



# Health-related attitudes, behaviors and burnout in intern medical officers and their effects on self-reported patient care in a developing country

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## Abstract

**Background** Intern Medical Officers (IMOs) in Sri Lanka face significant challenges due to heavy patient load and scarcity of resources.

**Aims** To assess IMOs' level of burnout, associated factors and the effects on self-reported patient care in comparison to post-intern Relief House Officers (RHOs).

**Methods** A descriptive cross-sectional study was conducted among IMOs and RHOs in two leading tertiary care hospitals in Sri Lanka. The level of burnout was assessed using Maslach Burnout Index. The self-reported health-related attitudes, practices, level of burnout, and their associations with patient care were compared between IMOs and RHOs.

**Results** We studied 114 participants (70 (61.4%) IMOs and 44 (38.6%) RHOs). IMOs were not involved in regular exercises ( $\chi^2(1) = 19.8, p = 0.000$ ), skipped meals frequently ( $\chi^2(1) = 29.3, p = 0.000$ ), and had a poor sleep quality ( $\chi^2(1) = 35.7, p = 0.000$ ) compared to RHOs. Overall, 46.5%, 95.5%, and 86.7% of the participants were having moderate-to-high emotional exhaustion, depersonalization, and sense of poor personal achievement. The exhaustion and depersonalization levels were significantly higher among IMOs. Emotional exhaustion was significantly associated with poor sleep ( $U = 923.0, p = 0.014$ ). Self-reported patient care negatively correlated with exhaustion ( $r_s(112) = -0.263, p = 0.005$ ) and depersonalization ( $r_s(112) = -0.491, p = 0.000$ ), while having positive attitudes correlated with better patient care ( $r_s(112) = 0.208, p = 0.027$ ).

**Conclusions** The prevalence of burnout in IMOs in Sri Lanka is high, which, in turn, negatively correlates with patient care. IMOs face significant challenges in self-care, while their poor sleep perturbs daytime activities and conceivably interferes with patient care. Therefore, we recommend introduction of preventive measures to mitigate burnout in early-career physicians, particularly IMOs, to improve both self and patient care.

**Keywords** Attitudes · Health risk behaviors · Medical internship · Patient care · Physician burnout · Sri Lanka

## Introduction

Physician burnout, characterized by a state of emotional exhaustion and depersonalization, and a sense of poor work performance, has been increasingly recognized as a global epidemic at present [1]. Two recent surveys conducted in the

USA [2] and the UK [3] reported that approximately 80% of the physicians experience burnout or are at high risk of burnout. Physician burnout is associated with serious consequences in health care delivery in terms of high patient mortality, reporting errors, and workforce shortage [4, 5] while contributing to detrimental effects in both the physical

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and mental well-being of the physicians [6–10]. A meta-analysis identified organizational level and demographic attributes as potential regulatory elements of burnout among healthcare workers [11]. Despite the problem of physician burnout being widely recognized in the developed world [5], there is a scarcity of research in this regard in developing countries [12, 13]. A few studies conducted in Lebanon [12, 14], Mexico [15], Pakistan [16], and India [17] report high levels of burnout, stress, or fatigue among medical interns and postgraduate trainees. Conceivably, a high patient load and poor resources in developing countries could increase its likelihood, especially among junior doctors who are at a high risk of burnout [1, 3, 17, 18].

Sri Lanka is an island in South Asia that houses over 20 million people. The physician to population ratio in Sri Lanka is 1.004 (per 1000 population) [19, 20], which markedly exceeds the western figures [21]. Medical internship in Sri Lanka is considered challenging particularly because of a heavy workload, inadequate rest and sleep, inadequate help, and lack of supportive relationships faced by the Intern Medical Officers (IMOs) [22]. Unlike in the developed countries where duty hours of IMOs are restricted [23], Sri Lankan interns are compelled to work long hours with minimum breaks [24]. Therefore, we intended to compare the self-reported health-related attitudes, practices, level of burnout, and their associations with patient care of IMOs and the post-intern Relief House Officers (RHOs, who have immediately finished their internships) in two leading tertiary care hospitals in Sri Lanka.

