

## ORIGINAL ARTICLE

# Prevalence and Related Factors of Depression among Healthcare Personnel at Primary Healthcare Centers

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## ABSTRACT

**Introduction:** Depressive disorders are common. As compared to the general population, healthcare personnel are hypothesized to have an above than average risk to develop this condition. The aim of this study is to assess the prevalence of this condition and its contributing factors amongst primary healthcare personnel. **Methods:** A cross-sectional study was conducted by universally sampling 179 primary healthcare personnel at nine primary healthcare centers across Kuala Lumpur and Selangor in May 2015. Depressive symptoms were screened using self-administered Patient Health Questionnaire-9 (PHQ-9) questionnaire. Socio-demographic and work profile data were also assessed. **Results:** 92.7% of the 179 personnel agreed to participate. Near half of the respondents were staff nurses (49%), followed by doctors (22%), assistant medical officers (10%), attendants (10%) and the remaining were pharmacists, dieticians, and laboratory technicians (9%). Depression was found to be present in 38% of the participants with one-third found to have moderate to severe depression. Bivariate analysis show that males ( $p=0.043$ ), assistant medical officers ( $p=0.048$ ), and working more than 10 hours per day ( $p=0.019$ ) are significant risk factors. Further analysis by logistic regression shows that working more than 10 hours per day increases the odds of depression by 3.1 (OR 3.1, 95% CI 1.1-8.7,  $p=0.03$ ). **Conclusions:** A high prevalence of depression was found within the healthcare personnel population at the primary healthcare centres studied. Being a male, employed as an assistant medical officer, and, prolonged hours at the workplace is a significant risk factor for depression.

**Keywords:** Depression, Screening, Healthcare workers, Primary care, Malaysia

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## INTRODUCTION

Depression is a common medical condition. More than 300 million people are affected worldwide, making it one of the leading causes of disability (1). Across the Asia Pacific region, lifetime rate of developing depression ranges from 1.1% to 19.9% with a median of 3.7% (2). In Malaysia, it is the most common mental illness reported with approximately 2.3 million people being affected at some point of their lives (3). Within the Malaysian primary care patient population, the prevalence of depression is estimated to be between 6.7-14.4% (4,5).

Depression results from a complex interaction of social,

psychological and biological factors (1). The disability caused by depression leads to functional impairment in both workplace and personal lives. Within the healthcare sector, this potentially could lead to compromised patient care, creating disciplinary issues, and even lead to substance misuse. Healthcare workers are thought to be at risk to develop depression due to the nature of their job. Healthy and highly functional employees are important to ensure the efficient delivery of any service(6).

A search of the online medical literature revealed a few published studies of depression within the hospital based healthcare worker population in Malaysia. A cross-sectional study done in the year 2001 and 2002 on hospital laboratory technicians in the state of Kelantan, Malaysia found that depression was prevalent (at 39.4% within the seven Ministry of Health hospitals studied, and at 59.9% in Hospital Universiti Sains Malaysia)(7). But to the best of our knowledge, published studies that specifically looked at the primary healthcare worker

sub-population are very limited. Therefore, the aim of this study is to determine the prevalence of depression within this specific population and also to find any factors that may be associated with it. The findings would provide an insight into the estimated magnitude of this issue among healthcare workers in the primary care setting.

## MATERIALS AND METHODS

A cross sectional study had been conducted at the primary care setting in a few selected clinics. These clinics provide acute and chronic medical care to its community and can be accessed without a referral letter. Data collection was done during the month of May 2015 at two primary care clinics in a Kuala Lumpur government university hospital and seven Ministry of Health clinics under the Kuala Langat Health District in Selangor. The selection of the clinics had taken into account the two types of government primary care settings in Malaysia which is namely university based and Ministry of Health based primary care clinics. They were purposely selected based on the previous literature findings which showed that the depression rate was prevalent among the hospital-based healthcare workers in these two settings (7).

The services provided by the clinics are similar with the university hospital primary care centers having academic activities on top of clinical services. Recruitment of the centers was performed via convenience sampling. A universal sampling of all the seven healthcare clinics in the district and two primary care clinics in the university settings were carried out subsequently. Attempts to recruit private primary care clinics into the study failed due to the taboo nature of the subject studied.

