Shiraz E-Med J. 2024 July; 25(7): e146018. https://doi.org/10.5812/semj-146018.

Published online: 2024 June 1. **Research Article**

Quality of Professional Life in Medical Students: The Roles of Psychological Self-care, Anxiety, and Depression

Mahboobeh Khoozan [1, 2], Amir Reza Falahnezhad [3], Hoda Shirafkan [2], Seyyedeh Mahboobeh Mirtabar [3, #], Mahbobeh Faramarzi [2, #, *]

[1] Department of Psychiatry, Iran University of Medical Sciences, Tehran, Iran
[2] Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran
[3] Student Research Committee, Health Research Institute, Babol University of Medical Sciences, Babol, Iran
[#] These authors contributed equally to this work

[*] *Corresponding author:* Department of General Courses, Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran. Email: mahbob330@yahoo.com

Received 2024 February 17; **Revised** 2024 April 28; **Accepted** 2024 May 7.

Abstract

Background: Medical students often experience high levels of psychological stress, which can significantly impact their professional lives.

Objectives: This study aimed to investigate the quality of professional life among medical students and the influence of psychological self-care and resilience on both professional quality of life and psychological distress among medical clerks and interns at Babol University of Medical Sciences.

Methods: This descriptive-cross-sectional study, conducted from May to September 2022, included 270 medical trainees from Babol University of Medical Sciences (Babol, Iran). Participants had not taken academic leave in the past year nor transferred to another university. They completed online questionnaires covering resilience, psychological self-care, quality of professional life, and psychological distress, along with demographic details such as age, gender, and marital status. Data were analyzed using SPSS software.

Results: Results indicated a generally favorable quality of professional life among the students, characterized by low compassion fatigue (mean 17.43 ± 7.87 out of 36) and low psychological burnout (mean 15.34 ± 4.10 out of 24), but moderate compassion satisfaction (mean 34.52 ± 8.13 out of 50). Additionally, mean scores for depression (7.84 ± 3.50 out of 21) and anxiety (7.24 ± 3.76 out of 21) were low. Students demonstrated above-average psychological self-care (mean 127.47 ± 17.97 out of 180) but had low resilience against stress (mean 24.12 ± 5.28 out of 38). Regression analysis revealed that psychological self-care significantly influenced the quality of professional life ($P < 0.001$, $\beta = 0.318$). Furthermore, age ($P < 0.001$, $\beta = 0.299$), female gender ($P = 0.013$, $\beta = -0.136$), and self-care ($P < 0.001$, $\beta = -0.327$) significantly affected levels of anxiety and depression.

Conclusions: Psychological self-care plays a crucial role in enhancing the quality of professional life and in mitigating anxiety and depression among medical clerks and interns.

Keywords: Quality of Life, Medical Students, Self-care, Anxiety, Depression

1. Background

Medical education is a stressful period for medical students worldwide, often associated with high job burnout, anxiety, and depression, which may adversely affect their quality of professional life (1). The WHO defines quality of life as an individual's perceived physical, social, and mental well-being, influenced by their culture, value systems, personal goals, hopes, and expectations (2). The quality of professional life provides insight into how individuals interact with their environment, achieve their aspirations, and experience feelings of "being," "belonging," and "becoming" (3).

Engaging in effective self-care is an approach to reducing stress and promoting well-being during medical education (4). Psychological self-care involves specific actions taken by individuals and organizations

to improve health, reduce stress, and maintain optimal mental and emotional states (5). Self-care encompasses the ability of individuals, families, and communities to enhance health, prevent disease, maintain health, and manage disease and disability with or without the support of healthcare providers (6). Resilience, which is positively correlated with the quality of professional life, is a personality trait closely linked to mental health (7).

Resilience is crucial in the medical students' stressful work environment (8). It aids students in withstanding difficult situations without harm and potentially growing in personality from such experiences (9). Although resilience may not directly correlate with medical students' academic performance (10), it is positively associated with their well-being. Previous studies have shown that resilience correlates with lower levels of psychological distress (10), higher life satisfaction (11, 12), improved quality of life (11), fewer anxiety symptoms (12), and greater mental well-being (13, 14) among medical students.

