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Adaptation and Psychometric Features of the Korean Medical Academicians Stress Questionnaire for Iranian Medical Academicians

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

4 comments · 9 Jul 2024 – 22 Jul 2024

Referee 1 Reviewer

MAJOR REVISION 9 Jul 2024

Dear Author/s
Thank you very much for considering the MEJRH for publication of your article entitled "Multidimensional Assessment and Contextual Refinement of Stress Metrics among Medical Academicians in Iran". I read your article carefully, and I am concerned about some issues in your manuscript. I list my comments below to help you resolve them. I hope you do not get disappointed and keep working.
1- Your English looks okay, but it needs in-depth editing and revision. Please consider this issue when you have made all the corrections.
2- I think the MEJRH has specific instructions for authors, and I think you need to read them carefully and implement the corrections. For example, you need to add numbering to your headings and first subheadings.
3- Your study is not a cross-sectional study. You have adapted a tool and assessed its psychometric features. Therefore, your title, your aim in the abstract, and your aim at the end of the introduction must reflect this. Check out these papers to help you revise your article:
1- https://jrsr.sums.ac.ir/article_48900.html
2- Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine. 2000;25(24):3186-91. 12.
3- World Health Organization. Process of translation and adaptation of instruments: WHO; 2020 [cited 2020]. Available from: https:// www.who.int/substance_abuse/research_tools/translation/en/#
4- Zamanzadeh V, Ghahramanian A, Rassouli M, Abbaszadeh A, Alavi-Majd H, Nikanfar AR. Design and Implementation Content Validity Study: Development of an instrument for measuring Patient-Centered Communication. Journal of caring sciences. 2015;4(2):165-78.
I think your title should have been something like this: "adaptation and psychometric features of Korean Medical Student Stress Scale (KMSSS) for Iranian medical students". Such a title will clarify your aims.
4- I am really concerned about your methodology. Ask at least two test developers (read articles written by Dr Abbas Emadi (https://payeshjournal.ir/browse.php?a_id=93&sid=1&slc_lang=fa & https://www.sid.ir/paper/23577/fa)) and a statistician to help you with the methodology. Since this scale has already gone through the validity process, I am not sure that you needed to do factor analysis or content validity assessment.
5- The flow of the introduction is fine. However, your introduction must be written more strongly and concisely. Start the first paragraph with a definition of stress and highlight the consequences for medical students compared with the general population. In the second paragraph, introduce different studies that evaluated stress in this specific group, emphasize their tools and why they used them, and explain what gaps or deficiencies these tools have. In the third paragraph, since you are reporting an adaptation study, you need to present a well-written paragraph about the scale: what it is, its psychometric features in the original version (actual numbers, not interpretations, with complete details), why you chose this scale (its advantages), and where it is applicable. Finally, state your aims/objectives precisely.
6- If you choose to follow a guideline such as the one by Beaton et al., then you can tidy up your materials & methods and results sections.
7- Your discussion must be written in more detail but should be comparative. If you include that fully detailed paragraph about the original version and other tools in your introduction, you can make a better comparison between the two studies here. Firstly, the comparison must be between your findings and the original developers' findings. For example, you found X for CVI, and they found Y. You need to be specific: are the findings really similar or different? If they are similar, why did you find this similarity? And if you found

differences, why? Secondly, you need to compare your scale's psychometric features with the psychometric features of other tools available to assess stress.
8- Your tables must have all lines—vertical and horizontal—simply drawn without any shading or color.
9- Your reference list was not included in the PDF; however, check all references for page numbers & abbreviated journal names according to Medline.
Best of luck

Referee 2 Reviewer

MAJOR REVISION 13 Jul 2024

The title "Multidimensional Assessment and Contextual Refinement of Stress Metrics among Medical Academicians in Iran" is generally informative but has some issues:
Title:
The title should be as follows:
"Validation and Adaptation of the Korean Medical Student Stress Scale for Iranian Medical Students"
Serious comment:
The article has no references.
Abstract
1. Try to use the keywords that you used in the abstract.
2. Use consistent vocabulary (academicians vs. students).
3. State why you need KMSS adaptation for Iranian students.
4. Considering that your study was the first study to validate the KMSSS in Iran and that assessing stress in Iranian medical education is important, emphasize this unique role.

Background
5. Provide a comprehensive literature review on stress measurement tools in medical students. What are the strengths and weaknesses of stress assessment tools?
6. Is a specific cultural or educational context in Iran a prerequisite for scale adaptation?
7. Discuss the specific ways in which chronic stress contributes to physical disorders.
8. "increased medical error" should be "increased medical errors".
9. Make a better transition from the background to the specific study objectives. Make a smoother transition between stress and the subject of medical students.
10. Provide a comprehensive literature review on stress measurement instruments in medical students.

Methods:
11. Explain how the strata and the number of students selected from each stratum are determined in the sampling method.
12. Mention the psychometric features of the OSIPOW questionnaire and the reason for choosing it as a comparator.
13. In EFA, give more information about the specific items that load on each of the 6 agents.
14. In CFA, consider fit indices (CFI, TLI, RMSEA) to assess model fit.
15. Why were these universities and this sample size selected?
16. How were the discrepancies resolved in the translation process?
17. Is the sample size sufficient? Determine this with power analysis.
18. Exclusion criteria are broad (dissatisfaction).
19. Why did you use each measure of reliability (Cronbach's alpha, split-half reliability, test-retest reliability)?
20. Give a brief explanation of the importance of CVR and CVI scores.
21. Mention indices to evaluate model fit in CFA.
22. What is the process of selecting students?

23. Try to use consistent terms. You use “scale” in one instance and “questionnaire” in another for KMSSS.
24. How did you perform the random selection and how did you collect the demographic information?
25. Integrate ROC curve analysis with other statistical methods. Why did you use the Youden index?
26. Explain the sampling method, translation and cultural adaptation in more detail.
27. Headings, subheadings and paragraphs should be consistent.
28. Organize the statistical analysis section into subheadings (e.g., "Content Validity," "Concurrent Validity," "Construct Validity," "Model Fit").
29. How is the questionnaire administered (on paper or online) and in what environment?
Results

30. Add a scree plot for factor analysis or an ROC curve.
31. Provide factor loadings or a table that shows which items load on which factors.
32. The number of decimal places used to report statistical values is inconsistent.
33. Report impact scores for face validity. Report all analyses mentioned in the methods section in the results section.
34. Use subheadings to improve readability and organize results.

Discussion

35. Further discuss the specific constructs measured by the KMSSS scale and their relationship to medical student stress.
36. Repeat the comparison of the results with the original research less often. When discussing any type of validity, some information is repetitive and unnecessary.
37. Critically discuss why there are differences or similarities between the results of the current study and the original study.
38. Discuss any new findings, not just those consistent with the study.
39. State how important these results are for medical education in Iran.
40. Regarding the cut-off point, state how you compare it with other stress scales. Discuss the applications of the intermediate cut-off point. How is it used in clinical and educational settings?
41. Use consistent words: You have used “us” once and “ this study” once.
42. Carefully review and edit the text to improve grammar and sentence structure.
43. Use subheadings for better organization.
44. State the limitations of the study, such as sample size, sampling bias, and cultural differences.
45. In conclusion, discuss KMSSS applications in different environments.

Associate Editor

MAJOR REVISION 19 Jul 2024

Dear Editor

Based on reviewers' comments, the manuscript titled "Multidimensional Assessment and Contextual Refinement of Stress Metrics among Medical Academicians in Iran" needs "Major" revisions.

Best

Editor-in-Chief

MAJOR REVISION 22 Jul 2024

Dear Authors
According to the reviewers’ and associate editor’s comments, your article needs major revision. When revising

your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and submit the required files.

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Reviewers,

Thank you for your valuable feedback on our manuscript titled "Adaptation and Psychometric Features of the Korean Medical Academicians Stress Scale (KMSSS) for Iranian Medical Academicians." We appreciate the time and effort you have invested in reviewing our work and providing insightful comments and suggestions.

We have carefully considered each of your points and have made the necessary revisions to enhance the clarity and robustness of our study. Below, we provide detailed responses to each of your comments, along with the corresponding changes made to the manuscript.

Reviewer 1:
Title:
The title should be like this: "Validation and Adaptation of the Korean Medical Student Stress Scale for Iranian Medical Students"
Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows
Changes made: **P: 2 line: 1-2** **Adaptation and Psychometric Features of the Korean Medical Academicians Stress Scale for Iranian Medical Academicians**
Serious comment:
The article has no references
Authors' response: While thanking you for your valuable comment, the sources were written and added with Endnote
Abstract
1. Try to use the keywords that you used in the abstract.
Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows
Changes made: **P: 2 line: 34** **Keywords:** Stress, Academicians, Medical, Questionnaires, Adaptation, Iran.
2. Use consistent vocabulary (academicians vs. students).
Authors' response: While thanking you for your valuable comment, the changes in the entire text were made based on this valuable comment.
3. State why you need KMSS adaptation for Iranian students.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 1-2 line: 4-31
Background

Stress is a major factor affecting the mental health and academic performance of medical academicians, which necessitates the use of valid and reliable tools to measure it according to their cultural and educational contexts. Given the unique conditions of Iranian medical academicians, it is crucial to adapt and validate the Korean Medical Academicians Stress Scale (KMSSS) to ensure it accurately captures the stressors they face. This study represents the first effort to validate and culturally adapt the KMSSS for use in Iran, emphasizing its relevance in addressing the stress assessment needs of Iranian medical academicians.

Objectives

This study aimed to adapt and validate the KMSSS for use among Iranian medical academicians to ensure cultural relevance and accuracy in reflecting the unique stressors they face.

Materials And Methods

This study, focused on psychometric evaluation, included 900 medical academicians selected using stratified sampling from Tehran universities. Participants completed the KMSSS and the Occupational Stress Inventory (OSI). The face, content, concurrent, and structural validity, along with internal consistency and test-retest reliability, were evaluated using SPSS (version 21) and LISREL (version 8.8). The cut-off point of the Scale was calculated using the ROC curve.

Results:

The KMSSS showed high face, content, and concurrent validity (r=0.91). Exploratory factor analysis (EFA) revealed six factors explaining 60.41% of the variance. Confirmatory factor analysis (CFA) confirmed a six-dimensional construct. The Scale had a high internal consistency (Cronbach's alpha = 0.93) and test-retest reliability (r=0.91). The cut-off point was set at 120, with a sensitivity of 100% and specificity of 85.23%.

Conclusions:

The KMSSS is a valid and reliable tool for assessing stress among Iranian medical academicians. It can be used for educational planning and psychological interventions, providing a culturally adapted measure that addresses the unique challenges faced by this group.

4. Considering that your study was the first study to validate the KMSSS in Iran and also the importance of assessing stress in Iranian medical education, emphasize this unique role.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 1 line: 4-11
Background

Stress is a major factor affecting the mental health and academic performance of medical academicians, which necessitates the use of valid and reliable tools to measure it according to their cultural and educational contexts. Given the unique conditions of Iranian medical academicians, it is crucial to adapt and validate the Korean Medical Academicians Stress Scale (KMSSS) to ensure it accurately captures the stressors they face. This study represents the first effort to validate and culturally adapt the KMSSS for use in Iran, emphasizing its relevance in addressing the stress assessment needs of Iranian medical academicians.

Background

5. Provide a comprehensive literature review on stress measurement tools in medical students. What are the strengths and weaknesses of stress assessment tools?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 3-4 line: 64-77

A comprehensive literature review on stress measurement tools among medical students reveals several commonly used instruments, each with its strengths and weaknesses. The Occupational Stress Inventory (OSI) is widely used for its comprehensive approach to assessing occupational stress, but it may not capture the unique stressors faced by medical students [12]. The Depression, Anxiety, and Stress Scale (DASS) is valued for its ability to measure multiple dimensions of psychological distress, yet it may lack specificity for academic-related stress [13]. The Perceived Stress Scale (PSS) is praised for its simplicity and ease of use, but it may not fully address the specific stressors in the medical academic environment [14]. The Student Stress Inventory (SSI) is tailored for academic settings but may not be fully validated for medical academicians in Iran [15]. The Medical Student Stress Profile (MSSP) assesses stress specific to medical students, focusing on academic and clinical stressors [16]. Other tools, such as the Medical Student Stress Scale (MSSS) and the Perceived Medical School Stress (PMSS) scale, also aim to evaluate stress specific to medical students, but their applicability to Iranian medical academicians remains uncertain [17, 18].

6. Is a specific cultural or educational context in Iran a prerequisite for scale adaptation?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 4 line: 78-86

The adaptation of stress measurement tools to specific cultural and educational contexts is essential for their accuracy and relevance [19]. The stressors experienced by medical academicians in Iran are shaped by the unique cultural, social, and educational environment of the country. For instance, societal expectations, financial pressures, and the high prevalence of substance abuse among students have been identified as significant stress factors in Iranian medical academicians [20, 21]. Moreover, the academic environment in Iran places significant emphasis on both clinical practice and academic performance, which differs from other educational systems. Therefore, it is critical to have a culturally adapted tool that reflects these unique stressors and accurately measures them to facilitate effective interventions [19].

