

# Job Satisfaction of Doctors as a Foundation for Quality Healthcare in Northeastern Malaysia

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## ABSTRACT

Medical doctors play a vital role in primary healthcare. Understanding their job satisfaction is crucial for improving engagement, dedication, and quality of care. This study investigated job satisfaction and its associated factors among medical doctors in primary healthcare in Terengganu. A cross sectional study was conducted in eight district health offices and the state health department of Terengganu from December 2023 to February 2024. Using proportionate stratified random sampling, 200 participants were selected. The Malay version of the Psychosocial Aspect of Work Questionnaire, PAW M, consisting of 15 items measuring job satisfaction, social support, and mental stress, was applied. Data were analyzed using SPSS version 27 with linear regression to identify factors associated with job satisfaction. Results showed the mean job satisfaction score was 26.41 with a standard deviation of 4.7. Participants had a mean age of 35.45 years with a standard deviation of 4.80, a mean social support score of 16.67 with a standard deviation of 2.32, and a mean mental stress score of 17.29 with a standard deviation of 2.07. Satisfaction with income, permanent employment status, and social support were significantly associated with job satisfaction. In conclusion, enhancing income satisfaction, employment stability, and social support can improve job satisfaction among doctors, thereby strengthening the quality of healthcare services

**Keywords:** *Job Satisfaction, Medical Doctors, Primary Healthcare*

## INTRODUCTION

Job satisfaction is defined as a positive emotional state resulting from the appraisal of one's work experiences and the extent to which these experiences meet personal expectations and aspirations (Locke, 1970). In healthcare, job satisfaction is a critical determinant of both professional well-being and system performance, as it influences quality of life, mental health, clinical effectiveness, and organizational stability (Montuori et al., 2022; Liu et al., 2023). Within Malaysia, primary healthcare (PHC) is delivered by Medical and Health Officers (M&HOs), who carry responsibilities extending beyond direct patient care to include planning, implementing, and evaluating community health programs. Their satisfaction and well-being are therefore pivotal for sustaining service delivery and ensuring equitable access to healthcare (Kementerian Kesihatan Malaysia, 2015).

Determinants of job satisfaction among doctors are diverse, spanning sociodemographic, occupational, and lifestyle-related domains. Age has been associated with greater satisfaction due to professional maturity, stability, and refined coping mechanisms (Daud et al., 2022), yet in some contexts, older doctors report lower satisfaction, possibly linked to declining optimism or evolving job expectations (Abdullahi et al., 2023). Gender-related findings remain inconsistent; while some evidence suggests female doctors report higher

satisfaction due to differing social expectations and roles (Miao et al., 2017), other studies have found no significant gender-based differences (Daud et al., 2022). Marital status appears to exert a protective effect, with married doctors benefiting from emotional support and improved work–life balance (Chew et al., 2013).

Lifestyle-related aspects are increasingly recognized as important influences on doctors' job satisfaction. For instance, higher body mass index (BMI) has been linked to health concerns, weight-related discrimination, and lower perceived well-being, thereby contributing to reduced satisfaction (Jacobsen et al., 2022; Keramat et al., 2020). Sleep quality is another critical factor, as insufficient rest undermines cognitive functioning, heightens stress, and predisposes to burnout, whereas adequate sleep supports resilience and engagement at work (Gates et al., 2018). The ability to integrate professional duties with personal life and family roles also strongly affects satisfaction, reflecting the broader lifestyle challenges faced by physicians who often work long and irregular hours.

Occupational and organizational factors further shape satisfaction. Permanent employment is consistently associated with greater job security and satisfaction compared to contractual positions (Deshmukh et al., 2023). Income and financial stability play a significant role, with higher earnings linked to reduced stress and greater motivation (Zhang et al., 2020). Conversely, long working hours and administrative burdens contribute to dissatisfaction, fatigue, and eventual burnout (Lu et al., 2017). Social support from colleagues and supervisors enhances satisfaction by fostering collaboration and reducing isolation, while poor workplace relationships are detrimental (Ge et al., 2011). Cultural influences also matter; in Malaysia, Malay doctors have been reported to experience higher satisfaction, possibly due to cultural norms aligning with authority and patient expectations (Ab Rahman et al., 2019).

The implications of job satisfaction are substantial for healthcare systems. Satisfied doctors are more engaged, maintain better patient relationships, demonstrate safer clinical practices, and are less likely to leave their positions (Chew et al., 2013). Conversely, low satisfaction diminishes motivation, increases turnover, and imposes significant costs on healthcare organizations in replacing experienced clinicians (Tong et al., 2018). Dissatisfaction is also linked to stress, burnout, and long-term health consequences for doctors themselves (Harun et al., 2022). In Malaysia, where the doctor-to-population ratio remains at 1:420, short of the Ministry of Health's 2030 target of 1:330 (Azmi et al., 2022), physician resignation and workforce attrition due to dissatisfaction represent pressing concerns.

Despite its importance, research on doctors' job satisfaction in Malaysia, particularly among those in PHC, remains limited. This study aims to address this gap by examining job satisfaction and its associated determinants, with a particular emphasis on lifestyle and occupational factors, among doctors working in PHC settings in Terengganu, Malaysia.

#### Research objectives and study rationale

The objective of this study is to evaluate job satisfaction levels and their associated determinants among medical doctors in primary healthcare (PHC) facilities in Terengganu, a northeastern state in Peninsular Malaysia. Job satisfaction is a critical predictor of workforce stability, clinical performance, and the quality of healthcare delivery (Chew et al., 2013). However, there remains a paucity of localized evidence addressing the specific experiences of medical doctors in Malaysia's PHC sector, particularly within the northeastern region, where health system challenges and resource constraints may differ from other states.