Psychological distress is an emotional suffering state associated with environmental stressors and demands that are challenging to manage in daily life (13). Studies indicate that medical students encounter numerous stressors throughout their academic programs that require adequate flexibility for healthy adaptation (14). Due to varying cultural contexts in different cities and countries, students in Asian countries often experience increased psychological pressure from families and teachers concerning academic and career progress (15).

2. Objectives

Given the limited research on the professional life of medical interns and the role of self-care in enhancing the quality of professional life among medical students, this study aims to explore the quality of professional life in medical students and its relationship with self-care, resilience, anxiety, and depression. The study seeks to answer several questions: (1) What is the status of professional life and self-care among medical clerks and interns? (2) How do demographic factors, psychological self-care, resilience, and anxiety or depression influence the quality of professional life in medical students? (3) Can demographic characteristics, psychological self-care, and resilience predict anxiety and depression among students?

3. Methods

This descriptive-analytical study was conducted with medical clerks and interns at Babol University of Medical Sciences (Babol, Iran) from May to September 2022. The study was approved by the ethics committee of Babol University of Medical Sciences (IR.MUBABOL.HRI.REC 1401.035) and adhered to the Declaration of Helsinki. Participants' names were not recorded to ensure confidentiality. All participants were informed about the study details and signed written consent forms at the start of the study.

Census sampling was used in this study, with all 350 medical trainees at Babol University Medical School invited to participate. The inclusion criteria specified that participants must be medical students at Babol University of Medical Sciences who had not taken academic leave in the past year nor transferred to another university to complete academic courses. Exclusion criteria included medical clerks and interns who left the university during the past year or chose not to participate in the study. Additionally, participants who did not fully complete the questionnaires were excluded. A medical student and member of the research team (second author) explained the study's purpose, inclusion and exclusion criteria, and the questionnaire completion method through text and voice messages in two WhatsApp groups containing all medical clerks and interns. Links to the online questionnaires were shared in these groups, and volunteers anonymously completed and submitted them. Out of 350 medical clerks and interns, 49 chose not to participate, 21 did not meet the inclusion criteria, and 10 did not fully complete the questionnaire. Ultimately, 270 students qualified and were included in the study.

3.1. Quality of Professional Life Questionnaire

This questionnaire, designed by Stamm, contains 30 questions and is divided into three subsets: Compassion fatigue, compassion satisfaction, and psychological burnout. Scores of 22 or lower indicate low compassion fatigue and burnout; scores of 23 to 41 suggest a medium level of both; scores of 42 or higher denote high levels of compassion fatigue and burnout (16). This study used the Persian version of the revised Quality of Professional Life Questionnaire. The intra-class reliability of the scale was 0.96, and its reliability based

on internal consistency (Cronbach's alpha) was 0.73. The content validity ratio (CVR) for the entire tool was 0.7, and for individual items, it ranged from 0.5 to 1. The content validity index (CVI) was 0.91 (17).

3.2. Connor-Davidson Resilience Scale

This scale comprises 10 questions delineating five dimensions: Personal competency, confidence in individual instincts, tolerance of negative emotions, positive acceptance of change and secure relationships, and control and spiritual effects. The resilience scores range from 10 to 40 (18). The Persian version of Connor-Davidson Resilience Scale (CD-RISC 10) is a validated scale, exhibiting a Cronbach's alpha coefficient of 0.89 and an ICC coefficient of 0.90. Additionally, the CVR is 0.8, and the Content Validity Index (CVI) is 0.89 (19).

3.3. Psychological Self-care Questionnaire

Yunibhand (1999) developed this questionnaire, comprising 46 questions across seven sub-components: Self-awareness, effective communication, time management, problem-solving, development and maintenance of support systems, religious activities, and physical self-care. The total score ranges from 46 to 184. We utilized the Persian version of this tool, reporting a Cronbach's alpha of 0.7 for the 46-item questionnaire. The CVR is 0.82, and the CVI is 0.85 (20).

