



Demographic Gradients of Mental Health in University Students: A Study of Medical Interns in Iran

Mana Jameie^{1,2}, Nastaran Keshavarz Mohammadi ^{1,*}, Hossein Hatami³, Melika Jamie⁴ and Pejman Mansouri²

¹School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran

²Cardiovascular Diseases Research Institute, Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran

³Environmental and Occupational Hazards Control Research Center, School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁴Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author: School of Public Health and Safety, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Tel: +98-2122432040, Email: n_keshavars@yahoo.com

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Abstract

Background: The mental health status of medical students is not optimistic. Understanding the factors associated with their poor mental health can contribute to alleviating this condition.

Objectives: This study aimed to examine the mental health status of medical interns and its associated demographic and personal traits.

Methods: From 2020 to 2021, 358 interns were enrolled in the study. Goldberg's general health questionnaire (GHQ-28) was used to assess their mental health, with scores ≥ 24 indicating poor mental health. Factors associated with GHQ scores were determined using multivariable regression.

Results: Among the study population (age: 25.43 ± 2.31 , 49.4% males), GHQ mean score was 30.09 ± 14.44 , and 61.7% of interns had GHQ ≥ 24 . Female gender (adjusted-OR: 1.78, P: 0.015), low hope for career prospects (adjusted-OR: 4.09, P: 0.001), and low and medium personal life satisfaction (adjusted-OR: 10.94, P < 0.001; adjusted-OR: 2.55, P: 0.001, respectively) significantly increased the risk of having poor mental health.

Conclusions: In Iran, more than half of medical interns are not enjoying desirable mental health. Female students are more prone to being mentally unhealthy. Furthermore, lower hope and personal life satisfaction levels negatively affect students' mental health. Related university officials should identify the causes and develop effective preventive and therapeutic mental health services for interns. Female students should be the priority group.

Keywords: Health Promotion, Students, Medical, Mental Health

1. Background

For several years, studies have argued that mental health in medical schools is a considerable issue. Psychiatric problems are more prevalent among medical students than the rest of the population (1) or other students (2). A meta-analysis suggested the prevalence of depressive symptoms to be 27.2 % among medical students, ranging from 9.3 to 55.9 (3). Various reasons have been proposed for this situation: Heavy shift work, academic pressure, workload, sleep deprivation, and stiff competition (4). Further, poor mental health conditions can lead to irreparable consequences such as excessive alcohol consumption, tobacco, and problematic substance use (5, 6).

Studies from Iran have reported the prevalence of mental health issues as high as 52.1% among medical students (7, 8). A deeper understanding of its contributing variables can pave the way to alleviating this condition. While a large body of literature has focused on extrinsic factors such as not having appropriate access to mental health services (9, 10), less attention has been given to the root elements that lie within the students. In addition, the findings of such studies are inconsistent. Many studies have reported significantly better men's mental health than women's (7, 11); however, some did not (2, 12). Controversial results are also reported regarding the relationship between mental health and socioeconomic and marital status (7, 12). Reasonably, however, these associations might be context-dependent, not universal, so

they must be investigated in any given context.

2. Objectives

In light of this information, this study examined the mental health status and explored its demographic gradients among medical interns.

3. Methods

This cross-sectional study was conducted at Shahid Beheshti University of Medical Sciences (SBMU), Tehran, Iran, in 2020 - 2021. The Ethics Committee approved the study (IR.SBMU.PHNS.REC.1399.156), and written informed consent was obtained.

3.1. Study the Population

All medical interns (6th and 7th-year students) were included in the study. Questionnaires were handed to all medical interns. Of 430 interns, 358 completed the questionnaires (a response rate of 83.25%).

