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PREVALENCE AND ASSOCIATED FACTORS OF DEPRESSION, ANXIETY AND STRESS AMONG HEALTHCARE WORKERS IN PEJABAT KESIHATAN DAERAH MELAKA TENGAH

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ABSTRACT

Background: The percentage of people suffering from depression and/or anxiety globally has doubled from 416 million in 1990 to 615 million in 2013. Amongst associated factors identified were job demand, poor social support, organizational issues, financial problems, wages and workload. Thus, the objective of this study was to determine the prevalence and what are the associated factors that influencing depression, anxiety and stress level among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah..

Materials and Methods: The study design of this research was a cross sectional method. We recruited all 1203 healthcare workers, but the final number was 702 responses screened for analysis in which provide complete data on the variables of interest of the study. This study was conducted from August till December 2018. The validated Malay version of DASS 21 was used as a research tool in this study..

Result: The highest prevalence among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah was anxiety (14.0%), followed by depression (7.0%) and stress (4.3%).The prevalence of depression was significant among PPKP (OR: 10.27, 95%CI: 4.19-25.17) and those respondents working at PKD administrative office (5.40, 95%CI: 2.60-11.21); anxiety prevalence was statistically associated with age (OR: 2.26, 95%CI: 1.10-4.65), work place (OR: 3.75, 95%CI: 1.99-7.06), and occupation (OR: 5.17, 95%CI: 2.20-12.14). Lastly, stress prevalence was found to be significant among PPKP (OR: 5.29, 95%CI: 1.68, 16.65).

Conclusion: Age, working at PKD administrative office and occupation as PPKP were significantly associated with DAS score among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah..

Keywords: anxiety, depression, Stress, healthcare workers

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1.0 Introduction

Occupational stress is defined by The National Institute for Occupational Safety and Health (NIOSH) as "the harmful physical and emotional responses that happen when the needs of the job do not tally with the needs of the worker, capabilities or resources."

Medical field is psychologically demanding sector and associated with suboptimal psychological health (Dyrbye & Shanafelt 2016). In 1997, about 77.5% of 40 house officers in a public hospital was found to experience emotional disturbance (Sidi & Maniam 1997) and recent study reported that 31% of 42 house officers in a teaching hospital found to experience psychological distress (Yusoff et al. 2011).

Globally, there has been a significant increase of common psychological health disorders. Report from World Health Organization (WHO), the prevalence of general population suffering from depression and/or anxiety disorder has roughly doubled from a total of 416 million in 1990 to 615 million in 2013 (WHO 2016). This condition led to the World Health Assembly resolution which conducted in May 2013. The purposed of this assembly was to advocate for a nationwide comprehensive and synchronised response to this mental health issue (WHO 2016).

A depressed mood is the experience of unhappiness or distress. Depression may involve feelings of being sad, weak, disappointed, frustrated, despairing, helpless, and hopeless (Sarason & Sarason 2002). The projection is for depression to become the second most common cause of disability by 2020 (Chung C et al., 2012). Depression, anxiety, and stress can be reduced or worsen by the coping strategy adopted by an individual (Brougham et al. 2009). Depression is the most common type of mental disorder, a chronic disease it begins early in life (the mid to late 20s) and is two times more prevalent among women than men (Marcus et al. 2012). Studies have reported that emerging adults from the ages of 18 to 25 years have the highest prevalence of depression among any age group (Marcus et al. 2012). It remains unclear whether depression is the result of an unhealthy behaviour or depression causes negative behavioural patterns, such as smoking, alcohol use, physical inactivity and sleep disruption. What remains clear is that one can utilise several coping skills, that some will aid in refraining and manage stressors while others heighten the symptoms of psychological disorder (Hassan et al. 2016).

Anxiety is a psychological disorder that is associated with significant suffering and impairment in functioning. It is a blend of thoughts and feelings characterised by a sense of uncontrollability and unpredictability over potentially adversive life events (Wilson et al. 1996).