3.4. Hospital Anxiety Depression Scale (HADS)

This instrument consists of 14 questions, assessing anxiety and depression separately (21). Responses are rated on a 4-point Likert scale. Hossein Kaviani et al. confirmed the validity and reliability of the Persian versions of both the first and second versions of the questionnaire. Their findings demonstrated the validity and reliability of all measures and subscales among depressed and anxious Iranian patients. The reliability coefficients, as measured by Cronbach's alpha, were 0.81 and 0.78 for the anxiety and depression subscales, respectively (22).

3.5. Data Analysis

The data underwent statistical analysis using SPSS version 23. Descriptive analysis included mean±standard deviation for quantitative data and percentage frequency for qualitative data. Furthermore, *t*-tests, chi-square tests, and multiple linear regressions were employed to investigate the relationships of interest. The significance level was set at 0.05.

4. Results

A total of 270 medical students from Babol University of Medical Sciences participated in this study, which examined their mental resilience, self-care practices, quality of professional life, and psychological distress. The participants had an average age of 24.63 ± 2.61 years (ranging from 21 to 41 years), with a majority being female, living at home, and single. Table 1 presents demographic information alongside mean scores for professional life, resilience, psychological self-care, depression, and anxiety.

Table 1. Demographic Information Along with the Mean Scores of the Questionnaires [a]

Parameter [b]	Values
Sex	
Female	123 (45.6)
Male	147 (54.4)
Residential status	
Dormitory	78 (28.9)
House	192 (71.1)
Marital status	
Married	55 (20.4)
Single	215 (79.6)
Quality of professional life	
Compassion fatigue	17.43 ± 7.87
Compassion satisfaction	34.52 ± 8.13
Psychological burnout	15.34 ± 4.10
Resilience	24.12 ± 5.28
Psychological self-care	127.47 ± 17.97
Anxiety	7.24 ± 3.76
Depression	7.84 ± 3.50

[a] Values are expressed as mean ± SD or No. (%).

[b] Range of psychological self-care scores: 46 - 184; Resilience: 10 - 40; compassion satisfaction: 17 - 50, psychological burnout: 7 - 24; compassion fatigue: 10 - 36; quality of professional life: 50 - 97; anxiety: 0 - 21; and depression: 0 - 21.

According to the findings, the quality of professional life among medical students was deemed desirable, as indicated by their low levels of compassion fatigue (mean of 17.43 ± 7.87 out of 36) and psychological burnout (mean of 15.34 ± 4.10 out of 24), along with a moderate level of compassion satisfaction (mean of 34.52 ± 8.13 out of 50). Additionally, their mean scores for depression (7.84 ± 3.50 out of 21) and anxiety (7.24 ± 3.76 out of 21) were low. Psychological self-care among

students surpassed the average (127.47 ± 17.97 out of 180), while their resilience against stress was relatively low (24.12 ± 5.28 out of 38).

Subsequently, the correlation between resilience and psychological self-care questionnaires with other measures was examined. Apart from a lack of significant correlation between resilience and compassion fatigue, significant correlations were observed in other instances. Specifically, a positive correlation existed between the self-care and resilience questionnaires with compassion satisfaction and quality of professional life, while negative correlations were observed in other cases, as illustrated in Table 2.

Table 2. The Correlation Between Psychological Self-care and Resilience with Other Questionnaires

Variables	Pearson Correlation	P-Value [a]
Self-care-compassion satisfaction	0.890	< 0.001
Self-care-psychological burnout	-0.539	< 0.001
Self-care-compassion fatigue	-0.234	< 0.001
Self-care-anxiety	-0.288	< 0.001
Self-care-depression	-0.356	< 0.001
Self-care-psychological distress	-0.347	< 0.001
Self-care-quality of professional life	0.207	0.001
Resilience-compassion satisfaction	0.675	< 0.001
Resilience-psychological burnout	-0.620	< 0.001
Resilience-compassion fatigue	-0.107	0.078
Resilience-anxiety	-0.190	0.002
Resilience-depression	-0.323	< 0.001
Resilience-psychological distress	-0.275	< 0.001
Resilience-quality of professional life	0.314	< 0.001

[a] The Pearson correlation test was used.