7. Discuss the specific ways in which chronic stress contributes to physical disorders.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 2-3 line: 39-48

Exposure to chronic stress is a precursor to a spectrum of psychological conditions, including depressive states, generalized anxiety, post-traumatic stress disorder (PTSD), and acute stress disorder (ASD) [3]. Chronic stress can also contribute to physical disorders through various mechanisms. For instance, it can lead to the dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in elevated cortisol levels, which in turn can suppress the immune system, increase blood pressure, and promote the development of cardiovascular diseases [4, 5]. In addition, chronic stress can lead to unhealthy behaviors such as poor diet, lack of exercise, and substance abuse, which further exacerbate physical health problems [6]. Therefore, identifying and managing stress effectively is crucial to preventing its harmful consequences on both mental and physical health.

8. "increased medical error" should be "increased medical errors".

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 3 line: 57-59

Stress in medical academicians can lead to decreased academic performance, increased medical errors, decreased job satisfaction, and even increased risk of suicide and psychological disorders [8, 10, 11].

9. Make a better transition from background to specific study objectives. Make a smoother transition between stress and the subject of medical students.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 3 line: 49-64

However, the impact of stress is not uniform across all individuals or professions. Some professional groups, particularly those in high-pressure environments such as the

medical field, are more vulnerable to experiencing elevated levels of stress [7]**.** Medical academicians, as a key subgroup of healthcare professionals, face unique and compounded stressors due to the demands of both academic responsibilities and clinical duties [8]. **This heightened stress can result from various factors, including academic pressures, a high workload, competition with peers, lack of time for rest and recreation, worry about future career prospects, dealing with patients and death, disruption in social and family relationships, and financial problems** [8, 9].

Stress in medical academicians can lead to decreased academic performance, increased medical errors, decreased job satisfaction, and even increased risk of suicide and psychological disorders [7, 10, 11]. Therefore, identifying and managing stress in medical academicians is of high importance to both their personal well-being and the overall quality of healthcare services they provide.

Given the significant consequences of stress on medical academicians and the critical role they play in healthcare and education, it is essential to develop reliable and culturally relevant tools to assess their stress levels accurately [6].

10. Provide a comprehensive literature review on stress measurement instruments in medical students.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 3-4 line: 64-77

A comprehensive literature review on stress measurement tools among medical students reveals several commonly used instruments, each with its strengths and weaknesses. The Occupational Stress Inventory (OSI) is widely used for its comprehensive approach to assessing occupational stress, but it may not capture the unique stressors faced by medical students [12]. The Depression, Anxiety, and Stress Scale (DASS) is valued for its ability to measure multiple dimensions of psychological distress, yet it may lack specificity for academic-related stress [13]. The Perceived Stress Scale (PSS) is praised for its simplicity and ease of use, but it may not fully address the specific stressors in the medical academic environment [14]. The Student Stress Inventory (SSI) is tailored for academic settings but may not be fully validated for medical academicians in Iran [15]. The Medical Student Stress Profile (MSSP) assesses stress specific to medical students, focusing on academic and clinical

stressors [16]. Other tools, such as the Medical Student Stress Scale (MSSS) and the Perceived Medical School Stress (PMSS) scale, also aim to evaluate stress specific to medical students, but their applicability to Iranian medical academicians remains uncertain [17, 18].

Methods:

11. In the sampling method, how the strata and the number of students selected from each strata are determined.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 7 line: 163-171

A proportionate stratified sampling schema was adopted for the sampling process. This approach entailed extracting a sample whose size was commensurate with the population dimension of each stratum, derived from every university and corresponding academic tenure. The strata were determined based on the academic year (third and fourth year) and the university. The number of students selected from each stratum was proportional to the total number of students in that stratum, ensuring that each university and academic year was adequately represented.

Table 1 details the sample distribution for each university and academic year, categorized by concurrent validity, EFA, CFA, and reliability assessments.

12. Mention the psychometric features of the OSI questionnaire and the reason for choosing it as a comparator.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P:7-8 line: 195-210

OSI: OSI is a 60-item tool designed to measure occupational stress across six dimensions: role overload, role insufficiency, role ambiguity, role conflict, responsibility, and physical environment. Each item is rated on a five-point scale from 1 (never) to 5 (most of the time), with total scores ranging from 60 to 300. Scores above 200 indicate severe stress. The OSI has demonstrated high content, construct, and reliability validity, confirmed through expert feedback and factor analysis. Its content validity has been verified using the Content Validity Index (CVI) and Content Validity Ratio (CVR). The reliability coefficients calculated by the Split Half (odd-even) strategy and Cronbach's Alpha for the scales were 0.94 and 0.90, respectively. Additionally, the overall internal consistency reliability (Cronbach’s Alpha) of the OSI was computed as 0.87, indicating high reliability [32-35]. In Iran, the content validity of the OSI has been confirmed, with concurrent validity reported at 0.81. The overall internal consistency reliability (Cronbach’s Alpha) in Iran was reported as 0.91, and the split-half reliability coefficient was 0.87 [36, 37]. The OSI was chosen as a comparator in this study due to its established psychometric properties and its relevance in measuring occupational stress across various contexts, including education and medical fields. Its comprehensive nature and

high reliability make it a suitable benchmark for validating the KMSSS.

13. In EFA, give more information about the specific items that are loaded on each of the 6 agents.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 9 line: 236-250

Structure validity: Structure validity was evaluated by CFA and EFA. To perform EFA, the Kaiser-Meyer-Olkin (KMO) criterion and Bartlett's test of sphericity were calculated first, then the latent factors were extracted by principal axis factoring (PAF) with varimax rotation. The specific items loaded on each of the six factors were identified. The factors were extracted using PAF with varimax rotation, and the factor loadings for each item were above 0.5, demonstrating strong associations with their respective factors [43].

To assess the appropriateness of the KMSSS structure in the Iranian context, an exploratory factor analysis (EFA) was conducted. This analysis aimed to explore whether the stress dimensions defined in the Korean version of the questionnaire are also valid in the context of Iranian medical students. Cultural and environmental differences between the two countries may lead to variations in the factor structure. For instance, in Iran, crises such as floods, earthquakes, wars, and pandemics may affect the stress structure of medical students, while such crises are less common in South Korea. Hence, EFA was necessary to evaluate the compatibility of this structure with the Iranian population and ensure comprehensive coverage of the present stressors [44].

Changes made:
P: 11-12 line: 326-340

- **EFA:** To evaluate the conditions necessary for conducting EFA, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were utilized. The KMO value was 0.946, indicating an adequate and suitable sample for EFA. Additionally, Bartlett's test was significant (χ^2 = 9434.33, df = 780, $p < 0.01$), indicating the presence of a factor pattern in the data. The factor extraction method was principal axis factoring, and the factor rotation method was Varimax. Based on the criterion of eigenvalue greater than one, six factors were extracted

from the data, explaining 60.41 percent of the total variance. Additionally, the Scree Plot was used to determine the number of factors, confirming the extraction of six factors as the point where the eigenvalues start to level off (Figure 1). These six factors were named, respectively, internship stress, academic stress, occupational stress, interpersonal stress, health-related stress, and financial stress. The percentage of variance explained by each factor was 18.65, 14.25, 13.31, 5.41, 5.05, and 3.75, respectively. The specific items loaded on each of the six factors were as follows: academic stress: items 1 to 7, internship stress: items 8 to 14, interpersonal stress: items 15 to 21, occupational stress: items 22 to 28, health-related stress: items 29 to 35, and financial stress: items 36 to 40 (Table 3).

Changes made:
P: 19 line: 540

Table 3: Rotated Component Matrix

Items	Factor						impact factor
	Internship stress	Academic stress	Occupational stress	Interpersonal stress	Health-related stress	Financial stress	
i1	0.15	**0.68**	0.18	0.17	0.10	0.08	2.73
i2	0.17	**0.71**	0.16	0.14	0.07	0.10	3.44
i3	0.16	**0.73**	0.19	0.14	0.10	0.02	3.20
i4	0.20	**0.68**	0.18	0.06	0.11	0.11	2.87
i5	0.24	**0.70**	0.15	0.11	0.16	0.03	3.28
i6	0.17	**0.69**	0.13	0.17	0.09	0.05	4.05
i7	0.24	**0.66**	0.13	0.11	0.13	0.11	3.36
i8	0.22	**0.73**	0.20	0.07	0.04	0.11	3.44
i9	0.22	**0.66**	0.20	0.11	0.05	0.07	4.50
i10	**0.73**	0.16	0.21	0.16	0.10	0.06	4.40
i11	**0.74**	0.17	0.21	0.14	0.08	0.04	4.60
i12	**0.74**	0.20	0.16	0.10	0.15	0.09	4.40
i13	**0.71**	0.18	0.09	0.20	0.12	0.07	4.60
i14	**0.72**	0.21	0.20	0.12	0.07	0.03	4.50
i15	**0.75**	0.14	0.15	0.19	0.10	0.10	2.34
i16	**0.73**	0.15	0.20	0.07	0.07	0.17	3.44
i17	**0.74**	0.22	0.19	0.09	0.09	0.06	4.60
i18	**0.74**	0.24	0.19	0.08	0.07	0.07	4.50
i19	**0.72**	0.17	0.20	0.16	0.02	0.04	3.28
i20	**0.74**	0.21	0.13	0.06	0.14	0.06	2.87
i21	0.33	0.28	0.27	**0.47**	0.17	0.16	2.87
i22	0.31	0.25	0.36	**0.42**	0.10	0.08	4.40
i23	0.35	0.25	0.23	**0.49**	0.17	0.16	3.36
i24	0.21	0.30	0.25	**0.57**	0.20	0.14	4.05
i25	0.43	0.25	0.18	**0.42**	0.10	0.09	4.30
i26	0.29	0.30	0.23	**0.40**	0.20	0.22	3.20
i27	0.30	0.27	0.24	**0.52**	0.16	0.22	3.20
i28	0.21	0.17	**0.71**	0.07	0.12	0.07	2.34

i29	0.18	0.17	**0.73**	0.09	0.17	0.05	4.70
i30	0.13	0.20	**0.68**	0.16	0.18	0.02	3.20
i31	0.20	0.18	**0.68**	0.10	0.12	0.08	4.40
i32	0.23	0.12	**0.72**	0.14	0.04	0.12	1.85
i33	0.19	0.24	**0.70**	0.06	0.13	0.09	4.60
i34	0.21	0.13	**0.73**	0.15	0.04	0.02	4.05
i35	0.17	0.21	**0.75**	0.17	0.11	0.06	2.73
i36	0.14	0.21	0.26	0.13	**0.62**	0.13	4.30
i37	0.22	0.15	0.20	0.15	**0.75**	0.07	3.28
i38	0.16	0.19	0.19	0.15	**0.73**	0.07	4.05
i39	0.18	0.15	0.15	0.18	0.17	**0.74**	4.70
i40	0.16	0.23	0.13	0.17	0.07	**0.75**	3.36

-

14. In CFA, to consider model fit, consider fit indices (CFI, TLI, RMSEA).

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 9 line: 251-256
Using confirmatory factor analysis (CFA), the fit of the model extracted by exploratory factor analysis (EFA) was examined. The fit indices used included: chi-square test, root mean square error of approximation (RMSEA < 0.08), comparative fit index (CFI > 0.95), Tucker-Lewis index (TLI > 0.95), standardized root mean square residual (SRMR < 0.05), normed fit index (NFI > 0.95), non-normed fit index (NNFI > 0.95), incremental fit index (IFI > 0.95), relative fit index (RFI > 0.95), and root mean square residual (RMR < 0.05) [45].

Changes made:
P: 13 line: 341-348

- **CFA:** The CFA results supported the six-factor structure of the KMSSS Scale. The model fit the data well, as indicated by the following fit indices: chi-square test (1579.79; degrees of freedom 725, p < 0.01), **RMSEA (0.06, < 0.08), CFI (0.98, > 0.95), TLI (0.98, > 0.95),** SRMR (0.03, < 0.05), NFI (0.97, > 0.95), NNFI (0.98, > 0.95), IFI (0.98, > 0.95), RFI

(0.96, > 0.95), and RMR (0.04, < 0.05). These fit indices suggest that the six-factor model had an acceptable fit and could be used for further analyses. Figure 1 shows the standardized parameter estimates of the model. The data confirmed the six-factor model of the KMSSS Scale.

15. Why were these universities and this sample size selected?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 6-7 line: 143-161

The study's demographic encompassed a cohort of 1,880 third- and fourth-year medical academicians from Tehran's academic institutions in 2023, corresponding to the allocated enrollment figures of these universities (as depicted in Table 1). A power analysis determined the sample sizes for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with an anticipated effect size of 0.30, a desired statistical power level of 0.95, and a probability level of 0.025, resulting in a minimum required sample size of 229 participants [27].