3.2. Study Protocol

The two-part questionnaire consisted of a) demographic and personal factors and b) Goldberg's General Health Questionnaire (GHQ-28) for mental health evaluation (13). The GHQ-28 questionnaire comprises four subscales; (1) somatic symptoms (subscale A); (2) anxiety and insomnia (subscale B); (3) social dysfunction (subscale C); and (4) severe depression (subscale D). The more the score, the worse the mental health outcome. Based on previous studies on the Iranian population, the cut-off point of 24 scores (reliability of 0.9, the validity of 0.78, and Cronbach's alpha of 0.97) indicated poor mental health (14).

3.3. Statistical Analysis

Categorical variables were compared using the Chi-squared test and are presented as frequency (percentages). Normally-distributed continuous variables were compared using the Student's- *t* test and are reported as mean \pm SD. Skewed continuous variables were compared using the Mann-Whitney U test and are reported as median (25th - 75th percentiles). Normality was tested using the Kolmogorov-Smirnov test. Univariate and multivariable binary logistic regressions were used to identify the factors associated with GHQ > 28 (poor mental health), which are reported with odds ratios (OR), 95% confidence intervals (CI), and P values. Since no cut-offs were proposed for subscales, linear regression was used to evaluate factors associated with lower scores in each subscale, and the findings are presented as beta coefficients and standard error (SE). SPSS version 21 was used, and $P < 0.05$ was considered significant.

4. Results

4.1. Baseline Characteristics

The study population aged 25.43 ± 2.31 , with 50.5% females. Most of the students had started their internship more than one year, lived with their families, had no underlying disease, and were from middle economic groups. While 45.8% of the students had a high interest in medicine, only 17% and 26.5% had high hope for career prospects and personal life satisfaction, respectively (Table 1).

The total GHQ score was 30.09 ± 14.45 out of 84, with the worse condition for subscale B (anxiety and insomnia, 8.93 ± 5.03 out of 21). Among the study population, 61.7% had poor mental health. Those in the poor mental health group were significantly more likely to be females, have diseases, and have low interest, hope, and satisfaction (Table 1).

4.2. Factors Associated with GHQ Score Equal or Greater Than 24

Table 2 presents the factors associated with poor mental health.

Female gender, internship month ≤ 6 , medium interest in medicine, low and medium hope for career prospects, low and medium personal life satisfaction, and having diseases were significantly associated with poor mental health at the univariable level. After adjustments, the following variables were significant factors associated with poor mental health: Female gender (adjusted-OR: 1.78, 95% CI: 1.12 - 2.86), low hope for career prospects (adjusted-OR: 4.09, 95% CI: 1.80 - 9.23), and low and medium personal life satisfaction (adjusted-OR: 10.94, 95% CI: 4.33 - 27.66; adjusted-OR: 2.55, 95% CI: 1.47 - 4.42, respectively).

4.3. Factors Associated with Subscale Scores

Table 3 presents the mean score of each subscale and the factors associated with subscale scores at the multivariable level. Across all subscales, dormitory residence was a significant protective factor, while low and medium hope for career prospects and low personal life satisfaction were significant hazardous factors. Female sex, medium level of personal life satisfaction, and having diseases significantly deteriorated mental health outcomes across three subscales. Many other variables were associated with at least one subscale (Table 3). No significant relationship existed between hometown, economic, marital status, and any subscales at the adjusted level.

