60 and above. WHO validated questionnaire (English version) was chosen and translated into Malay, and the Malay version of the questionnaire was used to identify the status of unipolar major depression.

Results: The prevalence of unipolar major depression among the Malay elderly living in Klang Valley, Malaysia was found to be 20.9%. Using multi variant analysis, type of family (joint/extended), smoking habits(smoker), acknowledgement of memory problem/depressed mood(acknowledged), and positive status of well-being (poor) were determined to be significantly associated with depression.

Conclusion: The prevalence of unipolar major depression among Malay elderly within Klang Valley, Malaysia appears to be much higher than studies done in previous years, but is comparable to other countries. Prevention of depression is essential to be done among the elderly, as this age group of individuals is very susceptible to depression.

Keywords: Depression, Epidemiology, WHO (five) well-being index, Major (ICD-10) Depression Inventory, The 6-CIT Dementia Test, elderly Malay, Malaysia.

INTRODUCTION

The World Health Organization (WHO) and the World Bank stated that unipolar major depression is currently ranked at the fourth placing as the most disabling disease in the world.¹Status in Malaysia is similar with global statistics. Lifetime occurrence of unipolar major depression for anyone in any country is between 8% to 10% [1]. Many factors play a vital role being associated with unipolar major depression, and this includes genetic susceptibility, chronic diseases and disability, frustration with limitations in activities, pain, lack of adequate social support and adverse life events. The prevalence rate of depression among the Malaysian elderly population is currently stated as 6.3% [2], 7.6% [3], and 13.9% [4]. In a neighboring country like Singapore, the prevalence rate of depression is segregated based on ethnicity, and the prevalence for Malay elderly is 6.5% [5]. Additionally, a south Asian developing country like Pakistan has a prevalence rate of depression among the elderly as high as 40.6% [6]. A common mental disorder such as depression is characterized by many depressive symptoms such as sadness, low self-worth, guilt, tiredness, loss of interest or pleasure (anhedonia), poor concentration and disturbed sleep or appetite [7]. These symptoms must be severe and significant, until it affects the productivity and social aspects of a person. Thus, these individuals are known to suffer from Unipolar Major Depression, which is the main focus of our study.

METHODS

Design and participants

This cross-sectional study was conducted from April to November 2013 within Klang Valley, Malaysia as it is the busiest region for its main economic and cultural hub. Klang Valley's present geriatric population is projected to be 395276 people [8]. Malaysia has a

multicultural society, consisting of mainly Malays, followed by Chinese, Indians, and etc.

All Malay elderly aged 60 years and above of both genders from Klang Valley, who agreed to participate must provide consent (either verbal or written) prior to interview and a study information sheet (Appendix A) was shown. The exclusion criteria include elderly people who were unable to provide consent (Appendix B) for any reason and had communication barrier. If a potential subject was defined as a non-respondent based on criteria, then he was not subjected to future interrogation. These criteria include possessing severe hearing impairment or articulation disorder, severe behavioural problem or cognitive impairment, any terminal illness whereby the subject was unable to communicate for the interview, and not being cooperative enough leading to a premature termination of the interview with a clear indication that it could not be conducted on a later date. This was based on their response to specific questions and physical conditions regarding their capability to cooperate with an interviewer for approximately 30 to 40 minutes.

Study sample and recruitment

The sample size was calculated manually using the sample size estimation formula, and reconfirmed with the help of RAOSOF Calculator. The prevalence of depression was set as 6.3%² and the absolute error was set to 5% in this study. Taking into account 95% confidence intervals (CI), normal deviate corresponding to 95% CI as 1.96, and total geriatric population to be covered as 395376, the sample size was calculated to be 91. To provide for a non-response rate of 10%, an additional 9 persons were included. Thus, the final sample size was calculated as 100 subjects. We took the initiative to recruit more subjects to obtain more accurate data, and our new sample size achieved was 172 subjects.