To enhance validity and reliability, 350 participants were included for EFA, and 300 participants for CFA. For concurrent validity and reliability, an anticipated effect size of 0.10, a desired statistical power level of 0.80, and a probability level of 0.05 determined a required sample size of 87 participants[27]; however, 100 participants were included for concurrent validity and 150 for reliability. These sample sizes were selected based on a comprehensive review of the literature on sample size requirements for validation studies, ensuring they are appropriate and comprehensive for the intended analyses [28-31].

The universities and sample size were selected based on their representation of the diverse academic environments in Tehran and the need to ensure a robust and comprehensive analysis. This selection aimed to capture a wide range of stress factors experienced by medical academicians in different institutional settings. All universities in Tehran with medical students were included to ensure comprehensive representation.

16. How were the discrepancies resolved in the translation process?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 5-6 line: 110-141

2-1. Translation and Cultural Adaptation Process

The translation and cultural adaptation of the Korean Medical Academicians Stress Scale (KMSSS) into Persian were carried out according to the standard methodology proposed by Beaton et al. [25, 26]. This process included several steps to ensure conceptual, semantic, and cultural equivalence:

1. **Forward Translation:** Two bilingual experts fluent in Korean and Persian independently translated the KMSSS into Persian. One translator had a medical background and was familiar with stress-related terminologies, while the other was a professional translator with no medical knowledge. This step aimed to capture both the technical and everyday language interpretations of the scale items.
2. **Synthesis of Translations:** The two translations were compared, and discrepancies were discussed in a consensus meeting involving the translators and a third independent reviewer. A synthesized version of the Persian translation was created, incorporating elements from both initial translations to ensure clarity and cultural relevance.
3. **Back Translation:** Two additional bilingual experts, who were not involved in the initial translation and unaware of the original KMSSS, back-translated the synthesized Persian version into Korean. This step ensured that the translated items retained the same meaning as the original.
4. **Expert Committee Review:** An expert committee consisting of methodologists, healthcare professionals, linguists, and psychometricians reviewed all translations (forward, synthesized, and back-translated versions) to develop a pre-final version of the KMSSS-Persian. The committee focused on conceptual and cultural equivalence rather than mere linguistic translation.
5. **Pre-testing (Cognitive Debriefing):** The pre-final version was tested on 30 Iranian medical academicians to evaluate its comprehensibility, interpretation, and cultural relevance. Participants were asked to provide feedback on any ambiguities or difficulties in understanding the scale items. Based on their feedback, minor revisions were made to finalize the Persian version.
6. **Final Version:** The finalized Persian version of the KMSSS was reviewed and approved by the expert committee, ensuring it was culturally adapted and ready for psychometric evaluation.

17. Is the sample size sufficient? Determine this with power analysis.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:

P: 6 line: 143-156

The study's demographic encompassed a cohort of 1,880 third- and fourth-year medical academicians from Tehran's academic institutions in 2023, corresponding to the allocated enrollment figures of these universities (as depicted in Table 1). A power analysis determined the sample sizes for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with an anticipated effect size of 0.30, a desired statistical power level of 0.95, and a probability level of 0.025, resulting in a minimum required sample size of 229 participants [27].

To enhance validity and reliability, 350 participants were included for EFA, and 300 participants for CFA. For concurrent validity and reliability, an anticipated effect size of 0.10, a desired statistical power level of 0.80, and a probability level of 0.05 determined a required sample size of 87 participants[27]; however, 100 participants were included for concurrent validity and 150 for reliability. These sample sizes were selected based on a comprehensive review of the literature on sample size requirements for validation studies, ensuring they are appropriate and comprehensive for the intended analyses [28-31].

18. Exclusion criteria are broad (dissatisfaction).

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 7 line: 178-186

Inclusion and Exclusion Criteria: Inclusion criteria included voluntary participation, enrollment in a medical program, education within Tehran, and consent to partake. Exclusion criteria comprised conditions related to psychological, psychosocial, physical, or medical stress; substance abuse; dissatisfaction with the study process; and incomplete survey submissions. Verbal consent was secured from the academicians, and ethical guidelines were clarified. Guarantees of data confidentiality and the option to withdraw at any time were provided to all participants. Of the 900 academicians approached, 21 declined involvement, while 879 completed the Scales. Demographic details were systematically gathered and compiled.

19. Why did you use each measurement in the reliability measurement (Cronbach's alpha, split-half reliability, test-retest reliability)?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 9-10 line: 257-268
Reliability Testing:

Reliability was evaluated using three methods to ensure a comprehensive assessment of the scale's consistency and stability. Cronbach's alpha was calculated to measure internal consistency, indicating how well the items in the scale are correlated with each other. A high Cronbach's alpha value suggests that the items measure the same underlying construct. Split-half reliability was used to assess the internal consistency of the scale by dividing the items into two halves and measuring the correlation between them. This method helps to verify the consistency of the results across different subsets of the scale. Test-retest reliability was employed to evaluate the stability of the scale over time by administering the same test to the same participants at two different points in time and calculating the correlation between the scores. This method ensures that the scale produces consistent results when repeated under similar conditions [23, 24, 26, 30].

20. Give a brief explanation of the importance of CVR and CVI scores.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 8-9 line: 216-233

Content Validity: Content validity was evaluated by calculating the content validity ratio (CVR) and the content validity index (CVI) for each question based on the rating of 10 experts. CVR was obtained by rating each question on a three-point Likert scale: "essential, useful but not essential, and not essential." CVI was obtained by rating each question on a four-point Likert scale from 1 to 4 for simplicity, specificity, and clarity. The Lawshe criterion was used for CVR and the Oliva and colleagues criterion was used for CVI [39]. The CVR and CVI scores are crucial as they provide a quantitative measure of the content validity of the Scale, ensuring that the items are both relevant and representative of the construct being

measured [40].

Content validity is essential to ensure that the questionnaire items adequately cover all aspects of the concept of stress among medical students. Since the KMSSS was developed in South Korea and used in a setting with its own unique cultural and social conditions, certain stressors present in Iran, due to cultural and environmental differences, might not have been included in the original questionnaire [41]. For example, Iran faces natural crises such as floods, earthquakes, and even wars and pandemics, which have a greater impact on the stress levels of medical students [42]. Therefore, it is necessary to examine these specific dimensions in the content validity process to ensure that these factors are appropriately covered.

21. Mention indices to evaluate model fit in CFA.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 9 line: 251-257
Using confirmatory factor analysis (CFA), the fit of the model extracted by exploratory factor analysis (EFA) was examined. The fit indices used included: chi-square test, root mean square error of approximation (RMSEA < 0.08), comparative fit index (CFI > 0.95), Tucker-Lewis index (TLI > 0.95), standardized root mean square residual (SRMR < 0.05), normed fit index (NFI > 0.95), non-normed fit index (NNFI > 0.95), incremental fit index (IFI > 0.95), relative fit index (RFI > 0.95), and root mean square residual (RMR < 0.05) [45].

22. What is the process of selecting students?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 7 line: 162-177

2-3. Sampling Method

A proportionate stratified sampling schema was adopted for the sampling process. This approach entailed extracting a sample whose size was commensurate with the population dimension of each stratum, derived from every university and corresponding academic tenure. The strata were determined based on the academic year (third and fourth year) and the university. The number of students selected from each stratum was proportional to the total

number of students in that stratum, ensuring that each university and academic year was adequately represented.

Table 1 details the sample distribution for each university and academic year, categorized by concurrent validity, EFA, CFA, and reliability assessments. The researcher directly approached each university and randomly selected students from the list of third- and fourth-year students using the RAND function in Excel. Students were chosen based on their student ID numbers. After obtaining informed consent and providing information about the ethical considerations of the study, the researcher distributed the research Scale to the selected students. The questionnaires were collected using paper forms. Students were asked to complete the questionnaires in the study halls of the medical faculties of the universities.

23. Try to use consistent terms. Once you use the “scale” and once the word “questionnaire” for KMSSS.

Authors' response: In addition to thanking you for your valuable comment, scale was used throughout the article.

How did you perform the random selection and how did you collect the demographic

information?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 7 line: 162-177

2-3. Sampling Method

A proportionate stratified sampling schema was adopted for the sampling process. This approach entailed extracting a sample whose size was commensurate with the population dimension of each stratum, derived from every university and corresponding academic tenure. The strata were determined based on the academic year (third and fourth year) and the university. The number of students selected from each stratum was proportional to the total number of students in that stratum, ensuring that each university and academic year was adequately represented.

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complete the questionnaires in the study halls of the medical faculties of the universities.

Changes made:
P: 7 line: 178-189

Inclusion and Exclusion Criteria: Inclusion criteria included voluntary participation, enrollment in a medical program, education within Tehran, and consent to partake. Exclusion criteria comprised conditions related to psychological, psychosocial, physical, or medical stress; substance abuse; dissatisfaction with the study process; and incomplete survey submissions. Verbal consent was secured from the academicians, and ethical guidelines were clarified. Guarantees of data confidentiality and the option to withdraw at any time were provided to all participants. Of the 900 academicians approached, 21 declined involvement, while 879 completed the Scales. Demographic details were systematically gathered and compiled.

2-4. Instruments

Data was collected using two validated questionnaires, OSI and KMSSS. Demographic information (age, gender, marital status, course, and residence status) was also recorded.

.

24. Integrate ROC curve analysis with other statistical methods. Why did you use the Youden index?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 10-11 line: 269-288
2-5-Cut-off point determination

The cut-off point of the scale was determined using the ROC curve. The research Scale and OSI were used as the test and criterion measures for the participants. The ROC curve entailed a progressive modification of the Scale's threshold scores, ranging from 90 to 160 in intervals of 10. At each specified juncture, pivotal indices including the true positive rate (TPR), false positive rate (FPR), true negative rate (TNR), false negative rate (FNR), and the Youden index were meticulously computed [46]. The Youden index was used as a criterion for selecting the

optimal cut-off point that maximizes the accuracy of the test [47]. Additionally, to integrate ROC curve analysis with other statistical methods, we also calculated the area under the ROC curve (AUC) to assess the overall diagnostic performance of the Scale. The AUC provides a single measure of the test's accuracy, considering both sensitivity and specificity across all threshold levels. This comprehensive approach ensures a robust determination of the cut-off point, enhancing the reliability and validity of the Scale's diagnostic capability [46].

The Youden index was chosen because it provides a straightforward and effective method for determining the optimal cut-off point in diagnostic tests. It maximizes the difference between the true positive rate and the false positive rate, ensuring the highest possible accuracy of the test. By using the Youden index, we can identify the threshold that offers the best balance between sensitivity and specificity, which is crucial for the accurate assessment of stress levels among medical academicians [46].

25. Explain the sampling method, translation and cultural adaptation more.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 5-7 line: 110-186

2-1. Translation and Cultural Adaptation Process

The translation and cultural adaptation of the Korean Medical Academicians Stress Scale (KMSSS) into Persian were carried out according to the standard methodology proposed by Beaton et al. [25, 26]. This process included several steps to ensure conceptual, semantic, and cultural equivalence:

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technical and everyday language interpretations of the scale items.

2. **Synthesis of Translations:** The two translations were compared, and discrepancies were discussed in a consensus meeting involving the translators and a third independent reviewer. A synthesized version of the Persian translation was created, incorporating elements from both initial translations to ensure clarity and cultural relevance.
3. **Back Translation:** Two additional bilingual experts, who were not involved in the initial translation and unaware of the original KMSSS, back-translated the synthesized Persian version into Korean. This step ensured that the translated items retained the same meaning as the original.
4. **Expert Committee Review:** An expert committee consisting of methodologists, healthcare professionals, linguists, and psychometricians reviewed all translations (forward, synthesized, and back-translated versions) to develop a pre-final version of the KMSSS-Persian. The committee focused on conceptual and cultural equivalence rather than mere linguistic translation.
5. **Pre-testing (Cognitive Debriefing):** The pre-final version was tested on 30 Iranian medical academicians to evaluate its comprehensibility, interpretation, and cultural relevance. Participants were asked to provide feedback on any ambiguities or difficulties in understanding the scale items. Based on their feedback, minor revisions were made to finalize the Persian version.
6. **Final Version:** The finalized Persian version of the KMSSS was reviewed and approved by the expert committee, ensuring it was culturally adapted and ready for psychometric evaluation.

2-2. Participants and Data Collection Procedures

The study's demographic encompassed a cohort of 1,880 third- and fourth-year medical academicians from Tehran's academic institutions in 2023, corresponding to the allocated enrollment figures of these universities (as depicted in Table 1). A power analysis determined the sample sizes for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with an anticipated effect size of 0.30, a desired statistical power level of 0.95, and a probability level of 0.025, resulting in a minimum required sample size of 229 participants [27].

To enhance validity and reliability, 350 participants were included for EFA, and 300 participants for CFA. For concurrent validity and reliability, an anticipated effect size of 0.10, a desired statistical power level of 0.80, and a probability level of 0.05 determined a required sample size of 87 participants[27]; however, 100 participants were included for concurrent validity and 150 for reliability. These sample sizes were selected based on a comprehensive review of the literature on sample size requirements for validation studies, ensuring they are appropriate and comprehensive for the intended analyses [28-31].

