

# Burnout among Healthcare Workers in a Hospital Calculated based on Fourth Edition of Maslach Burnout Inventory

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**Background:** The prevalence of burnout has been increasing worldwide. Studies were conducted among healthcare workers as they demonstrated high levels of prevalence of burnout especially more than 50% among doctors, pharmacists, and medical laboratory technologists. Moreover, burnout reduces professional efficacy and may negatively impact personal and patient care.

**Objective:** To synthesize research evidence for the prevalence and level of burnout among staffs of various categories according to the scores based on the fourth edition of Maslach Burnout Inventory Manual.

**Materials and Methods:** In the present cross-sectional study, 194 participants from various categories participated from a hospital. Burnout scores were measured using the Maslach Burnout Inventory of General Survey. The general linear model (MANCOVA) was conducted to determine the mean scores of various domains among categories of staffs from the hospital.

**Results:** The prevalence of burnout with at least one component was 82.47%. The scores were 13.12, 14.85, and 26.80 for high emotional exhaustion, cynicism, and professional efficacy, respectively. There were no differences in the levels of emotional exhaustion between participants from various categories. The cynicism scores for the doctors and medical assistants were statistically significantly higher than attendants ( $p=0.044$ ), partial  $\eta^2=0.082$  indicating a moderate to strong association. There were no significant differences detected in the mean scores between staffs from various categories for professional efficacy domain with  $p=0.056$  and partial  $\eta^2=0.059$ .

**Conclusion:** Doctors and medical assistants had shown higher levels of burnout while attendants had demonstrated burnout on one domain compared to other category of staffs.

**Keywords:** Burnout; Healthcare workers; Maslach Burnout Inventory

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The data obtained from work-related hazards may be inadequate due to a lengthy dormancy period between exposure to and manifestation of illness. The insufficiency of data may be also due to aspects such as poor work-related history, poor perception, inadequate documentation, and neglectful reporting. The prevalence of occupational stress and burnout has

been increasing worldwide<sup>(1)</sup>. Persistence of exposure to stress at work setting may lead to burnout<sup>(2)</sup>. Burnout occurs when stress among professionals characterized by emotional exhaustion, reduced personal achievement, and depersonalization where stress offsets support and rewards awarded. More occupational stress and burnout has been emerging in developing countries compared to developed countries due to rapid industrialization with poor preventive measures. Burnout would reduce professional efficacy among healthcare workers and thereby, affect their personal and patient care. Prevalence of burnout among healthcare workers for personal-related was around 54% and 40% for work-related<sup>(3)</sup>, where more than 50% was noticed among doctors, pharmacists, and medical laboratory technologists, while medical assistants demonstrated more than 40%.

Homeostasis, a predefined steady state, is vital for life and well-being<sup>(4,5)</sup>. Stress occurs to offset

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behavioral and physiologic responses to restore the threatened steady state. The individual displays cognitive symptoms such as lack of concentration, unable to make decisions, anxious, negative thoughts, lack of judgment, and shows no objectivity on making decision<sup>(6)</sup>. Stress is also associated with the level of education of the individuals<sup>(7,8)</sup>. The stress level is inversely proportionate to the level of education. The stressed individuals may have physical symptoms such as headache, gastrointestinal symptoms, and irritability. Irritability, an extreme reaction to stress leading to anger or violent behavior, may be negative demeanor or a motivation<sup>(9)</sup>. They may also have behavioral symptoms such as consumption of alcohol, smoking, abuse of drugs, staying alone, sleeping most of the time, or eating more or less than usual. The stressors may be negative such as work fatigue or positive such as work promotion. Certain life events may magnify the level of occupational stress.