Snowball sampling technique was used to collect the sample. Once identified, these potential participants were screened for eligibility criteria. Study participants who fulfilled the criteria and approved to participate were introduced to the study, along with its aims, and process of conduct. An interviewer was instructed to establish a good rapport with the respondent and gained his confidence before the official interview was conducted. Name and identity card number of participants were not taken to assure the confidentiality and anonymity of the participants.

Questionnaire

The data collection instrument used in our study was WHO validated questionnaire. The Malay version of the questionnaire (Appendices A₁, B₁, C₁, D₁, E₁ and F₁) was developed from the English version, and pre-tested on 35 Malay elderly individuals to ascertain the validity of the questionnaire (Cronbach-alpha) and to determine whether they optimally suited our field condition. The questionnaire included information regarding the socio-demographic characteristics of the respondent (Appendix C), WHO (five) Well-being Index (1998 version) (Appendix D), Major (ICD-10) Depression Inventory (MDI) (Appendix E), and The 6-cognitive impairment test (CIT) Dementia Test (Appendix F).

Measures

Socio-demographic characteristics data were gathered by direct interview with a participant and this includes age, gender, ethnicity, place of residence, living arrangements, marital status, occupation, education level, lifestyle, presence of family history of mental disorders and social support. Data regarding the health related variables were collected: presence of chronic co-morbidities, positive status of well-being, depressive symptomatology, and cognitive impairment. Respondents were asked whether they present with the following chronic co-morbidities with the following question: "Has your doctor ever told you that you suffer from ..(disease)?" The diseases include diabetes mellitus, hypertension, and hypotension, any sort of heart problems, joint pain, backache, asthma, chronic obstructive pulmonary disease (COPD), constipation, epilepsy, renal problem, paralysis, haemorrhoids, and gastritis.

Subjective quality of life based on positive mood (relaxation and good spirit), vitality (waking up fresh and rested and being active), and general interest (being interested in things) were assessed with the help of WHO (five) Well-being Index (1998 version). High scores mean better well-being, and were associated to the absence or

presence of depression [9]. Raw score of 0 indicates worst possible quality of life and 25 indicates best possible quality of life. Scores that revealed positive status of poor well-being indicated for testing of unipolar major depression under MDI. In this study, the WHO (five) Well-being Index (1998 version) was validated alongside MDI. Diagnosis of clinical depression in addition to an estimate of symptom severity was assessed. A score of 4 or 5 in any items mentioned indicate depressive symptomatology. Different combination of scoring of all items was able to specify the severity of an individual suffering from major depression [10].

The 6 cognitive impairment test (CIT) Dementia Test was used to measure cognitive impairment. This test was proven to be a valid and reliable instrument for the evaluation of cognitive impairment among the elderly community. Total scores range between 0 to 28. Score between 0 to 7 indicated as normal, 8 to 9 as mild cognitive impairment and 10 and above as severe cognitive impairment.

Statistical analysis

Data collected was tabulated and analyzed by using the statistical package SPSS (Statistical Package for Social Sciences) version 22.0 for Windows. Findings were described in terms of proportions and their 95% CI. To test for association, Chi-square test and Fisher's exact test were applied to study the relationship between different variables and depression. Descriptive statistics were used to show the prevalence of depression in elderly. Univariate analysis was performed to study the effect of socio-demographic and other health related variables on the depression status. Additionally, all co-variables were regressed separately with the depression status to get the crude estimates of their odd ratios (OR) and CIs. Covariates that showed p-value of less than 0.30 at univariate level were included in the multivariate analysis for adjustment.

Multiple logistic regressions was done to estimate the independent effect of various factors on depression. The significance was determined in terms of adjusted OR (aOR) and its 95% CI. To develop a final multivariable model, the variables were entered in the model one by one. The final model included variables that were significant at p-value less than 0.05. Receiver Operating Characteristic (ROC) curve demonstrate the trade-off between sensitivity and specificity of instrument. The area under the curve was a measure of text accuracy, and dependent on how well the instrument separated the respondents into with and without depression. A good instrument was considered when the total area under the curve was 0.80 and above.

