

ORIGINAL ARTICLE

Risk Factors of Depression, Anxiety and Stress Among Adults Attending Primary Health Clinics in an Urban Area in Klang Valley, Malaysia

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ABSTRACT

Introduction: Mental health problem is an important public health issue which causes deterioration in quality of life, function and financial capabilities. According to the National Health and Morbidity Survey (NHMS) 1996, the prevalence of mental problem among adults in Malaysia was 10.7% and this has increased to 29.2% in NHMS 2015. The aim of this study was to evaluate the burden of depression, anxiety and stress among adults in a city in Klang Valley, Malaysia including its associated factors. **Methods:** A cross-sectional study was conducted by analysing secondary data obtained from screening program performed in six primary health clinics in the city throughout 2016. There were 576 adults participated in the screening program which consisted of mental health screening using Depression, Anxiety, Stress 21 (DASS-21) questionnaire and health status screening using Health Status Screening Form. **Results:** The prevalence of depression was 20.5%, anxiety was 44.5%, while stress was 10.1%. By using logistic regression, history of being abused was the only significant protective factor associated with depression, anxiety and stress with OR of 0.062 (95% CI 0.007; 0.563, $p=0.004$), OR of 0.001 (95% CI 0.000; -, $p=0.001$) and OR of 0.026 (95% CI 0.003; 0.238, $p<0.001$) respectively. Other independent variables were not statistically significant. **Conclusions:** As conclusions, surprisingly the risk of depression, anxiety and stress were not increased among participants who reported history of being abused. This was probably due to good coping mechanism among them. Nevertheless, early intervention needs to be emphasized to prevent mental disorders among this group of people in community.

Keywords: Depression, Anxiety, Stress, Adults, Urban

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INTRODUCTION

Prevalence of mental disorders is increasing worldwide, which may cause deterioration in individual function, quality of life and economic burden to patient, family and subsequently to the country on the whole (1). According to NHMS conducted in 1996, the prevalence of mental disorders among adults in Malaysia was 10.7% (2). However, NHMS in 2015 showed the prevalence had increased to 29.2% (3). The commonest mental illness affecting adults was depression, which frequently co-exist with anxiety and stress (1).

Depression is defined as an excessive feeling of sadness and loss of interest which affects the ability of individual to function (4). As has been projected, depression will be the second disability in the world by 2020 (1). In Malaysia, among all mental disorders, depression is the commonest disability affecting the population (5).

In a study in Selangor, Malaysia, it was revealed that prevalence of depression was 10.3% (6). About 300 million people suffer from depression and almost 800,000 people commit suicide every year due to depression (7). The findings from a study conducted among Malaysian young adults indicated that depression was significantly associated with suicidal ideation (8). Early diagnosis and prompt treatment of depression were proven to reduce the incidence of committing suicide (9).

Anxiety is a normal reaction to stress, but anxiety disorder occurs when it is associated with excessive fear or anticipation of future concern which may affect daily functions (4). In East Asia, about 1 in 50 people were diagnosed with anxiety disorder in year 2010 (10). A study conducted in Selangor; Malaysia revealed prevalence of anxiety disorder of 8.2% (11).

Depression, Anxiety, Stress Scale either DASS-42 or DASS-21 is a widely used screening tool for mental health which evaluates depression, anxiety and stress level within a one-week period. In DASS-21, the scoring is done by taking mean of all three scales as normative data and cut-off point is not currently provided (12,13).

However, DASS-42 or DASS-21 cannot be used as a confirmatory test to diagnose depression, anxiety or stress. Other example of tools used to screen mental disorders are Clinical Interview Scheduled-Revised (CIS-R), Hospital Anxiety and Depression Scale (HADS), Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD7).

Evaluating risk factors for these mental disorders are important for targeting preventive intervention. Example of risk factors that may contribute to these problems are history of being abused (6), having chronic illnesses (6), financial problem (14) and history of divorce or marital problem (14). Emotional trauma associated with these risk factors may progress to mental disorders (15). Therefore, the objective of this study was to evaluate the prevalence of mental health problems, and the associated risk factors by analysing secondary data from a screening program on mental health and health status conducted among adults attending primary health clinics in a Klang Valley city, Malaysia.

MATERIALS AND METHODS

This study was conducted in a city located in Klang Valley, Malaysia with a population of 90,000 people and out of this, 80 per cent were adults (16). The study design was a cross-sectional study using secondary data obtained from screening program consists of mental health and health status screening conducted among adults attending six primary health clinics in the city throughout 2016.