Table 1. Baseline Characteristics of the Study Population ^a

Variables	Total (N = 358)	GHQ < 24 (N = 137, 38.3%)	GHQ ≥ 24 (N = 221, 61.7%)	P-Value
Age	25.43 ± 2.31	25.37 ± 2.33	25.46 ± 2.31	0.724
Gender				0.026
Male	177 (49.4)	78 (56.9)	99 (44.8)	
Female	181 (50.5)	59 (43.1)	122 (55.2)	
Internship months				0.087
≤ 6	71 (19.8)	20 (14.6)	51 (23.1)	
6 - 12	60 (16.7)	21 (15.3)	39 (17.6)	
12 - 24	227 (63.4)	96 (70.1)	131 (59.3)	
Hometown				0.328
Tehran	179 (50)	64 (46.7)	115 (52)	
Others	179 (50)	73 (53.3)	106 (48)	
Economic status				0.133
Poor/middle	206 (57.5)	72 (52.6)	134 (60.6)	
Good	152 (42.5)	65 (47.4)	87 (39.4)	
Marital status				0.975
Single	295 (82.4)	113 (82.5)	182 (82.4)	
Married	63 (24.4)	24 (17.5)	39 (17.6)	
Current department				0.167
Emergency/Surgery	62 (17.3)	23 (16.8)	39 (17.6)	
Internal medicine ^b	139 (38.8)	55 (40.1)	84 (38)	
Pediatric	23 (6.42)	5 (3.6)	18 (8.1)	
Gynecology	22 (6.14)	5 (3.6)	17 (7.7)	
Others	112 (31.3)	49 (35.8)	63 (28.5)	
Accommodation				0.528
Dormitory	64 (17.9)	29 (21.2)	35 (15.8)	
Home with family	217 (60.6)	82 (59.9)	135 (61.1)	
Home with friends	14 (3.9)	4 (2.9)	10 (4.5)	
Home alone	63 (17.6)	22 (16.1)	41 (18.6)	
Interest in medicine				0.015
Low	30 (8.4)	9 (6.6)	21 (9.5)	
Medium	164 (45.8)	52 (38.0)	112 (50.7)	
High	164 (45.8)	76 (55.5)	88 (39.8)	
Hope for career prospects				< 0.001
Low	94 (26.3)	16 (11.7)	78 (35.3)	
Medium	203 (56.7)	83 (60.6)	120 (54.3)	
High	61 (17.0)	38 (27.7)	23 (10.4)	
Personal life satisfaction				< 0.001
Low	67 (18.7)	7 (5.1)	60 (27.1)	
Medium	196 (54.7)	69 (50.4)	127 (57.5)	
High	95 (26.5)	61 (44.5)	34 (15.4)	
Physical/mental disease				0.042
Yes	66 (18.4)	18 (13.1)	48 (21.7)	
No	292 (81.6)	119 (86.9)	173 (78.3)	

Abbreviation: GHQ, General Health Questionnaire.

^a Values are expressed as No. (%) or mean ± SD.^b Internal medicine, cardiology, infectious diseases, and toxicology.

Table 2. Mean General Health Questionnaire Scores and Factors Associated with GHQ Equal or Greater Than 24