This study is designed to address this knowledge gap by examining both occupational and lifestyle-related factors that shape doctors' job satisfaction. Lifestyle aspects such as body mass index (BMI), sleep quality, stress management, and social support are increasingly recognized as significant influences on physician well-being and work engagement. These factors, combined with working characteristics such as employment status, workload, and tenure, provide a more holistic understanding of the determinants of job satisfaction.

By identifying how lifestyle and occupational factors interact to affect job satisfaction, the study aims to generate evidence that can guide targeted interventions, workplace wellness strategies, and policy reforms. Such insights are essential for improving job satisfaction, enhancing workforce retention, and strengthening the resilience of the healthcare system. Ultimately, this research contributes to safeguarding physician well-being while advancing healthcare system efficiency, patient care quality, and broader public health outcomes in Malaysia..

## METHODS

### Study Design and Populations

A cross-sectional study was conducted among medical doctors working in primary healthcare (PHC) facilities across Terengganu, Malaysia, between January 1 and June 30, 2024. The study involved eight district health offices and the state health department, encompassing a total population of 477 medical doctors. Eligible participants included doctors who were actively employed during the study period and had at least three months of service experience, while non-Malaysian medical doctors were excluded.

### Study Tools

The study instrument comprised two sections. Section A consisted of a proforma capturing participants' sociodemographic and occupational background. Section B utilized the Malay version of the Psychosocial Aspect of Work Questionnaire (PAW-M), a validated tool containing 15 items that assess three domains: job satisfaction (7 items), social support (4 items), and work-related mental stress (4 items) (Yew et al., 2017). Each item was rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Domain scores were calculated separately, with possible ranges of 7–35 for job satisfaction, 4–20 for social support, and 4–20 for mental stress. In this study, job satisfaction was treated as the dependent variable, while social support and mental stress served as independent variables. A higher score on the job satisfaction domain indicated greater satisfaction with work. The questionnaire was self-administered, and completion time was approximately 10 minutes.

### Sample and Sampling Technique

The mean job satisfaction score among medical doctors in Terengganu was estimated using a single mean formula. The study power was set at 80%, with  $Z_{\alpha} = 1.96$ ,  $d = 1.0$ , and a standard deviation (SD) of 5.42 derived from Yew et al. (2017). Based on these parameters, a minimum sample size of 140 participants was required.

For the analysis of factors associated with job satisfaction, the sample size was calculated using two approaches. First, G\*Power software was applied for Multiple Linear Regression: Fixed Model,  $R^2$  deviation from zero. Using a medium effect size (0.15), a 5% type I error, 80% power, and 18 independent variables, the required sample size was 150. Allowing for a 10% non-response rate increased the number to 166. Second, the rule of thumb ( $n = 10 \times$  number of variables) was applied, yielding a requirement of 180 participants. After adding a 10% non-response allowance, the sample size was 200. Thus, the final target sample size was set at 200, which was sufficient to address all study objectives.

A proportionate stratified random sampling method was employed. The sampling proportion was calculated using the formula:  $(\text{Estimated sample} \div \text{Total N}) \times \text{Number of medical doctors in each district health office and the state health department}$ . Out of 477 medical doctors in Terengganu, the required samples were distributed as follows: Marang

(25), Kemaman (32), Dungun (26), Kuala Terengganu (30), Kuala Nerus (22), Hulu Terengganu (13), Setiu (11), Besut (29), and the state health department (12). Proportionate stratified random sampling was then applied to select participants from health clinics within each district.

Permission and cooperation were obtained from district health officers and the officer in charge of the state health department. With their assistance, selected medical doctors were contacted personally through WhatsApp and provided with detailed information regarding the study objectives and procedures. Participants were given sufficient time to review the information sheet and consent form, and were encouraged to contact the investigators with any questions. Those who provided informed consent subsequently proceeded to complete the self-administered questionnaire.

### Data collection

Data were collected using the study instrument distributed via Google Forms. To ensure confidentiality, no personal identifiers were included, and participants were not required to sign in to an account. Each respondent was invited to complete the self-administered questionnaire, which required approximately 10 minutes. The data collection period lasted for one month from the date the link was disseminated, after which the form was disabled to prevent further responses. Access to the Google Form was restricted solely to the research team. Upon completion of the collection period, all responses were exported and recorded in a secure offline database, after which the data stored on Google Forms were permanently deleted.

### Statistical Analysis

Data were entered and analyzed using IBM SPSS version 27.0. Following data entry, cleaning and validation procedures were performed to detect missing values or errors. Questionnaires with missing values were to be excluded; however, no missing data were encountered, and all responses were retained for analysis. Descriptive statistics were used to summarize participants' sociodemographic characteristics. Continuous variables were presented as mean (SD) or median (IQR), while categorical variables were expressed as frequency (percentage). The job satisfaction score was derived from seven items in the instrument (Q1, Q2, Q4, Q7, Q10, Q12, Q14) and expressed as mean (SD) and total score. Social support (Q3, Q5, Q8, Q15) and mental stress (Q6, Q9, Q11, Q13) were analyzed as independent variables.

Simple linear regression was initially applied to examine the relationship between independent variables and job satisfaction. Variables with  $p$ -values  $< 0.25$  were subsequently entered into multiple linear regression to avoid exclusion of potentially relevant predictors. Assumptions of linear regression were assessed before analysis: linearity was evaluated using scatter plots, normality of residuals was verified through histograms and Q-Q plots, and homoscedasticity was checked with residual-versus-predicted value scatter plots.

In the multiple regression analysis, assumptions were reassessed to ensure model validity. Multicollinearity was examined using the Variance Inflation Factor (VIF) values, all of which were within acceptable limits, indicating no significant collinearity. No interaction effects were detected between significant predictors. The final model was reported with adjusted regression coefficients ( $\beta$ ), 95% confidence intervals (CI), and  $p$ -values. Statistical significance was set at  $p < 0.05$ .

