ORIGINAL ARTICLE

Work-related Quality of Life and Its Associated Factors Among House Officers Working at Two Hospitals in Selangor

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ABSTRACT

Introduction: Mental health-related problems are on the rise among medical doctors, with many house officers (HOs) have quitted training prematurely owing to work and life-related factors. However, the quality of work-life (QOWL) among Malaysian HOs remains unknown. Hence, we aimed to determine the mean score of QOWL and its predictors among HOs working at two tertiary hospitals. **Methods:** This is a cross-sectional study conducted at two tertiary hospitals in Selangor, between May and August 2019. A stratified random sampling was employed. The Malay version of work-related quality of life scale (M-WRQLS-2) and the patient health questionnaire (M-PHQ-9) were used for data collection. Statistical analysis was performed using the SPSS version 23.0 (IBM, Chicago, IL). **Results:** A total of 260 (72.9%) respondents completed the questionnaires. The overall score of QOWL was 3.05 ± 0.48 (95% CI: 2.99, 3.11). Depressed HOs had a significantly lower mean score across all subscales ($p < 0.005$) except for the stress at work (SAW) subscale. Two predictors were inversely associated with QOWL. These were the M-PHQ-9 score [$\beta= -0.049$, 95% CI: -0.06, -0.04] and being female [$\beta=-0.129$, 95% CI: -0.24, -0.02]. **Conclusion:** HOs who worked at the two hospitals in Selangor perceived their overall QOWL as average. However,   being female and having depression were found to be associated with lower QOWL. Therefore, early interventions targeting female HOs and those with depressive symptoms are warranted. Further research and strategies aiming to improve the overall quality of work-life and its dimensions for HOs during housemanship training are vital.

Keywords: Quality of work-life, Work-Related Quality of Life (WRQOL), Depression, House officers, Malaysia

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INTRODUCTION

Quality of work-life (QOWL) is a complex entity that interacts with many aspects of work and personal life. It is related to job satisfaction, the personality of an employee, work-stress factors, intention to leave and organisational turnover (1). Job satisfaction of an employee towards the extrinsic (e.g. wages and incentives, safety at workplace, adequacy of facilities) and intrinsic traits of a job (e.g. autonomy and control at work, job content and context, job requirements and availability of an ancillary programme) including the non-work life dimensions such as the positive attitude of the employee towards the organisation, life satisfaction,

happiness and wellness of an employee are necessary to accelerate productivity and efficiency of an organisation (2, 3). Failure to manage these factors can have a major impact on employee's behaviour and responses as well as outcomes of the organisation (4) Therefore, measuring QOWL is imperative to safeguard the well-being of employees, subsequently ensuring their motivation and commitment (5, 6).

The contemporary measure of QOWL is known as the Work-Related Quality of Life Scale (WRQLS) and was developed by Van Laar et al. (3). The exploratory and confirmatory factor analysis produced a good fit and reliable 23-item, six-factor measurement model of Work-Related Quality of Life (3). The subscales are namely the job and career satisfaction (JCS); general well-being (GWB); home-work interface (HWI); stress at work (SAW); control at work (CAW) and working conditions (WCS) (3). The JCS subscale describes how much an employee values its organisation, and it represents the

organisation abilities in polishing the employee's self-esteem, potential, and maintaining career opportunities (3). The GWB assesses employee's happiness, optimism, physical and mental wellness, which needed to be positively addressed in the context of prevention to avoid absenteeism and presenteeism (3). While, HWI reflects the organisational flexibility in maintaining their employee's work-life balance which centred around job rotation, working hours, parental leaves, and dependent care issues (3). Stress at work occurs when the level of pressure or demand of the employee's experience exceeded their ability to cope, which the SAW subscale evaluates (3). On the other hand, control at work (CAW) subscale reflects the employee's perception of their authority towards the work environment that link to the opportunity to contribute to the process of decision making that affects them (3). Working conditions (WCS) assesses the extent to which the employee is satisfied with the resources, working conditions and safety of the workplace for them to perform their tasks effectively (3). The WRQLS has been used to measure QOWL of healthcare workers in various settings (7-9).