## Methods

A descriptive cross-sectional study was conducted in two teaching hospitals in Sri Lanka (The National Hospital of Sri Lanka and Colombo North Teaching Hospital) before the onset of the COVID-19 pandemic. The teaching hospitals in Sri Lanka provide clinical training to medical students and postgraduate trainees and are affiliated with a University. The protocol was approved by the Ethics Review Committee of the Post Graduate Institute of Medicine in Sri Lanka (ERC/PGIM/2018/55). All the IMOs and RHOs attached to general medical and general surgical wards were invited for the study. The IMOs who have abandoned their posts or obtained long-term leave (more than two weeks) during the internship and those who have been diagnosed with chronic physical or psychiatric illnesses were excluded from the study. The study was conducted after completing 8 to 10 months of training in the corresponding appointments to minimize variability [10].

A self-administered questionnaire was used to collect data on sociodemographic characteristics, health-related behaviors, health-related attitudes, level of burnout, and level of patient

care. Age, sex, ethnicity, religion, monthly income, and marital status were assessed as the sociodemographic characteristics. Physical exercise, smoking, alcohol intake, food habits and sleeping patterns were evaluated as health-related behaviors. The health-related attitudes were assessed using a 5-point Likert scale-based questionnaire consisting of ten items. The self-reported patient care was assessed using a tool consisting of eight items of 5-point Likert scale-based questions. The questions were developed after an extensive review of the literature and were then reviewed by a panel consisting of a lecturer, three clinicians, two IMOs and two RHOs. The purpose and details of the study were provided, and the participants were asked to rate the items on relevance and appropriateness on a scale of 1 to 5 (1 = least relevant; 5 = highly relevant and 1 = least appropriate; 5 = highly appropriate). If the participants allocated a score of less than three for relevance or appropriateness, they were further requested to suggest how the question could be modified to improve relevance or appropriateness. Items with a mean score of less than 3 for relevance were removed in the first round of screening. Items that scored a mean of less than 4 for appropriateness were reviewed by the first and last authors for the comments by the panel members to improve appropriateness. The best modification was agreed upon after a discussion among the authors. The modified second version was reevaluated by the panel members for relevance and appropriateness and any conflicts were resolved in the same manner. The third version was scrutinized for language and understandability. The scrutinized version was then pilot tested in five IMOs and five RHOs followed by a structured interview by the investigators. Based on the comments, minor changes in wording were made in the questionnaire to improve understandability. This final validated version of the questionnaire was administered to the participants of this study.

Cumulative scores were subsequently calculated after reversing relevant test scores and converting to a percentage scale where higher values indicated good attitudes and good patient care. The level of burnout was assessed using Maslach Burnout Index (MBI) [25], a popular [10, 26], validated [27], 6-point Likert scale-based questionnaire which evaluates 3 components: exhaustion (7 items), depersonalization (7 items), and personal achievement (8 items). Higher mean scores of exhaustion and depersonalization subscales correspond to high burnout, whereas higher personal achievement scores correspond to low burnout.

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 27. Continuous data were presented as median  $\pm$  interquartile range. Pearson's chi-square and Mann-Whitney *U* tests were used to compare categorical and continuous data, respectively. Spearman's correlation coefficients were computed to examine associations between continuous variables. All analyses were performed at a priori alpha of .05.

