

Prevalence and Risk Factors of Stress, Anxiety and Depression among House Officers in Kota Kinabalu, Sabah

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ABSTRACT

Introduction: House officers who are suffering from stress, anxiety or depression are at risk of harm to themselves, colleagues and even patients, as well as affecting their livelihood. **Objective:** This study is aimed to find the prevalence of stress, anxiety and depression among house officers working in Kota Kinabalu, Sabah. **Method:** A cross-sectional study was done using a self-administered questionnaire containing socio-demographic factors and Depression, Anxiety and Stress Scale (DASS) 21. **Results:** Prevalence of stress, anxiety and depression were 57.1%, 63.7%, and 42.9% respectively. Multiple logistic regression analysis found that house officers who thought of quitting Housemanship was associated with stress (adjusted OR = 3.64, 95% CI: (1.44, 9.20), $p = 0.006$), and depression (adjusted OR = 8.26, 95% CI: (2.96, 23.02), $p < 0.001$). House officers who perceives that they are bullied is associated with anxiety (adjusted OR = 4.16, 95% CI: (1.33, 13.07), $p = 0.015$). Work experience of the house officers in months have a protective effect to stress (adjusted OR = 0.92, 95% CI: (0.87, 0.97), $p = 0.004$), anxiety (adjusted OR = 0.93, 95% CI: (0.88, 0.98), $p = 0.006$) and depression (adjusted OR = 0.92, 95% CI: (0.87, 0.98), $p = 0.006$). **Conclusion:** The prevalence of stress, anxiety and depression among house officers in Kota Kinabalu, Sabah is high. Management should look into the findings and understand the importance of addressing this problem as it may affect patient care and safety, and the livelihood of house officers. Future studies identifying why house officers are thinking of quitting service and why they do feel that they are being bullied may be warranted.

Keywords: Stress, Anxiety, Depression, House Officer, Housemanship, DASS, Malaysia

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Introduction

Medical Act 1971 defines “Housemanship” as a two-year supervised practical training in any public health care institution, upon completing a medical degree program in an accredited medical school. This mandatory training is to produce professional and patient-oriented doctors for the betterment of our public health services (1). Successful

completion of this program requires specific documentation, including satisfactory reports from the supervisors and heads of each department, which indicates that the houseman is now eligible to serve with independent capacity in various public/private health sectors.

Problems arise among house officers as the expectations increase and the work

distribution load gets more intense. When the coping ability of the fellow house officers does not tally with the pressure exerted upon him that is when Psychological distress comes in (2).

However, stress itself is not all hazardous. An optimal amount of stress known as the favourable stress is required to facilitate their learning and adapting process, moulding them into holistic experienced doctors. On the contrary, stress that suppresses the learning, decision making and function of a doctor is known as the unfavourable stress (3).

The common stressors that induce psychological distress amongst any medical personnel are at plenty. Various studies show that there is no sole factor comes into play (4). Housemen are the future of the medical profession. The challenges and trials faced by the newer generation differ greatly from the previous generation. In order to foster good doctors in training, psychological distress in doctors should be identified and addressed properly.

In 1997, 77.5% of house officers were found to be emotionally distressed, and in 2013, it was found that 60.7% of house officers were anxious (1, 5). The percentages, in contrast, are especially high as compared to the western world, where psychological distress levels were from 7% to 49% (6).

Significant emotional disturbances are usually present when a fresh house officer starts working. The changes when stepping from school to work life is pronounced, and can affect the house officers functioning (7). Emotional distress itself can manifest as cognitive impairment, anger, cynicism and depression (8, 9). This may lead to maladaptive behaviour, increase in running costs through absenteeism and litigation, and most importantly, can cause harm to themselves, colleagues and even patients (10–13).

This research done on house officers working at Kota Kinabalu, Sabah based in Queen Elizabeth I Hospital, Queen Elizabeth II Hospital, and Likas Women's and Children's Hospital was done by fourth year medical students of International Medical University, Management and Science University, as part of their elective posting research, which includes research as part of the curriculum and assessment.

Method

Study Design and Population

A cross-sectional study to determine the prevalence and risk factors of stress, anxiety and depression among house officers working in Kota Kinabalu, Sabah, in 2015. A sample of 121 was determined using a single proportion sample size formula for stress, anxiety and depression.