The tools used to screen burnout include the Maslach Burnout Inventory, Oldenburg Burnout Inventory, Copenhagen Burnout Inventory, Rapid Burnout Screening Tool, and Single Item Burnout Question<sup>(10)</sup>. The Maslach Burnout Inventory is used and validated to perceive burnout among healthcare workers. Research has focused on job stress and burnout based on the third edition of Maslach Burnout Inventory. Cut-off scores were introduced in the third edition of Maslach Burnout Inventory but removed in the fourth edition as it has no diagnostic value. Moreover, the calculation in the fourth edition concentrates on the population of the group, considering the mean score and divided into engaged, ineffective, overextended, disengaged, and burnout categories. The aim of the present study was to synthesize research evidence for the prevalence and level of burnout among staffs of categories based on fourth edition of Maslach Burnout Inventory. In the present study, the authors addressed the gap in the research literature on healthcare practitioner burnout to reduce the turnover rate and create a healthy workplace.

## Materials and Methods

### Study design and participants

The present study was a cross-sectional study, using the Maslach Burnout Inventory to extract burnout level among participants from a hospital. The study was conducted between January 2019 and December 2019. The selected study area was a semi-specialist hospital, having four specialty disciplines, Medical, Pediatrics, Psychiatry, and Occupational

Medicine. The hospital was nominated, because of the eagerness of the management to take part in the study, as it would benefit them and their workforces, which was apparent. The study protocol was approved by the Institutional Review Board, Faculty of Medicine and Health Sciences University Malaysia Sarawak [ref: No. UNIMAS/NC-21.02/03-02 Jld.3 (42)]. Upon approval to conduct the study in the hospital, pertinent material about the present study was provided to the participants through the participant information sheet. It defined the objectives, technique of data collection by dispersal of questionnaire, and length of the study. The study population was made up of healthcare workers from the hospital. There were around 60 doctors and medical assistants, 50 of them were community nurses, as well as 80 trained nurses, while 70 attendants and the remaining 70 were from rehabilitation, diet, and administrative units. The medical assistants provide curative and emergency treatment services including pre-hospital care and ambulance services. They work in various specialist departments and hence were grouped with medical doctors. The participation of employees was voluntary. They all provided informed and written consents. Incentives were not given. The universal sampling technique was applied in the present study as only 330 employees were working in the hospital. Universal sampling was employed to include all the employees to test the hypothesis since they may provide useful information from top management to attendants. The inclusion criterion was subjects who were working in the hospital for at least a year. The exclusion criteria were employees who refused to participate in the study, contract workers since they were not continuously employed and exposed to stress, and employees who were diagnosed to have mental illness other than stress.

### Research instrument

A questionnaire was created based and modified accordingly to the Bahasa Malaysia from Maslach Burnout Inventory and reviewed by a panel of occupational physicians and psychiatrists to ensure a dependable content validity. They were involved in regular teaching of stress among workers. They reviewed the relevance and coverage of the items in each construct of the questionnaire. A pragmatic consensus was reached after in-depth discussion of every single item. The scope covered in the questionnaire was maintained. Healthcare professionals screened the items of the questionnaire to assess validity. They participated in consistent

training of stress among employees besides having experience in assessing burnout and stress through questionnaires such as DASS (Depression, Anxiety, and Stress Scale). The Maslach Burnout Inventory was validated to perceive burnout among healthcare workers and the fourth edition was used as the previous edition had cut-off scores that had no diagnostic value.

The questionnaire was created in English where permission was obtained from the Mind Garden, Inc. to translate as per Translation Agreement TA-758. It was later translated to Bahasa Malaysia and then back to English as a forward and backward translation. The Department of Malaysian Languages and Applied Linguistics of University Malaya did this translation. The self-administered questionnaires consisted of four parts, demographic, emotional exhaustion, cynicism, and professional efficacy.

The questionnaires were distributed to determine reliability analysis in English and Bahasa Malaysia, since participants in the main study locations might know either language well. This reliability method was realized by distributing the questionnaire among the participants in a different hospital, other than the main study location. The method to test reliability of the questionnaire was to evaluate internal consistency using Cronbach's alpha coefficients.