The inclusion criteria were all personnel involved in the clinical care or management of patients. All non-clinical, clerical and administrative staffs were excluded. The entire 179 clinical staff (inclusive of doctors, nurses, assistant medical officers, pharmacists, dieticians, laboratory technicians and attendants) working in the selected clinics during the period was invited to participate. Thirteen of them opted out while 166 (92.7%) agreed and were included in the study.

Sample size calculation was determined by using the Kish L. 1965 formula. By using a prevalence of 59.5% found by the study that was conducted on laboratory technicians in Hospital Universiti Sains Malaysia in Kelantan as a reference point (7). After taking into account an expected non-response rate of 25%, the needed sample size is 116 healthcare personnel.

Participants completed a set of self-administered questionnaires which assessed their socio-demographic status and work profile characteristics. The information collected were participants' age group, ethnicity, gender, marital status, education level, monthly household

income, occupation, duration of service, daily working hours and patient load.

Screening for depression was achieved by using the PHQ-9 questionnaire. Validated English and Bahasa Melayu versions of the PHQ-9 questionnaire were used (8). The PHQ-9 questionnaire incorporates DSM-IV depression diagnostic criteria into a brief self-report tool. It consists of 9 questions which score 0 to 3; assessing patients' symptoms over the last two weeks. The criterion for depression requires the patient to report the presence of at least anhedonia and/or low mood (question 1 and/or 2) to be valid. The other features of depression assessed by the questionnaire include tiredness; changes in appetite; changes in sleep pattern; reduced concentration; restlessness or motor retardation; feelings of worthlessness; and thoughts of self-harm or suicide. A total score of 5-9 indicates mild depression; 10-14 moderate depression; and a score of 15 or more indicates moderately severe to severe depression. A score of 10 or more has a sensitivity of 88% and a specificity of 88% for depression (8, 9).

Participants who agreed to participate signed a consent form, completed the questionnaires, and then returned them in sealed envelopes. To ensure confidentiality, results were informed through individualised feedback letters in sealed envelopes. Participants who scored 5 and above were advised to see their primary care physician for further assessment.

The collected data was analysed using Statistical Package for Social Studies (SPSS) version 20. Categorical variables were presented as frequency (n) and percentage (%). Numerical variables were presented as mean and standard deviation for normally distributed continuous data and median with inter-quartile range (IQR) for non-normally distributed continuous data. Associations between possible depression with socio-demographic and work profile factors were determined using the Pearson's Chi Square test. A p – value of <0.05 was considered to be statistically significant. Variables with the result of p-value <0.20 in bivariate analysis (occupation category, education level, gender, race and working hours category) were included in multivariable logistic regression.

This study had obtained ethical approval from the Medical Research Ethics Committee of the Ministry of Health Malaysia (NMRR-15-422-24382 (IIR)) and the Research Committee of the National University of Malaysia 9UKM FPR.4/244/FF-2015-079).

## RESULTS

166 of the 179 (92.7%) of the primary healthcare workers at the selected centres participated in this study. Staff nurses make up the majority of respondents at 49% with doctors (22%), assistant medical officers (10%) and

attendants (10%). Pharmacists, dieticians, and laboratory technicians make up the remaining 9%. Both settings had a similar response rates of 92.7% (government = 102/110, teaching hospital = 64/69). The majority of the participants are between 26 to 35 years old (52%), of Malay ethnicity (88%), female (82%), and diploma holders (57%) (Table I).

The prevalence of depression in the population studied is 38.5%. 64 out of the 166 respondents met the PHQ-9 minimum criteria for depression. Of the 64 participants, 71.8 % (46/64) scored into the mild depression category, 23.4 % (15/64) into the moderate depression category and 4.7 % (3/64) into the moderately severe to severe depression category. The proportion of depression was higher among the healthcare workers at the teaching university setting compared to primary health care clinics at the Ministry of Health ( 48.4% in teaching university vs. 32.4% in Ministry of Health primary healthcare clinics, p-value=0.038).

