PREVALENVE AND ASSOCIATED FACTORS OF STRESS, ANXIETY AND DEPRESSION AMONG TRAINEES IN ANAESTHESIOLOGY DEPARTMENT, UNIVERSITI OF MALAYA

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ABSTRACT

Background

In 2016, the data registry of American Association Of Medical Colleges (AMMC) found that there are 1103 doctors suicided. Anaesthesiologists have 5.5 times the rate of suicide of general internal medicine doctors. This study is to determine prevalence and associated factors of depression, anxiety and stress among anaesthesia trainees working at the department of aesthesiology Universiti of Malaya (UM).

Method

This study is a prospective, single centre, cross-sectional study that collects information on DASS–21 Score and a demographic data of anaesthesia trainee in University of Malaya. The inclusion criteria are anaesthesia trainees in Master program who are able to understand, read and speak Bahasa Malaysia language. Participant with psychosis, mental disability or refuse to participate were excluded from the study.

Result

There is a total of 64 participant in this study. By using DASS-21 the prevalence among anaesthetist trainees in UM was anxiety (56.2%), followed by depression (39.1%) and stress (32.8%) (see Table 1). From Table 2, we noticed that the prevalence of depression was significantly associated with age (p = 0.044), regularity of physical exercise (p=0.029), number of on-call (p= 0.029) , duration to travel to UMMC from home (p=0.013) and poor memory (p=0.040). From Table 3, the prevalence of anxiety was associated with poor memory (p=0.012). In table 4, there is a significant association between age and stress (p=0.006).

Conclusion

Anaesthesia is playing an important role in all the surgery, intensive care, and pain management in the hospital. A 2009 survey showed that there were about 620 anaesthesiologists in the Malaysia, giving us a ratio of about one anaesthesiologist to 45,000 of the population. This is still far from the figures of developed countries of one in 10,000. The prevailing ratio of anaesthesiologists to surgeons in time is about one in four in Malaysia, as compared to one in two in developed countries. The prevalence of anxiety is high among anaesthetist trainees at Universiti of Malaya followed by depression and stress. Poor memory has been significantly associated with both depression and anxiety, whereas age is significantly associated with both depression and stress. Other factors that associated with depression were age, regularity of

exercise, and time spend on the travel to UMMC from home. This information could help to identify the group at risk and provide them support, guidance and advice in order to achieve work life balance.

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LIST OF SYMBOLS AND ABBREVIATIONS

UM : University of Malaya

DASS – 21 : Depression Anxiety Stress Score – 21

UMMC : University of Malaya Medical Centre

SPSS : Statistical Packages for Social Science

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CHAPTER 1: INTRODUCTION

In 2016, the data registry of American Association of Medical Colleges (AMMC) found that there are 1103 doctors suicided. From the raw registry numbers per specialty (and not accounting for size of specialty), surgeons (161) are in the lead, then anesthesiologists (138), family medicine (92), internal medicine (69), emergency medicine (50), psychiatry (49), obstetrics/gynecology (46), pediatrics (42), and radiology (25). However, from the data analysis Anesthesiologists actually have 2.3 times the rate of suicide of all surgeons (general surgeons plus all surgical subspecialties). Anesthesiologists have 5.5 times the rate of suicide of general internal medicine doctors.

In 2016, a total of systematic search of without language restriction for studies on the prevalence of depression, depressive symptoms, or suicidal ideation in medical students. Data from 167 cross-sectional studies (n = 116628) and 16 longitudinal studies (n = 5728) from 43 countries were extracted. Among the medical student in estimate of the prevalence of depression or depressive symptoms among medical students was 27.2% and that of suicidal ideation was 11.1% (Rotenstein L & Ramos MA, 2016).

Recently in Malaysia, a study found that approximately 31% of the house officers were in distress. The top five stressors were fears of making mistakes that can lead to serious consequences, work overload, working with

uncooperative colleagues, doing work that mentally straining and feeling of being underpaid. (Yusoff MSB & Ying Jie T, 2011). This study was reported as high as compared to other countries such as in Tehran, Iran 36.8 % (Momeni M & Fahim F, 2016) and 25.7% in Western countries. (Sen S & Kranzler HR, 2010)

Another study found that the prevalence of anxiety anxiety (28.6%) followed by depression (10.7%) and stress (7.9%) among 140 emergency department medical officers working at general hospitals from seven Malaysia regions. (Shahruddin SA & Saseedaran P, 2016)

It is important to conduct this study in order to evaluate the prevalence of depression, anxiety and stress among anesthetist trainees in Universiti of Malaya, and identify the factor associated. At professional level, poor psychological health will lead absenteeism, mood disorders, and medical error poor job performance.(Embriaco N & Papazian L, 2007). These unwanted consequences due to poor psychological health will affect the quality of patient care and safety.