Stress is a mechanism of any internal or external demand made upon the body (Dusselier et al. 2005). Stress occurs when an individual perceives a stressor as a threat to their well-being that exceeds their coping capacity and is labelled as being harmful (Day 2003). Stress is considered as a state of individuals that result from their interaction with the environment that is perceived as too demanding and a threat to their well-being. The stressors are not only physical, but may also involve emotions. Stress is best described as a situation where environmental demands exceed the capacity for effective response by the individual and can potentially have physical and psychological consequences (Fisher 1993). Coping with stress, on the other hand, is important for human survival and can be defined as the process of managing external or internal

demands that are perceived as taxing on personal capacities and resources (Rout 1993). Coping has been viewed as a stabilizing factor that may assist an individual in psychosocial adaptation during stressful events (Walton 2002).

Stress threatens the mental, physical, emotional and spiritual wellbeing of an individual. Chronic Stress has been associated with mental health problems such as depression, Post Traumatic Stress Disorder (PTSD), pathologic ageing and also associated with the progress of 70% to 80% of all diseases and illness, particularly Coronary Heart Diseases (CHD) and cancer (Marin et al. 2011).

Apart from age, marital status, suppressing emotions and feeling unrewarded, research has identified other common risk factors for depression, anxiety and stress (NIMH 2009). One is being a woman. Another is being divorced, widowed or separated; substance abuse or being dependent on alcohol; not exercising, and sleeping badly (Perry et al. 2015). A family history of mental disorder is also an indicator (Kaur et al. 2013).

Poor psychological health will lead to negative ramifications on healthcare workers either at personal or professional level. At personal level, poor psychological health will lead to diminished commitment and broken relationships (Balch et al. 2009), substance abuse (Kumar & Basu 2000), committing suicide (Hawton et al. 2001) and developing physical illnesses such as cardiovascular diseases (Schnall et al. 1994), musculoskeletal diseases (Bongers et al. 1993) and metabolic diseases (Chandola et al. 2006). At professional level, poor psychological health will lead to communication breakdown, decreased clinical competency, vulnerable to clinical errors (Fahrenkopf et al. 2008), absenteeism, increase turnover (Embriaco et al. 2007) and poor job performance (McCray et al. 2008). Early recognition of mental illness among healthcare workers is important to address these situations. Thus, the objective of this study was to determine the prevalence and what are the associated factors of depression, anxiety and stress level among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah.

2.0 Materials and Methods

2.1 Study Design and Samples

The study design of this research was a cross sectional method. We used convenience sampling method whereby all 1203 healthcare workers were invited to take part in this study. Total participants were 809 healthcare workers whom agreed to be participated in this study with response rate of 86.8%. The final number was 702 responses screened for analysis in which provide complete data on the variables of interest of the study.

2.2 Procedure

This study was conducted in from June till October 2018. The validated Malay version of DASS 21 (with good Cronbach's alpha values of 0.84, 0.74 and 0.79, respectively, for depression, anxiety and stress) was used as a research tool in this study. Socio-demographic details such as age at the time of data collection, race, marital status, job description and education level were also taken. We also explored their details regarding socio-economic status, household liability,

occupational factors, and co morbidity. Those who didn't agree to take part in this study were excluded. Healthcare workers were asked to complete a self-administered questionnaire using and asked to return back the completed form of questionnaire. All the responses from participants were transformed in a form of excel format in which later will be exported into SPSS version 22.0.

2.3 Eligible Criteria

The eligible criteria were as follows: (1) healthcare workers aged at least18 years; (2) provided an informed consent; (3) permanent workers and (4) able to comprehend the Malay language questionnaire.

2.4 Data Analysis

Analysis of the data was carried out using the IBM- Statistical Package for the Social Sciences (IBM-SPSS®) version 22.0 for Windows. Data cleaning was used to detect any missing values, coding error or any illogical data value. Data was checked for completeness and normality was checked using the Kolmogorov-Smirnov test. Descriptive statistics were examined using numbers and percentages for categorical variables, and means and standard deviations for normally distributed variables. Pearson chi-square and Fisher exact tests were performed to determine the association between prevalence of anxiety, depression and stress with the selected factor variables. All significant results were based on $p<0.05$.