Table 1: Socio-demographical profile of the elderly Malay in Klang Valley, Malaysia

Socio-demographic Characteristics	Depressed (N ₁ =) N ₁ (%)	Non-depressed (N ₂ =) N ₂ (%)	Total Surveyed (N =) N(%)
Gender			
Male	24 (23.8)	77 (76.2)	101 (58.7)
Female	12 (16.9)	59 (83.1)	71 (41.3)
Age Group (years)			
60-69	22 (19.6)	90 (80.4)	112 (65.1)
70-79	10 (20.8)	38 (79.2)	48 (27.9)
80 and above	4 (33.3)	8 (66.7)	12 (7.0)
Place of Residence			
Urban	16 (21.6)	58 (78.4)	74 (43.0)
Rural	20 (20.4)	78 (79.6)	98 (57.0)
Type of Family			
Nuclear	7 (12.7)	48 (87.3)	55 (34.8)
Joint/Extended	28 (27.2)	75 (72.8)	103 (65.2)
Living Arrangement in the Household			
Alone	1 (7.1)	13 (92.9)	14 (8.1)
With the Family	35 (22.2)	123 (77.8)	158 (91.9)

Marital status			
Unmarried/Widowed/Separated/Divorced	5 (13.5)	32 (86.5)	37 (21.5)
Married	31 (23.0)	104 (77.0)	135 (78.5)
Previous Occupation			
Unemployed	6 (13.6)	38 (86.4)	44 (25.6)
Unskilled	5 (23.8)	16 (76.2)	21 (12.2)
Skilled	18 (23.7)	58 (76.3)	76 (44.2)
Professional	7 (22.6)	24 (77.4)	31 (18.0)
Present Occupation			
Unemployed	6 (13.6)	38 (86.4)	44 (25.6)
Retired	25 (23.8)	80 (76.2)	105 (61.0)
Unskilled	2 (18.2)	9 (81.8)	11 (6.4)
Skilled	2 (25.0)	6 (75.0)	8 (4.7)
Professional	1 (25.0)	3 (75.0)	4 (2.3)
Literacy Status			
Illiterate	17 (23.0)	57 (77.0)	74 (43.0)
Literate	19 (19.4)	79 (80.6)	98 (57.0)
Habits: Smoking			
Smoking	21 (31.8)	45 (68.2)	66 (38.4)
Non-smoker	15 (14.2)	91 (85.8)	106 (61.6)
Habits: Alcohol Consumption			
Alcoholic	5 (27.8)	13 (72.2)	18 (10.5)
Non-alcoholic	31 (20.1)	123 (79.9)	154 (89.5)
Chronic co-morbidity			
Present	34 (21.7)	123 (78.3)	157 (91.3)
Absent	2 (13.3)	13 (86.7)	15 (8.7)
Disease Category			
0-2 diseases	16 (15.1)	90 (84.9)	106 (61.6)
3 diseases and above	20 (30.3)	46 (69.7)	66 (38.4)
Doctor's acknowledgement on presenting illness			
Unacknowledged	3 (16.7)	15 (83.3)	18 (10.5)
Acknowledged	33 (21.4)	121 (78.6)	154 (89.5)
Acknowledgement of memory problem/depressed mood			
Unacknowledged	25 (18.4)	111 (81.6)	136 (79.1)
Acknowledged	11 (30.6)	25 (69.4)	36 (20.9)
Family History of Psychiatric Illness			
Present	3 (23.1)	10 (76.9)	13 (7.6)
Absent	33 (20.8)	126 (79.2)	159 (92.4)