### Ethical Consideration

Ethical approval for this study was obtained from the Universiti Sains Malaysia Human Research Ethics Committee (Reference: USM/JEPeM/KK/23110872) and the National Medical Research Registry (Reference: NMRR ID-23-03426-SGP[IIR]). Data confidentiality was strictly upheld, with access restricted exclusively to the research team. No personal identifiers were collected, and respondents' anonymity was preserved throughout reporting and publication. The authors declare no conflicts of interest related to this study

## RESULTS

### Socio-Demographic And Work Characteristics Of Participants

This study enrolled 200 medical doctors, achieving a 100% response rate. The mean (SD) age of participants was 35.45 (4.80) years. The majority were female (81.0%) and of Malay ethnicity (97.5%). Most respondents were married (88.0%), with mean (SD) of children of 2.13 (1.63). On average, participants reported mean (SD) of 5.97 (0.99) hours of sleep per day. Nearly all were non-smokers (97.0%). In terms of health status, 65.5% were classified as overweight or obese based on BMI, and 16.5% reported having comorbidities. A summary of participants' sociodemographic characteristics is presented in Table 1.

Sociodemographic of the participants (n=200)

Variables	n (%)	Mean (SD)
Age (years)		35.45 (4.80)
Gender		
Male	38 (19.0)	
Female Table 1	162 (81.0)	
Ethnicity		
Malay	195 (97.5)	
Non-Malay	5 (2.5)	
Marital Status		
Unmarried	24 (12.0)	
Married	176 (88.0)	
Number of children		2.13 (1.63)
Duration of sleep		5.97 (0.99)
Smoking		
No	194 (97.0)	
Yes	6 (3.0)	
BMI (kg/m <sup>2</sup> )		
<25	69 (34.5)	
≥25	131 (65.5)	
Comorbidities		
No	167 (83.5)	
Yes	33 (16.5)	

The majority of the participants worked less than 10 years (71.0%), and majority had an income range between RM5250 - RM11819 (83.0%). A total of 56% of participants reported dissatisfaction with their monthly income, while 44.0% expressed satisfaction. The majority were employed on a permanent basis (87.5%), with 78.0% engaged in clinical duties and 74.5% involved in on-call responsibilities. Table 2 provides a summary of the participants' working characteristics.

**Table 2** Working Characteristics of the Participants (n=200)

Variables	n (%)
Duration of working	
<10 years	142 (71.0)
≥10 years	58 (29.0)
Income per month (RM)	
<RM5250	19 (9.5)
RM5250 - RM11819	166 (83.0)
>RM11820	15 (7.5)
Satisfaction of income	
No	112 (56.0)
Yes	88 (44.0)
Employment status	
Permanent	175 (87.5)
Contract	25 (12.5)
Type of work	
Non-clinical	44(22.0)
Clinical	156 (78.0)
Extended hours	
Not Oncall	51 (25.5)
Oncall	149 (74.5)

The mean job satisfaction score among participants was 26.41 (4.7), while the mean scores for social support and mental stress were 16.67 (2.32) and 17.29 (2.07), respectively, as presented in Table 3.

**Table 3** The Job Satisfaction, Social Support and Mental Stress of the Participants (n=200)

Variables	Mean (SD)
Job Satisfaction	26.41 (4.7)
Social Support	16.67 (2.32)
Mental Stress	17.29 (2.07)

All sociodemographic characteristics, work-related factors, social support, and mental stress were systematically analyzed to determine their association with job satisfaction. The analysis demonstrated significant linear relationships between job satisfaction and age ( $p<0.001$ ), number of children ( $p<0.001$ ), duration of working ( $p<0.001$ ), monthly income  $\geq$  RM10,960 ( $p=0.003$ ), satisfaction of income ( $p=0.041$ ), employment status ( $p=0.041$ ), BMI ( $p=0.023$ ), and social support ( $p<0.001$ ). No significant associations were observed for gender, ethnicity, marital status, monthly income within the RM5,250–11,819 range, type of work, extended hours (on-call), average sleep duration, smoking status, comorbidities, or mental stress. Nevertheless, all variables with statistical significance ( $p<0.25$ ), as well as those deemed clinically relevant in the Simple Linear Regression (SLR), were included in the Multiple Linear Regression (MLR) analysis. The summarized findings are presented in Table 4.

**Table 4:** Associated factors of job satisfaction among medical doctors in Terengganu using Simple Linear Regression Analysis (n=200)

Variables	$\beta$	95% CI	p-value*
Age (years)	0.272	0.139, 0.405	<0.001
Gender			
Female	1		
Male	1.086	-0.598, 2.769	0.205
Ethnicity			

Non-Malay	1		
Malay	2.472	-1.762, 6.705	0.251
Marital Status			
Unmarried	1		
Married	0.987	-1.049, 3.023	0.304
Number of children	0.722	0.328, 1.117	<0.001
Duration of working (years)			
<10 years	1		
≥10 years	2.555	1.138, 3.972	<0.001
Income per month (RM)			
<RM5250	1		
5250 to 11819	-0.038	-1.803, 1.728	0.967
≥11820	3.809	1.348, 6.270	0.003
Satisfaction of income			
No	1		
Yes	1.378	0.056, 2.700	0.041
Employment status			
Contract	1		
Permanent	2.069	0.084, 4.053	0.041
Type of work			
Clinical	1		
Non-Clinical	1.368	-0.221, 2.958	0.091

**Table 4:** Continue

Variables	β	95% CI	p-value*
Extended hours			
On-call	1		
Not On-call	0.660	-0.858, 2.179	0.392
Average sleep hours per day	0.601	-0.068, 1.269	0.078
Smoking			
No	1		
Yes	0.952	-2.933, 4.837	0.630
BMI (kg/m <sup>2</sup> )			
<23	1		
≥23	1.600	0.223, 2.976	0.023
Comorbidities			
No	1		
Yes	0.453	-1.333, 2.238	0.618
Social Support	1.193	0.960, 1.425	<0.001
Mental Stress	0.019	-0.303, 0.341	0.907

\*Simple linear regression

Multiple linear regression (MLR) analysis was conducted to examine predictors of job satisfaction, incorporating sociodemographic variables, work characteristics, lifestyle factors, health status, social support, and mental stress. A stepwise MLR model including fourteen factors was applied to identify significant determinants. As presented in Table 5, the analysis revealed that income satisfaction, employment status, and social support were significantly associated with job satisfaction. The overall regression model was statistically significant ( $F(3,196) = 40.161, p < 0.001$ ) and explained 38.0% of the variance in job satisfaction, with an  $R^2$  of 0.381 and an adjusted  $R^2$  of 0.371.