Work context is an essential factor influencing QOWL among doctors. Studies found the type of specialty affects QOWL among resident doctors. For example, a higher level of QOWL was observed among Iranian paediatric residents and similarly, Thai residents who worked in the non-surgical departments than that of residents in the surgical departments (10, 11). There is a negative relationship between working hours and QOWL, which indicated dissatisfaction among healthcare workers related to heavy workloads (11-13). In Thailand, working hours of more than eighty hours per week were negatively associated with QOWL among the medical residents due to sleep deprivation, and heavy workloads (11). In addition, lack of support from employer, absent of work arrangement flexibility and poor relationship with superiors had a negative relationship with the general well-being of Belgian medical residents (14). It is also worthy to note that work experience and workloads have a significant role in job performance. It was found that junior radiologists and increased caseloads had a higher discrepancy rate than senior residents and lower caseloads (15). The relationships of socio-demographics with QOWL vary with contexts in different studies (7, 16-18). For example, the male surgeons in America were positively associated with QOWL as they had better autonomy at work than their female colleagues (7). Being single also predicted better QOWL as compared to those in relationships (7). However, Aldrees et al. found gender does not influence QOWL among the otolaryngologist residents (17). Factors such as marital status and physical illnesses were not found to be linked with QOWL (11, 19).

Depression is known to cause impaired work performance. Depression may be worsened by psychosocial work stressors such as insufficient social support from employer and poor job control (20). From the literature, depressed residents were six times more likely to cause medication errors than non-depressed residents, which could lead to compromised patient's care (21). A high workload and persistently being in emotional exhaustion state – that may lead to burnout are also significantly associated with medical errors (22). However, the relationship between depression and QOWL is still unclear and needed to be explored further.

In Malaysia, newly graduated doctors are required to undergo a two-year supervised clinical training, known as 'housemanship' at any credentialed government-funded hospitals. It is mandatory for HOs to have satisfactory supervisors and head of department's reports during their housemanship postings. This is to ensure doctors are competent to practice at healthcare facilities at the end of their housemanship training (23). There are six postings, and each rotation lasts for four months or longer if the HO does not achieve satisfactory performance. Approximately 1-5% of HO failed to get their full registration with the Malaysian Medical Council (MMC) every year (24). A number were prematurely terminated from their housemanship due to either medical or disciplinary issues (25). It is also observed, mental health-related problems are rising among young doctors, particularly among graduates from overseas who seem to unable to cope with work-related stress and it is recognised as an attribute of 'housemanship dropped out' (24, 25). Concerns have been raised on the increasing numbers of HOs were unable to complete their housemanship, and little is known about QOWL among HOs. With many medical graduates are produced yearly, we aimed to determine the QOWL and its associated factors such as work environment, socio-demography and presence of mental illness among HOs working at two busy hospitals in Selangor in order to provide baseline information about QOWL among HOs.

MATERIALS AND METHODS

Study design and setting
This was a cross-sectional study conducted between May 2019 and August 2019 at two tertiary government-funded hospitals in two central districts of Selangor. These two main districts, namely Gombak and Petaling, are densely populated by almost two million people in 2010 and approximately covered the area of 1000km2 in Selangor (26). Both hospitals mostly cater services to both urban and non-urban population surrounding the state of Selangor. These hospitals are equipped with 960 and 620 beds each, supported by the specialised clinical and non-clinical personnel, technical and administrative staffs and highly trained physicians. These hospitals are the centre of excellence for several specialties such as infectious diseases, trauma and burn unit, gastroenterology, hepatobiliary surgery. These hospitals are credentialed by the Ministry of Health

(MOH) to provide housemanship training in Malaysia.