Table 3 compared the means of psychological self-care, quality of professional life, and anxiety/depression between men and women. No differences were found between male and female students in terms of the mean total psychological self-care and quality of professional life (P > 0.05). However, the mean scores for anxiety and depression symptoms were significantly higher in women compared to men (P < 0.05).

Table 3. Comparison of Means (SD) of Psychological Self-care, Quality of Professional Life, and Anxiety/Depression between Men and Women

Variables	Students' Gender		P-Value [a]
	Female	Male	
Psychological self-care	127.72 ± 17.84	127.16 ± 18.20	0.679
Resilience	24.22 ± 5.47	24.00 ± 5.08	0.758
Compassion satisfaction	34.69 ± 8.09	34.32 ± 8.22	0.648
Psychological burnout	15.27 ± 4.03	15.43 ± 4.19	0.662
Compassion fatigue	18.05 ± 8.27	16.68 ± 7.34	0.336
Quality of professional life	69.01 ± 10.89	66.43 ± 9.15	0.348
Anxiety	7.76 ± 3.89	6.62 ± 3.52	0.016
Depression	8.16 ± 3.64	7.46 ± 3.30	0.016
Psychological distress	15.91 ± 7.11	14.08 ± 6.08	0.114

[a] *t*-test was used.

Finally, factors associated with the quality of professional life and psychological distress questionnaires were investigated (Table 4). Regression analysis was employed, with age, gender, psychological self-care, and resilience as independent variables. The dependent variables initially included quality of professional life and then psychological distress. According to Table 4, only psychological self-care was associated with the quality of professional life (β = 0.318) among medical students. Additionally, age (P < 0.001, β = 0.299), female gender (P = 0.013, β = -0.136), and psychological self-care (P < 0.001, β = -0.327) were significant factors for anxiety and depression among medical students.

Table 4. The Factors Associated with Quality of Professional Life and Anxiety/Depression in Multiple Linear Regression

Variables and Predictors	Beta [a]	P-Value
Quality of professional life		
Female sex	-0.072	0.215
Age	0.092	0.117
Psychological self-care	0.318	< 0.001
Resilience	-0.023	0.773
Anxiety/depression		
Female sex	-0.136	0.013
Age	0.299	< 0.001
Psychological self-care	-0.327	< 0.001
Resilience	-0.077	0.307

[a] Standardized coefficients.

5. Discussion

The research findings suggest that the quality of professional life among medical students was satisfactory. Furthermore, medical clerks and interns exhibited low levels of compassion fatigue and job burnout, while their compassion satisfaction scores fell within a moderate range. A study conducted in Brazil

population. Researchers observed that medical students reported a lower quality of life, particularly in the psychological and social domains, with one-fourth of them experiencing diminished quality of life in terms of physical and environmental health (15). Another study by Seifi et al. examined students at Birjand University of Medical Sciences, revealing a mean quality of professional life of 51.5 and a mean resilience score of 66.8. Their sample exhibited a poorer quality of professional life compared to the students in our study, although they demonstrated a superior resilience status. Notably, their study encompassed students across various clinical, physiopathological, and basic science stages, whereas our study solely focused on clinical students (23).

In our study, medical clerks and interns exhibited above-average psychological self-care scores, which likely positively influenced their careers. Neglecting self-care puts individuals at risk of adopting maladaptive coping strategies that could compromise their professional performance standards (24). Robat Sarpooshi et al. explored the correlation between the health literacy levels of 400 diabetic patients and their self-care behaviors, finding that those with higher education levels tended to have higher self-care scores (25).

According to our study, the mean levels of depression and anxiety were low among students, and they demonstrated resilience against stress. In contrast, a study investigating stress, anxiety, and depression prevalence and related factors among medical students at Fayoum University in Egypt reported high prevalence rates for these mental health issues (26). These disparities may stem from cultural variations, differences in healthcare and medical education systems, variations in study populations, and discrepancies in study tools. Our study also revealed low levels of resilience to stress among students, aligning with findings from Rahimi et al., which highlighted high stress levels among medical students and inadequate coping mechanisms and psychological resilience among physicians and medical students (27). If resilience is considered an inherent aspect of one's personality upon entry into medical school, then medical schools should prioritize admitting candidates equipped with the psychological resources to navigate the challenges inherent in medical education.