**Table 5** Associated factors for Job Satisfaction among medical doctors in Terengganu using Simple Linear Regression and Multiple Linear Regression (n=200)

Variables	Mean (SD)	Simple Linear Regression		Multiple Linear Regression	
		Crude ba (95% CI)	P-value	Adj. bb (95% CI)	P-value
Age (years)	35.45 (4.80)	0.272 (0.139,0.405)	<0.001		
Gender					
Female		1			
Male		1.086 (-0.598,2.769)	0.205		
Ethnicity					
Non-Malay		1			
Malay		2.472 (-1.762,6.705)	0.251		
Marital Status					
Unmarried		1			
Married		0.987 (-1.049,3.023)	0.304		
Number of children	2.13 (1.63)	0.722 (0.328,1.117)	<0.001		

**Table 5: Continue**

Variables	Mean (SD)	Simple Linear Regression		Multiple Linear Regression	
		Crude ba (95% CI)	P-value	Adj. bb (95% CI)	P-value
Duration of working (years)					
<10 years		1			
≥10 years		2.555 (1.138,3.972)	<0.001		
Income per month (RM)					
<RM5250		1			
5250-11819		-0.038 (-0.11819, 0.04219)	0.967		

		1.803,1.728)			
≥11820		3.809	0.00		
		(1.348,6.270)	3		
Satisfaction of income					
No		1			
Yes		1.378	0.04	1.218	0.03
		(0.056, 2.700)	1	(0.118, 2.317)	0
Employment status					
Contract		1			
Permanent		2.069	0.04	1.754	0.03
		(0.084, 4.053)	1	(0.104, 3.403)	7
Type of work					
Clinical		1			
Non-clinical		1.368	0.09		
		(-0.221, 2.958)	1		
Extended hours					
On call		1			
Not On call		0.660	0.39		
		(-0.858, 2.179)	2		
Average sleep hours per day	5.9	0.601	0.07		
	7	(-0.068, 1.269)	8		
	(0.99)				
Smoking					
No		1			
Yes		0.952	0.63		
		(-2.933, 4.837)	0		
BMI (kg/m <sup>2</sup> )					
<23		1			
≥23		1.600	0.02		
		(0.223, 2.976)	3		
Comorbidities					
No		1			
Yes		0.453	0.61		
		(-1.333, 2.238)	8		
Social Support	16.67	1.193	<0.001	1.206	<0.001
	(2.32)	(0.960, 1.425)	01	(0.979, 1.432)	001
Mental Stress	17.	0.019	0.90		

29 (-0.303, 7  
(2. 0.341)  
07)

<sup>a</sup> Crude regression coefficient <sup>b</sup> Adjusted regression coefficient, Model fitness, R<sup>2</sup>= 38.0%, The linear regression model demonstrates a good fit, as it satisfies the assumption of multiple linear regression. No independent variable interactions and no multicollinearity are present in the model.

This study examined factors influencing job satisfaction among medical doctors in PHC in Terengganu, and the results can be summarized as follows:

- i. Doctors who were satisfied with their income reported job satisfaction scores that were 1.218 units higher (95% CI: 0.118, 2.317), after controlling for other variables.
- ii. Permanent doctors demonstrated job satisfaction scores that were 1.754 units higher (95% CI: 0.104, 3.403), compared with their contract counterparts, when other variables were controlled.
- iii. Doctors who had a one-unit increase in social support showed job satisfaction score that was 1.206 units (95% CI 0.979, 1.432) higher when other variables were controlled.

## DISCUSSION

This study examined job satisfaction and its associated factors among medical doctors in PHC settings in Terengganu, Malaysia. The demographic profile of participants, with a mean age of 35.45 years, indicates a relatively young workforce compared to similar studies conducted in Malaysia and internationally (Ab Rahman et al., 2019; Azmi et al., 2022). The predominance of female doctors (81%) reflects the feminization of the medical workforce, consistent with evidence that women increasingly prefer PHC due to its perceived compatibility with family and work–life balance (Chew et al., 2013). The majority of respondents were Malay (97.5%), married (88%), and had children, which highlights the role of family structure as a stabilizing factor. Emotional and familial support is often protective against work-related stress and burnout, aligning with previous research that links marital and social support to improved job satisfaction (Chew et al., 2013).

The study also highlights important lifestyle characteristics of doctors that are seldom emphasized in job satisfaction research. On average, doctors reported only 5.97 hours of sleep per day, far below the recommended seven to eight hours. Sleep deprivation is known to impair cognitive function, elevate stress, and contribute to burnout, thereby indirectly reducing job satisfaction (Gates et al., 2018). Furthermore, a large proportion of participants (65.5%) were overweight or obese, which is higher than the prevalence reported in previous local studies among healthcare workers (Pei et al., 2020). This pattern may reflect sedentary work practices, limited opportunities for exercise, and irregular dietary habits shaped by demanding schedules. Overweight and obesity have been associated with reduced self-perceived well-being, increased risk of chronic illness, and workplace dissatisfaction (Jacobsen et al., 2022; Keramat et al., 2020). The presence of comorbidities in 16.5% of respondents further illustrates the double burden of providing patient care while managing their own health challenges. Interestingly, the prevalence of smoking among respondents (3%) was much lower than global estimates among physicians (Besson et al., 2021), suggesting that while doctors may avoid certain high-risk behaviors, occupational and lifestyle stressors continue to manifest in other health risks.