Family History of Psychiatric Illness Present			
Depression	2 (18.2)	9 (81.8)	11 (6.4)
Schizophrenia	1 (100)	0 (0)	1 (0.6)
Degree of Relatives Present with Psychiatric Illness			
First	2 (22.2)	7 (77.8)	9 (5.2)
Second	1 (33.3)	2 (66.7)	3 (1.7)
Financial Dependency			
Totally Dependent	13 (21.3)	48 (78.7)	61 (35.5)
Partially Dependent	13 (21.0)	49 (79.0)	62 (36.0)
Independent	10 (20.4)	39 (79.6)	49 (28.5)
Positive Status of Well-being			
Poor	22 (39.3)	34 (60.7)	56 (32.6)
Satisfactory	14 (12.1)	102 (87.9)	116 (67.4)
Cognitive Impairment			
Present	28 (25.2)	83 (74.8)	111 (64.5)
Absent	8 (13.1)	53 (86.9)	61 (35.5)
Severity of Cognitive Impairment			
Significant	26 (25.5)	76 (74.5)	102 (59.3)
Mild	2 (22.2)	7 (77.8)	9 (5.2)

RESULTS

A total of 172 subjects who fulfilled our inclusion criteria and agreed to participate in the study were recruited and written consent was obtained before the interview. Non-response was primarily attributed to the absence of potential respondent after two repeated approaches the overall sample was representative of the Malay elderly population in Klang Valley, Malaysia and the prevalence of unipolar major depression was found to be 20.9%.

Table 1 shows the socio-demographic characteristics of respondents. 58.7% were men, and majority of the respondents

ranged from 60 to 69 years old (65.1%). The elderly were more likely to stay married and live with their family. Only a small percentage was living alone. Slightly over one-fourth of them was presently and employed in the past. More elderly has smoking habits, as compared to alcohol consumption. Similar proportions of illiterate and literates exist, and overall of the respondents (91.3%) had no less than one self-reported medical conditions. One-third of the respondents were present with positive status of poor well-being, while two-third of them was cognitively impaired.

Table 2A indicates the association of socio-demographic and health related variables with unipolar major depression on univariate

analysis. Here, covariants with p value less than 0.30 (type of family, smoking, disease category, and positive status of well-being) were subjected to multivariate analysis. As for living arrangement in the household, one cell (25.0%) has expected count of less than five. Thus, Fisher's exact test was taken into consideration.

Table 2B presents the multivariate associations between unipolar major depression, and socio-demographic and health related variables. In our final model four adjusted variables: type of family (joint/extended: aOR= 0.274, 95% CI= 0.096-0.784), smoking behaviour (smoker: aOR= 4.421, 95% CI= 1.364-14.327),

acknowledgement of memory problem/depressed mood (acknowledged: aOR= 0.290, 95% CI= 0.097-0.865), and positive status of well-being (poor: aOR= 6.154, 95% CI= 2.336-16.210) were found to be predictors of major depression.

Figure 1 displays the evaluation of accuracy and external validity for assessment of unipolar major depression via an investigation done by ROC curve for WHO (five) Well-being Index (1998 version), MDI, and The 6-CIT Dementia Test. The total area under the graph recorded was 0.811, and was considered to be good at separating depressed participants from the general population.