Methods of Data Collection

A questionnaire was distributed among the house officers working in Kota Kinabalu, and it consisted of two sections. The first section includes the demographic factors comprising of age, current posting number, current department, gender, race, religion, state of origin, university of study, perception of being bullied and being overworked, thought of quitting housemanship, average working hours, work experience in months, and sleeping hours per day. Section two consists of the Depression, Anxiety and Stress Scale (DASS)-21 questionnaire, which scales the domains of stress, anxiety, and depression. DASS-21 was used as screening tool. The DASS-21 is composed of 21 items and 3 domains namely stress, anxiety and depression. The items are scored from 0 to 3 which indicated how much the statement applied to students over the past week. A rating of (0) means “does not apply to me at

all – NEVER”, rating of (1) means “applies to me to some degree, or some of the time – SOMETIMES”, rating of (2) means applies to me to a considerable degree, or a good part of time – OFTEN”, while a rating of (3) means “applies to me very much, or most of the time – ALMOST ALWAYS”. The questionnaire validity and reliability has been assessed in previous research (14).

Statistics

Data entry and analysis was done using statistical packages for social sciences (SPSS) version 22. The frequencies and distribution were examined. The frequencies and percentages for all categorical variables were described and the mean and standard deviation of continuous variables were calculated. Simple and multiple logistic regression analysis were used to determine the risk factors for stress, anxiety and depression.

Result

Characteristics of Subjects

A total of 121 house officers were enrolled in the study. The response rate was 75.2%, where most responses were discarded because of incomplete questionnaires. Mean age of the house officers were 25.57 years with a standard deviation of 1.2 years. There were 51.6% of females, and a majority of house officers were Malay (30.8%), 47.3% were Muslims, and 63.7% were from peninsular Malaysia.

Among of respondents, 67% of them feel that they are overworked, 30.8% feels that they are being bullied, and 50.5% have thought of quitting housemanship. Average working hours per day were 14.22 hours with a standard deviation of 3.1 hours, and average working experience were 10.54 months with a standard deviation of 8.7 months. Other factors are shown in Table 1.

Table 1: Respondent profile (n = 91)

Variable	Mean (SD)	N (%)
Age	25.57 (1.2)	–
Posting type		
Medical based	–	49 (53.8)
Surgical based	–	42 (46.2)
Posting number	2.76 (1.8)	–
Gender		
Male	–	44 (48.4)
Female	–	47 (51.6)
Race		
Malay	–	28 (30.8)
Chinese	–	27 (29.7)
Indian	–	7 (7.7)
Bumiputera Sabah / Sarawak		25 (27.5)
Others	–	4 (4.4)
Religion		
Islam	–	43 (47.3)
Buddhist	–	19 (20.9)

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Table 1: (continued)

Variable	Mean (SD)	N (%)
Hindu	–	5 (5.5)
Christian	–	20 (22)
Others	–	4 (4.4)
State		
Peninsular Malaysia	–	58 (63.7)
East Malaysia	–	33 (36.3)
University		
Local	–	59 (64.8)
Overseas	–	32 (35.2)
Perceived overwork		
No		30 (33)
Yes		61 (67)
Perceived bullying		
No	–	63 (69.2)
Yes	–	28 (30.8)
Thought of quitting house- manship		
No	–	45 (49.5)
Yes	–	46 (50.5)
Average working hours per day	14.22 (3.1)	–
Work experience in months	10.54 (8.7)	–
Sleeping hours per day	5.24 (1.1)	–

SD = standard deviation

Prevalence of Psychological Distress

Using DASS-21, the prevalence of stress, anxiety and depression was 42.9%, 63.7%, and 57.1% respectively (Table 2).

Table 2: Prevalence of psychological distress using DASS-21 (n = 91)

DASS	Category	n	Prevalence (%)
Depression	Yes	39	42.9
	No	52	57.1
Anxiety	Yes	58	63.7
	No	33	36.3
Stress	Yes	52	57.1
	No	39	42.9

Risk Factors for Stress, Anxiety and Depression

Univariate analysis, using simple logistic regression, done on the risk factors for stress shows that one month increase in working experience of the house officers are associated with 7% decrease in risk of developing stress (OR 0.93, 95% CI [0.88, 0.98], *P*-value 0.006). Posting number, thought of quitting housemanship, average working hours per day and sleeping hours per day were all associated with stress. The results are shown in Table 3.