The universities and sample size were selected based on their representation of the diverse academic environments in Tehran and the need to ensure a robust and comprehensive analysis. This selection aimed to capture a wide range of stress factors experienced by medical

academicians in different institutional settings. All universities in Tehran with medical students were included to ensure comprehensive representation.

2-3. Sampling Method

A proportionate stratified sampling schema was adopted for the sampling process. This approach entailed extracting a sample whose size was commensurate with the population dimension of each stratum, derived from every university and corresponding academic tenure. The strata were determined based on the academic year (third and fourth year) and the university. The number of students selected from each stratum was proportional to the total number of students in that stratum, ensuring that each university and academic year was adequately represented.

Table 1 details the sample distribution for each university and academic year, categorized by concurrent validity, EFA, CFA, and reliability assessments. The researcher directly approached each university and randomly selected students from the list of third- and fourth-year students using the RAND function in Excel. Students were chosen based on their student ID numbers. After obtaining informed consent and providing information about the ethical considerations of the study, the researcher distributed the research Scale to the selected students. The questionnaires were collected using paper forms. Students were asked to complete the questionnaires in the study halls of the medical faculties of the universities.

Inclusion and Exclusion Criteria: Inclusion criteria included voluntary participation, enrollment in a medical program, education within Tehran, and consent to partake. Exclusion criteria comprised conditions related to psychological, psychosocial, physical, or medical stress; substance abuse; dissatisfaction with the study process; and incomplete survey submissions. Verbal consent was secured from the academicians, and ethical guidelines were clarified. Guarantees of data confidentiality and the option to withdraw at any time were provided to all participants. Of the 900 academicians approached, 21 declined involvement, while 879 completed the Scales. Demographic details were systematically gathered and compiled.

26. Headings, subheadings and paragraphs should be consistent.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text.

27. Organize the statistical analysis section into subheadings (e.g., "Content Validity," "Concurrent Validity," "Construct Validity," "Model Fit").

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:

P: 11 line: 289-303

2-6. Data Analysis Procedures

The data were analyzed using descriptive statistics, including frequency and percentage, and inferential statistics as detailed below with the software.

Content Validity: The content validity of the KMSSS scale was evaluated by calculating the CVR and CVI for each item based on the opinion of 10 experts. The Lawshe criterion was used for CVR and the Oliva et al. criterion was used for CVI.

Concurrent Validity: The concurrent validity of KMSSS was examined by calculating the correlation coefficient between the scores of two measurement scales, OSI and KMSSS.

Construct Validity: The construct validity and factor structure of the KMSSS scale were evaluated by PAF with varimax rotation. Factors with eigenvalues greater than 1 were considered as the main factors. The KMO criterion and the Bartlett test of sphericity examined the suitability of the data for factor analysis. Additionally, a scree plot was used to visually assess the number of factors to retain, based on the point where the eigenvalues start to level off.

Model Fit: The model fit with the data was evaluated by CFA using various fit indices. The significance level was set at 0.05.

28. How is the questionnaire implemented (paper, online) and in what environment?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P:7 line: 171-177
The researcher directly approached each university and randomly selected students from the list of third- and fourth-year students using the RAND function in Excel. Students were chosen based on their student ID numbers. After obtaining informed consent and providing

information about the ethical considerations of the study, the researcher distributed the research Scale to the selected students. **The questionnaires were collected using paper forms**. Students were asked to complete the questionnaires in the study halls of the medical faculties of the universities.

Result

29. Add scree plot for factor analysis or Roc curve.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 22-23 line: 545-548

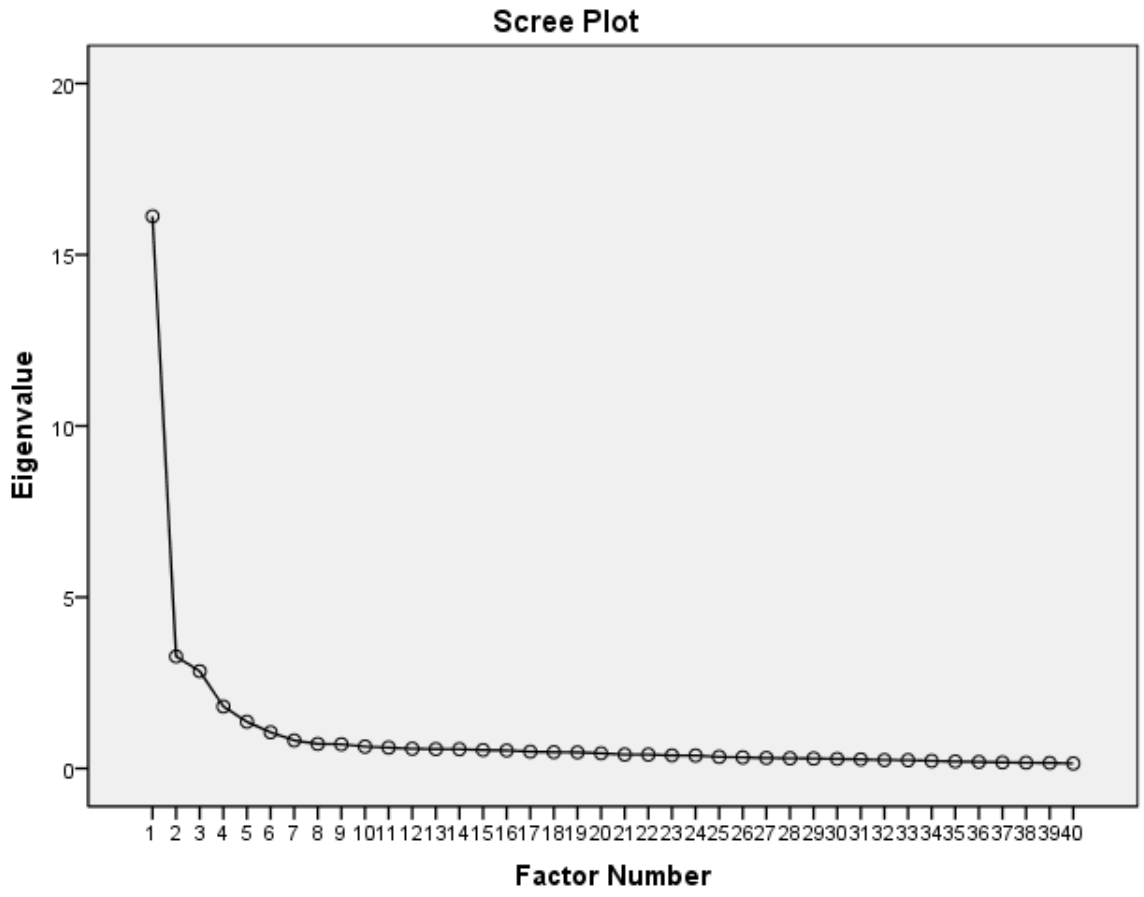


Figure 1: Scree Plot

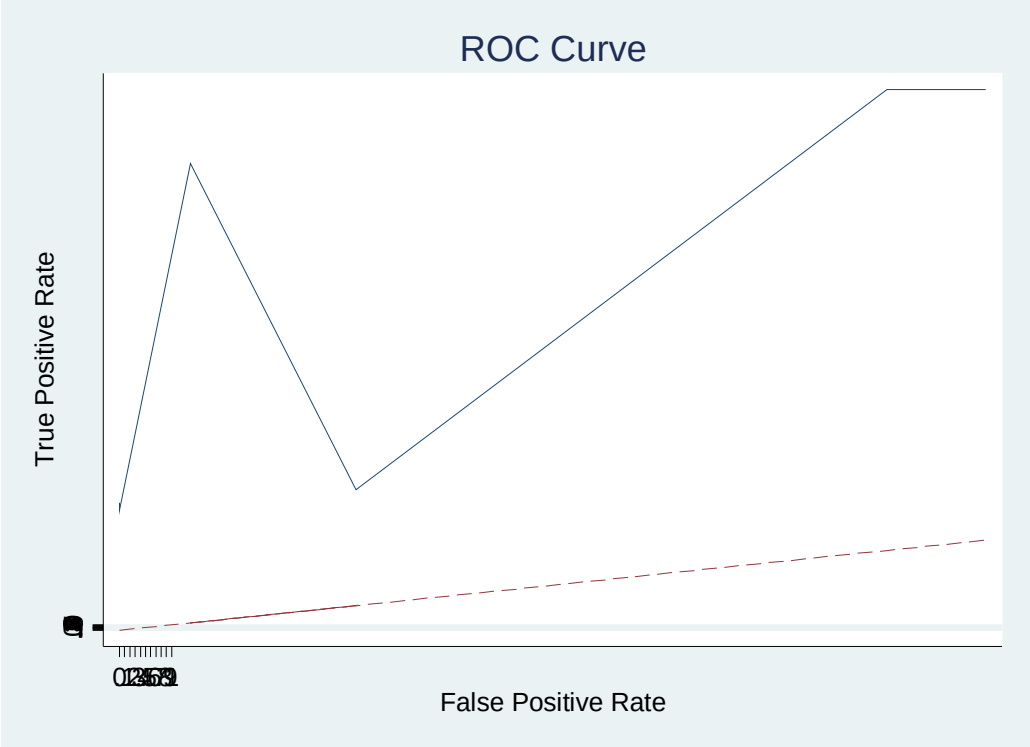


Figure 3: ROC Curve

30. Provide factor loadings or a table that shows which items are loaded in which factors.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 19 line: 541-542

Table 3: Rotated Component Matrix

Items	Factor					
	Internship stress	Academic stress	Occupational stress	Interpersonal stress	Health-related stress	Financial stress
i1	0.15	**0.68**	0.18	0.17	0.10	0.08
i2	0.17	**0.71**	0.16	0.14	0.07	0.10
i3	0.16	**0.73**	0.19	0.14	0.10	0.02
i4	0.20	**0.68**	0.18	0.06	0.11	0.11
i5	0.24	**0.70**	0.15	0.11	0.16	0.03
i6	0.17	**0.69**	0.13	0.17	0.09	0.05
i7	0.24	**0.66**	0.13	0.11	0.13	0.11
i8	0.22	**0.73**	0.20	0.07	0.04	0.11
i9	0.22	**0.66**	0.20	0.11	0.05	0.07
i10	**0.73**	0.16	0.21	0.16	0.10	0.06
i11	**0.74**	0.17	0.21	0.14	0.08	0.04
i12	**0.74**	0.20	0.16	0.10	0.15	0.09
i13	**0.71**	0.18	0.09	0.20	0.12	0.07
i14	**0.72**	0.21	0.20	0.12	0.07	0.03
i15	**0.75**	0.14	0.15	0.19	0.10	0.10

i16	**0.73**	0.15	0.20	0.07	0.07	0.17
i17	**0.74**	0.22	0.19	0.09	0.09	0.06
i18	**0.74**	0.24	0.19	0.08	0.07	0.07
i19	**0.72**	0.17	0.20	0.16	0.02	0.04
i20	**0.74**	0.21	0.13	0.06	0.14	0.06
i21	0.33	0.28	0.27	**0.47**	0.17	0.16
i22	0.31	0.25	0.36	**0.42**	0.10	0.08
i23	0.35	0.25	0.23	**0.49**	0.17	0.16
i24	0.21	0.30	0.25	**0.57**	0.20	0.14
i25	0.43	0.25	0.18	**0.42**	0.10	0.09
i26	0.29	0.30	0.23	**0.40**	0.20	0.22
i27	0.30	0.27	0.24	**0.52**	0.16	0.22
i28	0.21	0.17	**0.71**	0.07	0.12	0.07
i29	0.18	0.17	**0.73**	0.09	0.17	0.05
i30	0.13	0.20	**0.68**	0.16	0.18	0.02
i31	0.20	0.18	**0.68**	0.10	0.12	0.08
i32	0.23	0.12	**0.72**	0.14	0.04	0.12
i33	0.19	0.24	**0.70**	0.06	0.13	0.09
i34	0.21	0.13	**0.73**	0.15	0.04	0.02
i35	0.17	0.21	**0.75**	0.17	0.11	0.06
i36	0.14	0.21	0.26	0.13	**0.62**	0.13
i37	0.22	0.15	0.20	0.15	**0.75**	0.07
i38	0.16	0.19	0.19	0.15	**0.73**	0.07
i39	0.18	0.15	0.15	0.18	0.17	**0.74**
i40	0.16	0.23	0.13	0.17	0.07	**0.75**

31. The number of decimal places for reporting statistical values is different.

Authors' response: Thanks for your valuable comment, all decimal numbers have been rewritten to two decimal places.

32. Report impact scores for face validity. Report all analyzes mentioned in the method section in the results section.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 12 line: 314-318

-Face validity: The Scale had high face validity based on the qualitative and quantitative analysis of the items. The sample rated the importance, clarity, relevance, and comprehensibility of the items. The items were revised according to the feedback of the sample and the experts. The impact factor of the items was higher than 1.50 (ranging from 1.85 to 4.70), which indicated high face validity of the Scale.