In this screening program, one adult patient from each outpatient clinic was selected daily as participant using simple random sampling. One registration number was randomly selected daily in each clinic using random number generator. Adult patient with selected registration number, and fulfilled inclusion criteria were selected to participate in the mental health and health status screening. Inclusion criteria were Malaysian citizen and aged at least 18 years old. Exclusion criteria were those who had been diagnosed with psychiatric illness. Each participant was asked for consent to answer Depression, Anxiety, Stress 21 (DASS-21) questionnaire for mental health screening and Health Status Screening Form for health status screening. All data were entered in Microsoft Excel by each clinic. Data on participants who completely answered DASS-21 questionnaire and Health Status Screening Form were extracted for analysis.

DASS-21 questionnaire which was the tool used for mental health screening, measures depression score, anxiety score and stress score in one-week period. It has 21 items with 7 items for each variable. Minimum score for each item is 0. The maximum score is 3. It has been translated and validated in Malay language with Cronbach alpha of 0.74 – 0.84 (17). When multiplied

by 2, the sum of DASS-21 can be classified into severity rating as shown in Table I (12).

Health Status Screening Form which was developed by Family Health Development Division, Ministry of Health Malaysia, consists of sociodemographic data (age, ethnicity, gender, education level, occupation, marital status), medical illness, weight, height, exercise, smoking history, alcoholism, drug misuse and history of being abused. All of these items were self-reported.

Dependent variables were depression score, anxiety score and stress score obtained from DASS-21 used in mental health screening. Patients with depression score of 10 and more were classified as having depression, whereas those with anxiety score of 8 and more were categorized as having anxiety, and those with stress score of 15 and more were classified as having stress. Independent variables were age group, ethnicity, gender, education level, occupation, marital status, presence of medical illness, smoking status, drug misuse, alcohol consumption, history of being abused, exercise and body mass index (BMI) status, which were obtained from the Health Status Screening Form that was used in the health status screening.

Definition of independent variables were as follows; age refers to age during participation in the screening program. Age was categorized into '18 to 35 years old' and 'more than 35 years old'. Gender was classified into males and females. Ethnicity were Malays, Chinese, Indians, and other ethnic minorities represented the 'Others' group. For inferential analysis, ethnicity was classified as Malays and Non-Malays.

Education level refers to the highest education of respondents, were categorized as 'no formal education,' 'primary,' 'secondary' and 'tertiary'. 'No formal education' means those who had never attended formal education at school. 'Primary' education means highest education level at primary school. 'Secondary' education level referred to highest education till Form 5 in Malaysian education system, and 'tertiary' education was those who had diploma, degree, masters or PhD. Occupation refers to current job of the respondent during the screening programs were conducted. For inferential analysis, it was classified as 'employed' and 'unemployed/self-employed/student/ housewife'.

Medical illness refers to self-reported presence or absence of medical illness. Current smokers, regardless of how many cigarettes per day or number of years smoking, was the operational definition for smoking status. Drug misuse and alcohol consumption status were self-reported history of drug abuse and consumption of alcohol respectively. History of being abused refers to self-reported history of being abused emotionally, physically or sexually. BMI was classified according to the WHO Classification of Body Mass Index (BMI),

1998. BMI of less than 18.5 kg/m² was underweight, BMI of 18.5 to 24.9 kg/m² was normal, BMI of 25 to 29.9 kg/m² was overweight and BMI ≥30 kg/m² was obese. For inferential analysis, BMI was classified into 'underweight', 'normal' and 'overweight/obese'. Marital status was classified into 'married', and 'single' which refers to never married, divorced or widowed. Exercise refers to self-reported 30 minutes' exercise, at least three times a week, whether it was frequently done or otherwise.

Data analysis

All variables were analysed descriptively as mean and standard deviation for numerical data and, as frequency and percentage for categorical data.

According to Table I, patients with depression score of 10 and more were considered to have depression, whereas those with anxiety score of 8 and more were considered to have anxiety and those with stress score of 15 and more were classified as having stress. The associated factors were assessed using Simple Logistic Regression. Significant predictors were determined using Multiple Logistic Regression. Significance level was set at p-value of less than 0.05.