3.0 Result

3.1 Socio-demographic and Occupational Profile

A total of 702 healthcare workers' data from PejabatKesihatan Daerah Melaka Tengah were analysed in this study. Those participants were from the main administrative office, 12 health clinics, 17 rural health clinics, and 7 Klinik 1Malaysia. Table 1 shows the majority of healthcare workers were female (76.9%), married (86.2%) and Malay (89.7%). Occupational wise, 81.2% of the respondents form Klinik Kesihatan and majority of them were among the nurses (41.9%) (Table 1).

Table 1: Socio-demographic and occupational characteristics of respondents

	No of Respondents	%
Age (years)		
<30	135	19.2
30-39	390	55.6
40-49	134	19.1
50 and above	43	6.1
Gender		
Male	162	23.1
Female	540	76.9

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Ethnicity		
Malay	630	89.7
Chinese	33	4.7
Indian	30	4.3
Others	9	1.3
Marital Status		
Married	605	86.2
Single	83	11.8
Divorced	3	0.4
Widow/widower	11	1.6
Size of Family		
2 and less	106	15.1
3-4	295	42.0
5 and more	301	42.9
Work Place		
Klinik 1Malaysia	26	3.7
Klinik Desa	57	8.1
Klinik Kesihatan	570	81.2
PKD Main Office	49	7.0
Occupation		
Medical Officer/MO	127	18.1
Driver	9	1.3
PKA/PRA	29	4.1
Medical Assistant/MA	56	8.0
Nurse	294	41.9
PPKP	23	3.3
PPK	40	5.7
Medical Laboratory Technician	41	5.8
Pharmacist/PPF	37	5.3
Pembantu Tadbir/PT	15	2.1
Others	31	4.4
Family Income		
B40 (<RM3860)	163	23.2
M40 (RM3860-8319)	400	57.0
T20 (>RM8319)	139	19.8

3.2 Depression, Anxiety and Stress Scale

The highest prevalence among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah was anxiety (14.0%), followed by depression (7.0%) and stress (4.3%). The prevalence of depression and anxiety were highest among those who aged 50 years and above (depression 14.0% and anxiety 25.6%). As for gender, female had higher anxiety prevalence (14.6%) than male staff (11.7%). Based on ethnicity, Chinese staff was seen to have the highest depression prevalence (12.1%) than others, while Indian staffs had the highest prevalence for anxiety and stress (23.3% and 10.0% respectively). Depression, anxiety and stress prevalence was noted to be the highest among those who are working at PKD main office (24.5%, 34.7% and 8.2% respectively) compared to those at Klinik Kesihatan, Klinik Desa and K1M. Prevalence for depression was high among Penolong Pegawai Kesihatan Persekitaran (PPKP) with 39.1%, driver (11.1%) and PKA/PRA (10.3%); high anxiety prevalence was among PPKP (43.5%), Pharmacist/PPF (27.0%) and Pembantu Tadbir (2.7%); and lastly high stress prevalence was among PPKP (17.4%), driver (11.1%) and PKA/PRA (4.1%) (Table 2).

The prevalence of depression was noted to have a strong association with occupational factors (working at main PKD office and working as PPKP), whereby anxiety prevalence was found to be associated with age, working place and occupation as PPKP. As for stress prevalence among the respondents, bivariate analysis shown that only occupation as PPKP had a statistical significant association (Tables 3, 4 and 5).