Changes made:
P: 19 line: 541-542

Table 3: Rotated Component Matrix

Items	Factor						impact factor
	Internship stress	Academic stress	Occupational stress	Interpersonal stress	Health-related stress	Financial stress	
i1	0.15	**0.68**	0.18	0.17	0.10	0.08	2.73
i2	0.17	**0.71**	0.16	0.14	0.07	0.10	3.44
i3	0.16	**0.73**	0.19	0.14	0.10	0.02	3.20
i4	0.20	**0.68**	0.18	0.06	0.11	0.11	2.87
i5	0.24	**0.70**	0.15	0.11	0.16	0.03	3.28
i6	0.17	**0.69**	0.13	0.17	0.09	0.05	4.05
i7	0.24	**0.66**	0.13	0.11	0.13	0.11	3.36
i8	0.22	**0.73**	0.20	0.07	0.04	0.11	3.44
i9	0.22	**0.66**	0.20	0.11	0.05	0.07	4.50
i10	**0.73**	0.16	0.21	0.16	0.10	0.06	4.40
i11	**0.74**	0.17	0.21	0.14	0.08	0.04	4.60
i12	**0.74**	0.20	0.16	0.10	0.15	0.09	4.40
i13	**0.71**	0.18	0.09	0.20	0.12	0.07	4.60
i14	**0.72**	0.21	0.20	0.12	0.07	0.03	4.50
i15	**0.75**	0.14	0.15	0.19	0.10	0.10	2.34
i16	**0.73**	0.15	0.20	0.07	0.07	0.17	3.44
i17	**0.74**	0.22	0.19	0.09	0.09	0.06	4.60
i18	**0.74**	0.24	0.19	0.08	0.07	0.07	4.50
i19	**0.72**	0.17	0.20	0.16	0.02	0.04	3.28
i20	**0.74**	0.21	0.13	0.06	0.14	0.06	2.87
i21	0.33	0.28	0.27	**0.47**	0.17	0.16	2.87
i22	0.31	0.25	0.36	**0.42**	0.10	0.08	4.40
i23	0.35	0.25	0.23	**0.49**	0.17	0.16	3.36
i24	0.21	0.30	0.25	**0.57**	0.20	0.14	4.05
i25	0.43	0.25	0.18	**0.42**	0.10	0.09	4.30
i26	0.29	0.30	0.23	**0.40**	0.20	0.22	3.20
i27	0.30	0.27	0.24	**0.52**	0.16	0.22	3.20
i28	0.21	0.17	**0.71**	0.07	0.12	0.07	2.34
i29	0.18	0.17	**0.73**	0.09	0.17	0.05	4.70
i30	0.13	0.20	**0.68**	0.16	0.18	0.02	3.20
i31	0.20	0.18	**0.68**	0.10	0.12	0.08	4.40
i32	0.23	0.12	**0.72**	0.14	0.04	0.12	1.85
i33	0.19	0.24	**0.70**	0.06	0.13	0.09	4.60
i34	0.21	0.13	**0.73**	0.15	0.04	0.02	4.05
i35	0.17	0.21	**0.75**	0.17	0.11	0.06	2.73
i36	0.14	0.21	0.26	0.13	**0.62**	0.13	4.30
i37	0.22	0.15	0.20	0.15	**0.75**	0.07	3.28
i38	0.16	0.19	0.19	0.15	**0.73**	0.07	4.05
i39	0.18	0.15	0.15	0.18	0.17	**0.74**	4.70
i40	0.16	0.23	0.13	0.17	0.07	**0.75**	3.36

33. Use subheadings to improve readability and organize results.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text.

Discussion

34. Further discuss the specific constructs measured by the KMSSS scale and their relationship to medical student stress.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P:15-16 line: 383-444

Concurrent Validity: The KMSSS Scale showed a high correlation with the OSI scale, indicating its effectiveness in measuring stress among Iranian medical academicians. This confirms the concurrent validity of the KMSSS Scale. However, compared to the original study, which also reported strong concurrent validity with related stress scales, the strength of correlations in our study varied slightly. This could be due to differences in the stress dimensions highlighted. For example, financial stress was more prominent in our study compared to the Korean context, possibly due to Iran's economic instability, affecting the concurrent validity values between the two studies.

Factor Consistency: The six factors extracted from this scale were consistent with the six main dimensions identified by Kim and colleagues in South Korea [22]. While the overall factor structure remained similar, indicating comparable academic demands and pressures, the prominence of certain factors differed between the two studies. For instance, clinical practice stress was found to be more pronounced in the Iranian context. This could reflect differences in healthcare systems, where Iranian medical academicians may face more intense clinical training conditions or specific socio-cultural challenges in managing patient interactions. These nuances suggest that while factor consistency exists, the weight or emphasis of these factors is context-dependent.

Comparison with Other Stress Scales: The KMSSS Scale shows similarities with other existing scales. For instance, the academic stress factor parallels the role stress factor of OSI, the stress factor of DASS, and the perceived stress factor of PSS. Clinical practice stress is comparable to the personal strain factor of OSI. Interpersonal stress resembles the personal resources factor of OSI. Health-related stress aligns with the depression and anxiety factors of DASS and the personal strain factor of OSI. Financial stress is similar to the personal strain factor of OSI [13, 14, 32, 48]. Despite these similarities, the KMSSS Scale's specific content reflects the local context of Iranian students, emphasizing financial and academic stressors that may differ in magnitude from other countries. For instance, the financial burden of education and uncertainty about employment prospects are notably higher in Iran, explaining why financial stress emerged as a more dominant factor in this study.

The scale did not measure some aspects of stress or related constructs assessed by other scales, such as personal resources, personality depersonalization, and reduced personal accomplishment. For example, the KMSSS Scale lacks a factor for personal resources like coping skills, social support, self-esteem, or optimism, which are included in OSI and SSI [15, 32]. Additionally, the KMSSS Scale features factors that are more specific or detailed than those in other scales, such as clinical performance stress, which includes items about living in the hospital, clinical performance, hospital environment, and patient interactions, and occupational stress, which includes items about choosing a specialty, hospital, doctor’s status, and occupational information.

Specific Findings for the Iranian Context: A new and notable finding of this study is the specific emphasis on financial and clinical practice stressors in the Iranian context. While previous research focused on general academic and personal stressors, this study uniquely identified financial pressures, including tuition fees, textbooks, and housing costs, as dominant factors. This financial stress was exacerbated by the economic conditions in Iran and was less prominent in the original study. Furthermore, clinical practice stress, including aspects like living in the hospital and managing patient interactions, was found to be particularly critical for Iranian medical academicians, reflecting the unique demands of clinical education in Iran. These findings offer new insights into the specific stressors faced by Iranian medical students and highlight areas that may require targeted interventions.

Constructs Measured by KMSSS: The KMSSS Scale specifically measures constructs such as academic stress, clinical practice stress, interpersonal stress, health-related stress, and financial stress. These constructs are directly related to the stress experienced by medical students, encompassing their academic and clinical responsibilities, relationships with peers and faculty, health concerns, and financial pressures. The differences between this study and the original research may be attributed to the unique challenges faced by Iranian students, such as financial instability and a highly competitive medical residency system, which were less emphasized in the original study.

The consistency observed may be due to the KMSSS Scale being designed based on the real experiences of medical academicians and including components common to medical academicians in many countries. For example, stresses related to the curriculum, internship, interpersonal communications, future career, physical health, and finance could be relevant in any country where medical academicians study. Therefore, this Scale could be a suitable tool for measuring and comparing stress levels among medical academicians across different countries.

Changes made:
P: 17 line: 472-486

Implications for Medical Education in Iran: In addition to the validation and reliability findings, it is essential to recognize the broader implications of these results for medical education in Iran. The KMSSS Scale offers a valuable tool for identifying and quantifying the specific stressors faced by medical academicians in Iran, providing a nuanced understanding of how financial pressures, clinical demands, and academic challenges uniquely affect this population. These insights are crucial given the high-stakes nature of medical education in Iran, where economic instability, competitive residency placements, and societal expectations can exacerbate stress. Understanding these stress factors is vital for improving the well-being of medical academicians and informing institutional policies aimed at reducing stress-related burnout and promoting academic success. As medical education evolves in Iran, the KMSSS Scale can serve as a valuable resource for educators and policymakers to implement targeted interventions, support services, and curriculum adjustments addressing the most pressing stressors identified in this study. The identification of a cut-off point further enhances its

practical application in distinguishing between varying stress levels, ensuring timely and effective responses to the needs of medical students.

35. Repeat the comparison of the results with the original research less often. When discussing any type of validity, some information is repetitive and unnecessary.

Authors' response: Thanks for your valuable comment, changes have been made in the discussion to apply your valuable comment.

36. Critically discuss why there are differences or similarities between the results of the current study and the original study

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 14-17 line: 363-486

Validation of the KMSSS Scale: In this study, the KMSSS Scale was validated for measuring stress levels among medical academicians in Iran. Various methods were employed to assess the face, content, construct, and reliability validity of the scale.

Face Validity: The findings indicate that the KMSSS Scale exhibits high face validity, meaning the items are relevant, clear, important, and understandable for the sample. This aligns with the results from previous research [22]. However, it is important to note that while both studies reported high face validity, this could be attributed to different cultural contexts. In the Iranian setting, factors such as hierarchical academic structures and emphasis on memorization may have enhanced the perceived relevance and clarity of the items, whereas in South Korea, other cultural and educational factors could have played a role.

Content Validity: The KMSSS Scale, adapted for medical academicians in Iran, demonstrated high content validity, as confirmed by CVR and CVI criteria and expert feedback. This is consistent with findings from the original study by Kim et al. [22], where a high content validity index (CVI) was also reported. However, in comparing the CVI values, it is evident that while both scales were perceived as valid in their respective contexts, the specific stressors addressed differ. In the Iranian version, there was a stronger emphasis on financial pressures and cultural expectations, potentially due to the unique socio-economic conditions of Iran, which were less emphasized in the Korean context. The high CVI in both studies, despite different foci, underscores the importance of context-specific adaptation when developing stress measurement tools.

Concurrent Validity: The KMSSS Scale showed a high correlation with the OSI scale, indicating its effectiveness in measuring stress among Iranian medical academicians. This confirms the concurrent validity of the KMSSS Scale. However, compared to the original study, which also reported strong concurrent validity with related stress scales, the strength of correlations in our study varied slightly. This could be due to differences in the stress dimensions highlighted. For example, financial stress was more prominent in our study compared to the Korean context, possibly due to Iran's economic instability, affecting the

concurrent validity values between the two studies.

Factor Consistency: The six factors extracted from this scale were consistent with the six main dimensions identified by Kim and colleagues in South Korea [22]. While the overall factor structure remained similar, indicating comparable academic demands and pressures, the prominence of certain factors differed between the two studies. For instance, clinical practice stress was found to be more pronounced in the Iranian context. This could reflect differences in healthcare systems, where Iranian medical academicians may face more intense clinical training conditions or specific socio-cultural challenges in managing patient interactions. These nuances suggest that while factor consistency exists, the weight or emphasis of these factors is context-dependent.

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The scale did not measure some aspects of stress or related constructs assessed by other scales, such as personal resources, personality depersonalization, and reduced personal accomplishment. For example, the KMSSS Scale lacks a factor for personal resources like coping skills, social support, self-esteem, or optimism, which are included in OSI and SSI [15, 32]. Additionally, the KMSSS Scale features factors that are more specific or detailed than those in other scales, such as clinical performance stress, which includes items about living in the hospital, clinical performance, hospital environment, and patient interactions, and occupational stress, which includes items about choosing a specialty, hospital, doctor’s status, and occupational information.

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Constructs Measured by KMSSS: The KMSSS Scale specifically measures constructs such as academic stress, clinical practice stress, interpersonal stress, health-related stress, and financial stress. These constructs are directly related to the stress experienced by medical students, encompassing their academic and clinical responsibilities, relationships with peers and faculty, health concerns, and financial pressures. The differences between this study and the original research may be attributed to the unique challenges faced by Iranian students, such as financial instability and a highly competitive medical residency system, which were less emphasized in the original study.

The consistency observed may be due to the KMSSS Scale being designed based on the real experiences of medical academicians and including components common to medical academicians in many countries. For example, stresses related to the curriculum, internship, interpersonal communications, future career, physical health, and finance could be relevant in any country where medical academicians study. Therefore, this Scale could be a suitable tool for measuring and comparing stress levels among medical academicians across different countries.

Reliability and Cut-Off Point: The reliability findings of the KMSSS Scale for the Iranian population demonstrate that this Scale is a valid and reliable tool for measuring stress among medical academicians in Iran. However, slight differences in reliability may result from contextual factors, such as socio-economic instability and cultural emphasis on academic success and family expectations, which may contribute to stress levels not captured in other studies. These results are consistent with findings from earlier research [22]. The KMSSS Scale is tailored to the environment and culture of medical education in Iran, including items that may not be relevant in other settings, such as vertical relationships with professors and seniors, memorization-based education, lack of information about choosing a specialty, and financial pressures related to tuition and textbooks.