Bivariate analysis found that males (p=0.043), assistant medical officers (p=0.048), and working more than 10 hours per day (p=0.019) are significantly associated

**Table I:** Association between depression status and socio-demographic characteristics amongst healthcare workers at the primary healthcare centers studied

Socio-demographic Characteristics	Depression	No Depression	X <sup>2</sup>	P Value
	N=64	N=102		
<b>Age Group (years)</b>				
18-25	10 (41.7%)	14 (58.3%)		
26-35	36 (41.4%)	51 (58.6%)		
36-45	11 (26.2%)	31 (73.8%)	4.385	0.223
46-55	7 (53.8%)	6 (46.2%)		
<b>Gender</b>				
Male	16 (55.2%)	13 (44.8%)		
Female	48 (35%)	89 (65.0%)	4.096	*0.043
<b>Ethnicity</b>				
Malay	60 (41.1%)	86 (58.9%)		
Non-Malay	4 (20.0%)	16 (80.0%)	3.305	0.069
<b>Marital Status</b>				
Single/ Divorced	12 (32.4%)	25 (67.6%)		
Married	52 (40.3%)	77 (59.7%)	0.753	0.385
<b>Household Income/Month</b>				
3000 or less	25 (38.5%)	40 (61.5%)		
More than 3000	39 (38.6%)	62 (61.4%)	0.000	0.984
<b>Education</b>				
Primary + Secondary	9 (39.1%)	14 (60.9%)		
Diploma	43 (45.3%)	52 (54.7%)		
Degree + Higher	12 (25.0%)	36 (75.0%)	5.531	0.063

\*P<0.05

with depression (Table II). Using multivariate logistic regression, those who work more than 10 hours per day are 3.2 odds more likely to have depression compared to those who work less than 10 hours per day (OR 3.1, 95% CI 1.1-8.7, p=0.03) (Table III).

**Table II:** Association between depression status and work profile at the primary healthcare centers studied

	Depression N=64	No Depression N=102	X <sup>2</sup>	P Value
<b>Occupation</b>				
Assistant medical officer	12 (70.6%)	5 (29.4%)		
Staff Nurse	31 (38.3%)	50 (61.7%)		
Attendants	6 (35.3%)	11 (64.7%)	9.566	*0.048
Doctors	10 (27.0%)	27 (73.0%)		
Pharmacists/ Dietitian/ Lab technician	5 (35.7%)	9 (64.3%)		
<b>Years of service</b>				
<10	35 (39.3%)	54(60.7%)	0.048	0.826
10 and more	29(37.7%)	48 (62.3%)		
<b>Working hours/day</b>				
<10	51 (35.2%)	94 (64.8%)	5.533	*0.019
10 or more	13 (61.9%)	8 (38.1%)		
<b>Patient load/day</b>				
25 or less	27 (36.0%)	48 (64.0%)	1.356	0.508
26-50	16 (35.6%)	29 (64.4%)		
>50	21 (45.7%)	25 (54.3%)		

\*P<0.05

## DISCUSSION

The 38.5% prevalence of depression among the primary healthcare workers studied is significantly higher compared to the 6.7-14.4% found in the Malaysian general population (4, 5). The study on medical lab technicians in Kelantan which was mentioned earlier in the article had also found a prevalence that is significantly higher than the general population (7); consistent with our findings. Data from nearby neighbouring countries are lacking. But in contrast, the prevalence of depression amongst healthcare workers in the more developed countries of Australia (10) and Japan (11) is not significantly higher as compared to its general population.

Three factors are found to be associated with depression in primary healthcare workers. They are longer working hours, being male, and employed as an assistant medical officer. Working 10 hours or more was found to be a risk factor for depression among the primary health care workers studied. Both primary healthcare settings in this study provide their services mainly during office hours (8am-5pm) with some of the Ministry of Health clinics providing additional out of hours service from 5pm to