The self-administered questionnaire was distributed in the main study location of the hospital, after the reliability analysis. It has 16 items. Categorical responses of "never", "a few times a year or less", "once a month or less", "a few times a month", "once a week", "a few times a week" and "everyday" were used for the Emotional Exhaustion, Cynicism, and Professional Efficacy constructs. The overall maximum score of the questionnaire was 96. The above scoring was reversed for a negative practice.

Self-administered questionnaires were distributed by the nurse-in-charge to participants to extract data on sociodemographic and stress at workplace. The scores of emotional exhaustion, cynicism and professional efficacy among participants were obtained.

### Data analysis

The sociodemographic characteristics of participants identified from the questionnaire survey were age, gender, ethnic, marital status, religion, education level, and income. The risk factor variables were duration of employment in the hospital, smoking, and consumption of alcohol status were extracted from the questionnaire. All expression levels were described as frequency (%) for categorical variables

or mean (standard deviation, SD) for continuous variables. The general linear model (MANCOVA) was conducted to determine the mean scores of the domains such as Emotional Exhaustion, Cynicism, and Professional Efficacy among categories of staffs from the hospital. The general linear model (MANCOVA) was also conducted to determine whether there were statistically significant differences compare the stress level score between categories of staffs among the three domains of Maslach Burnout Inventory questionnaire. This analysis was done after considering confounders such as gender, race, religion, marital status, education level, income, smoking, alcohol consumption, age, and duration of work. The reliability analysis was used to detect internal consistency of the questionnaire. A p-value of less than 0.05 was considered statistically significant. The 95% confidence interval (CI) or the effect sizes were calculated and reported for categorical and continuous variables in all statistical tests among participants from the hospital. The data analyses were accomplished using IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, NY, USA).

### Reliability of the constructs

Thirty-nine participants were in the pilot study to assess internal consistency of Bahasa Malaysia version of the questionnaire. The present study was conducted in another hospital. The mean age of these participants was 39.9 (9.30). More than half of them were Dayaks. The mean duration of employment among the participants was 8.95 (9.19) years. Almost 90% of them were earning RM 3,000 or more in a month and attained at least Form Six, college, or university. More than 50% of them never smoked and never consumed alcohol. There were three domains analyzed separately, emotional exhaustion, cynicism, and professional efficacy for internal consistency. The Cronbach's alpha for the emotional exhaustion, cynicism, and professional efficacy constructs were 0.900, 0.811, and 0.850, respectively. The correlation value of each item with another item was at least 0.3 in the constructs except for item q13 showed 0.281.

The Maslach Burnout Inventory was used as it is perceived as the gold standard for evaluating burnout<sup>(1)</sup>. The Maslach Burnout Inventory General Survey was used as it gauges burnout among individuals with work and not with individuals at workplace<sup>(2)</sup>. The instrument has 16 items with three domains, emotional exhaustion, cynicism, and professional efficacy. Burnout is inflated if the scores

were elevated on emotional exhaustion and cynicism domains but low in professional efficacy domain.

The test conducted evaluating repeatability of the questionnaire was to detect internal consistency of constructs in Bahasa Malaysia version. The affiliation between the individual items in the domain could be assessed. The average inter-item correlation is the basis for the alpha (Cronbach's) model. The questionnaire was disseminated among 39 healthcare staffs in another hospital. The internal consistency of the domain was good as shown by a Cronbach's alpha of 0.900<sup>(13,14)</sup>. The five items were sufficiently correlated in the emotional exhaustion domain and the corrected item-total correlation values were within the satisfactory range of at least 0.3<sup>(15)</sup>. Another construct, 'cynicism', contained five questions. The internal consistency of the domain was also good as reflected by a Cronbach's alpha of 0.811<sup>(13,14)</sup>. The four items were sufficiently correlated in the cynicism domain with the corrected item-total correlation values were within the satisfactory range of at least 0.3<sup>(15)</sup>. According to Zumbo and Chan<sup>(16)</sup>, the corrected item-total correlation values above 0.2 is acceptable for higher order constructs and hence, the value of 0.281 for item q13 was acceptable. Finally, the construct, 'professional efficacy', contained six questions. The internal consistency of the domain was also good as reflected by a Cronbach's alpha of 0.850<sup>(13,14)</sup>. The six items were sufficiently correlated in the professional efficacy domain with the corrected item-total correlation values were within the satisfactory range of at least 0.3<sup>(15)</sup>. Based on this reliability, all items of the emotional exhaustion domain, cynicism domain, and the professional efficacy domain were retained.