Participants and sampling

The source of the study population was HO, who worked full time at both hospitals during the study period. HOs with a working experience of at least four weeks at the department they were working at during the study period were included. HOs from eight departments (i.e., Medicine, Surgery, Obstetrics and Gynecology, Paediatrics, Orthopedic, Emergency, Anesthesiology, and Psychiatry) were eligible to participate. These departments were chosen due to the compulsory training requirement of HO in Malaysia. Meanwhile, the exclusion criteria were: HOs who worked at health clinic posting; were on leave for more than four weeks (e.g., due to maternity leave or medical leaves); or who were prematurely terminated from service training and missing from work during the study period. The Human Resource Departments generated a list of HOs working at both hospitals, respectively. The generated lists, which consisted of 608 HOs, were screened for eligibility. 247 HOs were excluded due to various reasons, while 361 HOs were eligible to participate in the study (see Figure 1). The numbers of respondent to be recruited from each department were proportionally calculated to ensure similar representation from all departments (27). In the end, 263 HOs were recruited, while 260 HOs completed the questionnaire.
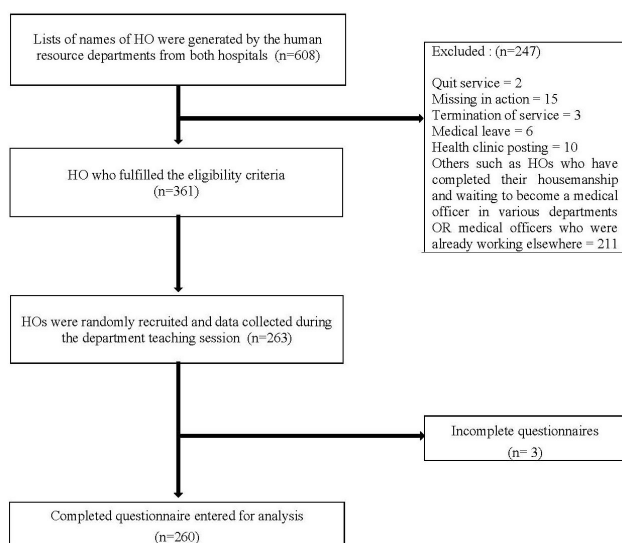
Figure 1:The flow of study and response rate

The sample size was determined using the single mean formula based on the main objective of this study. The required sample size based on the mean score of work-related quality of life (WRQOL) among the American surgical residents (3.3 ±1.11) by Zubair et al. (7) with 95% CI, 80% of the power with 0.05 significance level was 242.

Study variables

The dependent variable was the mean score of QOWL. The independent variables included the socio-

demography characteristics (i.e., age, gender, marital status, race, religion, university of undergraduate); physical illness; work environment characters (i.e., number of postings done, name of the current department, working experience as a house officer in the current department and working hours per month); and the psychosocial characteristics and depressive symptoms, (i.e., history of psychiatry illness and PHQ-9 score).

Study Instrument

The study instrument consisted of three parts. The first part was the socio-demographic, work environment and psychosocial characteristics of the respondents. The second part of the instrument was the Malay version of Work-Related Quality Of Life Scale-2 (M-WRQLS-2), which aimed to assess the quality of work-life in healthcare and office workers (28). The third part was the Malay version of Patient Health Questionnaire-9 (M-PHQ-9) used to screen for depressive symptoms (29).

The original WRQLS aimed to assess QOWL among employers in the United Kingdom (30). It consists of six subscales, namely the JCS, SAW, GWB, HWI, CAW, and WCS. The final item which does not belong to any subscale measures the perception of overall quality of working life. The average score of the final item may be used as an alternative to the overall mean score of WRQLS (30). The range of score for total WRQLS is 0 to100. While the M-WRQLS-2 was translated and validated by Sulaiman et al. among health care and office worker (28). It has 15 items with five subscales. The subscales are JCS as measured by three items (i.e. Q5, Q9, and Q11); the GWB as measured by four items (i.e. Q4, Q6, Q7, and Q10); the SAW subscale as measured by two items (i.e. Q3 and Q8); the HWI as measured by two items (i.e. Q1 and Q2), and the 'Employee Engagement' (EEN) subscale which is measured by three items (i.e. Q12, Q13 and Q14). Similarly, the final item (Q15) is an isolated item that does not belong to any of the subscales, and it assesses self-perception of the overall individual's quality working life (28). The psychometric properties of the M-WRQLS-2 found all fitness indices for the models met the required level of the construct validity, and the value of Cronbach-α for all items were > 0.7 (28).