CHAPTER 2: OBJECTIVE

Objective of this project is to study the prevalence of depression, anxiety and stress among anesthetist trainees in Universiti Malaya. This is also to identify the factor associated of depression, anxiety and stress among the anesthetist trainee in Universiti of Malaya.

CHAPTER 3: METHODOLOGY

This study is a prospective, single center, cross-sectional study that collects information on DASS – 21 Score of anesthetist trainees in University Malaya. The period of this study started from November 2018 to May 2019. A total of 64 anesthetist trainees were enrolled in this study based on Krejcie and Morgan sample size calculation. The inclusion criteria are anesthetist trainee in Master program who are able to understand, read and speak Bahasa Malaysia language. Participant with psychosis, mental disability or refuse to participate were excluded from the study.

Approval from the ethics committee of University of Malaya Medical Centre (UMMC) were obtained prior the study. Prior questionnaire administration all participants were requested to fill in an informed consent and read information sheet. Subsequently, participants are requested to fill up a demographic data comprising age, gender, ethnic, weight, height, Body Mass Index (BMI),

medical illness, family status, academic and working status.

DASS-21 was derived and simplified from the original version of DASS-42. It is a self-report scale measuring characteristic attitudes of depression, anxiety and stress, and has been used in diverse settings. DASS–21 which composed of 21 items and 3 domains namely stress, anxiety and depression were administered to participants. Based on the manual guidelines, scores from each question were summed up and multiplied by two to a sum suit the original 42-items. (Lovibond P, 1995).

DASS-21 questionnaire has been translated into Malay language (Musa R & Fadzil MA, 2007) and validated in Malaysian population (Musa R & Ramli R, 2011) and permission was granted by Professor Dr Ramli Musa, Professor and Head of Department, Consultant Psychiatrist, Department of Psychiatry, International Islamic University Malaysia. SPSS version 23 were used for data entry and analysis. After examination of the frequencies and distribution, all categorical variables were described.

CHAPTER 4: RESULTS

A total of 64 participant in this study. By using DASS -21 the prevalence among anesthetist trainee in UM was anxiety (56.2%), followed by depression (39.1%) and stress (32.8%).

From the table 2, the prevalence of depression was significantly associated with age (p = 0.044), regularity of physical exercise (p=0.029), number of on-call (p= 0.029) , duration to travel to UMMC from home (p=0.013), poor memory (p=0.040). There is a marginal significant association of marital status with depression (p=0.057). From Table 3, the prevalence of anxiety was associated with poor memory (p=0.012) and marginally associated with personal loans (p=0.052). In table 4, there is a significant association between age and stress (p=0.006).

Table 1: Prevalence of Stress, Anxiety and Depression among anaesthetist trainee

	Normal	Depressed	Normal	Anxiety	Normal	Stressed
Frequency	39	25	28	36	43	21
Percent (%)	60.9	39.1	43.8	56.2	67.2	32.8

Table 2: Association of socio demographic factors with depression

Associated Factor	n	Normal	Depressed	Chi-square (df)	p-value	Fisher Exact Test
		n (%)	n (%)			
Age						
< 34 years old	47	25 (53.2)	22 (46.8)	4.460 (1)	**0.035**	**0.044**
> 34 years old	17	14 (82.4)	3 (17.6)			
Gender						
Male	36	23 (69.4)	11 (30.6)	2.502 (1)	0.114	0.130
Female	28	14 (50.0)	14 (50.0)			
Ethnic						
Malay	20	13 (65.0)	7 (35.0)	0.202 (1)	0.653	0.784
Non-Malay	44	26 (59.1)	18 (40.9)			
BMI						
Underweight and normal	35	19 (54.3)	16 (45.7)	1.436 (1)	0.231	0.305
Overweight and obese	29	20 (69.0)	9 (31.0)			
Physical Exercise						
Regular	24	19 (79.2)	5 (20.8)	7.058 (2)	**0.029**	**0.028**
Occasionally	22	13 (59.1)	9 (40.9)			
Rarely	18	7 (38.9)	11(61.1)			
Marital status						
Yes	49	33 (67.3)	16 (32.7)	3.608 (1)	0.057	0.056
No	15	6 (40.0)	9 (60.0)			
Children						
Yes	27	14(51.9)	13 (48.1)	1.602 (1)	0.203	0.300
No	37	25(67.6)	12 (32.4)			