The mean job satisfaction score of 26.41 (4.7) in this study is comparable to results from studies employing the same instrument (Burton et al., 1997). Studies on doctors' job satisfaction show wide variation, largely due to differences in tools and methods used. In

Switzerland, primary care doctors had a mean satisfaction score of 6.16 on the Warr-Cook-Wall scale, with the highest satisfaction for “freedom of working method” and the lowest for “hours of work” and “income” (Goetz et al., 2016). In Norway, scores on the Job Satisfaction Scale declined from 5.52 in 2010 to 5.30 in 2017, though satisfaction remained relatively high (Rosta et al., 2019). In China, one study found an average score of 3.26 (Zhang et al., 2020), while another using the Minnesota Satisfaction Questionnaire showed only 35.2% of doctors were satisfied (Liu et al., 2019). In India, satisfaction was even lower, with only 20% of healthcare providers satisfied (Deshmukh et al., 2023). In Malaysia, results are mixed: one study reported a mean score of 71.2 (13.3) among PHC doctors (Chew et al., 2013), and the QUALICOPC study showed higher satisfaction than in many European countries despite heavier workloads (Ab Rahman et al., 2019). However, a recent study in northeastern Malaysia found that 35.7% of PHC practitioners were dissatisfied, mainly due to poor working conditions and benefits (Azmi et al., 2022).

This study identified three significant predictors of job satisfaction: employment status, income satisfaction, and social support. Employment status strongly influenced satisfaction, with permanent doctors reporting higher scores compared to those on contract particularly due to greater job security, benefits, and career advancement opportunities (Deshmukh et al., 2023; Kumar et al., 2014). Compared to permanent roles, contract-based positions are often associated with uncertainty, fewer entitlements, and limited career prospects, which can increase stress and dissatisfaction (Seathu Raman et al., 2024). In this study, 87.5% of participants were permanent staff, while 12.5% were on contract. The Ministry of Health Malaysia introduced the contract system in 2016 for new medical graduates, providing a five-year pathway to complete mandatory service before consideration for permanent appointment. However, contract doctors face disadvantages in salary, leave entitlements, and career progression, which has contributed to increasing resignation rates between 2017 and 2023, placing additional strain on the healthcare system (Su-Lyn, 2024). Organizational stability and supportive workplace practices further strengthen the positive impact of permanent employment on satisfaction, as they promote retention and reduce turnover (Cantarelli et al., 2023). Permanent doctors are more likely to demonstrate loyalty and long-term commitment, which enhances continuity of care and overall health system performance, while contract doctors may prioritize career mobility due to limited opportunities (Seathu Raman et al., 2024). Evidence from China similarly shows that employment status, workload, and financial stability directly influence job satisfaction and turnover intentions (Lu et al., 2017). The present study therefore reinforces that permanent medical doctors report greater satisfaction compared to their contract counterparts.

In this study, income satisfaction was identified as a significant predictor of overall job satisfaction. It reflects doctors’ perceptions of financial security and the adequacy of remuneration in relation to their professional effort and responsibilities (Derbel et al., 2017). Previous research consistently shows that higher income levels are strongly associated with greater job satisfaction (Daud et al., 2022), as financial stability reduces stress and improves quality of life (Chew et al., 2013). Despite most participants earning between RM5250 and RM11,819—placing them within the middle-income (M40) category—56% reported dissatisfaction with their income. This dissatisfaction likely stems from a perceived imbalance between heavy workloads and compensation received. Doctors who are satisfied with their income demonstrate higher motivation, greater retention, and enhanced professional fulfillment (Alrawashdeh et al., 2021). In contrast, dissatisfaction with earnings can erode morale, lower engagement, and contribute to burnout (Zhang et al., 2020). Insufficient financial reward, particularly among younger doctors and those in PHC, is often linked to feelings of undervaluation and higher turnover intentions (Seathu Raman et al., 2024). During crises such as the COVID-19 pandemic, financial incentives played a critical role in sustaining doctors’ job satisfaction, as they helped offset the increased stress and burnout associated with frontline service (Alrawashdeh et al., 2021). These findings

highlight the central importance of fair and adequate compensation in enhancing job satisfaction, improving retention, and ultimately safeguarding the quality of healthcare delivery.

Social support was another significant predictor of job satisfaction. It encompasses both physical and emotional assistance from family, friends, colleagues, and the wider work environment. Doctors who perceive strong social support consistently report higher satisfaction with their jobs. Such support serves as a protective factor against work-related stressors such as burnout, fatigue, and professional isolation. Evidence also shows a strong correlation between job satisfaction and the support received from superiors and co-workers (Dousin et al., 2019). Likewise, research among healthcare practitioners in Indonesia revealed that collegial support not only improved job satisfaction but also reduced the risk of burnout and turnover (Rakhmitania, 2022). Beyond the workplace, lifestyle aspects also play an important role. Doctors often face long hours, on-call shifts, and disrupted sleep schedules, which can compromise their physical health and work-life balance. In such circumstances, family and social networks are essential in helping them manage domestic responsibilities, childcare, and emotional stress. For instance, doctors with strong family support are better able to maintain healthier routines, such as exercising regularly, ensuring adequate rest, and balancing professional demands with personal commitments. This highlights that social support not only improves workplace morale but also influences lifestyle stability, which in turn sustains long-term job satisfaction. Theoretical models reinforce these findings. The Job Demands-Resources (JD-R) model suggests that social support reduces job demands and facilitates achievement of professional goals, while the Conservation of Resources (COR) theory posits that social support helps preserve personal and social resources, thereby reducing stress and enhancing well-being. Practical implications include promoting structured mentorship programs, peer support groups, and workplace policies that encourage collaboration and recognition. Leadership training that emphasizes supportive behaviors, open communication, and appreciation of teamwork can further enhance job satisfaction. Respondents in this study also expressed satisfaction with teamwork, supporting findings from local research that associated strong teamwork with higher job satisfaction (Daud et al., 2022). Collectively, these insights highlight that cultivating supportive professional and personal environments is central not only to sustaining job satisfaction but also to enabling healthier lifestyles among doctors.