## Results

### Descriptive statistics

About 59% from 194 healthcare workers agreed to participate and the response rate was acceptable<sup>(17,18)</sup>. The non-respondents, 136 of them refused to participate in the study. All the participants were Malaysians of mean age of 38.6 (8.54) years as shown in Table 1. More than 75% of them were females and slightly above half were non-Dayaks. Most of these workers never married and almost a quarter of them never smoked. Only about a fifth of them never consumed alcohol. More than half of these employees had at least Form 6 or certificate education and hence, most of them were earning more than RM 3,000 a month. Low-income payees earn below RM 3,000 a month in Malaysia<sup>(19)</sup>. The mean duration of employment in the hospital was 9.18 (7.47) years.

**Table 1.** Participants' sociodemographic characteristics (n=194)

Sociodemographic variables	n (%)
Sex	
Male	46 (23.7)
Female	148 (76.3)
Age (years)	
Mean (SD)	38.60 (8.54)
Median	37.00
Range	24.00 to 59.00
Race	
Dayak	91 (46.9)
Non-Dayak	103 (53.1)
Religion	
Christianity	100 (51.8)
Non-Christianity	93 (48.2)
Marital status	
Single	43 (22.2)
Ever married	151 (77.8)
Education level	
Primary and secondary school	81 (42.0)
Form six, certificate, college, and university	112 (58.0)
Income	
<3,000	87 (45.3)
3,000 and above	105 (54.7)
Smoking	
No smoking	169 (87.6)
Ever smoked	24 (12.4)
Alcohol consumption	
Not consuming alcohol	158 (81.9)
Ever consumed alcohol	35 (18.1)
Duration of work (years)	
Mean (SD)	9.18 (7.47)
Median	6.50
Range	1 to 34
Chronic medical illness	
No	167 (86.5)
Yes	26 (13.5)
Worked in different hospitals	
No	80 (41.2)
Yes	114 (58.8)
Category of staffs	
Doctors and medical assistants	31 (16.0)
Community nurse	33 (17.0)
Trained nurse	65 (33.5)
Attendant	46 (23.7)
Rehabilitation, dietitian, and administration	19 (9.8)
SD=standard deviation	

More than a quarter had chronic medical illness such as hypertension and diabetes. Almost 60% of them had

worked in different hospitals before. More than half of the staff in the hospital were nurses and a third of them were trained nurses.

### Prevalence and mean scores of various domains

The prevalence of burnout with at least one component was 82.5%, where the highest was from low professional efficacy construct with 46.4%, followed by 25.8% for high emotional exhaustion and 10.3% for high cynicism. The trained nurses exhibited the highest prevalence with at least one component of burnout representing 35.6% compared to doctors and medical assistants' group and community nurse's category with 16.5% and 14.4%, respectively. The attendants exhibited only 13.9% with rehabilitation, dietitian, and administrative unit with 9.3%. The mean scores of emotional exhaustion, cynicism, and professional efficacy of the staffs in the hospital were 9.62 (6.99), 8.06 (5.43), and 25.94 (8.59), respectively. The mean scores of emotional exhaustion, cynicism and professional efficacy were measured between participants from various categories as shown in Table 2.

