

Well-being of Residents in Training Programs of Abu Dhabi Health Services

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Abstract

Background: Residency is a stressful period adversely affecting the health and lifestyle of resident physicians. In September 2001, the American Council of Graduate Medical Education released requirements that limit resident working hours in an effort to decrease resident fatigue. **Aims:** We aimed to measure the prevalence of stress, burnout, and depression among residents working in Abu Dhabi Health Services and to determine the percentage of residents with a healthy lifestyle and to compare the well-being of residents from different specialties. **Setting and Design:** A cross-sectional survey was conducted in the year 2016 among resident doctors in Abu Dhabi. The study population comprised 458 residents representing 20 training programs at six institutions. **Subjects and Methods:** All the residents were provided self-administered questionnaires. **Results:** Response rate was 81%. The prevalence of perceived stress among residents was 86.4%. Stress was significantly associated with workload ($P < 0.01$) and night shifts ($P < 0.001$) among residents from most specialties. Regarding burnout, 65.7% of the residents felt emotionally exhausted and 50.8% felt depressed at some point during their residency. Furthermore, 58.8% of the residents with chronic diseases had an uncontrolled disease status. **Conclusion:** Majority of the residents of Abu Dhabi Health Services experienced high rates of burnout, depression, and stress along with poor lifestyle and uncontrolled status of chronic diseases.

Keywords: Burnout, depression, education, lifestyle, medical training, postgraduate, residency, stress, well-being

INTRODUCTION

Modern medical workplaces represent a complex environment replete with multiple stressors, such as a constant influx of patients, responsibilities related to critical decision-making, and the pressure to avoid medical errors.^[1]

During residency, an academically qualified medical school graduate is transformed into a competent medical practitioner through training. It is a stressful period, during which resident physicians encounter multiple hardships, including catering to severely ill patients, lengthy working hours, and a need to study regularly to keep themselves updated.^[2] Moreover, sleep deprivation, inadequate personal time, on-call duties, exam preparations, and research work all act as additional stressful factors.^[3] These stressors can lead to health and emotional problems as well as negatively affect a trainee's academic and clinical performances and social engagement.^[4] In September 2001, the Accreditation Council for Graduate Medical Education (ACGME) released requirements that limit resident working hours to no more than an average of 80 h per

week in an attempt to decrease resident fatigue.^[5] The negative effects of stress experienced by residents during training have been well reported in the literature since 1980.^[6] A recent study conducted among residents of Dubai Health Authority (DHA) in the United Arab Emirates (UAE) reported the prevalence of stress to be 42%, with 63.3% of residents exhibiting symptoms of depression.^[2] The same study reported stress, depression, and anxiety to be more prevalent among residents with long commute times, those with lower income, and those who wanted to change their specialty.^[2]

Another study conducted in two academic medical centers in the Eastern and Western United States (USA) reported that residents are more likely to be overweight at the beginning of the 3rd year of their training than that at the beginning of the

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1st year of the training.^[4] In a Canadian study, 25% of residents were found to have chronic diseases and 40% of them with regular prescriptions did not follow up with their family physicians and instead followed other prescribers, including their friends.^[7]

Many studies have been conducted worldwide to evaluate wellness, health, lifestyle, effect of stress, and coping mechanisms among residents.^[4] However, to date, no studies have been published regarding health or lifestyle choices among the residents of Abu Dhabi residency programs. This study aimed to measure the prevalence of stress, burnout, and depression among these residents. Another aim was to determine the percentage of residents who led a healthy lifestyle and to draw comparisons between the well-being of residents from different specialties.

SUBJECTS AND METHODS

Design and setting

A cross-sectional survey was conducted among resident doctors in Abu Dhabi (including Al Ain city) enrolled under training programs in 2016. Questionnaires were distributed by researchers and chief residents from each specialty in meeting rooms inside hospitals and primary health-care clinics; these include the following: Sheikh Khalifa Medical City (including Al Bateen clinic for family medicine), Mafraq Hospital, Corniche Hospital, Tawam Hospital, Al Ain Hospital, and Ambulatory Healthcare Services-Al Ain. Ethical approval was provided by the Institutional Review Board of Sheikh Khalifa Medical City, Abu Dhabi, UAE (reference number RS-406). All participants gave written informed consent before the questionnaire was served.