Table 2 A: Univariate Analysis: Socio-demographic correlates of Depression

Socio-demographic Correlates	Depression		Total Surveyed (N=) N(%)	p value	OR (unadjusted)	95% CI	
	Present (N ₁ =) N ₁ (%)	Absent (N ₂ =) N ₂ (%)					
Gender							
Male	24 (23.8)	77 (76.2)	101 (58.7)	0.276	1.532	0.709-3.315	
Female	12 (16.9)	59 (83.1)	71 (41.3)				
Age Group (years)							
60-69	22 (19.6)	90 (80.4)	112 (65.1)	0.571	1.245	0.583-2.658	
70 and above	14 (23.3)	46 (76.7)	60 (34.9)				
Place of Residence							
Urban	16 (21.6)	58(78.4)	74 (43.0)	0.846	1.076	0.513-2.255	
Rural	20 (20.4)	78 (79.6)	98 (57.0)				
Type of Family							
Nuclear	7 (12.7)	48 (87.3)	55 (34.8)	0.037	0.391	0.158-0.965	
Joint/Extended	28 (27.2)	75 (72.8)	103 (65.2)				
Living Arrangement in the Household							
Alone	1 (7.1)	13 (92.9)	14 (8.1)	0.164*	0.270	0.034-2.139	
With the Family	35 (22.2)	123 (77.8)	158 (91.9)				
Marital status							
Unmarried/Widowed/Separated/ Divorced	5 (13.5)	32 (86.5)	37 (21.5)	0.211	0.524	0.188-1.460	
Married	21 (23.0)	104 (77.0)	135 (78.5)				
Previous Occupation							
Unemployed	6 (13.6)	38 (86.4)	44 (25.6)	0.168	0.516	0.199-1.338	
Employed	30 (23.4)	98 (76.6)	128 (74.4)				
Present Occupation							
Unemployed/Retired	31 (20.8)	118 (79.2)	149 (86.6)	0.918	0.946	0.325-2.749	
Employed	5 (21.7)	18 (78.3)	23 (13.4)				
Literacy Status							
Illiterate	17 (23.0)	57 (77.0)	74 (43.0)	0.567	1.240	0.593-2.593	
Literate	19 (19.4)	79 (80.6)	98 (57.0)				
Habits: Smoking							
Smoker	21 (31.8)	45 (68.2)	66 (38.4)	0.006	2.831	1.334-6.010	
Non-smoker	15 (14.2)	91 (85.8)	106 (61.6)				
Habits: Alcohol Consumption							
Alcoholic		5 (27.8)	13 (72.2)	18 (10.5)	0.450	1.526	0.506-4.603
Non-alcoholic		31 (20.1)	123 (79.9)				
Chronic co-morbidity							
Present		34 (21.7)	123 (78.3)	157 (91.3)	0.449	1.797	0.387-8.351
Absent		2 (13.3)	13 (86.7)				
Disease Category							
0-2 diseases		16 (15.1)	90 (84.9)	106 (61.6)	0.017	2.446	1.158-5.163
3 diseases and above		20 (30.3)	46 (69.7)				
Doctor's acknowledgement on presenting illness							
Unacknowledged		3 (16.7)	15 (83.3)	18 (10.5)	0.638	0.733	0.200-2.685
Acknowledged		33 (21.4)	121 (78.6)				
Acknowledgement of memory problem/depressed mood							
Unacknowledged		25 (18.4)	111 (81.6)	136 (79.1)	0.110	0.512	0.223-1.175
Acknowledged		11 (30.6)	25 (69.4)				

Family History of Psychiatric Illness						
Present	3 (23.1)	10 (76.9)	13 (7.6)	0.843	1.145	0.298-4.401
Absent	33 (20.8)	126 (79.2)	159 (92.4)			
Financial Dependency						
Dependent	26 (21.1)	97 (78.9)	123 (71.5)	0.915	1.045	0.461-2.370
Independent	10 (20.4)	39 (79.6)	49 (28.5)			
Positive Status of Well-being						
Poor	22 (39.3)	34 (60.7)	56 (32.6)	0.000	4.714	2.173-10.226
Satisfactory	14 (12.1)	102 (87.9)	116 (67.4)			
Cognitive Impairment						
Present	28 (25.2)	83 (74.8)	111 (64.5)	0.062	2.235	0.948-5.271
Absent	8 (13.1)	53 (86.9)	61 (35.5)			

*Fisher's exact test was utilised when one cell (25.0%) has expected count of less than five.