Table I: DASS-21 severity rating

| SEVERITY | DEPRESSION | ANXIETY | STRESS |
|------------------|------------|---------|--------|
| NORMAL | 0-9 | 0-7 | 0-14 |
| MILD | 10-13 | 8-9 | 15-18 |
| MODERATE | 14-20 | 10-14 | 19-25 |
| SEVERE | 21-27 | 15-19 | 26-33 |
| EXTREMELY SEVERE | 28+ | 20+ | 34+ |

RESULTS

Out of all 1500 patients participated in this screening program, only 576 participants had completely answered both DASS-21 and Health Status Screening Form. Data from this screening program were analysed for this study.

From this study, 58.2% were female. The mean for age was 33.6 years old (sd 8.87). Respondents aged 18 to 35 years old were 376 (65.3%) and more than 35 years old were 200 (34.7%). By ethnicity, 95.7% were Malay and 0.5% were Chinese, 1.4% were Indian and 2.4% were "others".

In terms of marital status, 307 (53.3%) were single and 267 (46.4%) were married. In terms of job, 366 (63.5%) were employed and the rest were self-employed or unemployed or students. There were 36.8% smokers, 3.3% alcohol consumer, 0.7% drug abuser and 0.7% had history of being abused. Among the respondents,

9.2% had co-existing medical illness. In terms of BMI, 33.5% were obese, 34.5% were overweight, 26.7% normal BMI and 5.3% were underweight. Only 7.8% had regular exercise and other 92.2% did not exercise. With regards to education level, 71.2% had at least diploma or degree, and 28.8% were studied till secondary school level. None of the respondents had highest education at primary level or no formal education.

The prevalence of depression was 20.5%, anxiety was 44.5% and stress was 10.1%, based on the rating of DASS-21 score shown in Table II. Depression, anxiety and stress mean score was 5.29 (sd 4.84), 6.81 (sd 4.94) and 8.30 (sd 5.67) respectively.

Table II: Severity rating of DASS-21 score

| DASS-21 | Normal | Mild | Moderate | Severe | Extremely severe |
|------------------|--------|-------|----------|--------|------------------|
| Depression score | 79.5% | 13.9% | 5.7% | 0.7% | 0.2% |
| Anxiety score | 55.5% | 12.8% | 25.2% | 5.6% | 0.9% |
| Stress score | 89.9% | 6.6% | 3.1% | 0.2% | 0.2% |

The associated factors for depression, anxiety and stress using Simple Logistic Regression are shown in Table III, Table IV and Table V respectively. Since only 'history of being abused' was the only significant factor for depression, anxiety and stress, Multiple Logistic Regression was not performed. The summary of significant factor for depression, anxiety and stress is shown in Table VI.

DISCUSSION

From this study, the prevalence of depression was 20.5%, anxiety 44.5% and stress 10.1%. Community-based studies on adults using DASS were very limited. The first Malaysian Mental Health Survey (MMH), a community-based study on common mental disorder using Clinical Interview Scheduled-Revised (CIS-R) was carried out from year 2003 till 2005 on 3666 respondents in Penang and Kelantan, Malaysia showed 5.3% had mental disorders with mixed anxiety depression was the commonest (14).

Most studies which used DASS-42 or DASS-21 involved targeted sample population such as university students, and those sharing similar occupations or illnesses. For example, prevalence of moderate and severe depression, anxiety and stress among Malaysian university students aged 18 to 24 years old using DASS-21 were 37.2%, 63.0% and 23.7% respectively, which were significantly higher than prevalence of each DASS subscale in the present study (18). In Hong Kong, similar study was conducted among nursing students using DASS-21 which showed that the prevalence of depression, anxiety and stress at moderate to extremely severe level was 21%, 32% and 19% respectively, in which the prevalence