Participants

The target population included 458 residents representing 20 residency programs at six institutions. The residents were grouped according to their specialties, i.e., dermatology, emergency medicine (EM), family medicine (FM), general surgery, internal medicine (IM), obstetrics and gynecology, ophthalmology, pediatrics, psychiatry, and radiology. Both UAE nationals and expatriate residents were included in the study. Residents who were on leave or postcall during data collection were excluded from the study.

The study questionnaire

A primary questionnaire was developed *de novo* after a literature review and expert consultation. A pilot study was conducted on twenty resident physicians, and their notes were taken under consideration. Written informed consent was obtained from all participants prior to conducting the survey. Questionnaires were self-administered on paper. The main body of the questionnaire was structured into four sections that focused on demographic-, health-, lifestyle-, and psychosocial-related factors. In the section on psychosocial factors, participants were inquired about the perceived stress, depression, and burnout and the frequency at which these

feelings were experienced. We defined burnout as a state of emotional exhaustion that evokes negative feelings about oneself and one's job. After the survey, the questionnaires were stored in sealed envelopes to ensure confidentiality of participant responses.

Statistical analysis

Data analysis was performed using Statistical Package for the Social Sciences, version 21 (SPSS Inc., Chicago, IL, USA). Data are presented as means or frequency (percentage). Chi-square test was used to test the relationship between categorical variables by cross tabulation. $P < 0.05$ was taken to indicate statistical significance.

RESULTS

Demographic data

Overall response rate was 81%, with a 90% response rate observed from the residents of EM, surgery, and ophthalmology. Demographic characteristics of the study population are presented in Table 1.

Table 1: Demographic characteristics of the residents included in the study (n=296)

Parameter	Details	n (%)
Gender	Male/female	63 (21.3)/233 (78.7)
Nationality	UAE/expatriates	209 (0.6)/87 (29.4)
Marital status	Single/married/ divorced/widow	171 (57.8)/122 (41.2)/3 (1)
Number of children (n=291)	0	216 (74.2)
	1-2	62 (21.3)
	3-5	13 (4.5)
	>5	0
Specialty	Pediatrics	49 (16.6)
	Internal medicine	62 (20.9)
	Family medicine	63 (21.3)
	General surgery	26 (8.8)
	Ophthalmology	9 (3)
	Emergency medicine	41 (13.9)
	Obstetrics and gynecology	19 (6.4)
	Radiology	8 (2.7)
	Psychiatry	17 (5.7)
	Dermatology	2 (0.7)
Hospital	Al Ain hospital	25 (8.4)
	Mafraq hospital	38 (12.8)
	Sheikh Khalifa Medical City	120 (40.5)
	Corniche Hospital	12 (4.1)
	Tawam Hospital	77 (26)
	Ambulatory Healthcare Services-Al Ain	24 (8.1)
	Year of residency (n=293)	R1
R2	78 (26.6)	
R3	59 (20.1)	
R4	55 (18.8)	
R5	16 (5.5)	

Health and lifestyle

Chronic diseases were present in 11.8% of residents; 58.8% exhibited an uncontrolled disease status. Psychiatric disorders were present in 7.6% of the residents, with depression being the most commonly reported disorder. Furthermore, 3.8% of residents smoked daily and 87.2% of residents consumed at least one cup of tea, coffee, or energy drink daily. Fifteen percent of the residents exercised at least three times per week; half of all residents claimed that availability of a gym in the hospital would increase their exercise frequency.

The percentage of FM residents who exercised at least three times a week was 24.6%, which was the highest among the residents across all specialties. Nearly 90% of the residents consumed junk food at least once a week and 76% claimed that they would consume healthier food if it was available in the hospital. Furthermore, 57% of the residents were sleep deprived and routinely slept for 6 h or less per day. Residents from IM, surgery, dermatology, and obstetrics and gynecology departments tended to sleep less than their colleagues from

other specialties, and more than half of them felt sleep deprived. Lack of sleep showed a significant association with burnout ($P = 0.003$) and feeling of depression ($P = 0.031$) and stress ($P = 0.001$); it was also significantly associated with uncontrolled status of chronic diseases ($P = 0.029$). Two-thirds of the residents with uncontrolled chronic diseases complained of sleep deprivation [Table 2].