Regarding the cut-off point, a value of 120, established through ROC analysis, was chosen as the most appropriate threshold to differentiate between varying levels of stress among medical academicians. Notably, this cut-off point was not defined in the original study, representing a new contribution to the literature. The development of a specific cut-off point tailored to the Iranian context underscores the need for local adaptation in stress measurement tools. This cut-off point, derived from the unique stressors and context of Iranian medical academicians, differentiates it from cut-off points used in other widely used stress scales such as the Perceived Stress Scale (PSS) and the Occupational Stress Inventory (OSI). While these scales often focus on general or occupational stress, the KMSSS Scale's cut-off point addresses the unique blend of academic, financial, and clinical practice stressors pertinent to medical education in Iran. This intermediate cut-off point has practical applications in both clinical and educational settings. In clinical settings, it can identify students at moderate risk of stress-related issues, enabling early intervention before stress escalates into severe psychological or physical health problems. In educational settings, this cut-off can assist administrators and faculty in monitoring and supporting students who are under significant stress but may not yet show signs of burnout, allowing for timely academic or emotional support. Thus, it provides a

useful tool for stratifying stress levels and tailoring interventions accordingly.

Implications for Medical Education in Iran: In addition to the validation and reliability findings, it is essential to recognize the broader implications of these results for medical education in Iran. The KMSSS Scale offers a valuable tool for identifying and quantifying the specific stressors faced by medical academicians in Iran, providing a nuanced understanding of how financial pressures, clinical demands, and academic challenges uniquely affect this population. These insights are crucial given the high-stakes nature of medical education in Iran, where economic instability, competitive residency placements, and societal expectations can exacerbate stress. Understanding these stress factors is vital for improving the well-being of medical academicians and informing institutional policies aimed at reducing stress-related burnout and promoting academic success. As medical education evolves in Iran, the KMSSS Scale can serve as a valuable resource for educators and policymakers to implement targeted interventions, support services, and curriculum adjustments addressing the most pressing stressors identified in this study. The identification of a cut-off point further enhances its practical application in distinguishing between varying stress levels, ensuring timely and effective responses to the needs of medical students.

37. Discuss any new findings, not just those consistent with the study.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 14-17 line: 363-486

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Regarding the cut-off point, a value of 120, established through ROC analysis, was chosen as the most appropriate threshold to differentiate between varying levels of stress among medical academicians. Notably, this cut-off point was not defined in the original study, representing a new contribution to the literature. The development of a specific cut-off point tailored to the Iranian context underscores the need for local adaptation in stress measurement tools. This cut-off point, derived from the unique stressors and context of Iranian medical academicians, differentiates it from cut-off points used in other widely used stress scales such as the

Perceived Stress Scale (PSS) and the Occupational Stress Inventory (OSI). While these scales often focus on general or occupational stress, the KMSSS Scale's cut-off point addresses the unique blend of academic, financial, and clinical practice stressors pertinent to medical education in Iran. This intermediate cut-off point has practical applications in both clinical and educational settings. In clinical settings, it can identify students at moderate risk of stress-related issues, enabling early intervention before stress escalates into severe psychological or physical health problems. In educational settings, this cut-off can assist administrators and faculty in monitoring and supporting students who are under significant stress but may not yet show signs of burnout, allowing for timely academic or emotional support. Thus, it provides a useful tool for stratifying stress levels and tailoring interventions accordingly.

Implications for Medical Education in Iran: In addition to the validation and reliability findings, it is essential to recognize the broader implications of these results for medical education in Iran. The KMSSS Scale offers a valuable tool for identifying and quantifying the specific stressors faced by medical academicians in Iran, providing a nuanced understanding of how financial pressures, clinical demands, and academic challenges uniquely affect this population. These insights are crucial given the high-stakes nature of medical education in Iran, where economic instability, competitive residency placements, and societal expectations can exacerbate stress. Understanding these stress factors is vital for improving the well-being of medical academicians and informing institutional policies aimed at reducing stress-related burnout and promoting academic success. As medical education evolves in Iran, the KMSSS Scale can serve as a valuable resource for educators and policymakers to implement targeted interventions, support services, and curriculum adjustments addressing the most pressing stressors identified in this study. The identification of a cut-off point further enhances its practical application in distinguishing between varying stress levels, ensuring timely and effective responses to the needs of medical students.

38. State how important these results are for medical education in Iran.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 17 line: 472-486

Implications for Medical Education in Iran: In addition to the validation and reliability findings, it is essential to recognize the broader implications of these results for medical education in Iran. The KMSSS Scale offers a valuable tool for identifying and quantifying the specific stressors faced by medical academicians in Iran, providing a nuanced understanding of how financial pressures, clinical demands, and academic challenges uniquely affect this population. These insights are crucial given the high-stakes nature of medical education in Iran, where economic instability, competitive residency placements, and societal expectations can exacerbate stress. Understanding these stress factors is vital for improving the well-being of medical academicians and informing institutional policies aimed at reducing stress-related burnout and promoting academic success. As medical education evolves in Iran, the KMSSS

Scale can serve as a valuable resource for educators and policymakers to implement targeted interventions, support services, and curriculum adjustments addressing the most pressing stressors identified in this study. The identification of a cut-off point further enhances its practical application in distinguishing between varying stress levels, ensuring timely and effective responses to the needs of medical students.

39. In the cut-off point, state how you compare it with other stress scales. Discuss the applications of the intermediate cut-off point. How is it used in clinical and educational settings?

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 16-17 line: 455-471

Regarding the cut-off point, a value of 120, established through ROC analysis, was chosen as the most appropriate threshold to differentiate between varying levels of stress among medical academicians. Notably, this cut-off point was not defined in the original study, representing a new contribution to the literature. The development of a specific cut-off point tailored to the Iranian context underscores the need for local adaptation in stress measurement tools. This cut-off point, derived from the unique stressors and context of Iranian medical academicians, differentiates it from cut-off points used in other widely used stress scales such as the Perceived Stress Scale (PSS) and the Occupational Stress Inventory (OSI). While these scales often focus on general or occupational stress, the KMSSS Scale's cut-off point addresses the unique blend of academic, financial, and clinical practice stressors pertinent to medical education in Iran. This intermediate cut-off point has practical applications in both clinical and educational settings. In clinical settings, it can identify students at moderate risk of stress-related issues, enabling early intervention before stress escalates into severe psychological or physical health problems. In educational settings, this cut-off can assist administrators and faculty in monitoring and supporting students who are under significant stress but may not yet show signs of burnout, allowing for timely academic or emotional support. Thus, it provides a useful tool for stratifying stress levels and tailoring interventions accordingly.

40. Use consistent words: You have used “us” once and ” this study” once.

Authors' response: Thanks for your valuable comment, the discussion was rewritten based on your valuable comment.

41. Carefully review and edit the text to improve grammar and sentence structure.

Authors' response: Thanking you for your valuable comment, the article was rewritten based on your valuable comment.

42. Use subheadings for better organization.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text.

43. State the limitations of the study such as sample size, sampling bias, cultural differences.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 17-18 line: 487-511

Strengths and Limitations: This study demonstrated key strengths, including the use of stratified sampling and a comprehensive evaluation of the KMSSS Scale's validity and reliability through various methods. The determination of the cut-off point using ROC analysis also enhances the credibility of the results. Nonetheless, some limitations should be considered. The study was limited to third- and fourth-year medical academicians from Tehran universities, which may restrict the generalizability of the findings to other academic institutions or medical disciplines both within Iran and internationally. Expanding the sampling to include different universities, regions, and academic levels could help capture a wider array of stress factors not identified in this study.

Additionally, the cross-sectional design prevents establishing any causal relationships between stressors and their outcomes. Longitudinal studies could provide more insight into how stress levels change over time and in response to varying conditions. Another limitation is the potential for sampling bias, as those who chose to participate may exhibit different stress levels than those who declined or were unable to participate, which could influence the results. A further limitation relates to the potential influence of cultural differences on the KMSSS Scale's applicability beyond Iran. Although the scale was adapted to suit the Iranian context, the distinct cultural and academic challenges experienced by medical students in Tehran may not fully align with those in other regions or countries. Factors such as financial strain, the focus on memorization in education, and hierarchical academic structures may vary significantly in different cultural settings, which could affect the scale's broader relevance. Future research should aim to compare stressors across diverse cultural and academic environments to improve the scale's cross-cultural validity.

Addressing these limitations in future studies would contribute to a more nuanced understanding of stress among medical academicians, potentially paving the way for more targeted and culturally appropriate interventions.

44. In conclusion, discuss KMSSS applications in different environments.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 18 line: 513-530

The KMSSS Scale is a valid and reliable instrument for measuring the level of stress among

medical academicians in Iran. This Scale has high face, content, concurrent, and construct validity, as well as high internal consistency and test-retest reliability. The Scale also has a high ability to discriminate between academicians with high and low levels of stress, using a cut-off point of 120. Therefore, this Scale can be used for further research on the stress of medical academicians in Iran and has potential applications in other countries as well.

While the scale was developed specifically for the Iranian context, the core components, such as academic, clinical, interpersonal, and financial stress, are relevant to medical students globally. Future studies could adapt the KMSSS Scale to explore its application in various cultural and educational environments. By doing so, researchers can assess whether stressors unique to specific settings—such as healthcare system differences, academic expectations, or economic conditions—might affect the scale's validity and reliability in other regions.
This global applicability of the KMSSS Scale could help in identifying shared and culture-specific stressors, contributing to more refined interventions tailored to different medical academicians' experiences. As a result, the KMSSS Scale could become a valuable tool not only for research in Iran but also for cross-cultural comparisons of stress levels in medical education systems worldwide.

Reviewer 2:

1- Your English looks okay but it needs in-depth editing and revising. Please consider this issue when you have done all corrections.

Authors' response: Thanks for your valuable comment, corrections have been made in the whole text to answer the respected referee.

2- I think the MEJRH has specific author’s instruction and I think you need to read it carefully and implement the corrections, for example, you need to add numbering to your headings and first subheadings.

Authors' response: Thanks for your valuable comment, corrections have been made in the whole text to answer the respected referee.

3- Your study is not a cross-sectional study. You have adapted a tool and assessed its psychometric features. Therefore, your title, your aim in abstract, and your aim at the end of the introduction must follow same thing. Check out these papers to help you to revise your article better:
1- https://jrsr.sums.ac.ir/article_48900.html
2- Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine. 2000;25(24):3186-91. 12.
3- World Health Organization. Process of translation and adaptation of instruments: WHO; 2020 [cited 2020]. Available from: https://
www.who.int/substance_abuse/research_tools/translation/en/#
4- Zamanzadeh V, Ghahramanian A, Rassouli M, Abbaszadeh A, Alavi-Majd H, Nikanfar AR. Design and Implementation Content Validity Study: Development of an instrument for measuring Patient-Centered Communication. Journal of caring sciences. 2015;4(2):165-78.
I think your title should have been something like this: “adaptation and psychometric features of Korean Medical Student Stress Scale (KMSSS) for Iranian medical students”. Such title

will clarify your aims.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 1-2 line: 1-33
Adaptation and Psychometric Features of the Korean Medical Academicians Stress Scale (KMSSS) for Iranian Medical Academicians

Abstract

Background

Stress is a major factor affecting the mental health and academic performance of medical academicians, which necessitates the use of valid and reliable tools to measure it according to their cultural and educational contexts. Given the unique conditions of Iranian medical academicians, it is crucial to **adapt and validate** the Korean Medical Academicians Stress Scale (KMSSS) to ensure it accurately captures the stressors they face. This study represents the first effort to **validate and culturally adapt** the KMSSS for use in Iran, emphasizing its relevance in addressing the stress assessment needs of Iranian medical academicians.

Objectives

This study aimed to **adapt and validate** the KMSSS for use among Iranian medical academicians to ensure cultural relevance and accuracy in reflecting the unique stressors they face.

Materials And Methods

This study, focused on **psychometric evaluation**, included 900 medical academicians selected using stratified sampling from Tehran universities. Participants completed the KMSSS and the Occupational Stress Inventory (OSI). The face, content, concurrent, and structural validity, along with internal consistency and test-retest reliability, were evaluated using SPSS (version 21) and LISREL (version 8.8). The cut-off point of the Scale was calculated using the ROC

curve.

Changes made:
P: 5 line: 107-109

2- Methods

This psychometric validation study was conducted in accordance with the Helsinki

Declaration and approved by the Ethics Committee of the Islamic Azad University of

Banarabas.