Table III: Factors associated with depression

| Variable | OR | (95% CI OR) | x ² stat (df) | p-value |
|--------------------------|-----------|--------------|--------------------------|---------|
| Age group | | | | |
| 18-35 years old | 1.000 | | | |
| > 35 years old | 0.869 | 0.571; 1.322 | 0.428 (1) | 0.513 |
| Sex | | | | |
| Male | 1.000 | | | |
| Female | 0.687 | 0.451; 1.047 | 3.116 (1) | 0.078 |
| Ethnic | | | | |
| Malay | 0.730 | 0.246; 2.169 | 0.342 (1) | 0.559 |
| Non-Malay | 1.000 | | | |
| Job | | | | |
| Self-employed/Unemployed | 1.711 | 0.696; 4.208 | 1.517 (1) | 0.218 |
| Employed | 1.000 | | | |
| Medical illness | | | | |
| Yes | 1.119 | 0.545; 2.299 | 0.096 (1) | 0.757 |
| No | 1.000 | | | |
| Alcohol consumption | | | | |
| Yes | 0.965 | 0.314; 2.963 | 0.004 (1) | 0.951 |
| No | 1.000 | | | |
| Drug | | | | |
| Yes | 419881132 | 0.000; - | 1.841 (1) | 0.175 |
| No | 1.000 | | | |
| Smoking | | | | |
| Yes | 1.422 | 0.920; 2.196 | 2.583 (1) | 0.108 |
| No | 1.000 | | | |
| Exercise | | | | |
| Yes | 1.000 | | | |
| No | 1.282 | 0.629; 2.613 | 0.451 (1) | 0.502 |
| History of being abused | | | | |
| Yes | 0.062 | 0.007; 0.563 | 8.234 (1) | 0.004 |
| No | 1.000 | | | |
| BMI | | | 2.861 (2) | 0.239 |
| Normal | 1.000 | | | |
| Underweight | 0.488 | 0.204; 1.165 | 2.611 (1) | 0.106 |
| Overweight/Obese | 1.048 | 0.663; 1.658 | 0.040 (1) | 0.841 |
| Marital status | | | | |
| Single/Widowed | 1.005 | 0.670; 1.508 | 0.001 (1) | 0.982 |
| Married | 1.000 | | | |
| Education | | | | |
| Secondary level | 0.949 | 0.608; 1.479 | 0.054 (1) | 0.816 |
| Tertiary level | 1.000 | | | |

Level of significance at 0.05. Logistic Regression, OR=Odds Ratio. 95% CI= 95% Confidence Interval

of depression and stress were higher than the present study (19). Another study in Hong Kong conducted among nurses revealed the prevalence of depression was 35.8%, anxiety 37.3% and stress 41.1% in which the prevalence of depression as well as stress were also higher than the present study (20). According to study among Type II Diabetes mellitus patients in Klang Valley, Malaysia, the prevalence of DASS subscale were 11.5% for depression, 30.5% for anxiety and 12.5% for stress in which the depression and anxiety prevalence were lower than the present study (21). The possible reasons for these prevalence differences were different sample population with different exposing factors and different sample size in these studies.

Most community-based studies used other tools to evaluate these three mental problems. For instance, a community-based research done in East Coast Malaysia showed the prevalence of depression and anxiety were only 4.5% and 5.1% respectively by utilizing Hospital Anxiety and Depression Scale (HADS) (22). A study in population in Selangor using Patient

Table IV: Factors associated with anxiety

| Variable | OR | (95% CI OR) | x ² stat (df) | p-value |
|--------------------------|-------|---------------|--------------------------|---------|
| Age group | | | | |
| 18-35 years old | 1.000 | | | |
| > 35 years old | 1.162 | 0.801; 1.686 | 0.627 (1) | 0.428 |
| Sex | | | | |
| Male | 1.000 | | | |
| Female | 0.963 | 0.674; 1.375 | 0.044 (1) | 0.835 |
| Ethnic | | | | |
| Malay | 1.197 | 0.491; 2.918 | 0.160 (1) | 0.689 |
| Non-Malay | 1.000 | | | |
| Job | | | | |
| Self-employed/Unemployed | 1.608 | 0.763; 3.386 | 1.662 (1) | 0.197 |
| Employed | 1.000 | | | |
| Medical illness | | | | |
| Yes | 0.810 | 0.449; 1.463 | 0.479 (1) | 0.489 |
| No | 1.000 | | | |
| Alcohol consumption | | | | |
| Yes | 1.761 | 0.576; 5.383 | 1.086 (1) | 0.297 |
| No | 1.000 | | | |
| Drug | | | | |
| Yes | 1.389 | 0.143; 13.443 | 0.085 (1) | 0.771 |
| No | 1.000 | | | |
| Smoking | | | | |
| Yes | 1.233 | 0.852; 1.782 | 1.247 (1) | 0.264 |
| No | 1.000 | | | |
| Exercise | | | | |
| Yes | 1.000 | | | |
| No | 0.976 | 0.506; 1.882 | 0.005 (1) | 0.942 |
| History of being abused | | | | |
| Yes | 0.001 | | | |
| No | 1.000 | 0.000; - | 11.616 (1) | 0.001 |
| BMI | | | 0.905 (2) | 0.636 |
| Normal | 1.000 | | | |
| Underweight | 0.805 | 0.343; 1.893 | 0.247 (1) | 0.620 |
| Overweight/Obese | 0.833 | 0.562; 1.234 | 0.832 (1) | 0.362 |
| Marital status | | | | |
| Single/Widowed | 0.706 | 0.495; 1.009 | 3.691 (1) | 0.055 |
| Married | 1.000 | | | |
| Education | | | | |
| Secondary level | 1.023 | 0.695; 1.508 | 0.014 (1) | 0.907 |
| Tertiary level | 1.000 | | | |

Level of significance at 0.05. Logistic Regression, OR=Odds Ratio. 95% CI= 95% Confidence Interval.