Table 2B: Multivariate Analysis: Socio-demographic Correlates of Depression

Socio-demographic Correlates	OR (Adjusted)	95% CI	p value
Gender			
Male	1.000	0.160-2.878	0.599
Female	0.679		
Type of Family			
Nuclear	0.274	0.096-0.784	0.016
Joint/Extended	1.000		
Marital Status			
Unmarried/Widowed/Separated/Divorced	0.766	0.188-3.124	0.710
Married	1.000		
Previous Occupation			
Unemployed	0.526	0.120-2.301	0.394
Employed	1.000		
Habits: Smoking			
Smoker	4.421	1.364-14.327	0.013
Non-smoker	1.000		
Disease Category			
0-2 diseases	1.000	0.496-3.044	0.656
3 diseases and above	1.229		

Acknowledgement of memory problem/depressed mood			
Unacknowledged		0.290	
Acknowledged		1.000	0.097-0.865
Positive Status of Well-being			0.026
Poor		6.154	2.336-16.210
Satisfactory		1.000	
Cognitive Impairment			
Present		2.103	0.760-5.820
Absent		0.000	0.152

DISCUSSION

This is the pioneer study that has estimated the prevalence rate of unipolar major depression among the Malay geriatric population using WHO validated questionnaire on community based sample in Klang Valley, Malaysia.

In this research, the prevalence of depression among the elderly of 60 years and above was found to be 20.9% (95% CI= 14.9-27.0). Other studies conducted in Klang Valley, Malaysia using instruments besides the WHO validated questionnaire presented with prevalence of 6.3% [2] and 7.6% [3]. Our study results were consistent with the findings done in other countries, which had determined the prevalence as 22.0% [11] and 13.5% [12]. A community study involving a large cohort of elderly people in the Nangai Village, Japan showed a prevalence of depression at 22.3% [13]. Reviews from cross-sectional and cohort studies involving populations of elderly Caucasians revealed that the prevalence of depression in the

geriatric society was 0.9% to 9.4% for those staying in their own house, 14% to 42% those staying in institutions, and 1% to 16% for those living in the community [14]. Meanwhile, the WHO projected that the 10% to 20% overall prevalence rate of depression among the geriatrics differ, subjecting to cultural situations [15, 16]. Our study revealed that type of family (joint/extend), smoking (smoker), acknowledgement of memory problem/ depressed mood (unacknowledged), and positive status of well-being (poor) were predictors of depression.

Education deprivation is frequently related with lower standards of living, poverty and low income, less accessible to health and medical care services, and unhealthy lifestyle behavior and diet. In the present study, the percentage of illiterates suffering from major depression was almost similar to those of literates. Geriatric population without formal education was eight times more likely to suffer from depression, as compared to those with formal education in a primary care setting [17]. Research done in Malaysia [2] and

other countries such as Singapore[5] and India[18] on the general community had supported the idea of higher prevalence among those with lower education level.

With proper education highlights the significance of a firm awareness regarding health information and knowledge, resulting in them receiving prompt medical attention and adequate treatment. Among the depressed Singaporean participants, Malays have higher prevalence of somatic symptoms, and they rated their general health as fair or poor more significantly, as compared to other ethnicity [5]. These symptoms included decreased desire for food, interrupted sleep and/or early awakening, pain that interfered with normal work in past month, symptom(s) of hallucination(s) and/or delusion(s), subjective slowing in movement, listlessness or subjective restriction in energy, and low energy levels in the past month. In our study, well acknowledgement of memory problems/depressed mood signifies that the Malay ethnicity is more prone towards somatic symptoms and poorer health condition.

Social support is important in a community because it gives support and helps the elderly. Good social support plays an important role to ensure individuals and family members take care of the elderly. Migration and the nuclear family can lessen the support, which in turn can be a problem. A study in Malaysia found that elderly with low social support had eight times higher risk in developing depression [19]. Another local study also proven that the Malay elderly living in rural areas and having low social support would have seven times risks for depression [20]. Depression tends to occur in the elderly who lived alone, rather than lived with their family due to social isolation. Conversely in this study, only 14 (8.1%) of the participants were living alone, and they were not included under nuclear family. Elderly living in a nuclear family was 0.274 times less prone to suffered from depression, as compared to those living in a joint/extended family. In Japan, a community based study discovered that unmarried elderly possessed higher risk for depression as compared to those who were married [21]. However, our study and another local research[19] did not show any statistical difference among the married and single elderly and the risk of developing depression.