Each item of the M-WRQLS-2 is scored based on a five point Likert scale. (1 = strongly disagree, 2 = disagree, 3 = neutral,4 = agree, 5 = strongly agree) (5). Two negatively phrased items (Q3 and Q8) were recoded, and the overall QOWL score and SAW subscale were calculated. The score for each subscale is the average of the items score; meanwhile, the overall score of the M-WRQLS-2 is the average of subscale scores, excluding the final item (Q15). (see Appendix 1). Hence, the scores for overall QOWL and each subscale range from 1 to 5. There is no known cut-off score for M-WRQLS-2, but the higher the overall score indicates better QOWL (28).

Depressive symptoms were assessed using the M-PHQ-9 due to its brevity and reliable psychometric properties in the primary care setting (29). It showed good concurrent and convergent validities when compared to the Composite International Diagnostic Interview (CIDI) and the General Health Questionnaire (GHQ-12), with good Cronbach's alpha (0.70) (31, 32). It composes of nine items with each item is scored based on a four-point Likert scale from 'Not At All' (0) to 'Nearly Every Day' (3), depending on the severity of symptoms. The range of score for M-PHQ-9 is between zero and 27. A cut off point of > 10 indicates depression, which is highly sensitive and specific (32).

Data collection

Stratified random sampling was employed in this study. Data collection was undertaken when the hospital directors agreed to allow HOs to participate. A pre-notification memo regarding the study was sent by the Clinical Research Centre of respective hospitals to all coordinators of house officer's in order to increase participation of HOs from all departments. A computerised simple randomisation procedure was done to select eligible respondents from each department. The respondents were approached during the department's house officers teaching session and invited to participate in the study. Interested respondents were given a sealed envelope containing the patient information leaflet, the self-administered questionnaire and a consent form. Consented respondents were briefed regarding the questionnaire, and their confidentiality was ensured. The completed questionnaire was either immediately returned to the researcher at the end of the teaching session or within two weeks of recruitment via a secure, labelled drop-off box, placed at each of department offices.

Statistical Analysis

Data were checked for completeness and redundancy before analysis. Only completed questionnaires were included in the analysis. Data analysis was done using the SPSS version 23.0 (IBM, Chicago, IL). Descriptive statistics summarised the respondent's characteristics with numerical variables and scale scores in mean and standard deviation, while the categorical variables in frequency, and percentage. Independent T-test was used to determine the difference of mean score by socio-demographic, work environment and psychosocial characteristics. In the simple linear regression model, factors with a p-value of < 0.25 were included in the multiple linear regression models to determine the predictors of QOWL (33). All independent variables were tested by stepwise, backward, and forward methods. To determine the predictors of QOWL, factors with a statistically significant level of p < 0.05 were retained in the final model of multiple linear regression. The model reasonably fits with all model assumptions were met, and there was no interaction and multicollinearity problem.

Ethical consideration

This research was reviewed and approved by the University Teknologi Mara (UiTM) Research Ethics Committee (600-IRMI (5/1/6)) (REC/251/18) 2017) and the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia (NMRR 18194742272). The data collection process was under the supervision of Clinical Research Centres and Hospital Directors. Any respondents identified depressed using the MPHQ-9, were referred to the staff clinic for further assessment and treatment if indicated.

RESULTS

Characteristics of respondents

A total of 263 house officers participated in the study. The response rate was 72.9%. Out of 263 respondents, three questionnaires were incomplete and excluded from the analysis. Only 260 questionnaires were included for analysis. The mean age of respondents was 26.59 ± 1.14 years and there were more females (n= 177, 68.1%), Muslims (n=173, 66.5%), Malays (n=172, 66.2%), married (n=169, 65%) and non-smokers (n=245, 94.2%) (see Table I). A majority did not have any medical illnesses (n=238, 91.5%). More than half of the respondents obtained their medical degree from local universities (n=139, 53.5%); were within their first year of training (n=142, 54.6%) and were working in the non-surgical specialties (n=138, 53.1% respectively). The mean overall working experience as a house officer was 12.83 ± 7.24 months, while the mean of overall working hours per month was 277.96 ± 43.98 hours. A third (n=79, 30.4%) were found to be depressed by the MPHQ 9 scale.