In this study, self-care and female gender emerged as negative predictors, while age was identified as a positive predictor of psychological distress among medical clerks and interns. A similar study involving 139 male and female Australian students in 2015 yielded comparable results, showing that higher levels of self-care correlated with lower levels of distress (28). Significant gender differences in distress levels among medical students were also evident in our study, with female gender serving as a negative predictor of psychological distress. This finding was consistent with the results of a study by Fawzy and Hamed among Egyptian medical students, where psychological distress was significantly associated with female gender (29).

Moreover, our study confirmed that psychological self-care positively predicted the quality of professional life among medical clerks and interns. Lin et al. also noted that environmental stressors could adversely impact the quality of professional life for interns (9). While their findings aligned with ours, they observed that self-care alone could not entirely moderate the quality of professional life in students. In contrast, our study found that psychological self-care could predict the quality of professional life. This distinction might be attributed to the clinical level status of the students in our study, where the significance of self-care is heightened. In contrast, Lin's study included students from the first to the fifth years of medical school. Additionally, a similar study by Miguel et al. in 2021 utilized regression analysis to explore the predictive effect of certain questionnaires. They found that self-care could predict psychological distress in medical students, with this effect persisting over the long term (up to 5 years) (30).

While this study has strengths, such as the inclusion of students from various sectors, it also possesses weaknesses. The students' status and the sector in which they completed the questionnaires may have influenced the study results; for instance, students in major sectors might have experienced less anxiety and stress compared to those in simpler or minor sectors. Future research should consider incorporating non-clinical years of the medical curriculum, such as the physiopathology or basic sciences course, which typically occurs in the first six months of education. Additionally, it would be beneficial to examine the duration of students' attendance at different educational levels. Furthermore, it is advisable to

administer questionnaires that account for the significant impact of main departments, such as pediatrics, internal medicine, and surgery, on the mental well-being of students.

The results of the present study hold significant clinical implications. Considering the positive impact of psychological self-care and resilience on enhancing the quality of professional life and alleviating psychological distress among clerks and interns, strategies such as incorporating psychological self-care training during internships could be employed to enhance professional quality of life and mitigate psychological distress in medical students. Thus, the findings underscore the importance for clinical education planners for medical students to prioritize the promotion of psychological self-care and resilience among clerks and interns in hospital settings.

5.1. Conclusions

Psychological self-care emerges as a crucial factor in predicting the quality of professional life and reducing anxiety and depression among medical clerks and interns. Additionally, the results indicate that self-care and female gender serve as negative predictors, while age acts as a positive predictor of psychological distress among these medical professionals.

Acknowledgements

The authors extend their gratitude to the participants for their cooperation in completing the questionnaires.

Footnotes

Authors' Contribution: MK, AF, and MF: Conceptualization, design, definition of intellectual content. AF: Data acquisition. HS: Statistical analysis. SMM: Manuscript preparation and critical revision. MF: Manuscript editing. All authors contributed to the study, read, and approved the final manuscript.

Conflict of Interests Statement: The authors declare no conflicts of interest including funding or research support, employment, personal or professional relations with organizations and individuals, personal financial interests, consultation fees, patents, or unpaid membership in a government or non-governmental organization.

Data Availability: 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 the Ethical Committee.

Ethical Approval: This study was approved by the Babol University of Medical Sciences under the ethical approval code IR.MUBABOL.HRI.REC 1401.035 .

Funding/Support: This study received partial support from grant 724133943 from Babol University of Medical Sciences and a teaching and research scholarship from the Medicine College of Physicians (Dr. Faramarzi).

Informed Consent: The participants signed informed consent before entering the study.