Spouse working						
Yes	46	31 (67.4)	15 (32.6)	2.862 (1)	0.091	0.153
No	18	8 (44.4)	10 (55.6)			
Personal loans						
Yes	27	15(55.6)	12 (44.4)	0.568 (1)	0.451	0.604
No	37	24(64.9)	13 (35.1)			
Grade						
UD 48	53	30 (56.6)	23 (43.4)	2.433 (1)	0.119	0.178
UD 51/52	11	9 (81.8)	2 (18.2)			
Academic year						
First and Final (with exam)	26	15 (57.7)	11 (42.3)	0.194 (1)	0.660	0.795
Second and Third	38	24 (63.2)	14 (36.8)			
Working experience						
< 5 years	25	18 (72.0)	7 (28.0)	2.109 (1)	0.146	0.192
> 5 years	39	21 (53.8)	18 (46.2)			
Number of on-call a month						
1- 3 calls	14	5 (35.7)	9 (64.3)	4.790 (1)	**0.029**	**0.060**
4- 6 calls	50	34 (68.0)	16 (32.0)			
Duration to travel from home to UMMC						
< 10 min	14	4 (28.6)	10 (71.4)	8.642 (2)	**0.013**	**0.016**
10 – 30 min	25	16 (64.0)	9 (36.0)			
> 30 min	25	19 (76.0)	6 (24.0)			

Time spend for study						
< 10 hours / week	41	23 (56.1)	18 (43.9)	1.123 (1)	0.289	0.424
> 10 hours / week	23	16 (69.6)	7 (30.4)			
Poor memory						
Yes	54	30 (55.6)	24 (44.4)	4.205 (1)	**0.040**	**0.074**
No	10	9 (90.0)	1 (10.0)			
Repeat examination						
Yes	25	16 (64.0)	9 (36.0)	0.162 (1)	0.688	0.795
No	39	23 (59.0)	16 (41.0)			
Extra academic duty						
Yes	34	20 (58.8)	14 (41.2)	0.136 (1)	0.712	0.800
No	30	19 (63.3)	11 (36.7)			

Note: Pearson Chi Square test, significant level at 0.05; Fisher Exact Test, significant level at 0.05.

Table 3: Association of socio demographic factors with anxiety

Associated Factor	n	Normal	Anxiety	Chi-square (df)	p- value	Fisher Exact Test
		n (%)	n (%)			
Age						
< 34 years old	47	20(42.6)	27(57.4)	0.103 (1)	0.748	0.782
> 34 years old	17	8 (47.1)	9 (52.9)			
Gender						
Male	36	16 (44.4)	20 (55.6)	0.016 (1)	0.899	1.000
Female	28	12 (42.9)	16 (57.1)			
Ethnic						
Malay	20	9 (45.0)	11(55.0)	0.018 (1)	0.892	1.000
Non-Malay	44	19 (43.2)	25(56.8)			
BMI						
Underweight and normal	35	12 (34.3)	23(65.7)	2.811 (1)	0.094	0.130
Overweight and obese	29	16 (55.2)	13 (44.8)			
Physical Exercise						
Regular	24	13 (54.2)	11(45.8)	2.950 (2)	0.229	0.270
Occasionally	21	10 (45.5)	12 (54.5)			
Rarely	18	5 (27.8)	13 (72.2)			
Marital status						
Yes	49	23 (46.9)	26(53.1)	0.864 (1)	0.353	0.390
No	15	5 (33.3)	10(66.7)			
Children						
Yes	27	10 (37.0)	17(63.0)	0.855 (1)	0.335	0.447
No	37	18 (48.6)	19 (51.4)			