The work-related quality of life and its subscales

The mean overall score of QOWL was 3.05 ± 0.48 (95% CI: 2.99,3.11). Meanwhile, the mean score for each subscales were: JCS [3.27±0.67 (95% CI: 3.19,3.36)]; GWB [2.98±0.66 (95% CI: 2.89,3.06]; SAW [2.88±0.52 (95% CI:2.81,2.94)]; HWI [2.96±0.82 (95% CI: 2.86,3.06)] and the mean score for EEN was 3.16±0.79 (95% CI: 3.06,3.25). The overall self-perceived quality of work-life was 2.96 ± 0.87 (95% CI 2.86,3.07). Table II describes the mean score of overall QOWL and its subscales.

Table III shows the mean difference of overall QOWL, and its subscales score by socio-demographic, work environment and psychosocial factors. From the univariate analysis, age, gender, marital status, presence of history of psychiatry illnesses, MPHQ-9 score and site of housemanship training had a significant mean difference in overall QOWL. There was a significantly lower mean score for GWB subscale among respondents with a background history of psychiatry illnesses and identified depressed than those without any history of psychiatry illnesses or non-depressed (p < 0.005). There were significantly lower mean scores among the

Table 1: Characteristics of house officers

Characteristics	Frequency, (N=260) n	(%)	Mean	(±SD)
Age (years)			26.59	1.14
Gender:				
Male	83	31.9		
Female	177	68.1		
Race:				
Malay	172	66.2		
Non-Malay	88	33.8		
Religion:				
Muslim	173	66.5		
Non-Muslim	87	33.5		
Marital status:				
Single	91	35		
Married	169	65		
Hospital:				
Selayang	152	58.5		
Sungai Buloh	108	41.5		
University of undergraduate study				
Local	139	53.5		
Overseas	121	46.5		
Smoking status				
Non-smoker	245	94.2		
Smoker	15	5.8		
Presence of medical illness				
No	238	91.5		
Yes	22	8.5		
Presence of psychiatry illness				
No	249	95.8		
Yes	11	4.2		
Number of posting				
1-3	142	54.6		
4-6	118	45.4		
Specialties of posting				
Non-surgical specialties (Internal medicine,Pediatric, Anesthesiology,Psychiatry, Emergency Medicine)	138	53.1		
Surgical specialties (General surgery, Orthopedic ,Obstetric and Gynecology)	122	46.9		
PHQ-9 score (Total 27)				
Non-depressed (Score ≤10)	181	69.6		
Depressed (Score > 10)	79	30.4		
Overall score of PHQ-9				
Working experience in the current department (month)			7.79	5.22
Working hours per month in the current department (hours)			2.67	1.02
			277.96	43.98
Working experience as a house officer (months)			12.83	7.24

Table II: The mean score of overall QoWL and its subscales

Items	Mean (±SD)
Overall QoWL	3.05(0.48)
Subscale score	
Job and career satisfaction (JCS)	3.27(0.67)
General wellbeing (GWB)	2.98(0.66)
Stress at work (SAW)	2.88(0.52)
Home-work interface (HWI)	2.96(0.82)
Employer engagement (EEN)	3.16(0.79)

depressed than the non-depressed respondents in four subscales (i.e. JCS, GWB, HWI and EEN) (p ≤ 0.005). Males had a significantly higher mean score than females for JCS and EEN subscales (p=0.005 and p=0.045; for JCS and EEN respectively). House officers who were single had a significantly higher mean score for overall QOWL as compared to those who were married.

Predictors of the work-related quality of life

In this model, two predictors were inversely associated with overall QOWL among the respondents. These were the M-PHQ-9 score [β= -0.049,95% CI: -0.06, -0.04] and female gender [β=-0.129,95% CI: -0.24, -0.02]. While being female was shown to have a lower mean score of QOWL, a one-point increased in the M-PHQ-9 corresponds to 0.05 deficits in the M-WRQLS-2 scale. The R^2 value was 0.3, which denotes 30% of the associated factors contributed to the variability of the overall QOWL among house officers (Table IV).