This study found no significant correlation between mental stress and job satisfaction, a finding that aligns with Karasek's Job Demand-Control Model. The model suggests that high job demands do not automatically reduce job satisfaction if employees maintain control and autonomy in their roles. For doctors, the ability to make independent clinical decisions and exercise professional judgment may buffer the strain of heavy workloads, sustaining their sense of fulfillment. Similarly, the duration of work or years of service was not directly linked to satisfaction, indicating that more meaningful predictors lie in the quality of the work environment, the availability of supportive relationships, and opportunities for personal and professional growth. Lifestyle factors, however, remain an important consideration. Many doctors in this study reported long working hours, frequent on-call duties, and inadequate sleep, averaging less than the recommended duration. Such patterns, if persistent, are strongly associated with fatigue, impaired concentration, and heightened risk of burnout. Yet, our findings suggest that these challenges may be offset when doctors find their work meaningful, have supportive colleagues, and enjoy some degree of flexibility and autonomy. Conversely, unhealthy lifestyle behaviors, such as lack of physical activity and high prevalence of overweight or obesity, may exacerbate stress and undermine long-term satisfaction, pointing to the need for interventions that promote healthier routines among medical professionals. These findings underscore that while structural and organizational factors, such as autonomy and supportive environments, play a dominant role in shaping job satisfaction, lifestyle determinants cannot be ignored. Creating workplace cultures that encourage adequate rest, physical activity, and stress management

may not only improve job satisfaction but also enhance the overall well-being and resilience of doctors in demanding healthcare settings.

Overall, this study demonstrates that job satisfaction among PHC doctors is shaped by a complex interplay of occupational stability, financial adequacy, social support, and lifestyle health behaviors. Addressing these determinants requires a holistic strategy that not only reforms structural and financial aspects but also incorporates physician wellness initiatives. Workplace wellness programs, flexible scheduling, opportunities for physical activity, promotion of sleep hygiene, and access to preventive health services for doctors themselves are needed to improve both lifestyle and occupational well-being. From a policy perspective, these findings are directly relevant to Malaysia's health workforce planning. The Ministry of Health's goal of achieving a doctor-to-population ratio of 1:330 by 2030 (Azmi et al., 2022) will not be realized without effective retention strategies. Policies must address dissatisfaction stemming from contract employment and income disparities, while simultaneously recognizing lifestyle challenges that erode doctors' health and satisfaction. Embedding wellness interventions, mentorship programs, and equitable employment practices into PHC systems can strengthen job satisfaction, reduce attrition, and enhance healthcare delivery. Ultimately, investing in the well-being of doctors is not only a matter of workforce management but also a cornerstone of sustainable, high-quality healthcare for the Malaysian population.

### **Limitations**

This study has few limitations. First, the use of primary data collection through self-administered questionnaires depended on the honesty and accuracy of respondents, which may have introduced recall bias or inaccuracies in self-reported information. Second, the cross-sectional design limits the ability to establish causal relationships between job satisfaction and associated factors such as income satisfaction, employment status, and social support. Finally, the scope for comparison with other studies is constrained, as the specific questionnaire employed is not widely utilized in similar research contexts

### **CONCLUSION**

This study demonstrates that job satisfaction among medical doctors in PHC in Terengganu is significantly shaped by income satisfaction, employment status, and social support. While most respondents held permanent positions, dissatisfaction with income and the disadvantages faced by contract doctors remain pressing challenges that undermine morale, motivation, and long-term workforce retention. The role of social support also emerged as a critical buffer against occupational stress, reinforcing the importance of nurturing collegiality and supportive workplace cultures.

Beyond occupational factors, the findings highlight the lifestyle challenges faced by doctors themselves—including inadequate sleep, high prevalence of overweight and obesity, and comorbidities—which may further erode satisfaction and resilience. These personal health risks underscore that the well-being of doctors is both a workforce issue and a public health concern. Addressing job satisfaction must therefore extend beyond organizational reforms to encompass holistic wellness initiatives that encourage healthy lifestyles, sufficient rest, and preventive care for healthcare providers. Strengthening financial incentives, ensuring equitable and transparent career pathways, and cultivating supportive work environments are essential for stabilizing the medical workforce. At the same time, embedding physician wellness into workplace policies will contribute to long-term satisfaction, retention, and sustained performance. From a broader public health perspective, investing in doctors' satisfaction is not merely a workforce strategy but a foundation for achieving equitable, effective, and high-quality healthcare delivery.

Future research should expand to larger and more diverse populations of medical doctors, including those working in hospitals and private facilities, to provide a more comprehensive picture. Incorporating qualitative approaches will also allow for deeper exploration of the contextual, organizational, and lifestyle factors influencing satisfaction. These insights can guide policymakers in developing evidence-based interventions that not only enhance doctors' professional fulfillment but also secure the sustainability of Malaysia's healthcare system and its ability to meet population health needs.

