

# Obesity and mental health issues among healthcare workers: a cross-sectional study in Sabah, Malaysia

Obesity and  
mental health  
issues

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Narinderjeet Kaur Dadar Singh

*Department of Community and Family Medicine,  
Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah,  
Kota Kinabalu, Malaysia*

Jiann Lin Loo

*Betsi Cadwaladr University Health Board, Wrexham Maelor Hospital, Wrexham, UK*

Azlan Ming Naing Ko

*Kota Kinabalu District Health Office, Sabah State Health Department,  
Kota Kinabalu, Malaysia*

Syed Shajee Husain

*Department of Community and Family Medicine,  
Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah,  
Kota Kinabalu, Malaysia*

Jiloris Frederick Dony

*Public Health Laboratory, Sabah State Health Department,  
Kota Kinabalu, Malaysia, and*

Syed Sharizman Syed Abdul Rahim

*Department of Community and Family Medicine,  
Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah,  
Kota Kinabalu, Malaysia*

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## Abstract

**Purpose** – This study aims to determine the prevalence of obesity and its relationship with mental health issues among healthcare workers in Kota Kinabalu District Health Office, Sabah Borneo and its associating factors.

**Design/methodology/approach** – This cross-sectional study was conducted among 387 healthcare workers working in the Kota Kinabalu District Health Office, Sabah. Sociodemographic data and anthropometric measurements were collected and DASS 21 questionnaire was used to assess mental health status.

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*Conflict of interest:* The authors declare no conflict of interest.



**Findings** – The prevalence of obesity among healthcare workers was 29%, which is significantly associated with years of service ( $p = 0.016$ ) and abnormal depression subscale scores ( $p = 0.012$ ) at univariate analysis. The percentage of abnormal subscale score for depression, anxiety and stress was 16, 26 and 12%, respectively. Multivariable logistic regression revealed that more than five years of service years (OR 2.23, 95% CI 1.16–4.28) and high depressive subscale score (OR 2.09, 95% CI 1.18–3.71) were both significantly associated with obesity.

**Originality/value** – This study has affirmed the link between physical and mental health. Policies that tackle both issues should be put in place to promote wellness among healthcare workers.

**Keywords** Healthcare workers, Mental health, Obesity, Physical health, Malaysia

**Paper type** Research paper

## Introduction

The world that we live in today is challenged by a new pandemic called obesity. About 1.9 billion people were overweight in 2016. Of these, more than 650 million were obese [1]. In the past three decades, the number of people who are either overweight or obese has increased three times; that is 875 million in 1980 and a staggering 2.1 billion in 2013 [2]. Since the classification of obesity as a disease by the American Medical Association [3], 65 % of the world's population today are overweight, and obesity currently kills more people than undernutrition [1]. Malaysia ranks high in Southeast Asia in terms of obesity, with a prevalence of 17%, which is 4% higher than the world obesity rate [2]. In the face of this obesity epidemic, healthcare workers play an important role in being exemplary and also in promoting healthy lifestyle practices to the general population [4]. Unfortunately, they are not spared, as confirmed in a study in 2008 that very interestingly observed that nurses had a higher incidence of obesity compared to the general population [5]. This is despite the fact that healthcare workers are presumed to have access to and knowledge of both the health-related risks of obesity as well as obesity managing methods. This phenomenon may affect the expectation of the general public in weight control and a healthy lifestyle when the healthcare workers are not practicing it themselves. This increase in obesity prevalence among healthcare workers also puts them at a higher risk to develop chronic diseases that will eventually have a negative impact on the availability of human resources for the health system [6].

Mental health issues are prevalent among healthcare workers [7]. All around the world, they are present with high rates of burnouts, sick leave and almost one-third of them suffer from psychological distress [8]. The reasons behind this are thought to be due to high levels of work-related stress as well as having more responsibility and accountability compared to other professions [9]. A recent study identified the prevalence of anxiety among medical officers to be 28.6% followed by depression at 10.7% and stress at 7.9% in Malaysia. These values are comparable to the prevalence of psychological distress obtained from Western nations, which range from 7 to 29% [10]. It has been established that obesity is associated with a high-demand job, fatigue, depression and anxiety [11].

There could be multiple explanations for the relationship between obesity and mental status, particularly among healthcare workers, as it has been stated that there is an association between being obese and having depression [12]. Work stress promotes unhealthy eating habits and sedentary behaviors that may contribute to weight gain [13].

Nevertheless, there is limited information available regarding the prevalence of obesity among healthcare workers in Malaysia. Therefore, this study aimed to explore the prevalence as well as the associating factors for obesity among healthcare workers and to ascertain if mental health status in terms of depression, anxiety and stress is associated with obesity.