Psychosocial features

Prevalence of perceived stress at some point during residency training among residents of Abu Dhabi Health Services was 86.4%, with 63.1% of residents feeling stressed sometimes and 23.4% feeling stressed all the time [Table 3]. The reported causes of stress included excessive workload (79.4%), lack of sleep (54.2%), family responsibilities (46.9%), and night calls (35.4%). Stress was found to be significantly associated with workload ($P = 0.009$) and night shifts ($P = 0.000$) among residents from most of the specialties. Female residents perceived greater stress while working alone with inadequate support, whereas male residents related their stress to financial

Table 2: Specialty and lifestyle

Parameter (P)	Peds, n (%)	IM, n (%)	FM, n (%)	Surgery, n (%)	Ophthal, n (%)	ER, I (%)	Obs/gyne, n (%)	Radio, n (%)	Psych, n (%)	Derma, n (%)
Exercise per week (0.295)										
Never	22 (47.8)	27 (43.5)	31 (50.8)	9 (37.5)	4 (44.4)	23 (56.1)	11 (57.9)	1 (12.5)	8 (47.1)	0
1-2 times	17 (37)	27 (43.5)	15 (24.6)	14 (58.3)	5 (55.6)	11 (26.8)	7 (36.8)	6 (75)	7 (41.2)	2 (100)
3-4 times	5 (10.9)	5 (8.1)	13 (21.3)	1 (4.2)	0	6 (14.6)	1 (5.3)	1 (12.5)	2 (11.8)	0
5 times or more	2 (4.3)	3 (4.8)	2 (3.3)	0	0	1 (2.4)	0	0	0	0
Will exercise if gym available at their hospital (0.021)										
Yes	25 (54.3)	32 (51.6)	33 (54.1)	8 (33.3)	2 (22.2)	15 (37.5)	14 (73.7)	5 (62.5)	10 (58.8)	2 (100)
No	14 (30.4)	14 (22.6)	13 (21.3)	11 (45.8)	6 (66.7)	7 (17.5)	2 (10.5)	0	3 (17.6)	0
Maybe	7 (15.2)	16 (25.8)	15 (24.6)	5 (20.8)	1 (11.1)	18 (45)	3 (15.8)	3 (37.5)	4 (23.5)	0
Eating junk food per week (0.066)										
Never	6 (13)	5 (8.1)	9 (15)	2 (8.3)	0	2 (4.9)	2 (10.5)	1 (12.5)	2 (11.8)	0
1-2	22 (47.8)	33 (53.2)	36 (60)	7 (29.2)	5 (55.6)	16 (39)	7 (36.8)	6 (75)	8 (47.1)	1 (50)
3-5	16 (34.8)	17 (27.4)	11 (18.3)	6 (25)	3 (33.3)	19 (46.3)	7 (36.8)	1 (12.5)	5 (29.4)	1 (50)
>5	2 (4.3)	7 (11.3)	4 (6.7)	9 (37.5)	1 (11.1)	4 (9.8)	3 (15.8)	0	2 (11.8)	0
Will eat healthier if it is available at hospital (0.061)										
Yes	35 (77.8)	48 (77.4)	47 (77)	12 (50)	6 (75)	30 (73.2)	18 (94.7)	8 (100)	13 (76.5)	2 (100)
No	1 (2.2)	3 (4.8)	4 (6.6)	5 (20.8)	2 (25)	4 (9.8)	0	0	3 (17.6)	0
Maybe	9 (20)	11 (17.7)	10 (16.4)	7 (29.2)	0	7 (17.1)	1 (5.3)	0	1 (5.9)	0
Smoking (0.476)										
Never	46 (100)	50 (80.6)	59 (98.3)	19 (79.2)	9 (100)	33 (80.5)	15 (83.3)	15 (83.3)	7 (87.5)	2 (100)
Ex-smoker	0	0	1 (1.7)	2 (8.3)	0	2 (4.9)	0	0	0	0
Rarely	0	4 (6.5)	0	1 (4.2)	0	3 (7.3)	1 (5.6)	1 (5.6)	1 (12.5)	0
Having chronic disease (0.231)										
Yes	4 (8.7)	5 (8.1)	5 (8.2)	4 (16.7)	3 (33.3)	5 (12.2)	2 (10.5)	1 (12.5)	4 (23.5)	1 (50)
No	42 (91.3)	57 (91.8)	56 (91.8)	20 (83.3)	6 (66.7)	36 (87.8)	17 (89.5)	7 (87.5)	13 (76.5)	1 (50)
Controlled (0.289)										
Yes	2 (50)	3 (60)	1 (20)	0	1 (33.3)	2 (40)	2 (100)	0	3 (75)	0
No	2 (50)	2 (40)	4 (100)	4 (100)	2 (66.7)	3 (60)	0	1 (100)	1 (25)	1 (100)