References

1. MacLean L, Booza J, Balon R. The Impact of Medical School on Student Mental Health. *Acad Psychiatry*. 2016;**40**(1):89-91. [PubMed ID: 25749920]. https://doi.org/10.1007/s40596-015-0301-5.
2. Bastaminia A, Rezaei MR, Rezaei MR, Tazesh Y. Resilience and quality of life among students of Yasouj State University. *J International Res in Humanities Social Studies*. 2016;**3**(8).
3. Somaiya M, Kolpakwar S, Faye A, Kamath R. Study of mechanisms of coping, resilience and quality of life in medical undergraduates. *J Indian Social Psychiatry*. 2015;**31**(1-2):19-28. https://doi.org/10.4103/0971-9962.161995.
4. Gordon JS. Mind-body skills groups for medical students: reducing stress, enhancing commitment, and promoting patient-centered care. *J BMC Med Edu*. 2014;**14**:1-8. [PubMed ID: 25245341].
5. Bolinski F, Boumparis N, Kleiboer A, Cuijpers P, Ebert DD, Riper H. The effect of e-mental health interventions on academic performance in university and college students: A meta-analysis of randomized controlled trials. *Internet Interv*. 2020;**20**:100321. [PubMed ID: 32382515]. [PubMed Central ID: PMC7201188]. https://doi.org/10.1016/j.invent.2020.100321.
6. Mirtabar SM, Kheirkhah F, Basirat Z, Barat S, Pahlavan Z, Ghadimi R, et al. The role of psychological self-care on worry of vaccination against COVID-19 in Iranian pregnant women: A cross-sectional study. *J Health Sci Reports*. 2022;**5**(4). e711. [PubMed ID: 35844827].
7. Conversano C, Ciacchini R, Orrù G, Di Giuseppe M, Gemignani A, Poli A. Mindfulness, compassion, and self-compassion among health care professionals: What's new? A systematic review. *J Frontiers in Psychol*. 2020;**11**:564573. [PubMed ID: 32849021].
8. Habibi H, Fatemi M. [Study of the relationship between sex and gender role with the level of resiliency]. *J Psychol Studies*. 2015;**11**(2):115-34. Persian.
9. Lin YK, Lin CD, Lin BYJ. Medical students' resilience: a protective role on stress and quality of life in clerkship. *BMC Med Educ*. 2019;**19**(10):334-41. [PubMed ID: 33456855]. [PubMed Central ID: PMC7807993]. https://doi.org/10.1016/j.bjae.2019.05.004.