**Table 1** Sociodemographic characteristics of intern medical officers and resident house officers

	Intern House Officers	Resident House Officers
Age	27 ± 1	27 ± 1
Male to female ratio	1:1.3	1.6:1
Percentage married	18.6%	34.1%
Mode ethnicity	Sinhala	Sinhala
Mode of religion	Buddhism	Buddhism
Mode monthly income	< LKR 50,000.00 (i.e., < 185 GBP, < 250 USD)	LKR 50,000.00– 100,000.00 (i.e., 185–370 GBP, 250–500 USD)

Continuous data are presented as median (interquartile range)  
*GBP* Pound Sterling; *LKR* Sri Lankan Rupees; *USD* United States Dollars

**Results**

Of 114 participants, 70 (61.4%) were IMOs and 44 (38.6%) were RHOs. The positive response rate was 80%. A comparison of the sociodemographic characteristics of the two study groups is summarized in Table 1. Age, ethnicity, and religion were comparable across two groups; however, females were overrepresented among the IMOs. The proportion of married couples and the salary were higher among the RHOs.

Table 2 summarizes the lifestyle habits of the two groups. Pearson’s chi-square tests showed that RHOs were more

involved in regular exercises ( $\chi^2(1) = 19.8, p = 0.000$ ) and sports ( $\chi^2(1) = 10.2, p = 0.001$ ) compared to IMOs. Moreover, RHOs often ate homemade food ( $\chi^2(1) = 29.7, p = 0.000$ ) and skipped meals less frequently ( $\chi^2(1) = 29.3, p = 0.000$ ) compared to IMOs. One participant started smoking during the internship while seven started to consume alcohol during this period. Nonetheless, there were no statistically significant differences in alcohol consumption ( $\chi^2(1) = 0.9, p = 0.351$ ) and smoking ( $\chi^2(1) = 1.6, p = 0.208$ ) among the two groups.

Pearson’s chi-square tests with Yate’s correction showed significant differences in perceived sleep quality ( $\chi^2(1) = 35.7, p = 0.000$ ), duration of sleep ( $\chi^2(1) = 30.6, p = 0.000$ ), frequent sleep disturbances ( $\chi^2(1) = 18.6, p = 0.000$ ), and daytime disturbances due to poor sleep quality ( $\chi^2(1) = 7.7, p = 0.006$ ) between IMOs and RHOs. The majority (22.9%) of the interns reported that their overall sleep quality was poor while only 2.3% of the RHOs had poor sleep quality. Ninety percent of the IMOs had less than 6 h of sleep per day while 43.2% of the RHOs slept less than 6 h. Frequent sleep disturbances were reported by 36.2% and 2.3% of the IMOs and RHOs, respectively. Daytime disturbances due to sleep problems were commonly reported by IMOs (31.4%) compared to RHOs (9.1%). One intern used sleep medications to alleviate sleep disturbances.

The scores of MBI, physical activity, attitudes, and patient care were not normally distributed according to the Shapiro–Wilk tests; hence, nonparametric tests were used in the subsequent analyses. The summary measurements of these scores are given in Table 3. Overall, 46.5%, 95.5%, and 86.7% of the participants were having moderate-to-high

**Table 2** Comparison of lifestyle of intern medical officers and resident house officers

Habit		Intern House Officers (n = 70)	Resident House Officers (n = 44)
Doing regular exercises <sup>#</sup>		1.4%	29.5%
Sports	None	92.9%	70.5%
	Mild-intensity	0%	0%
	Moderate-intensity	7.1%	22.7%
	Strenuous	0%	6.8%
Commonest food source	Home	7.2%	52.3%
	Quarters	58.0%	31.8%
	Outside	34.8%	15.9%
Percentage of skipping at least one meal/day		90.0%	43.2%
Fast food consumption	Daily	25.7%	7.5%
	> 3 times/week	27.1%	42.5%
	< 3 times/week	32.9%	45.0%
	< once/week	14.3%	5.0%
Smoking		10.0%	18.2%
Alcohol consumption		25.7%	27.3%

Continuous data are presented as median (interquartile range)

<sup>#</sup>Regular exercises were defined as exercising for at least 30 min for ≥ 4 days a week