## Methods

### *Study design and sample*

This cross-sectional study was conducted from January to June 2018 using a systematic sampling method in four healthcare clinics under the jurisdiction of the Kota Kinabalu district

health office in Malaysia. The sample size was calculated using the Cochran formula with the required sample size being 387 accounting for 20% of incomplete data using the prevalence of 30% [14] of overweight Malaysians [15]. The inclusion criteria were healthcare workers, (for example doctors, nurses, medical attendants and health inspectors) who were working at the Kota Kinabalu District Health Office and had given written consent. The exclusion criteria were pregnancy and any physical disability.

*Study instruments and data collection*

Sociodemographic information was obtained using data collection sheets. The DASS 21 questionnaire was used to assess the mental health of participants. This questionnaire has a high internal consistency for each subscale (Cronbach’s alpha of 0.94 for depression, 0.88 for anxiety and 0.93 for stress) and overall composite score (Cronbach’s alpha = 0.88) [16]. The validated Malay version of DASS has good internal consistency, with Cronbach’s alpha values of 0.94 for depression, 0.90 for anxiety and 0.87 for stress domains respectively [17]. The recommended cut-off point was used to determine the abnormal score for each subscale, which was ten and above for the subscale of depression, nine and above for the subscale of anxiety and 15 and above for the subscale of stress (Table 1).

*Variable definitions*

The anthropometric measurements, for example, weight, height and body mass index (BMI), were done in each respective health clinic by the Occupational Safety and Health Unit of Kota Kinabalu District Health Office. BMI was calculated from weight and height measured using calibrated machines. The World Health Organization (WHO) Asian classification of BMI was used: Underweight (<18.50 kg/m<sup>2</sup>), normal weight (18.50–22.9 kg/m<sup>2</sup>), overweight (≥23.0 kg/

Variables	Obese (%)	Not obese (%)	p-value
<i>Gender</i>			
Male	38 (38)	62 (62.0)	0.093
Female	78 (28.9)	192 (71.1)	
<i>Marital status</i>			
Married	98 (33.1)	198 (66.9)	0.145
Single/divorced/separated/widow	18 (24.3)	56 (75.7)	
<i>Years of service (years)</i>			
≥5	102 (34.1)	197 (65.9)	0.011*
<5	13 (18.6)	57 (81.4)	
<i>Income (monthly)</i>			
≥Rm 3,500.00	64 (31.4)	140 (68.6)	0.992
<Rm 3,500.00	52 (31.3)	114 (68.7)	
<i>Living status</i>			
Living with family	101 (32.4)	211 (67.6)	0.326
Living alone/shared accommodation with nonfamily	15 (25.9)	43 (74.1)	
<i>DASS</i>			
Abnormal subscale score for depression	27 (45.8)	32 (54.2)	0.009*
Abnormal anxiety subscale scores	31 (32.3)	65 (67.7)	0.817
Abnormal stress subscale scores	15 (34.1)	29 (65.9)	0.676
<b>Note(s):</b> * <i>p</i> < 0.05 using $\chi^2$ test ( <i>n</i> = 370)			

**Table 1.**  
Demographic data and  
score of DASS-21  
according to obese and  
nonobese groups

m<sup>2</sup>), preobese (23.00–27.49 kg/m<sup>2</sup>), obese class I (27.50–34.9 kg/m<sup>2</sup>), obese class II (35.0–39.9 kg/m<sup>2</sup>) and obese class III (≥40 kg/m<sup>2</sup>) [18]. Participants with a BMI of 18.5–27.49 were categorized under the “Nonobese” group while BMI above this range was classified as “Obese”.

In the DASS, depression is evaluated by question numbers, 2 (dryness of mouth), 4 (breathing difficulty), 7 (trembling), 9 (self-deception), 15 (panic), 19 (heartbeat) and 20 (scared). Anxiety is evaluated by question numbers 3 (permissive), 5 (difficult to initiate things), 10 (demotivated), 13 (down- hearted), 16 (not enthusiastic), 17 (feeling worthless) and 21 (meaningless life). Stress is evaluated by question numbers 1 (calm down), 6 (over-react), 8 (nervous), 11 (agitated), 12 (difficult to relax), 14 (intolerant) and 18 (touchy).

*Statistical analysis*

The data were first analyzed using a chi-square test. Simple logistic regression was then performed, and variables with *p* < 0.25 were included for subsequent multivariable binary logistic regression analysis. The explanatory variable was selected using forward and backward selection. Subsequently, multicollinearity and interaction were checked. Variables with large standard errors were omitted, and the preliminary final model was obtained.

*Ethical statement*

Ethical approval was obtained from both the Research Ethics Committee (JK Etika 1/18(7)) of University Malaysia Sabah and the National Medical Research Registry (NMRR) (NMRR-18-775-40711).