Social support is not only vital in encouraging the geriatric population to practice healthy lifestyle behavior, but is proven to affect the odds of suffering from depression. This can reduce suffering and improve their quality of life. Our study has suggested that there is a 4.421 risk of smoking being significantly associated with depression. Other studies showed that smoking can increase risk of getting a depression as well [22, 23]. Our study and another local study[19] did not reveal any significant findings in the relationship between alcohol drinking and depression, as the number of respondents who consumed alcohol was too small. Furthermore, alcohol drinking is not common among the Malays as alcohol is prohibited in Islam. In a study conducted in Finland, it was found that cigarette smoking and alcohol consumption were important risk factors for major depressive episode [12].

We had also assessed the status of positive well-being by using the WHO (five) Well-Being Index (1998 version). We had observed that participants with positive status of poor well-being were 6.154 times more likely to experience unipolar major depression, as compared to those who were satisfactory. This trend can also be seen in a study conducted in India, which assessed the validity and reliability of this instrument [24]. The general well-being was largely influenced by various factors, and this is also related to the somatic symptoms that are being experienced by the elderly. Therefore, depression was a contribution by the presence of somatic symptoms.

Observations made from this study reflected the state of the geriatrics at the moment when the study was conducted. The duration of time for data collection was short, thus a larger study need to be conducted to confirm these findings. The household survey administered made it unfeasible for us to access those who were homeless, living at elderly homes and severely depressed elderly patients in hospitals. Likewise, the exclusion of potential participants that did not meet the criteria could have undervalued our observed prevalence. Furthermore, bias regarding the self-

report of chronic co-morbidities and other relevant information may occur.

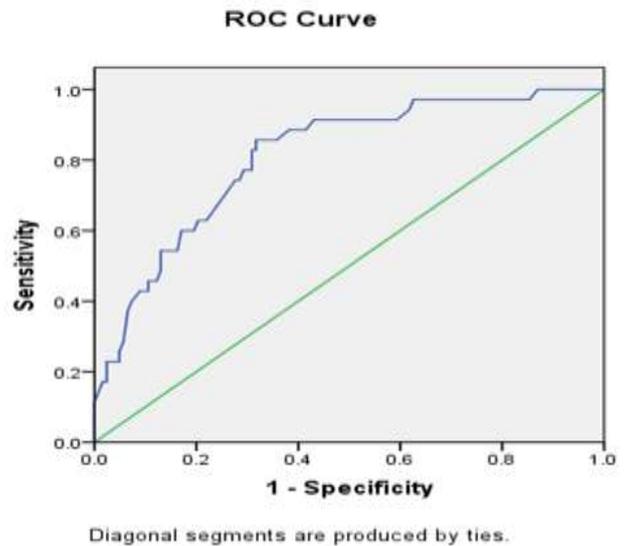


Fig. 1: Assessment of external validity of instrument: evaluation through analysis of the ROC curve.

CONCLUSION

Prevalence of unipolar major depression among the Malay elderly in this study was 20.9%. Factors found to be significantly associated with unipolar major depression were type of family (joint/extended family), smoking habits (smoker), acknowledgement of memory problem/depressed mood, and positive status of well-being (poor). Hence, coordination with support groups, such as the government, non-governmental organizations, and community and family members must together play a big role to help curb this matter. Identifying risk factors for depression among primary health personnel and clinician is important so as programs can be implemented, since depression is commonly found in this age group.

ETHICAL CONSIDERATIONS

Ethical approval (B Pharm B01/10-Res(37)2013) was obtained from IMU-Joint Committee of the Research and the Ethics Committee, International Medical University, Malaysia.

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