**Table 3** Comparison of scores obtained by Intern Medical Officers and Resident House Officers

Score	Intern House Officers	Resident House Officers	Results of the Mann–Whitney <i>U</i> test
Exhaustion	27.0 ± 14.5	20.0 ± 10.0	<i>U</i> = 903.0, <i>p</i> = 0.000*
Depersonalization	29.5 ± 15.0	25.0 ± 11.0	<i>U</i> = 986.5, <i>p</i> = 0.004*
Personal achievements	37.0 ± 15.0	36.0 ± 8.0	<i>U</i> = 1790.0, <i>p</i> = 0.109
Physical activity	0.0 ± 0.25	1.0 ± 5.0	<i>U</i> = 2213.5, <i>p</i> = 0.000*
Attitudes	24.0 ± 5.0	23.0 ± 5.0	<i>U</i> = 1206.5, <i>p</i> = 0.066
Patient care	18.0 ± 6.0	15.0 ± 11.0	<i>U</i> = 1215.0, <i>p</i> = 0.059

Continuous data are presented as median (interquartile range). The significant Mann–Whitney *U* tests are marked with asterisks (\*)

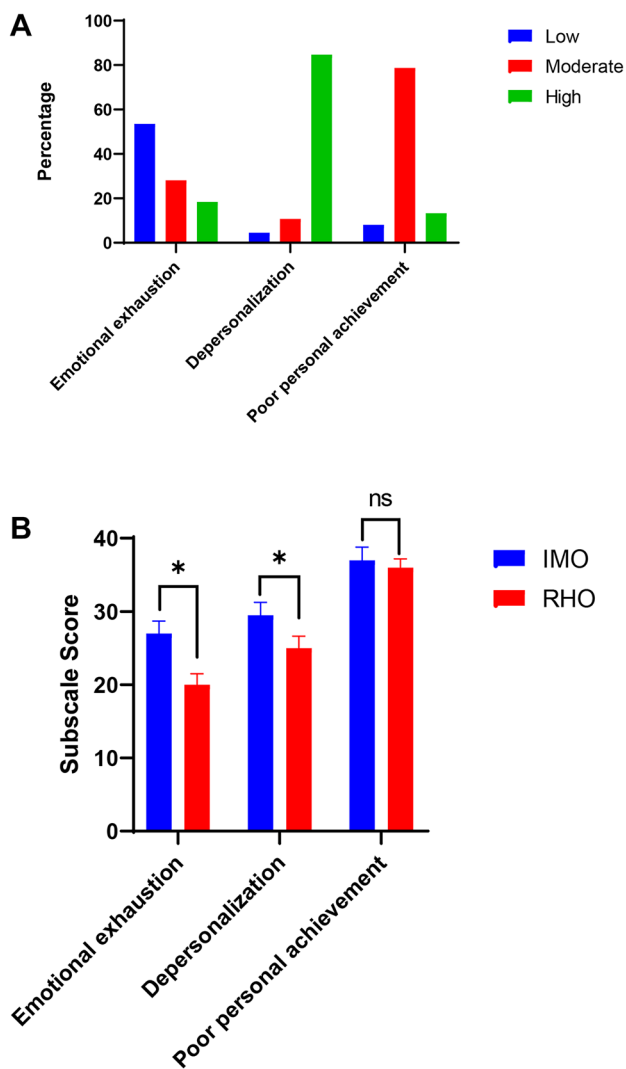
emotional exhaustion, depersonalization, and sense of poor personal achievement, respectively (Fig. 1A). The exhaustion and depersonalization levels were significantly higher among IMOs (Table 3 and Fig. 1B). Spearman's correlation coefficient tests demonstrated a strong positive correlation between exhaustion and depersonalization scores of the MBI ( $r_s(112) = 0.690$ ,  $p = 0.000$ ) (Supplementary Fig. 1). Moreover, score of patient care negatively correlated with exhaustion ( $r_s(112) = -0.263$ ,  $p = 0.005$ ) and depersonalization ( $r_s(112) = -0.491$ ,  $p = 0.000$ ). The personal achievement score of the MBI did not correlate significantly with any of the abovementioned scores. Exhaustion, depersonalization, or personal achievement scores did not associate with sex, marital status, ethnicity, religion, age, smoking, or alcohol consumption of the study participants. Those who slept less than 6 h a day were having a significantly high score of exhaustion ( $U = 923.0$ ,  $p = 0.014$ ) (median scores = 26 versus 24) and a nonsignificant increase of depersonalization score ( $U = 969.5$ ,  $p = 0.055$ ) (median scores = 28 versus 26) compared to participants who slept at least 6 h a day. Having positive attitudes correlated with better scores in patient care ( $r_s(112) = 0.208$ ,  $p = 0.027$ ). The patient care showed a negative correlation with the duration of sleep ( $r_s(112) = 0.245$ ,  $p = 0.009$ ). Subgroup analyses of the scores of MBI, physical activity, attitudes, and patient care between the two different hospitals (The National Hospital of Sri Lanka versus Colombo North Teaching Hospital) did not show statistically significant differences.