### Comparing mean scores of various domains between participants from categories using general linear model

The Box's M test revealed no statistically significant difference between variance-covariance in the model, hence, this pretest criteria was satisfied,  $F(72, 2,374)=0.915, p=0.678$ . There was also no statistically significant difference among variances of emotional exhaustion, cynicism, and professional efficacy with  $F(67, 96)=0.780, p=0.860$ ,  $F(67, 96)=1.059, p=0.395$ , and  $F(67, 96)=0.750, p=0.894$ , respectively. The model fit since the plots were randomly scattered, indicating unstandardized predicted value for the three domains in x-axis and unstandardized residuals in y-axis for the three domains were independent. Hence, the model was accepted since there were no serious violations of the assumptions.

The present study aimed to determine whether category of staffs had an association towards emotional exhaustion after adjusted for gender, race, religion, marital status, education level, income, smoking, alcohol consumption, age, and duration of work. The results in Table 3 shows that various categories of staffs had no association with the emotional exhaustion ( $p=0.626$ ).

The results in Table 4 shows that various categories of staffs had association with the cynicism

**Table 2.** Comparison of mean scores of various domains between participants from different categories

Category of staffs	Domain; mean (SD)		
	Emotional exhaustion	Cynicism	Professional efficacy
Doctor and medical assistant	12.23 (8.21)	11.39 (6.86)	23.45 (7.62)
Community nurse	8.06 (5.96)	6.97 (3.48)	28.76 (8.09)
Trained nurse	10.55 (6.71)	8.27 (5.30)	27.41 (7.90)
Attendant	7.70 (6.52)	5.89 (4.35)	22.59 (9.38)
Rehabilitation, dietetic, and administration staffs	9.35 (7.28)	9.00 (5.94)	28.18 (8.52)

SD=standard deviation

**Table 3.** The multivariate model, results from general linear model: association of different categories of staffs towards emotional exhaustion

Emotional exhaustion	Marginal means (95% CI)	p-value*
Doctors and medical assistants	12.5 (9.0 to 16.0)	0.626
Community nurses	9.9 (6.2 to 13.7)	
Trained nurses	11.9 (8.0 to 15.7)	
Attendants	9.5 (6.1 to 12.9)	
Rehabilitation, administration, and dietetic unit staffs	12.5 (7.6 to 17.4)	

CI=confidence interval  
\* Statistical significance is based on general linear model of multivariate

**Table 4.** The multivariate model, results from general linear model: association of different categories of staffs towards cynicism

Cynicism	Marginal means (95% CI)	p-value*
Doctors and medical assistants	11.9 (9.3 to 14.5)	0.012
Community nurses	7.9 (5.1 to 10.7)	
Trained nurses	10.2 (7.4 to 13.1)	
Attendants	6.0 (3.5 to 8.5)	
Rehabilitation, administration, and dietetic unit staffs	11.3 (7.6 to 14.9)	

CI=confidence interval  
\* Statistical significance is based on general linear model of multivariate

domain ( $p=0.012$ ), after adjusted for the variables. The marginal means of cynicism score between doctors with medical assistants, community nurses, trained nurses, attendants, and rehabilitation with administrative and dietetic unit staffs were different with  $\eta^2=0.082$ . The cynicism score for the doctors and medical assistants was statistically significantly higher than attendants ( $p=0.044$ ).

The results in Table 5 shows that various categories of staffs after adjusted for the variables, had no association with the professional efficacy domain ( $p=0.056$ ). The marginal means of professional

**Table 5.** The multivariate model, results from general linear model: association of different categories of staffs towards professional efficacy

Professional efficacy	Marginal means (95% CI)	p-value*
Doctors and medical assistants	22.0 (18.2 to 25.8)	0.056
Community nurses	28.4 (24.3 to 32.5)	
Trained nurses	27.2 (23.0 to 31.3)	
Attendants	24.3 (20.6 to 27.9)	
Rehabilitation, administration, and dietetic unit staffs	28.2 (22.9 to 33.5)	

CI=confidence interval  
\* Statistical significance is based on general linear model of multivariate

efficacy score between doctors with medical assistants, community nurses, trained nurses, attendants, and rehabilitation with administrative and dietetic unit staffs were almost different where the  $\eta^2=0.059$ .