The prevalence of depression, anxiety and stress among the medical staffs in PKD Melaka Tengah were not associated with gender, marital status, ethnicity, and size of family as described in Tables 3, 4 and 5. We found that work place factor did not have any association with stress level among the respondents. Though chi square test demonstrated that these factors were statistically insignificant, based on our observation, there were few things that can be noted: i) Respondents among Chinese, age less than 50 and those with family income less than RM3860 seemed to experience depression more than others; ii) Respondents who were aged 50 and above, female, married, family income less than RM3860 and Indian ethnicity seemed to experience anxiety more than the rest; iii) For stress score, respondents who were aged below 50, male, Indian ethnicity, working at PKDMT main office, family income less than RM3860 and family size 5 and more seemed to experience more stress than others.

Table 2: Descriptive DASS-21 according to socio-demographic and occupational factors

	Depression, n (%)	Anxiety, n (%)	Stress, n (%)
Age			
<30	11 (8.1%)	21 (15.6%)	6 (4.4%)
30-39	27 (6.9%)	55 (14.1%)	20 (5.1%)
40-49	5 (3.7%)	11 (8.2%)	3 (2.2%)
50 and above	6 (14.0%)	11 (25.6%)	1 (2.3%)
Gender			
Male	12 (7.4%)	19 (11.7%)	8 (4.9%)
Female	37 (6.9%)	79 (14.6%)	22 (4.1%)

Ethnicity			
Malay	43 (6.8%)	88 (14.0%)	27 (4.3%)
Chinese	4 (12.1%)	2 (6.1%)	0 (0.0%)
Indian	2 (6.7%)	7 (23.3%)	3 (10.0%)
Others	0 (0.0%)	1 (11.1%)	0 (0.0%)
Marital Status			
Married	43 (7.1%)	83 (13.7%)	26 (4.3%)
Single	34 (7.7%)	12 (14.5%)	4 (4.8%)
Widow/widower	0 (0.0%)	3 (27.3%)	0 (0.0%)
Divorced	0 (0.0%)	0 (0.0%)	0 (0.0%)
Size of Family			
1-2	7 (6.6%)	12 (11.3%)	3 (2.8%)
3-4	21 (7.1%)	46 (15.6%)	13 (4.4%)
5 and above	21 (7.0%)	40 (13.3%)	14 (4.7%)
Work Place			
PKD Main Office	12 (24.5%)	17 (34.7%)	4 (8.2%)
Klinik Kesihatan	31 (5.4%)	69 (12.1%)	21 (3.7%)
Klinik Desa	4 (7.0%)	8 (14.0%)	3 (5.3%)
Klinik 1Malaysia	2 (7.7%)	4 (15.4%)	2 (7.7%)
Occupation			
Medical Officer	5 (3.9%)	8 (6.3%)	5 (3.9%)
Pharmacy/PPF	2 (5.4%)	10 (27.0%)	2 (5.4%)
Nurse	15 (5.1%)	34 (11.6%)	10 (3.4%)
PPKP	9 (39.1%)	10 (43.5%)	4 (17.4%)
PPP	3 (5.4%)	5 (8.9%)	2 (3.6%)
MLT	4 (9.8%)	7 (17.1%)	2 (4.9%)
PPK	4 (10.0%)	6 (15.0%)	1 (2.5%)
Driver	1 (11.1%)	1 (11.1%)	1 (11.1%)
PembantuTadbir	1 (6.7%)	4 (26.7%)	0 (0.0%)
PKA/PRA	3 (10.3%)	6 (20.7%)	2 (6.9%)
Others	2 (6.5%)	7 (22.6%)	1 (3.2%)
Family Income			
B40 (<RM3860)	17 (10.4%)	29 (17.8%)	8 (4.9%)
M40 (RM3860-8319)	26 (6.5%)	54 (13.5%)	17 (4.3%)
T20 (>RM8319)	6 (4.3%)	15 (10.8%)	5 (3.6%)

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Table 3: Association of socio-demographic and occupational factors with depression