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## REFERENCES

- Ab Rahman, N., Husin, M., Dahian, K., Mohamad Noh, K., Atun, R., & Sivasampu, S. (2019). Job satisfaction of public and private primary care physicians in Malaysia: analysis of findings from QUALICO-PC. *Hum Resour Health*, 17(1), 1-10. <https://doi.org/10.1186/s12960-019-0410-4>
- Abdullahi, A. K., Mosanya, A. U., Bello, N., & Musa, M. K. (2023). Evaluation of job satisfaction among pharmacists working in public health facilities. *Exploratory Research in Clinical and Social Pharmacy*, 12.
- Alrawashdeh, H. M., Al-Tammemi, A. a. B., Alzawahreh, M. K., Al-Tamimi, A., Elkholy, M., Al Sarireh, F., . . . Ghouli, I. (2021). Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: a convergent parallel mixed-method study. *BMC Public Health*, 21(1), 811. <https://doi:10.1186/s12889-021-10897-4>
- Atefi, N., Abdullah, K. L., Wong, L. P., & Mazlom, R. (2013). Factors influencing job satisfaction among registered nurses: a questionnaire survey in Mashhad, Iran. *Journal of nursing management*, 23(4), 448-458. <https://doi.org/10.1111/jonm.12151>
- Azmi, M. I., Daud, A., Shafei, M. N., & Hamid, A. A. (2022). Job Dissatisfaction and Its Predictors among Healthcare Workers of 'Type 2 Health Clinics' in North-Eastern Malaysia. *International Journal of Environmental Research and Public Health*, 19, 16106. <https://doi.org/10.3390/ijerph192316106>
- Besson, A., Tarpin, A., Flaudias, V., Brousse, G., Laporte, C., Benson, A., . . . Duteil, F. (2021). Smoking Prevalence among Physicians: A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health*, 18(24). <https://doi:10.3390/ijerph182413328>
- Burton, A. K., Symonds, T. L., Zinzen, E., Tillotson, K. M., Caboor, D., Royf, P. V., & Clarys, J. P. (1997). Is ergonomic intervention alone sufficient to limit musculoskeletal problems in nurses? *Occupational Medicine*, 47(1), 25-32.
- Cantarelli, P., Vainieri, M., & Seghieri, C. (2023). The management of healthcare employees' job satisfaction: optimization analyses from a series of large-scale surveys. *BMC Health Services Research*, 23(1), 428. <https://doi:10.1186/s12913-023-09426-3>
- Chew, B. H., Ramli, A., Omar, M., & Ismail, I. (2013). A preliminary study of job satisfaction and motivation among the Malaysian primary healthcare professionals. *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*, 8 2, 15-25.
- Daud, F., Ghani, N. F. A., & Zahid1, S. N. A. (2022). Job Satisfaction Among Specialist In Ministry Of Health Malaysia And Its Associated Factors. *Malaysian Journal of Public Health Medicine*, 22, 1-8.
- Derbel, C., Braham, A., Souilem, A., Ben Romdhane, A., gallala, R., Ben Nasr, S., . . . Ben Hadj Ali, B. (2017). Factors associated with job satisfaction among physicians in a

- university hospital. *European Psychiatry*, 41(S1), S680-S680. <https://doi:10.1016/j.eurpsy.2017.01.1176>
- Deshmukh, N., Raj, P., Chide, P., Borkar, A., & Chopade, G. V. (2023). Job Satisfaction Among Healthcare Providers in a Tertiary Care Government Medical College and Hospital in Chhattisgarh. [https://doi: 10.7759/cureus.41111](https://doi:10.7759/cureus.41111)
- DOSM. (2020). Key Findings: Population And Housing Census Of Malaysia, Department Of Statistics Malaysia.
- DOSM. (2022). Household Expenditure Survey Report, Department Of Statistics, Malaysia
- Dousin, O., Collins, N., & Kler, B. K. (2019). Work-life balance, employee job performance and satisfaction among doctors and nurses in Malaysia. *International Journal of Human Resource Studies*, 9(4), 306-319.
- El Mouaddib, H., Sebbani, M., Mansouri, A., Adarmouch, L., & Amine, M. (2023). Job satisfaction of primary healthcare professionals (public sector): A cross-sectional study in Morocco. *Heliyon*, 9(9), e20357. doi:<https://doi.org/10.1016/j.heliyon.2023.e20357>
- Gates, M., Wingert, A., Featherstone, R., Samuels, C., Simon, C., & Dyson, M. (2018). Impact of fatigue and insufficient sleep on physician and patient outcomes: a systematic review. *BMJ Open*, 8, e021967. <https://doi:10.1136/bmjopen-2018-021967>
- Ge, C., Fu, J., Chang, Y., & Wang, L. (2011). Factors associated with job satisfaction among Chinese community health workers: a cross-sectional study. *BMC Public Health*, 11, 884. <https://doi:10.1186/1471-2458-11-884>
- Goetz, K., Jossen, M., Szecsenyi, J., Rosemann, T., Hahn, K., & Hess, S. (2016). Job satisfaction of primary care physicians in Switzerland: an observational study. *Family Practice*, 33(5), 498-503. <https://doi:10.1093/fampra/cmw047>
- Gu, J., Zhen, T., Song, Y., & Xu, L. (2019). Job satisfaction of certified primary care physicians in rural Shandong Province, China: a cross-sectional study. *BMC Health Services Research*, 19(1), 75. <https://doi:10.1186/s12913-019-3893-8>
- Harun, I., Mahmood, R., & Md. Som, H. (2022). Role stressors and turnover intention among doctors in Malaysian public hospitals: work–family conflict and work engagement as mediators. *PSU Research Review*, 6(1), 1-16. <https://doi:10.1108/PRR-08-2020-0025>
- Jacobsen, A. L., DeVries, C. E. E., Poulsen, L., Mou, D., Klassen, A. F., Pusic, A. L., . . . Sørensen, J. A. (2022). The impact of body mass index (BMI) on satisfaction with work life: An international BODY-Q study. *Clinical Obesity*, 12(4), e12527. <https://doi.org/10.1111/cob.12527>
- Kementerian Kesehatan Malaysia (2015). *Polisi Operasi Klinik Kesehatan*.
- Keramat, S. A., Alam, K., Gow, J., & Biddle, S. J. H. (2020). Obesity, Long-Term Health Problems, and Workplace Satisfaction: A Longitudinal Study of Australian Workers. *Journal of Community Health*, 45(2), 288-300. <https://doi:10.1007/s10900-019-00735-5>
- Kumar, P., Khan, A. M., Inder, D., & Mehra, A. (2014). A comparative study of job satisfaction among regular and staff on contract in the primary health care system in Delhi, India. *Journal of Family and Community Medicine*, 21(2), 112-118. <https://doi:10.4103/2230-8229.134768>
- Liu, J., Yu, W., Ding, T., Li, M., & Zhang, L. (2019). Cross-sectional survey on job satisfaction and its associated factors among doctors in tertiary public hospitals in Shanghai, China. *BMJ Open*. <https://doi:10.1136/bmjopen-2018-023823>
- Liu, M., Wang, J., Lou, J., Zhao, R., Deng, J., & Liu, Z. (2023). What is the impact of integrated care on the job satisfaction of primary healthcare providers: a systematic review. *Hum Resour Health*, 21(1), 86. <https://doi:10.1186/s12960-023-00874-w>
- Locke, E. A. (1970). Job Satisfaction and Job Performance: A Theoretical Analysis. *Organizational Behaviour and Human Performance*, 5, 484-500.