**Table III:** Factors associated with depression amongst healthcare workers at the primary care clinics studied\*

Variable	Coefficient (β)	Standard Error	Wald	p	Odds Ratio	95% Confidence Interval
<b>Working hours</b>						
<10 hours	ref					
≥10 hours	1.137	0.524	4.703	0.030	3.117	(1.116-8.707)
<b>Gender</b>						
Female	ref					
Male	0.078	0.625	0.016	0.901	1.081	(0.317-3.684)
<b>Ethnicity</b>						
Non-Malay	ref					
Malay	0.664	0.663	1.002	0.317	1.943	(0.529-7.131)
<b>Education level</b>						
Primary + Secondary	ref					
Diploma	-0.118	0.804	0.021	0.884	0.889	(0.184-4.295)
Degree + Higher	-1.172	1.121	1.093	0.296	0.310	(0.034-2.788)
<b>Types of occupation</b>						
Pharmacists/Dietitian/ Lab technician	ref					
Assistant medical officer	0.785	0.988	0.630	0.427	2.192	(0.316-15.212)
Staff Nurse	-0.423	0.790	0.287	0.592	0.655	(0.139-3.080)
Attendants	-0.588	1.001	0.345	0.557	0.555	(0.078-3.949)
Doctors	0.144	0.024	0.024	0.876	1.155	(0.189-7.037)

\*Multivariate logistic regression analysis (controlled for gender, ethnicity, education level and types of occupation)  
Cox and Snell R square: 0.105, Nagelkerke R square: 0.142

10pm which requires their staff to work overtime on a rotational basis. Apart from this, the assistant medical officer who stays in the quarters near the clinic area is required to be on-call overnight. Considering that the general work of healthcare workers is stressful and demanding, it is not surprising to find that longer working hours is a predictor of depression. A study done on clerical workers found that long working hours is associated with depression not only at the time of the evaluation but up to 1 to 3 years later (12). Another study done on physicians working in Shenzhen, China in the year 2009 found depression in 28% of the study population with workload and long working hours as contributing factors (13). However, we did not find the association between workload and depression in our analysis.

This study found a higher proportion of depression reported among healthcare workers at the university hospital primary care setting compared to primary health care clinics at the Ministry of Health. Although the university-based clinics do not provide after office hours service that require their personnel to work for long hours, the university primary care centres have academic activities on top of clinical services that could add on to their work stress. Future research would be

needed to explore the reasons for this.

55% of males in this study are found to have depression as compared to only 35% of females. This is in contrast with previous studies which have shown that being female renders a two-fold increase in the risk of having depression (14). Factors attributing to this could be the differences in health seeking behaviour, job roles and psychological coping skills between male and female healthcare workers. There is an increasing evidence that highlight a trend of delayed help seeking in men when they become ill (15). This would in turn delay being recognised to have depression and would delay help. An imbalance in the perception of job strain and reward could also be a contributing factor. The different genders perceive and respond to job strain differently. Psychological distress in relations to psychosocial work exposures are worse for men than for women (16). On the other hand, job reward perception is greater for women which predicted positively on their mental health as compared to men (17).

Assistant medical officer job role are found to be associated with depression. At the level of this cross-sectional study, we could not determine the possible reasons for this. Further studies are needed to explore the

possible stress faced by them, their coping mechanism in handling their work as well as psychosocial issues which could contribute to this.

Primary healthcare workers play an indispensable role in the delivery of healthcare for the general population. The findings from this study highlight that despite this role; they themselves become a group susceptible to depression. Unanswered questions at this point are how to reduce this risk and what would be the appropriate intervention at the workplace setting. This would be needed to plan strategies that will lead to the improvement of the psychological wellbeing of our healthcare workers.

The strength of this study is that it had managed to get a high participation rate from the government and university primary care centres studied. However, due to the limitation of convenience sampling of the clinics, the generalisation of the results needs to be interpreted with caution. Future studies would need to cover wider population, using probability sampling of the primary care clinics from both rural and urban area, as well as public and private primary care clinics for better representativeness of the primary care structure in this country.

## CONCLUSIONS

There is a high prevalence of depression among primary healthcare workers at the centres studied. Working 10 hours and more, being male, and working as an assistant medical officer is a risk factor for depression among primary care workers. Based on these findings, we would like to recommend that primary healthcare workers are screened periodically for the presence of depressive symptoms and adequate levels of support are provided to them by their employers. Future studies could focus on finding its impact on job performance, and the types of appropriate intervention.

## ACKNOWLEDGEMENTS

The authors wish to thank the Director General of Health, Malaysia, for permission to publish this work. We would also like to thank all the participants for their participation in this study. Last but not least we would like to extend our gratitude to the Academy of Family Physicians of Malaysia for providing us a platform to conduct our research.

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