Factors	Outcome, n (%)		$\chi 2$	p-value	OR (95%CI)
	Depression	Normal			
Age (years)					
Below 50	43 (6.5%)	616 (93.5%)	3.431	0.111	2.32 (0.93, 5.81)
50 above	6 (14.0%)	37 (86.0%)			
Gender					
Male	12 (7.4%)	150 (92.6%)	0.059	0.860	1.09 (0.55, 2.14)
Female	37 (6.9%)	503 (93.1%)			
Ethnicity					
Chinese	4 (12.1%)	29 (87.9%)	1.408	0.279	1.91 (0.64, 5.68)
Non-Chinese	45 (6.7%)	624 (93.3%)			
Marital Status					
Married	43 (7.1%)	562 (92.9%)	0.109	0.834	1.16 (0.48, 2.80)
Other status	6 (6.2%)	91 (93.8%)			
Size of Family					
Less than 5	22 (8.5%)	236 (91.5%)	1.504	0.282	1.44 (0.80, 2.51)
5 and above	27 (6.1%)	417 (93.9%)			
Work Place					
Main Office	12 (24.5%)	37 (75.5%)	24.874	**<0.001**	**5.40 (2.60, 11.21)***
KK/KD/ K1M	37 (5.7%)	616 (94.3%)			
Occupation					
PPKP	9 (39.1%)	14 (60.9%)	37.856	**<0.001**	**10.27 (4.19, 25.17)***
Others	40 (5.9%)	639 (94.1%)			
Family Income					
B40	17 (10.4%)	146 (89.6%)	4.648	0.098	1.85 (1.00, 3.42)
M40 and T20	32 (5.9%)	507 (94.1%)			

*Significant when p-value <0.05

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Table 4: Association of socio-demographic and occupational factors with anxiety

Factors	Outcome, n (%)		$\chi 2$	p-value	OR (95%CI)
	Anxiety	Normal			
Age (years)					
Below 50	87 (13.2%)	572 (86.8%)	5.150	**0.037**	**2.26 (1.10, 4.65)***
50 above	11 (25.6%)	32 (74.4%)			
Gender					
Male	19 (11.7%)	143 (88.3%)	0.873	0.370	1.29 (0.76, 2.20)
Female	79 (14.6%)	461 (85.4%)			
Ethnicity					
Indian	7 (23.3%)	23 (76.7%)	2.292	0.171	1.94 (0.81, 4.66)
Non-Indian	91 (13.5%)	581 (86.5%)			
Marital Status					
Married	43 (7.1%)	562 (92.9%)	0.109	0.834	1.15 (0.63, 2.09)
Other status	6 (6.2%)	91 (93.8%)			
Size of Family					
Less than 5	38 (14.7%)	220 (85.3%)	0.201	0.735	1.11 (0.71, 1.71)
5 and above	60 (13.5%)	384 (86.5%)			
Work Place					
Main Office	17 (34.7%)	32 (65.3%)	18.853	**<0.001**	**3.75 (1.10, 7.06)***
KK/KD/ K1M	81 (12.4%)	572 (87.6%)			
Occupation					
PPKP	10 (43.5%)	13 (56.5%)	17.250	**<0.001**	**5.17 (2.20, 12.14)***
Others	88 (13.0%)	591 (87.0%)			
Family Income					
B40	29 (17.8%)	134 (82.2%)	3.224	0.201	1.47 (0.92, 2.37)
M40 and T20	69 (12.8%)	470 (87.2%)			