DISCUSSION

Studies conducted on QOWL among house officers are still scarce. With huge challenges faced working as a doctor, newly graduated doctors are particularly at higher risk to achieve work-life balance and subsequently suffer a low quality of work-life. In Malaysia, housemanship training has undergone major changes with longer duration of training from only one year to two years with more posting or rotations, contract work basis employment, and shift work schedule since the past one decade. Changes were inevitable due to increasing concerns regarding their competency, stipulated to the lack of credentialed training hospitals with in-house consultants to train the increasing numbers of medical graduate produced each year (24). To our knowledge, this is the first study to investigate QOWL and its associated factors among house officers working at two tertiary hospitals in the Klang Valley using the M-WRQLS-2 questionnaire.

This study found the overall mean score of QOWL among the HOs was 3.05 ± 0.48. The score reflects near neutral or an average perception of QOWL by the HOs despite working at busy tertiary hospitals in Malaysia. Surprisingly, not many studies on QOWL among house officers or interns have been conducted globally but among the medical residents who worked at a university hospital in Northern Thailand, rated their QOWL as medium level (scores ranged from low, medium and high level using the Thai version of WRQLS2) with nearly a fifth of residents rated as good level (11). Meanwhile, the American surgical residents also rated their QOWL as near neutral with a score 3.3 ± 1.11 (7). The QOWL among our HOs and residents in Thailand and America are surprisingly similar despite differences in setting, level of working experience and health system. Nevertheless, HOs had an average QOWL which reflected the housemanship training was somewhat enriching and satisfying experience at both hospitals.

The range of scores for QOWL subscales in our study was from 2.88 (± 0.5) to 3.27 (± 0.67), with the highest rating was observed in the job satisfaction subscale (JCS) while the lowest mean score was for the stress

Table III: Mean difference of overall MWRQLS-2 and its subscales by demography, working environment and psychosocial characteristics (N=260)

Variable	JCS (Mean±SD)	p-value	SAW (Mean±SD)	p-value	EEN (Mean±SD)	p-value	GWB (Mean±SD)	p-value	HWI (Mean±SD)	p-value	Total QoWL (Mean±SD)	p-value
Gender												
Male	3.44(0.67)		2.89(0.49)		3.30(0.81)		3.09(0.65)		3.07(0.87)		3.16(0.46)	
Female	3.19(0.66)	0.005*	2.87(0.53)	0.662	3.09(0.78)	0.045*	2.93(0.66)	0.059	2.91(0.81)	0.134	2.99(0.49)	0.010*
Marital status												
Single	3.37(0.62)		2.88(0.57)		3.27(0.78)		3.07(0.67)		3.03(0.81)		3.12(0.48)	
Married	3.22(0.69)	0.086	2.87(0.49)	0.861	3.09(0.79)	0.100	2.93(0.66)	0.125	2.92(0.84)	0.296	3.01(0.48)	0.067*
Race												
Malay	3.29(0.65)		2.88(0.53)		3.19(0.78)		2.95(0.65)		2.98(0.82)		3.06(0.47)	
Non-malay	3.24(0.70)	0.598	2.86(0.49)	0.866	3.08(0.81)	0.279	3.03(0.69)	0.4	2.92(0.85)	0.534	3.03(0.5)	0.605
Religion												
Muslim	3.29(0.65)		2.88(0.53)		3.19(0.78)		2.96(0.65)		2.98(0.82)		3.06(0.47)	
Non-muslim	3.25(0.70)	0.682	2.88(0.50)	0.941	3.08(0.81)	0.289	3.03(0.69)	0.429	2.92(0.86)	0.582	3.03(0.51)	0.655
University of undergrad												
Local	3.29(0.68)		2.89(0.49)		3.16(0.83)		3.05(0.65)		3.01(0.90)		3.08(0.51)	
Overseas	3.25(0.66)	0.615	2.86(0.59)	0.102	3.16(0.74)	0.990	2.89(0.68)	0.053	2.91(0.74)	0.316	3.01(0.45)	0.274
Past medical history												
No	3.27(0.67)		2.90(0.52)		3.15(0.80)		2.97(0.66)		2.97(0.84)		3.05(0.48)	
Yes	3.30(0.69)	0.827	2.66(0.47)	0.040*	3.26(0.71)	0.536	3.09(0.74)	0.413	2.84(0.75)	0.484	3.03(0.51)	0.847
Past psychiatry history												
No	3.31(0.65)		2.89(0.51)		3.18(0.79)		3.01(0.65)		2.99(0.82)		3.08(0.47)	
Yes	2.55(0.79)	<0.005*	2.36(0.81)	0.014*	2.67(0.63)	0.035*	2.20(0.40)	<0.005*	2.36(0.81)	0.015*	2.46(0.43)	<0.005*
PHQ-9 outcome												
Non-depressed	3.41(0.57)		2.89(0.43)		3.31(0.72)		3.15(0.58)		3.09(0.78)		3.17(0.41)	
Depressed	2.96(0.76)	<0.005*	2.85(0.69)	0.623	2.81(0.84)	<0.005*	2.59(0.69)	<0.005*	2.66(0.88)	<0.005*	2.77(0.52)	<0.005*
Number of posting												
1-3	3.27(0.69)		2.92(0.52)		3.17(0.86)		2.98(0.69)		2.92(0.85)		3.05(0.49)	
4-6	3.27(0.65)	0.934	2.83(0.52)	0.190	3.14(0.79)	0.800	2.98(0.64)	0.980	3.00(0.80)	0.430	3.04(0.47)	0.949
Specialties of housemanship posting												
Non-surgical	3.29(0.69)		2.86(0.49)		3.25(0.74)		2.98(0.65)		2.91(0.84)		3.06(0.48)	
Surgical	3.25(0.65)	0.623	2.89(0.55)	0.631	3.06(0.83)	0.054	2.98(0.68)	0.968	3.01(0.81)	0.337	3.04(0.49)	0.749
Hospital												
Selayang	3.30(0.66)		2.90(0.41)		3.17(0.8)		3.11(0.64)		3.01(0.8)		3.1(0.47)	
Sungai Buloh	3.23(0.68)	0.398	2.83(0.65)	0.346	3.14(0.71)	0.707	2.79(0.66)	<0.005*	2.88(0.86)	0.218	2.98(0.49)	0.042*