Peds: Pediatrics, IM: Internal medicine, FM: Family medicine, Surgery: General surgery, Ophthal: Ophthalmology, ER: Emergency medicine, Obs/gyne: Obstetrics and gynecology, Radio: Radiology, Psych: Psychiatry, Derma: Dermatology

issues ($P = 0.000$). Moreover, 65.7% of the residents felt emotionally exhausted, while 50.8% felt depressed at some point during training. Various coping mechanisms were reported by the residents; these included family support (68.5%), religious activities (41.9%), physical exercise (35.4%), spa or massage activities (23.4%), music (31.3%), yoga (6.9%), and other coping mechanisms (11%). Residents who did not report using any coping mechanisms were more liable to emotional exhaustion compared with those who used different coping mechanisms ($P = 0.001$). In addition, 5.5% of all residents reported working for more than 80 h per week.

Furthermore, 78.3% of the residents felt that they receive adequate support from their family, friends, faculty, or program directors, with most of the support being derived from family interactions. Among residents who reported having adequate support, 90% never felt depressed ($P = 0.000$), 85.7% (6/7) never felt stressed ($P = 0.001$), and none of them ever experienced emotional exhaustion ($P = 0.000$) [Figure 1 and Table 3].

Leisure time and time to work

We found that 78.2% of the residents spent <8 h per week in pleasurable activities. These residents were more likely to experience burnout ($P = 0.000$) and feel depressed ($P = 0.005$) and stressed ($P < 0.025$). For less than a quarter of the

residents, it took more than 30 min to reach the workplace. Although depression, stress, and burnout were more prevalent in residents with longer commute times, the association was not significant.

DISCUSSION

Our study demonstrates that residency programs have a significant influence on the residents' health and lifestyle in

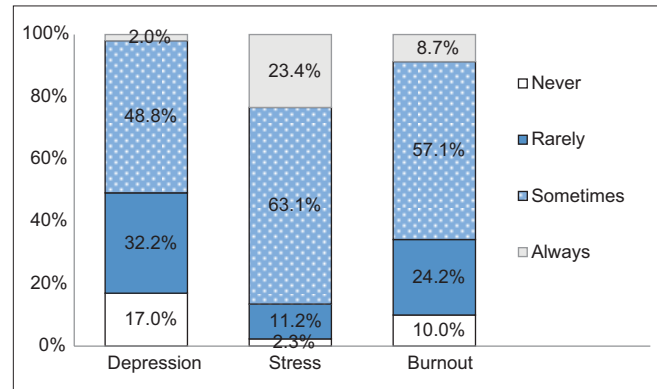


Figure 1: Prevalence of perceived depression, anxiety, and burnout among residents ($n = 295$)