## Discussion

The National Hospital of Sri Lanka and Colombo North Teaching Hospital are two leading tertiary care centers situated in the most populated province in Sri Lanka, which entertain direct admissions as well as referrals from all over the country. Though these are teaching hospitals where clinical training is provided to medical students and postgraduate trainees, IMOs and RHOs are exempted from teaching duties, thus their role(s) focusing on patient care. Unlike in most developed countries, the first line of diagnosis and management of patients admitted to these hospitals are

provided almost exclusively by the IMOs [24], while medical and surgical RHOs in the teaching hospitals are involved in the subsequent management of the patients. Due to the shortage of workforce, IMOs are officially required to be on-call for 1 year without breaks, thus being exposed to continuous stressful work compared to regional and global healthcare settings [22, 24]. This could explain the markedly elevated levels of burnout in Sri Lankan early-career physicians compared to the other countries [10, 28, 29], with interns being severely affected than RHOs. Both groups experience an equally high level of poor personal achievement indicating RHOs and IMOs are equally dissatisfied with their performance. Compared to RHOs, IMOs experience significantly high levels of exhaustion and depersonalization, which in turn negatively affects patient care. Despite the differences in emotional exhaustion and sense of depersonalization, the self-reported patient care and attitudes are not different in the two groups. Expectedly, poor sleep quality and duration in IMOs perturb daytime activities and conceivably interfere with patient care. Intriguingly, however, patient care negatively correlates with sleep duration. It is tempting to speculate that cautious doctors compromise their sleep for better patient care; nonetheless, the observational nature of this study does not allow causality assumptions.

According to the latest population census data in Sri Lanka, approximately 51% of the population is married [30]. The pooled median age at internship in our sample was 27 years, which is higher than the median age of marriage in Sri Lanka (23 years for women and 27 years for men) [30], despite only 18.6% of IMOs were married. Interestingly, the proportion of married RHOs (34.1%) was almost twice that of IMOs, while the median age of IMOs and RHOs in our sample was identical (median 27 years, IQR 1 year). This reflects the potential interferences in family life faced by the interns, which could make them reluctant to get married at this stage of their career. Moreover, the monthly salary of < 50,000 Sri Lankan Rupees (LKR) (i.e., < 185 GBP, < 250 USD) received by the IMOs may not be perceived as adequate to reward the heavy workload, which could further elevate the burnout. Smoking and substance use are frequently reported as factors associated with high