4- I am really concerned about your methodology, ask at least two test-developers (read articles written by Dr Abbas Emadi (https://payeshjournal.ir/browse.php?a_id=93&sid=1&slc_lang=fa & https://www.sid.ir/paper/23577/fa) and a statistician to help you about the methodology. Since this scale has already gone through the validity process, I am not sure that you needed to do factor analysis or content validity.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 8-9 line: 225-233

Content validity is essential to ensure that the questionnaire items adequately cover all aspects of the concept of stress among medical students. Since the KMSSS was developed in South Korea and used in a setting with its own unique cultural and social conditions, certain stressors present in Iran, due to cultural and environmental differences, might not have been included in the original questionnaire [41]. For example, Iran faces natural crises such as floods, earthquakes, and even wars and pandemics, which have a greater impact on the stress levels of medical students [42]. Therefore, it is necessary to examine these specific dimensions in the content validity process to ensure that these factors are appropriately covered.

Changes made:
P:9 line: 242-250
To assess the appropriateness of the KMSSS structure in the Iranian context, an exploratory factor analysis (EFA) was conducted. This analysis aimed to explore whether the stress dimensions defined in the Korean version of the questionnaire are also valid in the context of Iranian medical students. Cultural and environmental differences between the two countries may lead to variations in the factor structure. For instance, in Iran, crises such as floods, earthquakes, wars, and pandemics may affect the stress structure of medical students, while

such crises are less common in South Korea. Hence, EFA was necessary to evaluate the compatibility of this structure with the Iranian population and ensure comprehensive coverage of the present stressors [44].

5- The flow of the introduction is fine. However, your introduction must be written stronger and more concise. Start the first paragraph by definition of the stress, highlight the consequences for the medical students compare with the general population. In second paragraph introduce different studies that evaluated the stress sin this specific group emphasize their tools and why they did use them, and tell what paucities or deficiencies these tools have. In the third paragraph, since you are reporting an adaptation study, you need to present a well-written paragraph about the scale (what it is, its psychometric features –real numbers, not the interpretation- with complete details in original version, why you chose this scale (its advantages)? where is the applicability? Finally say your aims/objectives precisely.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

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P: 2-5 line: 35-105

Paragraph 1: Definition and Consequences of Stress
Stress is one of the common psychological problems in society that can have a negative impact on the physical and mental health of individuals [1]. Stress is defined as a syndrome of physiological and psychological responses to environmental stimuli that are appraised as threatening, challenging, or exceeding the individual's resources to cope with them [2]. Exposure to chronic stress is a precursor to a spectrum of psychological conditions, including depressive states, generalized anxiety, post-traumatic stress disorder (PTSD), and acute stress disorder (ASD) [3]. Chronic stress can also contribute to physical disorders through various mechanisms. For instance, it can lead to the dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in elevated cortisol levels, which in turn can suppress the immune system, increase blood pressure, and promote the development of cardiovascular diseases [4, 5]. In addition, chronic stress can lead to unhealthy behaviors such as poor diet, lack of exercise, and substance abuse, which further exacerbate physical health problems [6]. Therefore, identifying and managing stress effectively is crucial to preventing its harmful consequences on both mental and physical health.

Paragraph 2: Stress in Medical Academicians

Medical academicians are one of the groups that face significant levels of stress [7, 8]. This stress can result from various factors, including academic pressures, a high workload, competition with peers, lack of time for rest and recreation, worry about future career prospects, dealing with patients and death, disruption in social and family relationships, and financial problems [7, 9]. Stress in medical academicians can lead to decreased academic

performance, increased medical errors, decreased job satisfaction, and even increased risk of suicide and psychological disorders [8, 10, 11]. Therefore, identifying and managing stress in medical academicians is of high importance to both their personal well-being and the overall quality of healthcare services they provide.

Paragraph 3: Review of Stress Measurement Tools

A comprehensive literature review on stress measurement tools among medical students reveals several commonly used instruments, each with its strengths and weaknesses. The Occupational Stress Inventory (OSI) is widely used for its comprehensive approach to assessing occupational stress, but it may not capture the unique stressors faced by medical students [12]. The Depression, Anxiety, and Stress Scale (DASS) is valued for its ability to measure multiple dimensions of psychological distress, yet it may lack specificity for academic-related stress [13]. The Perceived Stress Scale (PSS) is praised for its simplicity and ease of use, but it may not fully address the specific stressors in the medical academic environment [14]. The Student Stress Inventory (SSI) is tailored for academic settings but may not be fully validated for medical academicians in Iran [15]. The Medical Student Stress Profile (MSSP) assesses stress specific to medical students, focusing on academic and clinical stressors [16]. Other tools, such as the Medical Student Stress Scale (MSSS) and the Perceived Medical School Stress (PMSS) scale, also aim to evaluate stress specific to medical students, but their applicability to Iranian medical academicians remains uncertain [17, 18].

Paragraph 4: Importance of Cultural Adaptation in Stress Measurement

The adaptation of stress measurement tools to specific cultural and educational contexts is essential for their accuracy and relevance [19]. The stressors experienced by medical academicians in Iran are shaped by the unique cultural, social, and educational environment of the country. For instance, societal expectations, financial pressures, and the high prevalence of substance abuse among students have been identified as significant stress factors in Iranian medical academicians [20, 21]. Moreover, the academic environment in Iran places significant emphasis on both clinical practice and academic performance, which differs from other educational systems. Therefore, it is critical to have a culturally adapted tool that reflects these unique stressors and accurately measures them to facilitate effective interventions [19].

Paragraph 5: Rationale for Choosing the KMSSS

The Korean Medical Academicians Stress Scale (KMSSS) was selected for adaptation in this study due to its comprehensive approach to assessing stress in medical academicians. Developed by Kim et al. in 2014, the KMSSS includes six key factors—academic stress, clinical stress, social stress, professional stress, health-related stress, and financial stress—that are particularly relevant to medical academicians in both academic and clinical settings [30]. This scale has been shown to have high validity and reliability in measuring occupational

stress among medical academicians in Korea, making it a suitable candidate for adaptation to the Iranian context. Additionally, the KMSSS provides detailed profiles of individual stressors, offering a nuanced understanding of the different types of stress that medical academicians face. This makes it particularly valuable for both research and practical applications in stress management and educational planning.

Paragraph 6: Study Objectives and Contributions
The primary objective of this study is to adapt and validate the KMSSS for use among Iranian medical academicians. By ensuring that the scale is culturally relevant and psychometrically sound, this study aims to provide a reliable tool for assessing stress in this population. Specifically, this research will examine the scale's validity (face, content, and structural) and reliability (internal consistency and test-retest reliability) in an Iranian context. Additionally, this study will assess the scale's concurrent validity by comparing it with the Occupational Stress Inventory (OSI) and will calculate the scale's cut-off point to determine stress severity levels among Iranian medical academicians. The findings of this study will contribute to both academic research and the development of targeted psychological interventions, helping to mitigate the negative effects of stress in this vulnerable population.

6- If you choose to follow a guideline such as Beaton et al's one, then you can tidy up your material& method + result section.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 5-11 line: 107-305

Materials And Methods

This psychometric validation study was conducted following the Declaration of Helsinki [23, 24] and approved by the Ethics Committee of the Islamic Azad University of Bandarabas.

2-1. Translation and Cultural Adaptation Process

The translation and cultural adaptation of the Korean Medical Academicians Stress Scale (KMSSS) into Persian were carried out according to the standard methodology proposed by Beaton et al. [25, 26]. This process included several steps to ensure conceptual, semantic, and cultural equivalence:

1. **Forward Translation:** Two bilingual experts fluent in Korean and Persian independently translated the KMSSS into Persian. One translator had a medical background and was familiar with stress-related terminologies, while the other was a professional translator with no medical knowledge. This step aimed to capture both the technical and everyday language interpretations of the scale items.
2. **Synthesis of Translations:** The two translations were compared, and discrepancies were discussed in a consensus meeting involving the translators and a third

independent reviewer. A synthesized version of the Persian translation was created, incorporating elements from both initial translations to ensure clarity and cultural relevance.

3. **Back Translation:** Two additional bilingual experts, who were not involved in the initial translation and unaware of the original KMSSS, back-translated the synthesized Persian version into Korean. This step ensured that the translated items retained the same meaning as the original.
4. **Expert Committee Review:** An expert committee consisting of methodologists, healthcare professionals, linguists, and psychometricians reviewed all translations (forward, synthesized, and back-translated versions) to develop a pre-final version of the KMSSS-Persian. The committee focused on conceptual and cultural equivalence rather than mere linguistic translation.
5. **Pre-testing (Cognitive Debriefing):** The pre-final version was tested on 30 Iranian medical academicians to evaluate its comprehensibility, interpretation, and cultural relevance. Participants were asked to provide feedback on any ambiguities or difficulties in understanding the scale items. Based on their feedback, minor revisions were made to finalize the Persian version.
6. **Final Version:** The finalized Persian version of the KMSSS was reviewed and approved by the expert committee, ensuring it was culturally adapted and ready for psychometric evaluation.

2-2. Participants and Data Collection Procedures

The study's demographic encompassed a cohort of 1,880 third- and fourth-year medical academicians from Tehran's academic institutions in 2023, corresponding to the allocated enrollment figures of these universities (as depicted in Table 1). A power analysis determined the sample sizes for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with an anticipated effect size of 0.30, a desired statistical power level of 0.95, and a probability level of 0.025, resulting in a minimum required sample size of 229 participants.

To enhance validity and reliability, 350 participants were included for EFA, and 300 participants for CFA. For concurrent validity and reliability, an anticipated effect size of 0.10, a desired statistical power level of 0.80, and a probability level of 0.05 determined a required sample size of 87 participants; however, 100 participants were included for concurrent validity and 150 for reliability. These sample sizes were selected based on a comprehensive review of the literature on sample size requirements for validation studies, ensuring they are appropriate and comprehensive for the intended analyses.

The universities and sample size were selected based on their representation of the diverse academic environments in Tehran and the need to ensure a robust and comprehensive analysis. This selection aimed to capture a wide range of stress factors experienced by medical academicians in different institutional settings. All universities in Tehran with medical students were included to ensure comprehensive representation.

2-3. Sampling Method

A proportionate stratified sampling schema was adopted for the sampling process. This approach entailed extracting a sample whose size was commensurate with the population dimension of each stratum, derived from every university and corresponding academic tenure. The strata were determined based on the academic year (third and fourth year) and the university. The number of students selected from each stratum was proportional to the total number of students in that stratum, ensuring that each university and academic year was adequately represented.

Table 1 details the sample distribution for each university and academic year, categorized by concurrent validity, EFA, CFA, and reliability assessments. The researcher directly approached each university and randomly selected students from the list of third- and fourth-year students using the RAND function in Excel. Students were chosen based on their student ID numbers. After obtaining informed consent and providing information about the ethical considerations of the study, the researcher distributed the research Scale to the selected students. The questionnaires were collected using paper forms. Students were asked to complete the questionnaires in the study halls of the medical faculties of the universities.

Inclusion and Exclusion Criteria: Inclusion criteria included voluntary participation, enrollment in a medical program, education within Tehran, and consent to partake. Exclusion criteria comprised conditions related to psychological, psychosocial, physical, or medical stress; substance abuse; dissatisfaction with the study process; and incomplete survey submissions. Verbal consent was secured from the academicians, and ethical guidelines were clarified. Guarantees of data confidentiality and the option to withdraw at any time were provided to all participants. Of the 900 academicians approached, 21 declined involvement, while 879 completed the Scales. Demographic details were systematically gathered and compiled.

2-4. Instruments

Data was collected using two validated questionnaires, OSI and KMSSS. Demographic information (age, gender, marital status, course, and residence status) was also recorded.

KMSSS: This is a 40-item Scale that measures the stress of medical academicians in South Korea based on six dimensions: academic, internship, interpersonal, occupational, health-related, and financial stress. Each item has a four-point scale from 1 (never true) to 4 (always true). The total score ranges from 40 to 160. The Scale has high content, structure, and reliability validity, which were confirmed by expert feedback and factor analysis [22].

OSI: OSI is a 60-item tool designed to measure occupational stress across six dimensions: role overload, role insufficiency, role ambiguity, role conflict, responsibility, and physical environment. Each item is rated on a five-point scale from 1 (never) to 5 (most of the time), with total scores ranging from 60 to 300. Scores above 200 indicate severe stress. The OSI has demonstrated high content, construct, and reliability validity, confirmed through expert feedback and factor analysis. Its content validity has been verified using the Content Validity Index (CVI) and Content Validity Ratio (CVR). The reliability coefficients calculated by the

Split Half (odd-even) strategy and Cronbach's Alpha for the scales were 0.94 and 0.90, respectively. Additionally, the overall internal consistency reliability (Cronbach's Alpha) of the OSI was computed as 0.87, indicating high reliability [27-30]. In Iran, the content validity of the OSI has been confirmed, with concurrent validity reported at 0.81. The overall internal consistency reliability (Cronbach's Alpha) in Iran was reported as 0.91, and the split-half reliability coefficient was 0.87 [31, 32]. The OSI was chosen as a comparator in this study due to its established psychometric properties and its relevance in measuring occupational stress across various contexts, including education and medical fields. Its comprehensive nature and high reliability make it a suitable benchmark for validating the KMSSS.