All comparisons between WRQLS-2 scores and demography, working environment and psychosocial characteristics were tested by independent T-test. *p*-value < 0.05* is significant

Table IV:. Final regression analysis model predicting factors of quality of work-life among house officers.

Variables		B (95% CI)	p-value	R²
Gender	Female	-0.129(-0.24, -0.02)	0.017	0.304
PHQ-9 total score		-0.049(-0.06, -0.04)	<0.001	

Note: Multiple Linear Regression using stepwise method (R²=0.322). The model reasonably fits well. Model assumptions are met. There is no interaction between independent variables and absent of multicollinearity problem.
CI = confidence interval.

at work (SAW) subscale. This indicated that the HOs were somewhat average to satisfied with their job, and revealed near average or neutral on work-related pressure and stress at workplace. Medical residents in Thailand rated JCS subscale at a good level while the SAW subscale as average to low (11). Similar to our study, the score of QOWL subscales ranged from 2.39 (± 0.94) to 3.77 (± 0.67) among the American surgical residents, with JCS subscale was the highest while the (SAW) subscale was the lowest (7). It was suggested that even though the residents in the surgical based specialties often encountered high-stress level at workplace, they are nonetheless satisfied with their work (7, 11). Our respondents, had 69 hours per week as an average working-hour, which was higher than the recommended working hours for house officers in Malaysia, which could explain the stress level among house officers at both hospitals. In addition, poor

work-life balance, annoying non-clinical personnel, and medico-legal threats were identified as common stressors at workplace among HOs in northern Malaysia. (34). Meanwhile the GWB, EEN and HWI subscales were rated as near average by the HOs. Hence, efforts to improve all dimensions of QOWL is warranted for HOs working at tertiary hospitals.