Variables	Mean \pm SD	Unadjusted Model		Adjusted Model	
		OR (95% CI)	P-Value	OR (95%CI)	P-Value
Age	-	1.02 (0.93 - 1.12)	0.723	NA ^a	NA
Gender					
Female	33.01 \pm 14.58	1.64 (1.06 - 2.50)	0.026	1.78 (1.12 - 2.85)	0.015
Male	27.10 \pm 13.72	Reference		Reference	
Internship months					
≤ 6	31.24 \pm 14.19	1.87 (1.05 - 3.34)	0.035	NA	NA
6 - 12	34.33 \pm 15.75	1.36 (0.75 - 2.46)	0.308	NA	NA
12 - 24	28.60 \pm 13.97	Reference		NA	NA
Home town					
Tehran	31.15 \pm 14.85	1.24 (0.80 - 1.89)	0.328	NA	NA
Others	29.03 \pm 13.99	Reference		NA	NA
Economic status					
Poor/middle	31.11 \pm 14.55	1.39 (0.90 - 2.14)	0.133	NA	NA
Good	28.70 \pm 14.24	Reference		NA	NA
Marital status					
Single	30.17 \pm 14.42	0.99 (0.56 - 1.73)	0.975	NA	NA
Married	29.70 \pm 14.67	Reference		NA	NA
Current department					
Emergency/surgery	33.26 \pm 15.88	1.32 (0.70 - 2.49)	0.394	NA	NA
Internal medicine ^b	29.72 \pm 14.26	1.19 (0.72 - 1.97)	0.504	NA	NA
Pediatric	32.30 \pm 14.55	2.80 (0.97 - 8.07)	0.057	NA	NA
Gynecology	35.27 \pm 13.62	2.64 (0.91 - 7.67)	0.073	NA	NA
Others	27.31 \pm 13.53	Reference		NA	NA
Accommodation					
Dormitory	26.42 \pm 12.05	0.65 (0.32 - 1.32)	0.648	NA	NA
Home with family	30.61 \pm 15.04	0.88 (0.49 - 1.59)	0.883	NA	NA
Home with friends	28.93 \pm 11.63	1.34 (0.38 - 4.778)	0.377	NA	NA
Home alone	32.27 \pm 14.77	Reference		NA	NA
Interest in medicine					
Low	31.67 \pm 13.76	2.02 (0.87 - 4.66)	0.102	NA	NA
Medium	33.24 \pm 14.893	1.86 (1.18 - 2.92)	0.007	NA	NA
High	26.65 \pm 13.389	Reference		NA	NA
Hope for career prospects					
Low	37.98 \pm 15.87	8.05 (3.82 - 16.99)	< 0.001	4.09 (1.80 - 9.23)	0.001
Medium	28.63 \pm 12.96	2.39 (1.33 - 4.30)	0.004	1.61 (0.85 - 3.07)	0.147
High	22.77 \pm 11.27	Reference		Reference	
Personal life satisfaction					
Low	42.13 \pm 13.92	15.38 (6.33 - 37.38)	< 0.001	10.94 (4.33 - 27.66)	< 0.001
Medium	30.18 \pm 13.38	3.30 (1.98 - 5.50)	< 0.001	2.55 (1.47 - 4.42)	0.001
High	21.40 \pm 10.29	Reference		Reference	
Physical/mental disease					
Yes	36.73 \pm 16.27	1.83 (1.02 - 3.31)	0.044	NA	NA
No	28.59 \pm 13.59	Reference		NA	NA

^a Not applicable (NA) indicates that the variable was not included in the multivariable regression equation.

^b Internal medicine, cardiology, infectious diseases, and toxicology.

Table 3. Mean General Health Questionnaire Subscale Scores and Factors Associated with Each Subscale