Table 3: Risk factors of stress using DASS-21 for house officers in Kota Kinabalu, Sabah (n = 91)

Variable	Categories	OR ^a	95% CI ^b	P value ^c
Age	–	0.71	(0.49, 1.01)	0.059
Posting type	Medical based	1	–	–
	Surgical based	0.84	(0.36, 1.92)	0.671
Posting number	–	0.73	(0.57, 0.94)	0.015
Gender	Male	1	–	–
	Female	0.81	(0.36, 1.87)	0.628
Race	Malay	1	–	–
	Chinese	2.69	(0.88, 8.21)	0.082
	Indian	1	(0.16, 6.26)	1.000
	Bumiputera Sabah / Sarawak	2.31	(0.74, 7.18)	0.149
	Others	7.50	(0.68, 83.26)	0.101
Religion	Islam	1	–	–
	Buddhist	2.30	(0.76, 6.94)	0.139
	Hindu	1.38	(0.21, 9.23)	0.739
	Christian	2.07	(0.70, 6.12)	0.188
	Others	6.21	(0.59, 65.25)	0.128
State	East Malaysia	1	–	–
	Peninsular Malaysia	1.03	(0.43, 2.44)	0.950
University	Local	1	–	–
	Overseas	1.29	(0.54, 3.06)	0.569
Perceived overwork	No	1	–	–
	Yes	1.47	(0.60, 3.60)	0.404
Perceived bullying	No	1	–	–
	Yes	1.88	(0.76, 4.61)	0.171
Thought of quitting housemanship	No	1	–	–
	Yes	3.20	(1.34, 7.63)	0.009
Average working hours per day	–	1.28	(1.02, 1.59)	0.030
Work experience in months	–	0.93	(0.88, 0.98)	0.006
Sleeping hours per day	–	0.55	(0.33, 0.92)	0.022

Note: ^aOdds ratio, ^b95% Confidence Interval, ^cSimple Logistic Regression Analysis

For anxiety, univariate analysis using simple logistic regression shows that perceived bullying, thought of quitting Housemanship, and average working hours per day, are associated with increase odds of suffering

anxiety. Posting number and working experience in months have a protective effect from anxiety. The results are shown in Table 4.

Table 4: Risk factors of anxiety using DASS-21 for house officers in Kota Kinabalu, Sabah (n = 91)

Variable	Categories	OR ^a	95% CI ^b	P value ^c
Age	–	0.66	(0.46, 0.95)	0.025
Posting type	Medical based	1	–	–
	Surgical based	1.05	(0.44, 2.46)	0.920
Posting number	–	0.72	(0.56, 0.93)	0.010
Gender	Male	1	–	–
	Female	1.01	(0.43, 2.37)	0.985
Race	Malay	1	–	–
	Chinese	1.50	(0.50, 4.49)	0.468
	Indian	1.88	(0.31, 11.37)	0.494
	Bumiputera Sabah / Sarawak	1.33	(0.44, 4.04)	0.611
Religion	Others	2.25	(0.21, 24.40)	0.505
	Islam	1	–	–
	Buddhist	1.88	(0.60, 5.88)	0.275
	Hindu	1.30	(0.20, 8.61)	0.783
	Christian	3.48	(1.00, 12.13)	0.050
State	Others	2.61	(0.25, 27.11)	0.422
	East Malaysia	1	–	–
University	Peninsular Malaysia	1.24	(0.51, 2.99)	0.640
	Local	1	–	–
Perceived overwork	Overseas	0.92	(0.38, 2.25)	0.857
	No	1	–	–
Perceived bullying	Yes	1.93	(0.79, 4.75)	0.150
	No	1	–	–
Thought of quitting housemanship	Yes	3.68	(1.24, 10.92)	0.019
	No	1	–	–
Average working hours per day	–	1.28	(1.02, 1.61)	0.034
Work experience in months	–	0.93	(0.88, 0.98)	0.007
Sleeping hours per day	–	0.80	(0.54, 1.18)	0.264

Note: ^aOdds ratio, ^b95% Confidence Interval, ^cSimple Logistic Regression Analysis

Univariate analysis for depression risk factors, using simple logistic regression, shows that house officers who think that they are overworked are at 2.86 times the risk of suffering from depression as compared to house officers who doesn't think so (OR 2.86, 95% CI [1.16, 7.04], *P*-value < 0.022). House officers who thought of quitting housemanship is also

associated with increased risk of depression. Posting number and working experience in months are seen to have a reduced risk of having depression.

Multivariate analysis using multiple logistic regression (Table 6) showed that thought of quitting housemanship is associated with 3.64 times increase risk of having

stress (adjusted OR = 3.64, 95% CI [1.44, 9.20], $p = 0.006$) and 8.26 times increase in risk of having depression (adjusted OR = 8.26, 95% CI [2.96, 23.02], $p < 0.001$). Meanwhile, perceived bullying was associated with increased risk of anxiety (adjusted OR = 4.16, 95% CI [1.33, 13.07], $p = 0.015$).