Table 3: Frequency and nature of psychological disturbances by speciality										
Parameter (P)	Peds, n (%)	IM, n (%)	FM, n (%)	Surgery, n (%)	Ophthal, n (%)	ER, n (%)	Ob and G, n (%)	Radio, n (%)	Psych, n (%)	Derma, n (%)
Having psychiatric disease (0.003)										
Yes	1 (2)	4 (6.5)	4 (6.3)	1 (3.8)	3 (33.3)	1 (2.4)	2 (10.5)	3 (37.5)	2 (11.8)	0
No	48 (98)	58 (93.5)	59 (93.7)	25 (96.2)	6 (66.7)	40 (97.6)	17 (89.5)	5 (62.5)	15 (88.2)	2 (100)
Nature of disorder										
Depression (0.055)	1 (2)	3 (4.8)	4 (6.3)	1 (3.8)	3 (33.3)	1 (2.4)	2 (10.5)	1 (12.5)	1 (5.9)	0
Anxiety (0.236)	0	1 (1.6)	3 (4.8)	1 (3.8)	1 (11.1)	0	0	1 (12.5)	0	0
Feeling depressed (0.705)										
Never	6 (12.2)	11 (17.7)	10 (16.1)	3 (11.5)	2 (22.2)	7 (17.7)	3 (15.8)	3 (37.5)	4 (23.5)	1 (50)
Rarely	13 (26.5)	21 (33.9)	20 (32.3)	13 (50)	1 (11.1)	17 (41.5)	4 (21.1)	2 (25)	4 (23.5)	0
Sometimes	2 (59.2)	28 (45.2)	31 (50)	9 (34.6)	5 (55.6)	17 (41.5)	12 (63.2)	3 (37.5)	9 (52.9)	1 (50)
Always	1 (2)	2 (3.2)	1 (1.6)	1 (3.8)	1 (11.1)	0	0	0	0	0
Feeling stressed (0.840)										
Never	0	2 (3.2)	1 (1.6)	1 (3.8)	1 (11.1)	1 (2.4)	1 (5.3)	0	0	0
Rarely	3 (6.1)	5 (8.1)	9 (14.3)	4 (15.4)	0	7 (17.1)	1 (5.3)	2 (25)	2 (12.5)	0
Sometimes	32 (65.3)	41 (66.1)	40 (63.5)	13 (50)	4 (44.4)	26 (63.2)	12 (63.2)	5 (62.5)	11 (68.8)	2 (100)
Always	14 (22.6)	14 (22.6)	13 (20.6)	8 (30.8)	4 (44.4)	7 (17.1)	5 (26.3)	1 (12.5)	3 (18.8)	0
Nature of stressors working alone										
Without support (0.129)	14 (30.4)	16 (26.7)	19 (30.2)	9 (37.5)	1 (11.1)	6 (15.8)	4 (21.1)	5 (62.5)	2 (11.8)	0
Workload (0.009)	38 (82.6)	52 (86.7)	52 (82.5)	18 (75)	8 (88.9)	31 (81.6)	15 (78.9)	2 (25)	9 (52.9)	2 (100)
Illness (0.012)	8 (17.4)	3 (5)	7 (11.1)	1 (4.2)	4 (44.4)	3 (7.9)	3 (15.8)	0	1 (5.9)	1 (50)
Financial issues (0.403)	11 (23.9)	11 (18.3)	5 (7.9)	2 (8.3)	1 (11.1)	8 (21.1)	3 (15.8)	1 (12.5)	1 (5.9)	0
Family responsibilities (0.037)	21 (45.7)	21 (35)	37 (58.7)	5 (20.8)	5 (55.6)	19 (50)	14 (73.7)	4 (50)	8 (47.1)	0
Lack of sleep (0.203)	25 (54.3)	35 (58.3)	40 (63.5)	14 (58.3)	4 (44.4)	17 (44.7)	5 (26.3)	6 (75)	8 (47.1)	1 (50)
Night calls (0.000)	23 (50)	26 (43.3)	14 (22.2)	7 (30.4)	5 (50.5.6)	7 (18.4)	3 (15.8)	7 (87.5)	9 (52.9)	0

Contd...

Table 3: Contd...