*Significant when p-value <0.05

Table 5: Association of socio demographic and occupational factors with stress

Factors	Outcome, n (%)		$\chi 2$	p-value	OR (95%CI)
	Stress	Normal			
Age (years)					
Below 50	29 (4.4%)	630 (95.6%)	0.425	0.715	1.93 (0.26, 14.54)
50 above	1 (2.3%)	42 (97.7%)			
Gender					
Male	8 (4.9%)	154 (95.1%)	0.228	0.658	1.22 (0.53, 2.80)
Female	22 (4.1%)	518 (95.9%)			
Ethnicity					
Indian	3 (10.0%)	27 (90.0%)	2.512	0.131	2.65 (0.76, 9.30)
Non-Indian	27 (4.0%)	645 (96.0%)			
Marital Status					
Married	26 (4.3%)	579 (95.7%)	0.006	1.000	1.04 (0.36, 3.06)
Other status	4 (4.1%)	93 (95.9%)			
Size of Family					
Less than 5	9 (3.5%)	249 (96.5%)	0.615	0.450	1.37 (0.62, 3.05)
5 and above	21 (4.7%)	423 (95.3%)			
Work Place					
Main Office	4 (8.2%)	45 (91.8%)	1.948	0.259	2.14 (0.72, 6.41)
KK/KD/ K1M	26 (4.0%)	627 (96.0%)			
Occupation					
PPKP	4 (17.4%)	19 (82.6%)	10.002	**0.014**	**5.29 (1.68, 16.65)***
Others	26 (3.8%)	653 (96.2%)			
Family Income					
B40	8 (4.9%)	155 (95.1%)	0.316	0.848	1.21 (0.53, 2.78)
M40 and T20	22 (4.1%)	517 (95.9%)			

*Significant when p-value <0.05

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4.0 Discussion

In general, the highest occurrence of psychological distress among the healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah was anxiety (14.0%), followed by depression (7.0%) and stress (4.3%). The prevalence of anxiety is higher when compared to the normal population (8.2%) (Maideen et al. 2015). But this crude research finding is almost similar with previous research conducted among medical doctors and nurses with the anxiety prevalence ranging from 17.9% to 25.4% (Mohamed et al. 2015). Nevertheless, based on stratified data, occupation which at risk of anxiety the most found to be among PPKP (43.5%) while medical doctor was among the least anxious (6.3%).Other studies conducted in Malaysia shown the highest prevalence of anxiety noted among undergraduate students in local universities (63%) (Shamsuddin et al. 2013) and medical interns from research conducted in Sabah (63.7%) (Shahruddin et al. 2016). A cross-sectional research conducted in China found that the prevalence of depression among 1592 nursing staffs was 61.7% (mild depressive symptoms) and 25.1% (moderate to severe depressive symptoms) (Gao et al. 2012). Another similar research conducted in South Korea among 441 registered female front-line nurses stated that there were significant association between emotionally arduous work, depressive symptoms and job-related stress. From their results revealed that about 38% of the respondents were experiencing depression (Yoon et al. 2013).

Based on gender factor, the female respondents were noted to be more anxious (14.6% for female and 11.7% for male); while male respondents were reported to be more depressed and stress (respectively 7.4% and 4.9% for male while 6.9% and 4.1% for female). This finding was slightly different from other research conducted among medical interns which found female prone to experience depression, anxiety and stress than male (Smith et al. 2007). However gender factor did not have any significant association with depression, anxiety and stress with OR: 1.09, 95%CI: 0.55-2.14; OR: 1.29, 95%CI: 0.76-2.20; and OR: 1.22, 95%CI: 0.53-2.80. However, WHO reported in 2013, women are more at risk of becoming depressed than male population. There are few possible explanation of this finding include: the male healthcare workers might receive more stressors form their surrounding including job demands and financial burdens as compared to the female; second, it might be due to higher responsibility and expectation to male healthcare workers as compared to female; and lastly, it might be due to career development whereby creates higher competition among them and thus lead to emotional disturbance.

This research showed age factor was not significantly associated with depression and stress level which similar with research conducted among psychosocial workers in Germany (Kirkcaldy et al. 1989). However, we found that those respondents aged fifty and above had significant association with anxiety level with OR: 2.26, 95%CI: 1.10-4.65. Although age was found to be not significant with depression and stress, we noted that those with age 50 years old and above had a higher level of depression (14.0%) and anxiety (25.6%) compared to younger respondents. This finding is contrast to other findings that suggested younger age workers which usually lack of training and working experience might experience more psychological disturbances (Reuben 1985). One of the possible reasons behind this finding is that older healthcare workers might exposed to more job demands; more involvement in administrative works and decision making; developing chronic diseases; and financial constraints which may lead to increase depressive mood, anxiety and stress experiences.