Work experience in months is shown to have a protective effect in stress (adjusted OR = 0.92, 95% CI [0.87, 0.97], $p = 0.004$), anxiety (adjusted OR = 0.93, 95% CI [0.88, 0.98], $p = 0.006$), and depression (adjusted OR = 0.92, 95% CI [0.87, 0.98], $p < 0.001$).

Table 5: Risk factors of Depression using DASS-21 for house officers in Kota Kinabalu, Sabah (n = 91)

Variable	Categories	OR ^a	95% CI ^b	P value ^c
Age	–	0.73	(0.51, 1.03)	0.073
Posting type	Medical based	1	–	–
	Surgical based	0.70	(0.30, 1.61)	0.396
Posting number	–	0.72	(0.56, 0.92)	0.008
Gender	Male	1	–	–
	Female	0.86	(0.37, 1.97)	0.716
Race	Malay	1	–	–
	Chinese	1.08	(0.38, 3.13)	0.883
	Indian	2.17	(0.36, 13.11)	0.400
	Bumiputera Sabah / Sarawak	1.10	(0.37, 3.26)	0.859
Religion	Others	2.60	(0.24, 28.15)	0.432
	Islam	1	–	–
	Buddhist	1.09	(0.37, 3.24)	0.879
	Hindu	1.19	(0.18, 7.84)	0.858
	Christian	0.97	(0.33, 2.81)	0.952
State	Others	2.38	(0.23, 24.70)	0.469
	East Malaysia	1	–	–
	Peninsular Malaysia	1.18	(0.50, 2.80)	0.706
University	Local	1	–	–
	Overseas	1.41	(0.58, 3.39)	0.448
Perceived overwork	No	1	–	–
	Yes	2.86	(1.16, 7.04)	0.022
Perceived bullying	No	1	–	–
	Yes	1.92	(0.75, 4.89)	0.172
Thought of quitting housemanship	No	1	–	–
	Yes	6.53	(2.58, 16.52)	< 0.001
Average working hours per day	–	1.18	(0.96, 1.44)	0.114
Work experience in months	–	0.94	(0.89, 0.99)	0.012
Sleeping hours per day	–	0.914	(0.63, 1.32)	0.633

Note: ^aOdds ratio, ^b95% Confidence Interval, ^cSimple Logistic Regression Analysis

Table 6: Risk factors of stress, anxiety and depression using DASS-21 for house officers in Kota Kinabalu (n = 91)

No.	Variables		Adj. OR ^a	95% CI ^b	P Value ^c
<i>Stress</i>					
	Thought of quitting housemanship	No	1	-	-
		Yes	3.64	(1.44, 9.20)	0.006
	Work experience in months		0.92	(0.87, 0.97)	0.004
<i>Anxiety</i>					
	Perceived bullying	No	1	-	-
		Yes	4.16	(1.33, 13.07)	0.015
	Work experience in months		0.93	(0.88, 0.98)	0.006
<i>Depression</i>					
	Thought of quitting housemanship	No	1	-	-
		Yes	8.26	(2.96, 23.02)	< 0.001
	Work experience in months		0.92	(0.87, 0.98)	0.005

Note: ^aAdjusted odds ratio, ^b95% Confidence Interval, ^cMultiple Logistic Regression Analysis

Discussion

This study on house officers in Kota Kinabalu, Sabah shows that prevalence of stress, anxiety and depression is high. The prevalence is slightly lower than what was reported previously in junior doctors (77.5%) (5), although anxiety rates is slightly higher than reported in Universiti Kebangsaan Malaysia Medical Centre (UKMMC), which was 60.7% (1).

No significant association between sociodemographic factors, with stress, anxiety and depression were found. This is in line with findings from previous studies done on the matter (1, 5).

Overall, we have found that work experience have a protective effect on stress, anxiety and depression. For anxiety, our findings were different as compared to the study done in UKMMC, whom did not find an association between work experience and anxiety (1). The discrepancies may arise from the different methodology used in analysing work experience. We believe that with experience comes coping mechanisms

that helps with reducing stress, anxiety and depression levels, especially in new doctors who have just graduated from university, as the transition can induce significant levels of distress (7).

House officers who have thought of quitting housemanship are at risk of stress and depression. Even though the cause and effect could not be established, it should be noted that doctors who are stressed have lower job satisfaction, which may be the cause of the thought, and it may affect their physical health, which, in all, can lead to depression (15, 16).

Perceived bullying by the house officers were also found to be a risk factor of anxiety. Workplace bullying have been found to cause lower job satisfaction, stress, anxiety, and depression, and cause the intent to leave the job (17). It may not be the intention of the senior doctor to do so, thus the need to get information from both perspectives is required. It is, however, important that there is a proper channel to address such issues, and doctors who use such channels are protected from abuse.