Parameter (P)	Peds, n (%)	IM, n (%)	FM, n (%)	Surgery, n (%)	Ophth, n (%)	ER, n (%)	Ob and G, n (%)	Radio, n (%)	Psych, n (%)	Derma, n (%)
Emotionally exhausted (0.193)										
Never	7 (14.6)	4 (6.9)	6 (9.5)	3 (12)	0	6 (15)	1 (5.3)	1 (12.5)	1 (5.9)	0
Rarely	14 (29.2)	14 (24.1)	11 (17.5)	10 (40)	0	13 (32.5)	4 (21.1)	1 (12.5)	3 (17.6)	0
Sometimes	24 (50)	35 (60.3)	40 (63.5)	9 (36)	6 (66.7)	18 (45)	14 (73.7)	4 (50)	13 (76.5)	2 (100)
Always	3 (6.2)	5 (8.6)	6 (9.5)	3 (12)	3 (33.3)	3 (7.5)	0	2 (25)	0	0
Stress coping mechanism										
None (0.175)	4 (8.2)	7 (11.5)	2 (3.2)	4 (15.4)	2 (22.2)	1 (2.4)	0	0	1 (5.9)	0
Family support (0.141)	32 (66.7)	33 (53.2)	50 (79.4)	19 (82.6)	6 (66.7)	30 (73.2)	12 (63.2)	5 (62.5)	12 (70.6)	1 (50)
Physical exercise (0.929)	16 (33.9)	21 (33.9)	26 (41.3)	6 (26.1)	3 (33.3)	13 (32.5)	8 (42.1)	4 (50)	5 (29.4)	1 (50)
Yoga (0.582)	2 (4.2)	6 (9.7)	4 (6.3)	2 (8.7)	0	1 (2.5)	2 (10.5)	0	3 (17.6)	0
Spa (0.249)	10 (20.8)	8 (12.9)	22 (34.9)	4 (17.4)	3 (33.3)	11 (27.5)	3 (15.8)	2 (25)	4 (23.5)	1 (50)
Religious activities (0.013)	26 (54.2)	17 (27.4)	31 (49.2)	6 (26.1)	4 (44.4)	21 (52.5)	8 (42.1)	4 (50)	3 (17.6)	2 (100)
Music (0.039)	13 (27.1)	21 (33.9)	12 (19)	5 (21.7)	6 (66.7)	16 (40)	7 (36.8)	2 (25)	9 (52.9)	0
Getting enough support (0.485)										
Yes	41 (83.7)	50 (80.6)	52 (82.5)	19 (73.1)	5 (55.6)	29 (72.5)	16 (84.2)	6 (75)	11 (64.7)	2 (100)
No	8 (16.3)	12 (19.4)	11 (17.5)	7 (26.9)	4 (44.4)	11 (27.5)	3 (15.8)	2 (25)	6 (35.3)	0
Frequency of support (0.138)										
Rarely	2 (5.3)	9 (19.1)	3 (6.4)	1 (5)	0		0	0	0	0
Sometimes	20 (52.6)	21 (44.7)	28 (59.6)	9 (45)	4 (66.7)	13 (46.4)	12 (75)	4 (80)	5 (41.7)	1 (50)
Always	16 (42.1)	17 (36.2)	16 (34)	10 (50)	2 (33.3)	15 (53.6)	4 (25)	2 (20)	7 (58.3)	1 (50)
Source of support										
Family (0.445)	37 (75)	36 (59)	50 (79.4)	17 (70.8)	6 (66.7)	28 (70)	13 (68.4)	6 (75)	10 (58.8)	2 (100)
Program director (0.000)	21 (42.9)	8 (13.1)	30 (47.6)	6 (27.3)	4 (44.4)	18 (46.2)	8 (46.2)	2 (25)	3 (17.6)	0
Faculty (0.99)	11 (22.4)	7 (11.5)	17 (27)	5 (22.7)	2 (22.2)	15 (38.5)	2 (10.5)	1 (12.5)	2 (11.8)	0
Friends (0.723)	25 (51)	37 (60.7)	40 (63.5)	14 (63.6)	4 (44.4)	23 (59)	14 (73.7)	4 (50)	10 (58.8)	2 (100)

Peds: Pediatrics, IM: Internal medicine, FM: Family medicine, Surgery: General surgery, Ophth: Ophthalmology, ER: Emergency medicine, Ob and G: Obstetrics and gynecology, Radio: Radiology, Psych: Psychiatry, Derma: Dermatology

several aspects including exercise, diet, and sleep. Among the 11.8% residents suffering from a chronic disease, 59% exhibited poor control over their illnesses. Residents were less likely to seek appropriate medical attention for their chronic diseases. These findings are consistent with those of a Canadian study reporting that 25% of residents had chronic diseases; however, 40% of those who had regular prescriptions did not follow up with their family physicians.^[7] This can be attributed to many reasons. As residents are busy in their clinical obligations, they might not consider self-care a priority.