Prevalence of depression, anxiety and stress among the healthcare workers was found to be no significant association with marital status. This finding is contrast with study conducted in Iran among emergency department staffs which found that marriage was a protective factor against psychological disturbance (Farahmand et al., 2016). Similar finding with Korean study among 441 nurses stated that there was significant association between younger or single nurses with higher level of depressive symptoms than married counterparts (OR = 2.88, 95%CI: 1.32–6.27) (Yoon et al. 2013). However, our local study conducted among medical interns also had a similar finding with our study which found that psychological distress did not have any significant association with marital status. (Tan et al. 2013). These inconsistent results between local and overseas studies might suggest that marital status possibly influenced by particular tradition and culture of the society.

Next factor is ethnicity which also not significantly associated with the prevalence of depression, anxiety and stress. This result is similar with research finding done among medical students in a private medical school in Malaysia which showed no association between psychological disturbances and ethnicity (Zaid et al. 2003). Most of local studies pertaining stress, anxiety and depression seemed to show that there were no association between ethnicity and psychological disturbances. Despite insignificant association, the prevalence of those suffering from depression were highest among Chinese respondents (10.7%) compared to Malay (7.0%) and Indian (8.7%) with OR: 1.91, 95%CI: 0.64-5.68; while highest prevalence of anxiety (26.1%) and stress (8.7%) were observed among Indian respondents with OR: 1.94, 95%CI: 0.81-4.66 and OR: 2.65, 95%CI: 0.76-9.30 respectively.

Family income was not significant with depression, anxiety and stress. However, the prevalence of depression (10.4%), anxiety (17.8%) and stress (4.9%) was higher among those with family income less than RM3860 (B40) compared to those with family income RM3860 and above. This finding was similar with a study conducted in Hong Kong that reported those lower family income experienced more depression (38.3%), anxiety (45.6%) and stress (51.5%) than that higher family income (Teris & Paul 2015).

The only significant factor that strongly associated with depression, anxiety and stress was occupation as PPKP with OR: 10.27, 95%CI: 4.19-25.17; OR: 5.17, 95%CI: 2.20-12.14; and OR: 5.29, 95%CI: 1.68-16.65 respectively. As for work place factor (working at main administrative health office), depression and anxiety seemed to show significant association with OR: 5.40, 95%CI: 2.60-11.21 and OR: 3.75, 95%CI: 1.99-7.06 respectively. However, to the best of our knowledge, there are no other studies that focus on work place and occupation factor (PPKP) as predictive to depression, anxiety and stress. Few possible explanation of this finding include might be due to working environment that required them dealing with multiagency, deadline stressor and a lot of paper works. However, further exploration must be done to get real picture of this issue.

Even though this research was conducted among 702 healthcare workers which involved more than 10 medical occupations, the exact causal of depression, anxiety and depression was not identified since it was not the objective of this study. Since this study used self-administered questionnaire, negative affectivity bias is one of the known limitations in our study. Despite of those stated limitations, this study managed to provide a good and few new findings on the general psychological condition of healthcare workers in the primary healthcare setting. Thus,

the best way to understand and explore those two highlighted factors must be studied via qualitative method. A clear understanding on those highlighted factors will guide our stakeholders to come out with strategic plans to overcome our healthcare workers psychological issues.

5.0 Conclusion and recommendation

Our research successfully identified few significant factors that influence the depression, anxiety and stress scale among healthcare workers in Pejabat Kesihatan Daerah Melaka Tengah. The risk factors include healthcare workers' age 50 and above, occupation as PPKP and lastly work place factor (working at main administrative health office).

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Declaration

All authors in this study declared no conflict of interest.

Authors contribution

All authors contributed to this manuscript. All authors actively participated in the process of study design, data collection, and data analysis and drafted this manuscript. All authors read and approved the final manuscript.

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