Globally, the prevalence of depression among medical residents ranged from 20.9% to 43.2% (35, 36) and a third of our HOs were found to be depressed by the M-PHQ-9. Our study also found depression was negatively associated with the overall QOWL. Furthermore, depressed HOs had a significantly lower score in four M-WRQLS-2 subscales (JCS, GWB, HWI and EEN) than the non-depressed HOs. The presence of depression among medical residents had been linked to negative and mediocre work performance, presenteeism, absenteeism, long term morbidity and other vulnerable work outcomes such as medication errors (21, 37). In addition, the thought of quitting the housemanship training prematurely was found to be associated with depression among HOs in Sabah (38). Efforts to identify workplace risk factors, providing a workplace culture that is conducive to employee's health and well-being, presence of work flexibilities to meet daily life needs by

the employers and early detection and treatment may alleviate employees who are distress (39).

We found HOs who worked at Hospital Selayang had significantly higher overall QOWL and GWB subscale score than HOs who worked at Hospital Sungai Buloh. However, the scores were somewhat average (i.e. 3.10 vs. 2.98 for overall QOWL among HOs at Hospital Selayang and Hospital Sungai Buloh respectively; and 3.11 vs. 2.78 for GWB subscale among HOs at Hospital Selayang and Hospital Sungai Buloh respectively). Understandably, both hospitals are referral centres in Malaysia for various medical fields such as hepatology for Hospital Selayang and neurosurgery for Hospital Sungai Buloh. Hence high workload is a norm at these hospitals, and evidently, the workload was found to be inversely related to QOWL among doctors (17). High burden workload, fatigue, and burnout are also associated with performance pressure (40) which could result in dissatisfactions with one's quality of work-life (41, 42).

Our study found female HOs had significantly lower mean subscale scores in the job and career satisfaction and employer engagement domains, as well as significantly lower total QOWL, mean score, compared to their male counterparts. This finding is consistent with other studies which were conducted among the American surgical residents, Bangladeshi and Australian doctors. (7, 16, 18). The effect of gender on QOWL may be explained by the fact of females having lesser autonomy at work as compared to their male colleagues (7, 16). The role of 'congruity theory' by Eagly et al. stated the presence of prejudices towards female leadership in whereby favouritism and positive attitude biases towards the male leadership (43). As such, females tend to be judged as having less leadership (43). Hence female residents tend to have lower QOWL in relation to the loss of their control at work Raising a family while enduring the demanding work commitments in a family-unfriendly working hours may result in family work-life imbalance and less job satisfaction among the female house officers (16, 44).

The strength of this study lies in the good response and completion rate. Perhaps the pre-notification memo regarding the study that was sent by the Clinical Research Centre of respective hospitals to all coordinators of house officer's was likely the reason for them to be aware and engaged in this study. Nonetheless, this study has few limitations. Firstly, the sampling bias in which HOs who were missing during the study period due to either maternal confinement, sick leaves, disciplinary action, quitted their housemanship training prematurely or other possibilities related to both personal and work reasons were excluded from this study. Secondly, other potential influencing factors of QOWL such as bully and violence at the workplace, resilience and coping mechanisms among house officers, support from

employers were not studied. Future studies to study these factors are recommended. The generalisation of the findings also need to be done with caution as only house officers at two tertiary hospitals were included.

Few recommendations to improve the quality of working life among doctors include implementing mental health promotion (MHP) at the workplace by enhancing protective factors against mental illnesses and identification of risk factors as recommended by The European Agency for Safety and Health at Work (EU-OSHA) (39). Hence, by adopting the concept of MHP, such as improving relationships between HOs and their superiors and eliminating stress factors such as prolonged working hours may help to improve QOWL among HOs. Furthermore, an effective coping mechanism, i.e. "adaptive coping mechanism,"(accepting, strategising and planning through their stressors) module, especially for females, may be introduced during the introductory week or pre-housemanship course which was found to be effective (45).

CONCLUSION

This study found house officers working at tertiary hospitals in Selangor perceived their quality of work-life as average. House officers had average to good job satisfaction, employer engagement, general well-being, home-work interface and stress at work which require planned reform in many areas of QOWL. Being female and having a higher PHQ-9 score were found to be associated with lower QOWL. Early interventions targeted at female and house officers with depressive symptoms are warranted. This study provides baseline information in understanding the quality of work-life of house officers, particularly in Selangor, Malaysia and further researches and strategies aiming to enhance the quality of working life and subsequently commitment and performance of house officers during housemanship are vital.

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