## Discussion

The prevalence of burnout with at least one component was 82.5%, where the highest was from low professional efficacy with 46.4%, followed by 25.8% for high emotional exhaustion and 10.3% for high cynicism. The overall prevalence of burnout was as high as 80% in a study conducted in Makkah and Jeddah<sup>(20)</sup>, which is comparable with the present study. Furthermore, the findings on constructs of burnout were consistent with a study conducted in Italy demonstrating 46.5% with low professional efficacy, and around 38% and 26% for emotional exhaustion and cynicism, respectively<sup>(21)</sup>. The trained nurses exhibited the highest prevalence with at least one component of burnout representing 35.6%. Nurses usually demonstrate higher rate of burnout due to provocation from patients and families with lack of support from the hospital management<sup>(22)</sup>. They may also need to manage violence from disgruntled family members. The mean for burnout for emotional exhaustion was 9.62 (6.99), cynicism was 8.06 (5.43), and professional efficacy was 25.94 (8.59). The scores based on the fourth edition of Maslach Burnout Inventory Manual were calculated as follows<sup>(23)</sup>:

- i) High exhaustion (emotional exhaustion) at  $z = \text{Mean} + (\text{SD} * 0.5)$
- ii) High cynicism (depersonalization) at  $z = \text{Mean} + (\text{SD} * 1.25)$
- iii) High professional efficacy (personal accomplishment) at  $z = \text{Mean} + (\text{SD} * 0.10)$

Hence, the scores were 13.12, 14.85, and 26.80 for high emotional exhaustion, cynicism, and professional efficacy, respectively. In emotional exhaustion domain,

doctors and medical assistants displayed the highest level with 12.23 (8.21) compared to other categories of staffs. In cynicism domain, doctors and medical assistants again displayed the highest level with 11.39 (6.86) compared to other categories of staffs. In both domains, the attendants presented the lowest level, 7.70 (6.52) for emotional exhaustion and 5.89 (4.35) for cynicism. The scores obtained by all categories of staffs in emotional exhaustion and cynicism domains were below the scores calculated based on the fourth edition of Maslach Burnout Inventory Manual. Therefore, the staffs had not demonstrated having high emotional exhaustion nor cynicism. However, in professional efficacy domain, doctors and medical assistants with attendants exhibited levels below the scores calculated based on the fourth edition of Maslach Burnout Inventory Manual. The doctors and medical assistants scored 23.45 (7.62) and attendants 22.59 (9.38), where they had demonstrated to have low levels of professional efficacy. Al-Dubai and Rampal<sup>(24)</sup> conducted a cross-sectional study to determine the extent of burnout among doctors in Yemen with response rate of more than 70% using the third edition of Maslach Burnout Inventory Human Services Survey. The scores obtained in the present study were higher in cynicism and much lower in professional efficacy and emotional exhaustion compared to the study conducted in Yemen where there were more than 60% of them had emotional exhaustion, almost 20% had depersonalization, and almost a third had low personal accomplishment. In another study conducted in Nigeria<sup>(18)</sup>, General Health Questionnaire and Maslach Burnout Inventory were used where more than 40% had emotional exhaustion, more than half had depersonalization, and more than 60% had reduced personal accomplishment among doctors. There was a study conducted in Malaysia to assess risk factors and psychological distress among workers in healthcare<sup>(25)</sup>. In this cross-sectional study, Depression, Anxiety, and Stress Scale (DASS-21) and Maslach Burnout Inventory were distributed among the healthcare workers. More than half of the doctors, more than a quarter of medical assistants and nurses, and almost 17% of attendants were found to be burnout,  $\chi^2=27.92$ ,  $p<0.001$ . More than half of nurses and attendants, 70% of doctors and more than 40% of medical assistants were found to be psychologically distressed,  $\chi^2=8.55$ ,  $p=0.036$ . The studies showed that doctors and medical assistants and attendants were high risks of developing burnout. In the present study, although there was no specific category of staff that have shown high levels of emotional exhaustion and