**Results**

The prevalence of obesity among healthcare workers employed in the Kota Kinabalu District Health Office was 29% (95% CI 25%–34%) based on the Asian BMI classification. The overall prevalence of abnormal DASS scores among the respondents was 29.6% (95% CI 25%–33%). The prevalence of participants with an abnormal score in the anxiety subscale was highest at 26% (95% CI 22%–30%), followed by a subscale of depression at 16% (95% CI 12%–20%) and subscale of stress at 12% (95% CI 9%–15%). Table 1 detailed the demographic data and the distribution of participants with an abnormal subscale score according to the obese and nonobese groups. Variables found significantly associated via chi-square test were five years or more of service (*p* = 0.011) and abnormal subscale score for depression (*p* = 0.009). Analysis was carried out further with simple logistic regression for all variables, and significant variables found were years of service cOR 2.27 95% CI (1.19,4.34) and abnormal subscale score for depression cOR 2.11 95% CI (1.19,3.72) were significant (Table 2). Those with a *p*-value < 0.25 were included in the final model.

The final model of multivariable regression analysis is shown in Table 2. From the final model, years of service of five years and more and depression were associated with obesity. The odds of being obese among those who were in service for five years or more were twice

**Table 2.**  
Final model of  
multivariable binary  
logistic regression  
analysis

Variables	Crude OR (95%CI)	<i>p</i> -value	Adjusted OR (95%CI)	<i>p</i> -value
Service for ≥ five years	2.27 (1.19–4.34)	0.013*	2.23 (1.16–4.28)	0.016*
Abnormal subscale score for depression	2.11 (1.19–3.72)	0.010*	2.08 (1.18–3.71)	0.012*

**Note(s):** *n* = 370; \*refers to significant *p*-value of <0.05

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that of those in service for less than five years (aOR 2.23 95%CI 1.16,4.28). The odds of being obese among those with abnormal depression levels were twice that of those who had normal depression levels (aOR 2.08 95%CI 1.18,3.71). This adjustment made via multivariate analysis considered confounders as part of the analysis to reduce bias in the final research conclusions.

## Discussion

The prevalence of obesity among the study population was 29%, which is higher than both the worldwide and national prevalence of obesity [3, 15]. Compared to another study in a different center among healthcare workers, which was 18.5%, the prevalence obtained in this study was still higher [19]. This alarming figure should prompt employers to seriously commit to interventions as employees spend more hours in the workplace during the day each week compared to at home. Absence from work is significantly linked to overweight and obesity among staff. An active workplace health promotion program is very important for overweight and obese workers' weight management and for reducing absenteeism in the workplace [20, 21]. Researchers and policymakers frequently underestimate the comprehensive efforts and substantial effects of employer-sponsored fitness and health improvement programs. Public and private businesses may support their own economic interests by combating obesity. Important role models can be set by healthcare organizations, particularly hospitals, as well as public employers [22].

A healthcare worker who serves five years or more has twice the risk of being obese, and this association between years of service and obesity was similarly seen in a study of another state of Malaysia [19]. The reasons behind this may be due to seniority in the workplace where there is a shift from a physically demanding job scope to a more sedentary job such as a supervisory role or a job scope that is less demanding physically, suiting employees of a more senior age [23]. Job commitments also increase with seniority, which is translated into reduced time for physical activities [24].

We found that the abnormal depression score was a significant associating factor for obesity among healthcare workers. This could be attributed to overeating due to unhappiness or perhaps neglected physical activity [25] and unhealthy eating in those who are depressed [26]. As the link is bidirectional, tackling both issues together is necessary.

Obesity greatly raises the chances of developing depression. A depressed mood not only impairs morale, quality of life and general functioning but raises the risk of complications of obesity as well. Abdominal obesity is a greater indicator of the likelihood of depression and anxiety than the adipose mass in general. Metabolic anomalies caused by central obesity that lead to metabolic disease may also be responsible for the increased incidence of obesity depression. Studies addressing the connection between adiposity, diet and negative emotional conditions examine evidence that there may be alterations in glucocorticoids, hormones derived from adipose, insulin and inflammatory signals characteristic of central obesity [27, 28]. Obesity as well as the mental health status among healthcare workers needs immediate attention. Another way to reduce depression prevalence is by conducting team-building activities as well as group counseling sessions. This can help workers to feel more comfortable and happier with their work environment. To the best of our knowledge, this study is the first of its kind on both obesity and mental health in Sabah among healthcare workers. As the DASS- 21 questionnaire is not a diagnostic tool, the prevalence does not reflect the real prevalence of depressive disorder and anxiety disorder. Potential confounders, including dietary habits, physical activity, smoking and alcohol consumption, are not captured in this study. The temporal relationship of obesity and mental health problems also cannot be established as limited by cross-sectional design. Lastly, the generalizability of this study is uncertain.

## Conclusion

The prevalence of obesity and mental health issues among healthcare workers in a district health office is higher than that in the documented literature. As there is an established association, policies to promote both physical and mental health should be promptly implemented for the healthcare workers; in other words, a healthy population begins with having healthy healthcare workers. A larger multicentre longitudinal study is suggested to better ascertain the risk factors in a larger population.

Conflicts of Interest: None

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### Corresponding author

Syed Shajee Husain can be contacted at: [shajee@ums.edu.my](mailto:shajee@ums.edu.my), [doctor.shajee@gmail.com](mailto:doctor.shajee@gmail.com)

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