Health Questionnaire-9 (PHQ-9) revealed prevalence of depression was 10.3%, which was lower than the prevalence of depression in the present study (6). In other research to evaluate prevalence of anxiety in Selangor community using Generalized Anxiety Disorder-7 (GAD7) revealed the prevalence of anxiety was 8.2% which was lower than the present study (20). In United States, prevalence of depression was 8.7% using PHQ-8, which was also lower compared to prevalence of depression in the present study (23). In view of different tools used in these community-based studies and the present study, fair comparison of the results was difficult to be made.

Depression, anxiety and stress mean score among participants in this study was 5.29 (sd 4.84), 6.81 (sd 4.94) and 8.30 (sd 5.67) respectively. For comparison, mean score of depression, anxiety and stress among non-clinical sample in United States was 5.7 (sd 8.6), 4.0 (sd 6.3) and 8.1 (sd 7.6) respectively (24). This indicates the mean score for depression and stress were relatively similar but the mean score for anxiety was higher in the

Table V: Factors associated with stress

| Variable | Crude OR | (95% CI OR) | x ² stat (df) | p-value |
|------------------------------|----------|---------------|--------------------------|---------|
| Age group | | | | |
| 18-35 years old | 1.000 | | | |
| > 35 years old | 0.907 | 0.509; 1.616 | 0.111 (1) | 0.739 |
| Sex | | | | |
| Male | 1.000 | | | |
| Female | 0.769 | 0.438; 1.350 | 0.852 (1) | 0.356 |
| Ethnic | | | | |
| Malay | 2.769 | 0.368; 20.856 | 1.334 (1) | 0.248 |
| Non-Malay | 1.000 | | | |
| Job | | | | |
| Self-employed/ Unemployed | 2.665 | 0.622; 11.422 | 2.279 (1) | 0.131 |
| Employed | 1.000 | | | |
| Medical illness | | | | |
| Yes | 1.083 | 0.413; 2.838 | 0.026 (1) | 0.871 |
| No | 1.000 | | | |
| Alcohol consumption | | | | |
| Yes | 0.584 | 0.165; 2.069 | 0.620 (1) | 0.431 |
| No | 1.000 | | | |
| Drug | | | | |
| Yes | 8.862 | 0.000; - | 0.852 (1) | 0.356 |
| No | 1.000 | | | |
| Smoking | | | | |
| Yes | 1.456 | 0.805; 2.634 | 1.605 (1) | 0.205 |
| No | 1.000 | | | |
| Exercise | | | | |
| Yes | 1.000 | | | |
| No | 0.862 | 0.297; 2.499 | 0.078 (1) | 0.780 |
| History of being abused | | | | |
| Yes | 0.026 | 0.003; 0.238 | 13.814 (1) | <0.001 |
| No | 1.000 | | | |
| BMI | | | 0.139 (2) | 0.933 |
| Normal | 1.000 | | | |
| Underweight | 0.800 | 0.220; 2.905 | 0.115 (1) | 0.734 |
| Overweight/ Obese | 1.025 | 0.545; 1.926 | 0.006 (1) | 0.939 |
| Marital status | | | | |
| Single/Widowed | 0.927 | 0.537; 1.600 | 0.074 (1) | 0.786 |
| Married | 1.000 | | | |
| Education | | | | |
| Secondary level | 1.028 | 0.566; 1.867 | 0.008 (1) | 0.927 |
| Tertiary level | 1.000 | | | |

Level of significance at 0.05. Logistic Regression. OR=Odds Ratio. 95% CI= 95% Confidence Interval.

Table VI: Summary of significant factors associated with depression, anxiety and stress

| DASS subscale | Factor | OR | 95% CI | x ² (df) | p-value |
|---------------|-------------------------|-------|--------------|---------------------|---------|
| Depression | History of being abused | 0.062 | 0.007; 0.563 | 8.234 (1) | 0.004 |
| Anxiety | History of being abused | 0.001 | 0.000; - | 11.616 (1) | 0.001 |
| Stress | History of being abused | 0.026 | 0.003; 0.238 | 13.814 (1) | <0.001 |

Level of significance at 0.05. Logistic Regression. OR=Odds Ratio. 95% CI= 95% Confidence Interval.

present study. Different stressor and exposing factors in different countries could explain these differences.