cynicism using the scores based on the fourth edition of Maslach Burnout Inventory Manual, doctors and medical assistants had the highest scores in the two domains. In professional efficacy domain, doctors, medical assistants and attendants had shown lower level of professional efficacy. The pattern of burnout for doctors, medical assistant and attendant were ineffective as they had normal score on emotional exhaustion and cynicism but low in professional efficacy. The other categories of staff were engaged with normal score in two domains but high in professional efficacy domain.

There were no differences in the levels of emotional exhaustion between participants from various categories as there were no significant difference detected in the mean scores. However, there were significant differences detected in the mean scores for cynicism domain. After adjusting for gender, race, religion, marital status, education level, income, smoking, alcohol consumption, age, and duration of work, the cynicism score for the doctors and medical assistants was statistically significantly higher than attendants ( $p=0.044$ ), partial  $\eta^2=0.082$ . The effect size was medium to large indicating a moderate to strong association<sup>(26,27)</sup> between various categories of staffs such as doctors and medical assistants' group with attendants' group on cynicism domain.

There were no significant differences detected in the mean scores between staffs from various categories for professional efficacy domain. However, the marginal means were almost different with  $p=0.056$  and partial  $\eta^2=0.059$ . The effect size is small to medium indicating a small to moderate association between various categories of staffs and professional efficacy domain. After adjusting for the variables, the mean for doctors with medical assistants and attendants had levels below the scores of 26.80 based on the fourth edition of Maslach Burnout Inventory Manual though they were not significantly different from other categories of staffs. These findings were consistent with a cross-sectional study conducted in Taiwan<sup>(28)</sup> demonstrating burnout among physicians and their assistants. In that study, nurses and physician assistant demonstrated high degree of burnout due to work with mean of 55.8 (21.1) and 54.7 (21.9), respectively, followed by physicians and administrative staffs with 41.5 (19.0) and 41.5 (19.2), respectively,  $p<0.001$ . The study from Taiwan also demonstrated that younger staffs had higher burnout scores due to work, especially those below 30 years of age with mean score of 55 (23.0) compared to

staffs between 40 and 50 years of age with 44.7 (20.5),  $p<0.001$ . In the present study, the mean age of nurses, both trained and community nurses were 41.4 (7.7) and 40.8 (9.8), and therefore the doctors and medical assistants demonstrated increased level of burnout compared to nurses. Moreover, the mean age of doctors and medical assistants were 34.1 (7.6).

Another cross-sectional study was conducted in Egypt where 283 staffs participated with response rate of 86%<sup>(29)</sup>. Burnout among the staffs were assessed using Maslach Burnout Inventory calculated based on the third edition of Maslach Burnout Inventory Manual. In Egypt, almost 60% of doctors had emotional exhaustion of high level compared to only more than 40% among nurses,  $p=0.001$  and the physicians also have high level of depersonalization compared to the nurses, almost 40% and 27.5%, respectively,  $p<0.001$ . The physicians in Egypt also had reduced levels of personal accomplishment compared to the nurses, more than 10% and almost 30% respectively,  $p=0.001$ . In the present study, the doctors and medical assistants had higher levels of emotional exhaustion, cynicism, and reduced levels of professional efficacy.

There was no distinction on confounding factors such as smoking, consumption of alcohol, and duration of work. Analogous with a cross-sectional study conducted in a hospital using Maslach Burnout Inventory by Abedi-Gilavandi et al, displayed no difference on duration of work on the three domains of burnout<sup>(30)</sup>. In the present study, smoking and alcohol variables had no statistically significant difference on burnout. This finding is contrast to that of Mikalauskas et al, who noted all smokers described burnout compared to slightly more than half among non-smokers,  $p<0.05$ , but alcohol consumption variable remains not significant<sup>(31)</sup>. There were also no significant differences in gender, income, ethnic group, marital status, and religion. In line with the outcome of Ogundipe et al<sup>(18)</sup>, the present study found no significant differences in the scores based on gender and marital status. Corresponding with a cross-sectional study conducted among physicians in the U.S.<sup>(32)</sup>, there was no significant difference on family income, ethnicity, religion, and spirituality on burnout.