Spouse working						
Yes	46	22 (47.8)	24 (52.2)	1.104 (1)	0.293	0.403
No	18	6 (33.3)	12(66.7)			
Personal loans						
Yes	27	8 (29.6)	19 (70.4)	3.784 (2)	0.052	0.075
No	37	2 (54.1)	17 (45.9)			
Grade						
UD 48	53	23 (43.4)	30(56.6)	0.016 (1)	0.900	1.000
UD 51/52	11	5 (45.5)	6 (54.5)			
Academic year						
First and Final (with exam)	26	10 (38.5)	16(61.5)	0.498 (1)	0.481	0.609
Second and Third	38	18 (47.4)	20 (52.6)			
Working experience						
< 5 years	25	12 (48.0)	13(52.0)	0.301 (1)	0.583	0.615
> 5 years	39	16 (41.0)	23(59.0)			
Number of on-call a month						
1-3 calls	14	4 (28.6)	10(71.4)	1.678 (1)	0.195	0.235
3-6 calls	50	24 (48.0)	26(52.0)			
Duration to travel from home to UMMC						
< 10 min	14			1.202 (2)	0.548	0.618

10 – 30 min	25	5 (35.7)	9 (64.3)			
> 30 min	25	10 (40.0)	15 (60.0)			
		13 (52.0)	12(48.0)			
Time spend for study per week						
< 10 hours	41	17 (41.5)	24(58.5)	0.242 (1)	0.622	0.793
> 10 hours	23	11 (47.8)	12(52.2)			
Poor memory						
Yes	54	20 (37.0)	34(63.0)	6.329 (1)	**0.012**	**0.016**
No	10	8 (80.0)	2 (20.0)			
Repeat exam						
Yes	25	12 (48.0)	13(52.0)	0.301 (1)	0.583	0.615
No	39	16 (41.0)	23(59.0)			
Extra academic duty						
Yes	34	16 (47.1)	18(52.9)	0.323 (1)	0.570	0.620
No	30	12 (40.0)	18 (60.0)			

Note: Pearson Chi Square test, significant level at 0.05; Fisher Exact Test, significant level at 0.05.

Table 4: Association of socio demographic factors with stress

Associated Factor	n	Normal	Stressed	Chi-square (df)	p-value	Fisher Exact Test
		n(%)	n(%)			
Age						
< 34 years old	47	27(57.4)	20(42.6)	7.615 (1)	**0.006**	**0.006**
> 34 years old	17	16(94.1)	1 (5.9)			
Gender						
Male	36	27 (75.0)	9 (25.0)	2.278(1)	0.131	0.181
Female	28	16 (57.1)	12 (42.9)			
Ethnic						
Malay	20	11 (55.0)	9 (45.0)	1.960 (1)	0.162	0.250
Non-Malay	44	32 (72.7)	12 (27.3)			
BMI						
Underweight and normal	35	22 (62.9)	13 (37.1)	0.657 (1)	0.418	0.439
Overweight and obese	29	21 (72.4)	8 (27.6)			
Physical Exercise						
Regular	24	18 (75.0)	6 (25.0)	3.383 (2)	0.184	0.199
Occasionally	22	16 (72.7)	6 (27.3)			
Rarely	18	9 (50.0)	9 (50.0)			
Marital status						
Yes	49	35 (71.4)	14(28.6)	1.706 (1)	0.192	0.220
No	15	8 (53.3)	7 (46.7)			
Children						
Yes	27	15 (55.6)	12(44.4)	2.866(1)	0.090	0.111
	37					

No		28 (75.7)	9 (24.3)			
Spouse working						
Yes	46	32 (69.9)	14(30.4)	0.419 (1)	0.517	0.562
No	18	11 (61.1)	7 (38.9)			
Personal loans						
Yes	27	16 (59.3)	11(40.7)	1.332 (1)	0.249	0.289
No	37	27 (73.0)	10 (27.0)			
Grade						
UD 48	53	33 (62.3)	20(37.7)	3.390 (1)	0.066	0.085
UD 51/52	11	10 (90.9)	1 (9.1)			
Academic year						
First and Final (with exam)	26	17 (65.4)	9 (34.6)	0.065(1)	0.799	1.000
Second and Third	38	26 (68.4)	12 (31.6)			
Working experience						
< 5 years	25	16 (64.0)	9 (36.0)	0.189 (1)	0.664	0.786
> 5 years	39	27 (69.2)	12(30.8)			
Number of on-call a month						
1 - 3 calls	14	7 (50.0)	7 (50.0)	2.401 (1)	0.121	0.196
3 - 6 calls	50	36 (72.0)	14 (28.0)			
Duration to travel from home to UMMC						
< 10 min	14	8 (57.1)	6 (42.9)	1.637 (2)	0.441	0.405