The prevalence of distressed house officers was relatively higher than that of the general population as shown in a previous study in Malaysia (18). This alarming finding suggested an increased level of pressure faced by young doctors.

There is a need to do a more in-depth study on the matter, as the amount of research done focusing on this matter is scarce, and the generalisability of this study is limited by the sample characteristics and sample size. Hopefully, research on this matter could be further explored, not just focusing on house officers specifically, but on all doctors as a whole. With such research underway, strategies and interventions could be planned for the benefit of all doctors in Malaysia.

Conclusion

This study has found that the prevalence of stress, anxiety and depression among house officers in Kota Kinabalu, Sabah is high. Management should understand the need to address this problem as it may affect patient safety and care. There is a need to identify why house officers are thinking of quitting the service, and why they feel bullied, as it is affecting their livelihood. Early intervention could help improve the situation that they are facing.

Ethical Approval

The research was approved by the ethical and research committee of Management and Science University and the National Medical Research register (NMRR-15-1391-27252[IIR]).

Acknowledgements

The authors would like to thank the Directors of Queen Elizabeth I Hospital, Queen Elizabeth II Hospital, and Likas Women's and Children's Hospital for allowing us to proceed with this research. A special thank you to Ms. Ammar Rafidah

from Clinical Research Centre (CRC) Queen Elizabeth Hospital for helping us with the NMRR registration.

References

1. Tan SMK, Jong SC, Chan LF, Jamaludin NA, Phang CK, Jamaluddin NS, et al. Physician, heal thyself: the paradox of anxiety amongst house officers and work in a teaching hospital. *Asia-Pacific Psychiatry*. 2013;5(S1):74–81.
2. Michie S. Causes and management of stress at work. *Occupational and Environmental Medicine*. 2002;59(1):67–72.
3. Sadock BJ, Kaplan & Sadock's comprehensive textbook of psychiatry. Philadelphia, PA: Lippincott Williams & Wilkins; 2000.
4. Chan KB, Lai G, Ko YC, Boey KW. Work stress among six professional groups: the Singapore experience. *Social Science & Medicine*. 2000;50(10):1415–32.
5. Sidi H, Maniam T. Emotional distress, job satisfaction and job-related tension among junior doctors. *Malaysian Journal of Psychiatry*. 1997;5(1):16–26.
6. Sen S, Kranzler HR, Krystal JH, Speller H, Chan G, Gelernter J, et al. A prospective cohort study investigating factors associated with depression during medical internship. *Archives of General Psychiatry*. 2010;67(6):557–65.
7. Schwartz AJ, Black ER, Goldstein MG, Jozefowicz RF, Emmings FG. Levels and causes of stress among residents. *Academic Medicine*. 1987;62(9):744–53.
8. Small GW. House officer stress syndrome. *Psychosomatics*. 1981;22(10):860–9.
9. Sylvester S, Allen H, Withey C, Morgan M, Holland W. The provision of medical services to sick doctors: a conspiracy of friendliness. London: Nuffield Provincial Hospitals Trust; 1994.

10. Fahrenkopf AM, Sectish TC, Barger LK, Sharek PJ, Lewin D, Chiang VW, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. *BMJ*. 2008;336(7642):488–91.
11. Firth-Cozens J. Emotional distress in junior house officers. *BMJ*. 1987;295(6597):533–6.
12. Firth-Cozens J. Interventions to improve physicians' well-being and patient care. *Social Science & Medicine*. 2001;52(2):215–22.
13. West CP, Huschka MM, Novotny PJ, Sloan JA, Kolars JC, Habermann TM, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. *JAMA*. 2006;296(9):1071–8.
14. Henry JD, Crawford JR. The short-form version of the depression anxiety stress scales (DASS-21): construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 2005;44(2):227–239.
15. Appleton K, House A, Dowell A. A survey of job satisfaction, sources of stress and psychological symptoms among general practitioners in Leeds. *British Journal of General Practice*. 1998;48(428):1059–63.
16. Newbury-Birch D, Kamali F. Psychological stress, anxiety, depression, job satisfaction, and personality characteristics in preregistration house officers. *Postgraduate Medical Journal*. 2001;77(904):109–11.
17. Quine L. Workplace bullying in NHS community trust: staff questionnaire survey. *BMJ*. 1999;318(7178):228–32.
18. Yusoff MSB, Ying Jie T, Esa AR. Stress, stressors and coping strategies among house officers in a Malaysian hospital. *ASEAN Journal of Psychiatry*. 2011;12(1):85–94.