Only 15% of the residents in the present study exercised at least three times per week. Furthermore, 90% of the residents consumed junk food at least once a week. Similar findings were noted in a study conducted in Georgia where a significant decline was noted in many lifestyle aspects, such as low-fat diet, sleep hours, exercise, family interactions, and television viewing.^[5] These findings are likely attributable to a disregard for personal health and the easy availability of fast food after a long and busy day at work.

It is worth mentioning that obesity and sedentary lifestyle are one of the major health problems in the UAE. In 2015, the UAE had the fifth highest incidence rate of diabetes worldwide.^[8] These figures are alarming given that resident doctors in the same country are not taking care of their own health.

The overall prevalence of perceived stress among residents was 86.4%, with 63.1% residents feeling stressed sometimes and 23.4% feeling stressed all the time. This figure is much higher than the 42% prevalence of perceived stress reported among DHA residents in the UAE and the 39.4% prevalence of stress reported among residents in the Philippines.^[2,9] In our study, 50.8% of residents felt depressed at some point during their residency program, which is less than the corresponding rate of 63.3% reported from a study conducted in Dubai.^[2] Untreated mental health problems among resident physicians can compromise the quality of health-care services.

A systematic review conducted in 2015 revealed a 28.8% prevalence of depression or depressive symptoms among resident physicians.^[10] This is much lower than that observed in our study as our calculation was based on self-reported "perceived" depression rather than on the clinical diagnosis of depression.

Despite recommendations by the ACGME to limit resident working hours, 5.5% of all residents reported working for >80 h per week.

We believe that this is due to lack of replacement for resident services, high volume of patients, and multiple responsibilities

of a clinical training. Our reported numbers are much lower than those reported from the USA in 2006, in which 65% of the residents reported working for >80 h a week on an average.^[1] This difference can be explained by better regulation of duty hour requirements and violations in recent years. However, program directors should be more aggressive while dealing with duty hour violations.

To promote residents' well-being, we recommend offering frequent seminars and strategic plans regarding stress management and sleep hygiene to residents. Furthermore, residents with chronic diseases should be provided a special day off to schedule a family physician consultation for the management of their chronic diseases. We also recommend provision of a staff psychologist to address issues related to residents' stress, depression, and burnout. Healthier food and gym should be available at the workplace for improvement in residents' lifestyle.

The study may have some limitations inherent to its design and settings. Seeking to assess twenty residency programs in six institutes may produce heterogeneous results as the challenges and specific problems may be different in different locations and different programs. However, there remains some common issues that could be teased out by this generic study. It is a cross-sectional study, thus only giving an assessment at one time point but does not allow how to ascertain outcomes of how residents dealt with challenges and obstacles. However, the study should provide a baseline assessment of well-being of residents in this new and extensive network of residency programs for future assessments.

CONCLUSION

High rates of perceived depression, stress, and burnout were noted among Abu Dhabi trainees. Residents from specialties with long working hours were found to be more stressed and exhibited poor control of their chronic diseases. A minority of residents in Abu Dhabi Health Services performed regular exercise and reported adequate sleep hours. Conversely, the majority felt sleep deprived and were consuming caffeinated beverages daily. The bulk of support received by the residents was from their families. Residents who reported having adequate support had fewer rates of depression, stress, and burnout.

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Authors' contributions

All authors contributed to the conception, planning and conduct of the study including data collection and analysis and to drafting, revision, and approval of the manuscript in its final version.

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Conflict of interest

There are no conflicts of interest.

Compliance with ethical principles

Ethical approval was granted by the Institutional Review Board of Sheikh Khalifa Medical City (reference number RS-406). All participants gave written informed consent before the questionnaire was served.

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