Variables	Subscale A (Somatic Symptoms)			Subscale B (Anxiety and Insomnia)			Subscale C (Social Dysfunction)			Subscale D (Severe Depression)		
	Descriptive ^a	Adjusted Model ^b	P-Value	Descriptive ^a	Adjusted Model ^b	P-Value	Descriptive ^a	Adjusted Model ^b	P-Value	Descriptive ^a	Adjusted Model ^b	P-Value
Total	7.23 ± 4.22	-	-	8.93 ± 5.03	-	-	8.87 ± 3.59	-	-	5.06 ± 4.69	-	-
Gender												
Female	8.43 ± 3.98	2.41 ± 0.41	< 0.001	9.94 ± 4.98	2.02 ± 0.49	< 0.001	9.08 ± 3.80	NA ^c	NA	5.55 ± 5.01	1.10 ± 0.43	0.010
Male	6.00 ± 4.11	Reference		7.89 ± 4.88	Reference		8.66 ± 3.37	NA	NA	4.55 ± 4.30	Reference	-
Internship months												
≤ 6	7.44 ± 4.02	NA	NA	9.93 ± 5.38	NA	NA	8.72 ± 3.57	NA	NA	5.15 ± 4.82	NA	NA
6-12	8.63 ± 4.84	1.84 ± 0.55	0.001	10.00 ± 5.28	NA	NA	9.97 ± 3.68	NA	NA	5.73 ± 4.75	NA	NA
12- 24	6.79 ± 4.04	Reference	-	8.33 ± 4.77	NA	NA	8.63 ± 3.54	NA	NA	4.85 ± 4.64	NA	NA
Hometown												
Tehran	7.63 ± 4.41	NA	NA	9.35 ± 5.08	NA	NA	8.96 ± 3.58	NA	NA	5.22 ± 4.86	NA	NA
Others	6.83 ± 4.00	NA	NA	8.51 ± 4.96	NA	NA	8.79 ± 3.61	NA	NA	4.89 ± 4.53	NA	NA
Economic status												
Poor/middle	7.31 ± 4.24	NA	NA	9.23 ± 4.96	NA	NA	9.05 ± 3.59	NA	NA	5.51 ± 4.83	NA	NA
Good	7.12 ± 4.20	NA	NA	8.52 ± 5.11	NA	NA	8.62 ± 3.59	NA	NA	4.43 ± 4.45	NA	NA
Marital Status												
Single	7.17 ± 4.25	NA	NA	8.88 ± 5.01	NA	NA	9.01 ± 3.68	NA	NA	5.11 ± 4.69	NA	NA
Married	7.49 ± 4.10	NA	NA	9.16 ± 5.15	NA	NA	8.24 ± 3.09	NA	NA	4.81 ± 4.75	NA	NA
Current department												
Emergency/surgery	8.23 ± 4.59	NA	NA	9.92 ± 4.94	NA	NA	9.15 ± 3.94	NA	NA	5.97 ± 4.87	NA	NA
Internal medicine ^d	7.15 ± 4.04	NA	NA	8.58 ± 5.04	NA	NA	8.83 ± 3.69	NA	NA	5.16 ± 4.72	NA	NA
Pediatrics	8.57 ± 4.60	NA	NA	10.00 ± 4.97	NA	NA	8.52 ± 4.81	NA	NA	5.22 ± 4.81	NA	NA
Gynecology	7.64 ± 4.02	NA	NA	11.77 ± 5.55	3.29 ± 1.05	0.002	10.95 ± 3.50	1.65 ± 0.75	0.028	5.32 ± 4.52	NA	NA
Others	6.42 ± 4.06	NA	NA	8.04 ± 4.72	Reference		8.51 ± 3.38	Reference		4.34 ± 4.55	NA	NA
Accommodation												
Dormitory	5.80 ± 3.56	-2.60 ± 0.66	< 0.001	7.97 ± 4.75	-2.06 ± 0.79	0.010	8.42 ± 3.08	-1.11 ± 0.56	0.047	4.23 ± 4.08	-1.61 ± 0.70	0.022
Home with family	7.51 ± 4.22	NA	NA	9.16 ± 5.24	NA	NA	8.87 ± 3.75	NA	NA	5.07 ± 4.80	NA	NA
Home with friends	6.21 ± 2.99	-2.24 ± 1.10	0.042	7.43 ± 4.42	-3.06 ± 1.32	0.021	9.00 ± 3.09	NA	NA	6.29 ± 5.62	NA	NA
Home alone	7.95 ± 4.76	Reference		9.46 ± 4.56	Reference		9.30 ± 3.65	Reference		5.56 ± 4.66	Reference	
Interest in medicine												
Low	7.73 ± 4.53	NA	NA	9.53 ± 5.44	NA	NA	9.03 ± 2.98	-1.36 ± 0.67	0.043	5.37 ± 4.00	-1.68 ± 0.83	0.044
Medium	7.61 ± 4.37	NA	NA	9.96 ± 4.938	NA	NA	9.57 ± 3.77	NA	NA	6.10 ± 4.87	NA	NA
High	6.76 ± 3.98	NA	NA	7.79 ± 4.823	NA	NA	8.15 ± 3.39	Reference		3.96 ± 4.41	Reference	
Hope for career prospects												
Low	8.61 ± 4.75	1.95 ± 0.68	0.004	11.31 ± 5.28	2.88 ± 0.81	0.001	10.40 ± 3.89	2.06 ± 0.59	0.001	7.66 ± 5.07	2.26 ± 0.74	0.002
Medium	7.05 ± 3.96	NA	NA	8.44 ± 4.64	NA	NA	8.73 ± 3.28	1.08 ± 0.50	0.031	4.41 ± 4.35	NA	NA
High	5.69 ± 3.60	Reference		6.90 ± 4.57	Reference		6.98 ± 3.14	Reference		3.20 ± 3.46	Reference	
Personal life satisfaction												
Low	9.15 ± 4.69	2.32 ± 0.67	0.001	12.34 ± 4.47	4.30 ± 0.77	0.001	11.64 ± 3.79	4.08 ± 0.57	< 0.001	9.00 ± 5.05	5.84 ± 0.72	< 0.001
Medium	7.38 ± 4.05	1.33 ± 0.49	0.008	8.72 ± 4.70	NA	NA	8.97 ± 3.21	1.75 ± 0.42	< 0.001	5.10 ± 4.34	2.33 ± 0.53	< 0.001
High	5.56 ± 3.57	Reference		6.96 ± 4.89	Reference		6.71 ± 2.72	Reference		2.18 ± 2.70	Reference	
Physical/mental disease												
Yes	8.86 ± 4.49	1.69 ± 0.53	0.001	10.41 ± 5.34	NA	NA	10.32 ± 3.96	1.03 ± 0.45	0.022	7.14 ± 5.36	1.40 ± 0.56	0.018
No	6.86 ± 4.08	Reference		8.60 ± 4.90	NA	NA	8.54 ± 3.43	Reference		4.59 ± 4.40	Reference	