There was a difference, however, between age and burnout where reduced personal accomplishment was seen among young doctors in a tertiary hospital with  $p=0.03$ <sup>(18)</sup>. In the present study, age had no association with two domains of burnout except for professional efficacy domain. After adjusted for the

variables, emotional exhaustion domain had  $p=0.649$ , cynicism of  $p=0.497$  while professional efficacy domain had  $p=0.024$  with partial  $\eta^2=0.034$ . The effect size is small indicating only a weak association and  $r$  was 0.189 suggesting little or no correlation between the two variables. Moreover, the mean age in the present study was 38.60 (8.54).

In the present study, education levels had no association with burnout on emotional exhaustion ( $p=0.877$ ) and cynicism ( $p=0.364$ ) except for professional efficacy domain ( $p=0.017$ ). The marginal means among those with no schooling or primary or secondary school education and those with at least Form 6 school education were almost similar except for professional efficacy domain where the partial  $\eta^2=0.038$ . The effect size was small indicating only a weak association<sup>(26,27)</sup>. In the study conducted in Iran, the staffs who had university degree qualification had reduced personal accomplishment compared to those having primary education,  $p<0.001$ . In addition, the university degree holders had more emotional exhaustion compared to staffs with only primary education,  $p<0.001$ <sup>(33)</sup>.

In the present study, the doctors and medical assistants had higher levels of emotional exhaustion, cynicism, and reduced levels of professional efficacy. The level of cynicism in the present study was statistically significantly higher among doctors and medical assistants than attendants. Although there was no statistically significant difference between the various categories of staffs in professional efficacy domain, doctors with medical assistants and attendants displayed the lowest mean on this domain with scores below the average score. Adoption of calculation based on the fourth edition of Maslach Burnout Inventory Manual had demonstrated lower levels of burnout compared to the third edition of the previous studies.

The present study was a cross-sectional design and hence causal-effect interpretation cannot be established between the variables. The generalizability of the authors' findings across Malaysia and other nations should be taken with caution, as the study was conducted in the specificity of a hospital only. Personality traits, duration of working, shift work, and other organizational variables such as adequacy of staffs were not included in the analyses. There were no differences among completers and non-completers in terms of age with mean age was 38.5 (8.57) and 37.0 (8.72), respectively, but there was a difference in terms of duration of work with mean duration of employment was 9.1 (7.21) and 5.1

(2.96), respectively. Those who participated worked on average of nine years compared to five years among those refused to contribute, hence, the non-responders may not contribute to a higher prevalence of burnout<sup>(34)</sup>.

## Conclusion

In the present study, the doctors and medical assistants had higher levels of emotional exhaustion, cynicism, and reduced levels of professional efficacy. The level of cynicism in the present study was statistically significantly higher among doctors and medical assistants than attendants. Although there was no statistically significant difference between the categories of staffs in professional efficacy domain, doctors with medical assistants and attendants displayed the lowest mean on this domain with scores below the average score. In summary, doctors and medical assistant had shown higher levels of burnout, while attendants had demonstrated burnout on one domain compared to other category of staffs.

## What is already known on this topic?

The prevalence of burnout has been increasing worldwide due to persistence of exposure to stress at workplace. Research has focused on job stress and burnout based on the third edition of Maslach Burnout Inventory.

## What this study adds?

This study has synthesized research evidence for the prevalence and level of burnout among staffs of categories based on the fourth edition of Maslach Burnout Inventory. In this study, the authors addressed the gap in the research literature on healthcare practitioner burnout to reduce the turnover rate and create a healthy workplace.

## Conflicts of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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