10 – 30 min	25	16 (64.0)	9 (36.0)			
> 30 min	25	19 (76.0)	6 (24.0)			
Time spend for study per week						
< 10 hours	41	27(65.9)	14 (34.1)	0.092 (1)	0.762	1.000
> 10 hours	23	16 (69.9)	7 (30.4)			
Poor memory						
Yes	54	35 (64.8)	19 (35.2)	0.883 (1)	0.348	0.476
No	10	8 (80.0)	2 (20.0)			
Repeated exam						
Yes	25	18 (72.0)	7 (28.0)	0.431 (1)	0.512	0.592
No	39	25 (64.1)	14(35.9)			
Extra academic duty						
Yes	34	25 (73.5)	9 (26.5)	1.323(1)	0.250	0.294
No	30	18 (60.0)	12 (40.0)			

Note: Pearson Chi Square test, significant level at 0.05; Fisher Exact Test, significant level at 0.05.

CHAPTER 5: DISCUSSION

From the statistical analysis above, it shows that the anxiety (56.2%) is the

highest prevalence of phycological issue among anesthetist trainee in Universiti Malaya, followed by depression (39.1) and stress (32.8%). This result is similar to our local Emergency Department medical officers in the Malaysian hospital with anxiety (28.6%), followed by depression (10.7%) and stress (7.9%). The difference in percentage may contributed by different working environment and shift system implemented in Emergency Department.

Age below 34 years old has shown a significant higher prevalence of depression and stress. This finding is similar to the literatures that suggested the younger age who are lacked of experience and training which might experience more depression symptoms. (Rueben 1985). In Malaysia, most of medical officer enroll in post graduate program at the age of early 30's and it is also the age where they start to build up the family.

There are 84.3% of the anesthetist trainee find themselves have poor memory and this is significantly associated with depression and anxiety. One of the analysis shows that the functional connections between the areas of the brain associated with short-term memory, and negative emotions are increased in both poor sleep and depressive participants. (Wei Cheng & Edmund 2018).

Anesthetist trainees that exercised less than once a month has a higher association with depression. Regular exercise has proven to ward off stress

and depression. It helps to boost up self-esteem and improve psychological feeling by increasing plasma endorphins. Trainees who did less than 3 on-call a month has a higher association with depression. The possible reason behind might be the senior registrar who did less on-call carry more responsibility compare with junior officers. In UMMC the senior registrar does not only receive all operation case referral and do preoperative assessment during on-call, but they also be the main person who in-charge high risk emergency operation.

The first limitation of the study is the negative affect bias from the participant that might increase the rating scale of questionnaire. Negative affectivity is strongly related to life satisfaction. Individuals high in negative affect will exhibit, on average, higher levels of distress, anxiety, and dissatisfaction, and tend to focus on the unpleasant aspects of themselves, the world, the future, and other people, and also evoke more negative life events. (Jeronimus, 2014).

Secondly, this study was conducted to find the associated between depression, anxiety, stress and the possible factor. However, it couldn't explain the underlying reason behind the result and scenario. Another important point to be mentioned about DASS-21 usage is that it measures the negative emotional states based on clinical symptoms but not means for clinical diagnosis.

It needs to be remembered that doctors are vulnerable to the same mental and physical ill health as the rest of the population, and are more at risk of conditions such as burnout and addiction.

CHAPTER 6: CONCLUSION

Anaesthesia is playing an important role in all the surgery, intensive care, and pain management in the hospital. A 2009 survey showed that there were about 620 anaesthesiologists in the country, giving us a ratio of about one anaesthesiologist to 45,000 of the population. This is still far from the figures of developed countries of one in 10,000. The prevailing ratio of anaesthesiologists to surgeons in time is about one in four, as compared to one in two in developed countries. The prevalence of anxiety is high among anaesthetist trainees at Universiti of Malaya followed by depression and stress. Poor memory has been significantly associated with both depression and anxiety, whereas age is significantly associated with both depression and stress. Other factors that associated with depression were age, regularity of exercise, and time spend for travel to UMMC. This information could help to identify the group at risk and provide them support, guidance and advice in order to achieve work life balance.

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