In this study, 'history of being abused' was the only significant protective factor associated with depression, anxiety and stress with OR of 0.062 (95% CI 0.007; 0.563, p=0.004), OR of 0.001 (95% CI 0.000; -, p=0.001) and OR of 0.026 (95% CI 0.003; 0.238,

p<0.001) respectively. The result indicates that the risk of depression, anxiety and stress was not increased among participants who reported history of being abused.

This finding was contradicted with a study conducted in Malaysia, which showed those with history of domestic violence were 7 times higher risk of getting depression (6). Meanwhile, in Hong Kong, a study revealed nurses with past history of being abused were 3 times higher risk to get depression and those experienced violence at workplace were 1.5 times higher risk to get depression (20). A study conducted in Australia also showed respondents who were bullied and rejected by peers and emotionally abused had higher DASS score (25). Adults with history of being abused or neglected during childhood were found to have higher risk of depression and other mood disturbance (26,27).

Many studies revealed strong association between history of being abused and mental disorders (6,20,25-27). However, in this study, being abused was found to be a protective factor for depression, anxiety and stress. This was probably due to the respondents perceived that they were being abused when in reality they were not. Therefore, they have lower risk of having mental health problems. Other causes could be that individuals with history of being abused who could adapt good coping method may have lower risk of having mental problems (28). In addition, the sympathetic hyperarousal in person with history of abused may become stable in "window of tolerance" stage which prevent the establishment of depression and other traumatic related mental disorders (15).

Unlike other studies, other factors were not significant in this study. In MMH survey, factors associated with common mental problem among Malaysian were female (OR = 1.91, P < 0.01), history of divorce (OR = 3.95, P < 0.05), problems at work (OR = 3.58, P < 0.01), bad life events (OR = 2.58, P < 0.01), financial difficulties (OR = 3.87, P < 0.01), and relationship problems (adjusted OR = 4.35, P < 0.01) (17) (14). According to a study on type II Diabetes mellitus patients in Klang Valley, Malaysia, the significant factors for depression were sex (females), race (Indian), marital status (never married, widowed, divorced), and alcoholism (21). Meanwhile, the significant factors for anxiety were job (unemployment and housewives) and the predictors for stress were sex (females), presence of co-morbidity and alcohol consumption (21).

The study has its own strength. Firstly, the sample size used was relatively big and random sampling method which was used during selection of participants for the mental health and health status screening makes the study is likely to represent the general population. It was also cost-effective as it only used secondary data obtained from screening program conducted in the community.

However, there were several limitations in this study. Firstly, most of the questions in the Health Status Screening Form used for health status screening were self-reported which may have associated with recall bias and information bias. Secondly, some questions were also superficial which may be easily misinterpreted by participants. For example, question on history of being abused is stated as history of being abused emotionally, physically or sexually before, which was not well defined. Therefore, the significant results should be carefully interpreted. Apart from this, there was also possibility of selection bias because only respondents who completely answered both mental health and health status screening questionnaires were selected as the respondents for final analysis in this study.

CONCLUSION

As conclusion, this research has determined the prevalence of depression, anxiety and stress among adults attending primary clinics in a Klang Valley city and associated factors. The prevalence for each DASS subscale was lower compared to other studies but relatively similar to NHMS 2015 results. The significant protective factor for depression, anxiety and stress was history of being abused. It indicates that the risk of depression, anxiety and stress was not increased among those with history of being abused in this study as the odd ratio was less than one. However, the results should be carefully interpreted. Other independent variables were not statistically significant in this study.

Mental health screening should be continued and be analysed to see the burden of the mental illnesses in the country. More community-based cohort study with bigger sample size should be conducted in the future. Respondents with high DASS-21 score should be followed-up and assessed with confirmatory psychiatric test according to DSM-V. This can be accomplished by co-operation with psychiatrists and psychologists. Subsequent intervention should be implemented to reduce the burden of these mental health problems. Health education and awareness program on mental health among community should also be included in this interventional study.

Besides, factors like history of being abused either physically, mentally and/or sexually should be explored among adults in the community and early intervention to prevent mental disorder among this particular group of people should be emphasized in the future.

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