^a Value are presented as mean ± SD.

^b Value are presented as β ± SE.

^c Non-applicable (NA) indicates that the variable was not included in the multivariable regression equation.

^d Internal medicine, cardiology, infectious diseases, and toxicology.

5. Discussion

Students in healthcare-related courses are more prone to mental issues, and medical students are among the most susceptible groups (15). We found that 61.7% of medical interns suffered from poor mental health. There was also a significant gradient of mental health according to some demographic/personal characteristics; female gender, low hope for career prospects, and low/medium personal life satisfaction contributed to poor mental health. Anxiety and Insomnia were the most unfavorable subscales, followed by social dysfunction, somatic symptoms, and severe depression.

The prevalence of 61.7% poor mental health among our medical interns was above that reported by Bahreinian and Nourali (52.1 %) with the same source population as ours 20 years ago (7) and Farahangiz et al. (54.4 %) on medical students of a different medical university in Iran (12). These numbers among medical students are alarmingly higher than that of the general young adult Iranian population (17.6 % for 17 - 24 years and 19.8% for 25 - 44 years) (16). Studies in other countries have reported a lower prevalence of mental health disorders among medical students; 20.9% in Nepal (17), 46.7% in Brazil (18), and 46.2% in Saudi Arabia (15). The variation in severity and prevalence of mental issues, in general, and in each subscale, might originate from different methods (GHQ-28, GHQ-12, DASS-21, BDI), cultural factors, the type of educational curriculum, and the educational environment.

Notably, the alarming prevalence of poor mental health among medical students is a wake-up call for university officials to take up the baton and focus on active surveillance rather than waiting for students to approach and seek help.

5.1. Factors Associated with Poor Mental Health in Medical Students

Studying contributors to poor mental health can pave the way for providing specialized support for doctors in their early careers and establishing a tailored curriculum that suits the specific needs of each individual. The fact that mental health issues are highly stigmatized among medical students acts as a major barrier to seeking professional care (9), hence the necessity of active surveillance rather than waiting for individuals to come and seek help.

Our findings chime in with many studies reporting a significant relationship between male gender (7, 11), dormitory accommodation (2, 8), higher interest in the field of study (7, 12), satisfaction with life (8), hope for career prospects (7, 19), and being disease-free (8) with favorable mental health outcomes.