**Fig. 1** Burnout in early-career physicians. **A** The level of burnout was measured using Maslach Burnout Inventory [25] in three subscales: emotional exhaustion, depersonalization, and sense of poor personal achievement. Each subscale was further subcategorized as low, medium, and high burnout as described before [40, 41]. Overall, 46.5%, 95.5%, and 86.7% of the participants were having moderate-to-high emotional exhaustion, depersonalization, and sense of poor personal achievement, respectively. **B** Intern Medical Officers (IMOs) showed significantly high emotional exhaustion and depersonalization compared to Resident House Officers (RHOs). Note that higher values of exhaustion and depersonalization indicate high burnout, whereas lower values of personal achievement scores represent high burnout. Statistical test: Mann–Whitney *U* test. Statistically significant test results are indicated by asterisks ( $p < 0.05$ ). *ns*, not significant

physician burnout [31–33]. Nonetheless, we did not observe such associations in our study conforming to Shanafelt et al. [26]. Lack of free time for such recreational activities may perhaps act as a potential confounder for this analysis since smoking and alcohol consumption in the hospital premises and quarters are strictly prohibited in our setting. Moreover, the role of gender [34–36], associated with burnout is

inconclusive which is in line with previous reports. Conversely, lack of sleep was significantly associated with burnout. The observational nature of this study does not allow derivation of causality; thus, it could be either poor sleep causing high burnout, or burnt-out physicians experiencing frequent sleep disturbances or a combination of both. IMOs are more susceptible to sleep deprivation due to comparatively high workloads than RHOs [24]. Similarly, RHOs regularly exercise and consume homemade meals which inarguably enhance their physical, mental, and social well-being compared to IMOs. Hence, we recommend generation of more workforce to cater to the high patient load, implementation of policies to ensure that the IMOs are woken up only for urgent tasks which could not wait until morning [37], and partial redistribution of IMOs' workload to RHOs after careful evaluation as potential strategies to alleviate early-career physician burnout in our setting. Moreover, since positive attitudes are correlated with self-reported patient care, mindfulness-based interventions could perhaps reduce physician burnout while enhancing patient care [38].

### Strengths and limitations

This multicentre study compared the level of burnout, potential causes, and consequences in two early-career physician groups in a resource-poor-developing country with unique medico-cultural demands [39] where population to physician ratio is considerably high (1.004 physicians per 1000 population) [19–21]. We invited all the eligible IMOs and RHOs to participate in this study achieving a considerable positive response rate; nonetheless, the small sample size may limit the generalization of the results of this study. We intended to match the setting of the study participants, viz general surgical and medical wards, which lead to overrepresentation of the IMOs because a considerable proportion of RHOs was attached to subspecialties. Furthermore, the study was conducted in two teaching hospitals, which does not capture all settings where interns work in Sri Lanka.

### Conclusions

The prevalence of burnout in early-career doctors in Sri Lanka is high. Compared to RHOs, who have immediately finished their internships, IMOs experience significantly high levels of exhaustion and depersonalization, which in turn negatively correlates with patient care. IMOs face significant challenges in self-care in terms of compromised exercises, poor eating habits, and lack of sleep. Moreover, poor sleep quality and duration in IMOs perturb daytime activities and conceivably interfere with patient care. As the primary contact physicians, it is of paramount importance to minimize the burnout of the IMOs for them to perform

optimally. Therefore, we recommend the introduction of preventive measures to mitigate burnout in early-career physicians, particularly IMOs, to improve both self and patient care. Notably, the supervising consultants and the relevant administrative officers must pay attention to allocate time for intern medical officers to have at least their meals and an adequate sleep, which may decrease the level of burnout. Furthermore, allocation of time for recreational activities, though challenging with the amount of workload bestowed upon an IMO, could not only help improve the physical and mental health of IMOs, but also the service they provide.

**Supplementary information** The online version contains supplementary material available at <https://doi.org/10.1007/s11845-021-02874-y>.

**Author contribution** IH conceptualized the study. VS, WD, and RT collected data. YM analyzed data and wrote first draft. All authors were involved in drafting and commenting on the paper and have approved the final version.

**Availability of data and material** Data is available from the corresponding author upon request.

## Declarations

**Ethics approval** The study was approved by the Ethics Review Committee of the Post Graduate Institute of Medicine in Sri Lanka (ERC/PGIM/2018/55).

**Competing interests** The authors declare no competing interests.

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