10. Burgis-Kasthala S, Elmitt N, Smyth L, Moore M. Predicting future performance in medical students. A longitudinal study examining the effects of resilience on low and higher performing students. *J Medical Teacher*. 2019;**41**(10):1184-91. [PubMed ID: 31314633].
11. Kim NE, Cho SM. Quality of Life of Medical Students during Clinical Clerkship. *Korean J Med Educ*. 2012;**24**(4):353-7. [PubMed ID: 25813332]. [PubMed Central ID: PMC8813359]. https://doi.org/10.3946/kjme.2012.24.4.353.
12. Shi M, Liu L, Wang ZY, Wang L. The mediating role of resilience in the relationship between big five personality and anxiety among Chinese medical students: a cross-sectional study. *PLoS One*. 2015;**10**(3). e0119916. [PubMed ID: 25794003]. [PubMed Central ID: PMC4368674]. https://doi.org/10.1371/journal.pone.0119916.
13. Arvidsdotter T, Marklund B, Kylen S, Taft C, Ekman I. Understanding persons with psychological distress in primary health care. *Scand J Caring Sci*. 2016;**30**(4):687-94. [PubMed ID: 26463897]. https://doi.org/10.1111/scs.12289.
14. Kiziela A, Viliūnienė R, Friborg O, Navickas A. Distress and resilience associated with workload of medical students. *J Mental Health*. 2019;**28**(3):319-23. [PubMed ID: 30449227].
15. Pagnin D, de Queiroz V. Comparison of quality of life between medical students and young general populations. *Educ Health (Abingdon)*. 2015;**28**(3):209-12. [PubMed ID: 26996647]. https://doi.org/10.4103/1357-6283.178599.
16. Stamm BH. *The concise ProQOL manual*. 2ed ed. Pocatello: ProQOL; 2010.
17. Ghorji M, Keshavarz Z, Ebadi A, Nasiri M. [Persian Translation and Psychometric Properties of Professional Quality of Life Scale (ProQOL) for Health Care Providers]. *J Mazandaran Univ Med Sci*. 2018;**28**(163):93-106. Persian.
18. Campbell-Sills L, Stein MB. Psychometric analysis and refinement of the Connor-davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *J Trauma Stress*. 2007;**20**(6):1019-28. [PubMed ID: 18157881]. https://doi.org/10.1002/jts.20271.
19. Rezaeipandari H, Mohammadpoorasl A, Morowatisharifabad MA, Shaghaghi A. Psychometric properties of the Persian version of abridged Connor-Davidson Resilience Scale 10 (CD-RISC-10) among older adults. *BMC Psychiatry*. 2022;**22**(1):493. [PubMed ID: 35869455]. [PubMed Central ID: PMC9308300]. https://doi.org/10.1186/s12888-022-04138-0.
20. Mirtabar SM, Kheirkhah F, Basirat Z, Barat S, Pahlavan Z, Ghadimi R, et al. The role of psychological self-care on worry of vaccination against COVID-19 in Iranian pregnant women: A cross-sectional study. *Health Sci Rep*. 2022;**5**(4). e711. [PubMed ID: 35844827]. [PubMed Central ID: PMC9273940]. https://doi.org/10.1002/hsr2.711.
21. Michalos AC. *Encyclopedia of quality of life and well-being research*. **171**. New York, London: Springer Netherlands Dordrecht; 2014. 383 p.
22. Hossein Kaviani, H S, V S, N E. [Reliability and validity of Anxiety and Depression Hospital Scales (HADS): Iranian patients with anxiety and depression disorders]. *J Tehran Univ Med*. 2009;**67**(5):379-85. Persian.
23. Seifi A, Ayati M, Fadaei M. [The study of the relationship between 388 internet addiction and depression, anxiety and stress among students of Islamic 389 Azad University of Birjand]. *Int J Econ Manage Soc Sci*. 2014;**3**:28-32. Persian.
24. Lloyd C, Campion DP. Occupational stress and the importance of self-care and resilience: focus on veterinary nursing. *Irish Veterinary Journal*. 2017;**70**(1):30. https://doi.org/10.1186/s13620-017-0108-7.
25. Robat SD, Mahdizadeh M, Alizadeh Siuki H, Haddadi M, Robatsarpooshi H, Peyman N. The Relationship Between Health Literacy Level and Self-Care Behaviors in Patients with Diabetes. *Patient Relat Outcome Meas*. 2020;**11**:129-35. [PubMed ID: 32440244]. [PubMed Central ID: PMC7211311]. https://doi.org/10.2147/PROM.S243678.
26. Abdel Wahed W, Hassan S. Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alexandria Journal of Medicine*. 2016;**53**. https://doi.org/10.1016/j.ajme.2016.01.005.
27. Rahimi B, Baetz M, Bowen R, Balbuena L. Resilience, stress, and coping among Canadian medical students. *Can Med Educ J*. 2014;**5**(1):e5-e12. [PubMed ID: 26451221]. [PubMed Central ID: PMC4563614].
28. Slonim J, Kienhuis M, Di Benedetto M, Reece J. The relationships among self-care, dispositional mindfulness, and psychological distress in medical students. *Med Educ Online*. 2015;**20**:27924. [PubMed ID: 26112354]. [PubMed Central ID: PMC4481049]. https://doi.org/10.3402/meo.v20.27924.
29. Fawzy M, Hamed SA. Prevalence of psychological stress, depression and anxiety among medical students in Egypt. *Psychiatry Res*. 2017;**255**:186-94. [PubMed ID: 28575777]. https://doi.org/10.1016/j.psychres.2017.05.027.
30. Miguel AQC, Tempski P, Kobayasi R, Mayer FB, Martins MA. Predictive factors of quality of life among medical students: results from a multicentric study. *BMC Psychol*. 2021;**9**(1):36. [PubMed ID: 33632321]. [PubMed Central ID: PMC7905855]. https://doi.org/10.1186/s40359-021-00534-5.