Our study revealed that the female gender enhances the risk of poor mental health by 78%. The gender of medical students is a critical but often ignored influencing aspect, especially in Iran. Although numerous national and international studies convince us this gender difference is not a site-specific or regional issue (4, 7, 11, 20), gender-oriented interventions are not yet applied in medical universities. Studies have reported higher depressiveness (21), demoralization, exhaustion, and negative social life perception among female medical students (22). It is, however, important to note that emotional distress in males and females is usually represented differently. While females express Depression, Anxiety, and somatic symptoms, males tend to present aggression and problematic substance and alcohol use more frequently (23). The GHQ-28 questionnaire used in our study, along with many other tools, seems to mainly focus on those aspects of mental health that are mostly perceived as feminine type. Therefore, it is plausible that females' distress has been overestimated, whereas that of males has remained underestimated.

Several explanations exist for sex disparities in mental health. Iran's medical education system is still a dominant patriarchal environment and involves gender inequity (24). Further, studies have shown that academic opportunities for females and males can differ in health-related professions (25), with higher unemployment rates among female physicians (26). Reasonably, eliminating the patriarchal atmosphere by providing equal respect and career opportunities for both genders can alleviate this disparity. Besides the implications of such extrinsic factors on mental health, inherent characteristics specific to each sex might also play a role, such as discrete gender-related personality traits and coping mechanisms (27). Further, women and men tend to adopt dissimilar learning styles; male students are more inclined to the converging learning style, which is inversely associated with depressive symptoms (21).

In contrast to many other studies (7, 18), we did not find an association between poor economic status and mental health. These incompatibilities might stem from the self-report nature and different categorizations of income groups. In our study, interns in their first months of internship exhibited poorer outcomes in some subscales compared to those spending their last months. As interns go forward in their training courses, they possibly gain more self-esteem, which has been reported to affect mental health positively (28). In agreement with others (2, 8), we found a better mental health status for dormitory-residing interns and those living with friends compared to living alone. When surrounded by family and friends and in case of difficulties, these students can have a higher chance of seeking family and friends' support and displaying

extroversion, both of which have been evinced to reduce stress and depression (9, 27). Therefore, teaming up the students living alone for curricular and extracurricular activities might alleviate their mental health.

Last but not least, our study indicated that high levels of hope for career prospects and personal life satisfaction were protective against poor mental health. Students' prospects might be boosted if their salaries were increased and they were offered different job opportunities instead of just residency programs. Additionally, engaging students in extracurricular and recreational programs inside or outside the university campus can lead to higher satisfaction with their personal life.

The present study is limited by its observational, single-center, and cross-sectional design. Further, mental health was assessed using the GHQ-28 questionnaire, which is not tailored to healthcare providers. Moreover, our study failed to evaluate whether the findings gathered using this questionnaire are compatible with those from clinical interviews with a psychiatrist. Nevertheless, the GHQ-28 is still a feasible and reliable tool widely used.

Our findings indicate that the mental health status of Iranian medical interns is far from favorable. Unfortunately, these calls have largely remained unheeded despite various calls for action. We found a demographic and personal characteristic gradient in mental health that can help identify risk factors and, therefore, high-priority groups for mental health promotion interventions. In the next step, there is an urgent need for curricular and extracurricular programs tailored to the differentiated needs of various demographic groups.

Footnotes

Authors' Contribution: MaJ, HH, and NKM contributed to the conception or design of the work; MaJ, MeJ, and PM contributed to data acquisition; MaJ and MeJ conducted data analysis; MaJ, MeJ, PM, NKM, and HH contributed to data interpretation. All the authors participated in drafting the work or revising it critically for important intellectual content. All the authors approved the version for publication and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interests: MaJ and MeJ are relatives (sisters) and reviewers of the *Thrita* journal. Other authors declare no conflict of interest.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to university policies in this regard.

Ethical Approval: IR.SBMU.PHNS.REC.1399.156.

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