- Lu, Y., Hu, X.-M., Huang, X.-L., Zhuang, X.-D., Guo, P., Feng, L.-F., . . . Hao, Y.-T. (2017). The relationship between job satisfaction, work stress, work–family conflict, and turnover intention among physicians in Guangdong, China: a cross-sectional study. *BMJ Open*, 7(5), e014894. <https://doi:10.1136/bmjopen-2016-014894>
- Manan, M. M., Azmi, Y., Lim, Z., Neoh, C. F., Khan, T. M., & Ming, L. C. (2015). Predictors of job satisfaction amongst pharmacists in Malaysian public hospitals and healthcare clinics. *Journal of Pharmacy Practice and Research*, 45, 404–411. <https://doi:10.1002/jppr.1094>
- Miao, Y., Li, L., & Bian, Y. (2017). Gender differences in job quality and job satisfaction among doctors in rural western China. *BMC Health Services Research*, 17(1), 848. <https://doi:10.1186/s12913-017-2786-y>
- MOH. (2021). Annual Report: Clinical & Technical Support Services Sector, Primary Health Care Section ,Family Health Development Division, Ministry Of Health Malaysia.
- Montuori, P., Sorrentino, M., Sarnacchiaro, P., Di Duca, F., Nardo, A., Ferrante, B., . . . Nardone, A. (2022). Job Satisfaction: Knowledge, Attitudes, and Practices Analysis in a Well-Educated Population. *Int J Environ Res Public Health*, 19(21). <https://doi:10.3390/ijerph192114214>
- Muenster, E., Rueger, H., Ochsmann, E., Letzel, S., & Toschke, A. M. (2011). Association between overweight, obesity and self-perceived job insecurity in German employees. *BMC Public Health*, 11(1), 162. <https://doi:10.1186/1471-2458-11-162>
- Ofei-Dodoo, S., Scriptor, C., Kellerman, R., Haynes, C., Marquise, M. E., & Bachman, C. S. (2018). Burnout and Job Satisfaction Among Family Medicine
- Pei, K. L., Saad, H. A., Jamaluddin, R., & Huei, P. C. (2020). Prevalence of Overweight and Obesity among Primary Healthcare Workers In Perak, Malaysia. *IJUM Medical Journal Malaysia*, 19(1). <https://doi:10.31436/imjm.v19i1.1327>
- Rakhmitania, T. (2022). Job Satisfaction Relationship With Turnover Intention. *The Second Muhammadiyah Internasional Public Health and Medicine Conference*, 2.
- Rosta, J., Aasland, O. G., & Nylenna, M. (2019). Changes in job satisfaction among doctors in Norway from 2010 to 2017: a study based on repeated surveys. *BMJ Open*, 9(9), e027891. <https://doi:10.1136/bmjopen-2018-027891>
- Seathu Raman, S. S., McDonnell, A., & Beck, M. (2024). Hospital doctor turnover and retention: a systematic review and new research pathway. *Journal of Health Organization and Management*, 38(9), 45-71. <https://doi:10.1108/JHOM-04-2023-0129>
- Su-Lyn, B. (Producer). (2024, 1 June 2024). Contract Doctors' Resignation Trend Rising, MOH To Cut Permanent Appointment Offers By 31% For 2024-2025. Retrieved from <https://codeblue.galencentre.org/2024/03/25/contract-doctors-resignation-trend-rising-moh-to-cut-permanent-appointment-offers-by-31-for-2024-2025/>
- Tong, W., Yan, Z., Xue, W., & Tang, G. (2018). Factors influencing turnover intention among primary care doctors: a cross-sectional study in Chongqing, China. *Hum Resour Health*, 16. <https://doi:10.1186/s12960-018-0274-z>
- Xiaoge, Y., Mengyun, Z., Xiaoqing, C., Bing, X., Zhao, T., Jiehui, D., . . . Bo, X. (2018). Job Satisfaction Among Doctors from Jiangsu Province in China. *Medical Science Monitor*, 24, 7162-7169. <https://doi:10.12659/MSM.912712>
- Yew, T. S., Sidek, M. Y., Jalil, R. A., & Arifin, W. N. (2017). Confirmatory Factor Analysis Of The Malay Version Of Utrecht Work Engagement Scale (Uwes-M). *International Journal of Public Health and Clinical Sciences*, 4, 77-86.
- Yong, L., Xiao-Min, H., Xiao-Liang, H., Xiao-Dong, Z., Pi, G., Li-Fen, F., . . . Yuan-Tao, H. (2016). Job satisfaction and associated factors among healthcare staff: a cross-sectional study in Guangdong Province, China. *BMJ Open*, 6. <https://doi:10.1136/bmjopen-2016-011388>

Zhang, Z., Shi, G., Li, L., & Bian, Y. (2020). Job satisfaction among primary care physicians in western China. *BMC Family Practice*, 21(1), 219. <https://doi.org/10.1186/s12875-020-01292-w>