2-5. Validation Procedures

Face Validity: Face validity was evaluated qualitatively by 10 members of the target population and quantitatively by calculating the impact score of each question based on 20 responses from the target group. Questions with an impact score higher than 1.5 were retained [33].

Content Validity: Content validity was evaluated by calculating the content validity ratio (CVR) and the content validity index (CVI) for each question based on the rating of 10 experts. CVR was obtained by rating each question on a three-point Likert scale: "essential, useful but not essential, and not essential." CVI was obtained by rating each question on a four-point Likert scale from 1 to 4 for simplicity, specificity, and clarity. The Lawshe criterion was used for CVR and the Oliva and colleagues criterion was used for CVI [34]. The CVR and CVI scores are crucial as they provide a quantitative measure of the content validity of the Scale, ensuring that the items are both relevant and representative of the construct being measured.

Content validity is essential to ensure that the questionnaire items adequately cover all aspects of the concept of stress among medical students. Since the KMSSS was developed in South Korea and used in a setting with its own unique cultural and social conditions, certain stressors present in Iran, due to cultural and environmental differences, might not have been included in the original questionnaire. For example, Iran faces natural crises such as floods, earthquakes, and even wars and pandemics, which have a greater impact on the stress levels of medical students. Therefore, it is necessary to examine these specific dimensions in the content validity process to ensure that these factors are appropriately covered.

Concurrent Validity: Concurrent validity was evaluated by correlating the total scores of the two scales, OSI and KMSSS.

Structure validity: Structure validity was evaluated by CFA and EFA. To perform EFA, the Kaiser-Meyer-Olkin (KMO) criterion and Bartlett's test of sphericity were calculated first, then the latent factors were extracted by principal axis factoring (PAF) with varimax rotation. The specific items loaded on each of the six factors were identified. The factors were extracted using PAF with varimax rotation, and the factor loadings for each item were above 0.5, demonstrating strong associations with their respective factors.

To assess the appropriateness of the KMSSS structure in the Iranian context, an exploratory factor analysis (EFA) was conducted. This analysis aimed to explore whether the stress dimensions defined in the Korean version of the questionnaire are also valid in the context of Iranian medical students. Cultural and environmental differences between the two countries may lead to variations in the factor structure. For instance, in Iran, crises such as floods, earthquakes, wars, and pandemics may affect the stress structure of medical students, while such crises are less common in South Korea. Hence, EFA was necessary to evaluate the compatibility of this structure with the Iranian population and ensure comprehensive coverage of the present stressors.
Using confirmatory factor analysis (CFA), the fit of the model extracted by exploratory factor analysis (EFA) was examined. The fit indices used included: chi-square test, root mean square error of approximation (RMSEA < 0.08), comparative fit index (CFI > 0.95), Tucker-Lewis index (TLI > 0.95), standardized root mean square residual (SRMR < 0.05), normed fit index (NFI > 0.95), non-normed fit index (NNFI > 0.95), incremental fit index (IFI > 0.95), relative fit index (RFI > 0.95), and root mean square residual (RMR < 0.05).

Reliability Testing:

Reliability was evaluated using three methods to ensure a comprehensive assessment of the scale's consistency and stability. Cronbach's alpha was calculated to measure internal consistency, indicating how well the items in the scale are correlated with each other. A high Cronbach's alpha value suggests that the items measure the same underlying construct. Split-

half reliability was used to assess the internal consistency of the scale by dividing the items into two halves and measuring the correlation between them. This method helps to verify the consistency of the results across different subsets of the scale. Test-retest reliability was employed to evaluate the stability of the scale over time by administering the same test to the same participants at two different points in time and calculating the correlation between the scores. This method ensures that the scale produces consistent results when repeated under similar conditions.

2-5-Cut-off point determination

The cut-off point of the scale was determined using the ROC curve. The research Scale and OSI were used as the test and criterion measures for the participants. The ROC curve entailed a progressive modification of the Scale's threshold scores, ranging from 90 to 160 in intervals of 10. At each specified juncture, pivotal indices including the true positive rate (TPR), false positive rate (FPR), true negative rate (TNR), false negative rate (FNR), and the Youden index were meticulously computed [35]. The Youden index was used as a criterion for selecting the optimal cut-off point that maximizes the accuracy of the test [36]. Additionally, to integrate ROC curve analysis with other statistical methods, we also calculated the area under the ROC curve (AUC) to assess the overall diagnostic performance of the Scale. The AUC provides a single measure of the test's accuracy, considering both sensitivity and specificity across all threshold levels. This comprehensive approach ensures a robust determination of the cut-off point, enhancing the reliability and validity of the Scale's diagnostic capability.

The Youden index was chosen because it provides a straightforward and effective method for determining the optimal cut-off point in diagnostic tests. It maximizes the difference between the true positive rate and the false positive rate, ensuring the highest possible accuracy of the

test. By using the Youden index, we can identify the threshold that offers the best balance between sensitivity and specificity, which is crucial for the accurate assessment of stress levels among medical academicians.

2-6. Data Analysis Procedures

7- Your discussion must be written with more details but comparative. If you bring that full detailed paragraph about the original version in your introduction, and other tools, here you can have a better comparison between two studies. Firstly, the comparison must be between your findings and the original developers' findings, for example, you found X for CVI they found Y, and you need to be specific is it really similar or different? If they are similar, why did you came to this similarity? And if you reached differences, why? Secondly, you need to compare your scale's psychometric features with the psychometric features of other tools available to assess the stress.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 14-18 line: 362-511

Validation of the KMSSS Scale: In this study, the KMSSS Scale was validated for measuring stress levels among medical academicians in Iran. Various methods were employed to assess the face, content, construct, and reliability validity of the scale.

Face Validity: The findings indicate that the KMSSS Scale exhibits high face validity, meaning the items are relevant, clear, important, and understandable for the sample. This aligns with the results from previous research [22]. However, it is important to note that while both studies reported high face validity, this could be attributed to different cultural contexts. In the Iranian setting, factors such as hierarchical academic structures and emphasis on memorization may have enhanced the perceived relevance and clarity of the items, whereas in South Korea, other cultural and educational factors could have played a role.

Content Validity: The KMSSS Scale, adapted for medical academicians in Iran, demonstrated high content validity, as confirmed by CVR and CVI criteria and expert feedback. This is consistent with findings from the original study by Kim et al. [22], where a high content validity index (CVI) was also reported. However, in comparing the CVI values, it is evident that while both scales were perceived as valid in their respective contexts, the specific stressors addressed differ. In the Iranian version, there was a stronger emphasis on financial pressures and cultural expectations, potentially due to the unique socio-economic conditions of Iran, which were less emphasized in the Korean context. The high CVI in both studies, despite different foci, underscores the importance of context-specific adaptation when developing stress measurement tools.

Concurrent Validity: The KMSSS Scale showed a high correlation with the OSI scale, indicating its effectiveness in measuring stress among Iranian medical academicians. This confirms the concurrent validity of the KMSSS Scale. However, compared to the original study, which also reported strong concurrent validity with related stress scales, the strength of correlations in our study varied slightly. This could be due to differences in the stress dimensions highlighted. For example, financial stress was more prominent in our study compared to the Korean context, possibly due to Iran's economic instability, affecting the concurrent validity values between the two studies.

Factor Consistency: The six factors extracted from this scale were consistent with the six main dimensions identified by Kim and colleagues in South Korea [22]. While the overall factor structure remained similar, indicating comparable academic demands and pressures, the prominence of certain factors differed between the two studies. For instance, clinical practice stress was found to be more pronounced in the Iranian context. This could reflect differences in healthcare systems, where Iranian medical academicians may face more intense clinical training conditions or specific socio-cultural challenges in managing patient interactions. These nuances suggest that while factor consistency exists, the weight or emphasis of these factors is context-dependent.

Comparison with Other Stress Scales: The KMSSS Scale shows similarities with other existing scales. For instance, the academic stress factor parallels the role stress factor of OSI, the stress factor of DASS, and the perceived stress factor of PSS. Clinical practice stress is comparable to the personal strain factor of OSI. Interpersonal stress resembles the personal resources factor of OSI. Health-related stress aligns with the depression and anxiety factors of DASS and the personal strain factor of OSI. Financial stress is similar to the personal strain factor of OSI [13, 14, 27, 37]. Despite these similarities, the KMSSS Scale's specific content reflects the local context of Iranian students, emphasizing financial and academic stressors that may differ in magnitude from other countries. For instance, the financial burden of education and uncertainty about employment prospects are notably higher in Iran, explaining why financial stress emerged as a more dominant factor in this study.

The scale did not measure some aspects of stress or related constructs assessed by other scales, such as personal resources, personality depersonalization, and reduced personal accomplishment. For example, the KMSSS Scale lacks a factor for personal resources like coping skills, social support, self-esteem, or optimism, which are included in OSI and SSI [15, 27]. Additionally, the KMSSS Scale features factors that are more specific or detailed than those in other scales, such as clinical performance stress, which includes items about living in the hospital, clinical performance, hospital environment, and patient interactions, and occupational stress, which includes items about choosing a specialty, hospital, doctor’s status, and occupational information.

Specific Findings for the Iranian Context: A new and notable finding of this study is the specific emphasis on financial and clinical practice stressors in the Iranian context. While previous research focused on general academic and personal stressors, this study uniquely identified financial pressures, including tuition fees, textbooks, and housing costs, as dominant

factors. This financial stress was exacerbated by the economic conditions in Iran and was less prominent in the original study. Furthermore, clinical practice stress, including aspects like living in the hospital and managing patient interactions, was found to be particularly critical for Iranian medical academicians, reflecting the unique demands of clinical education in Iran. These findings offer new insights into the specific stressors faced by Iranian medical students and highlight areas that may require targeted interventions.

Constructs Measured by KMSSS: The KMSSS Scale specifically measures constructs such as academic stress, clinical practice stress, interpersonal stress, health-related stress, and financial stress. These constructs are directly related to the stress experienced by medical students, encompassing their academic and clinical responsibilities, relationships with peers and faculty, health concerns, and financial pressures. The differences between this study and the original research may be attributed to the unique challenges faced by Iranian students, such as financial instability and a highly competitive medical residency system, which were less emphasized in the original study.

The consistency observed may be due to the KMSSS Scale being designed based on the real experiences of medical academicians and including components common to medical academicians in many countries. For example, stresses related to the curriculum, internship, interpersonal communications, future career, physical health, and finance could be relevant in any country where medical academicians study. Therefore, this Scale could be a suitable tool for measuring and comparing stress levels among medical academicians across different countries.

Reliability and Cut-Off Point: The reliability findings of the KMSSS Scale for the Iranian population demonstrate that this Scale is a valid and reliable tool for measuring stress among medical academicians in Iran. However, slight differences in reliability may result from contextual factors, such as socio-economic instability and cultural emphasis on academic success and family expectations, which may contribute to stress levels not captured in other studies. These results are consistent with findings from earlier research [22]. The KMSSS Scale is tailored to the environment and culture of medical education in Iran, including items that may not be relevant in other settings, such as vertical relationships with professors and seniors, memorization-based education, lack of information about choosing a specialty, and financial pressures related to tuition and textbooks.

Regarding the cut-off point, a value of 120, established through ROC analysis, was chosen as the most appropriate threshold to differentiate between varying levels of stress among medical academicians. Notably, this cut-off point was not defined in the original study, representing a new contribution to the literature. The development of a specific cut-off point tailored to the Iranian context underscores the need for local adaptation in stress measurement tools. This cut-off point, derived from the unique stressors and context of Iranian medical academicians, differentiates it from cut-off points used in other widely used stress scales such as the Perceived Stress Scale (PSS) and the Occupational Stress Inventory (OSI). While these scales often focus on general or occupational stress, the KMSSS Scale's cut-off point addresses the unique blend of academic, financial, and clinical practice stressors pertinent to medical

education in Iran. This intermediate cut-off point has practical applications in both clinical and educational settings. In clinical settings, it can identify students at moderate risk of stress-related issues, enabling early intervention before stress escalates into severe psychological or physical health problems. In educational settings, this cut-off can assist administrators and faculty in monitoring and supporting students who are under significant stress but may not yet show signs of burnout, allowing for timely academic or emotional support. Thus, it provides a useful tool for stratifying stress levels and tailoring interventions accordingly.

Implications for Medical Education in Iran: In addition to the validation and reliability findings, it is essential to recognize the broader implications of these results for medical education in Iran. The KMSSS Scale offers a valuable tool for identifying and quantifying the specific stressors faced by medical academicians in Iran, providing a nuanced understanding of how financial pressures, clinical demands, and academic challenges uniquely affect this population. These insights are crucial given the high-stakes nature of medical education in Iran, where economic instability, competitive residency placements, and societal expectations can exacerbate stress. Understanding these stress factors is vital for improving the well-being of medical academicians and informing institutional policies aimed at reducing stress-related burnout and promoting academic success. As medical education evolves in Iran, the KMSSS Scale can serve as a valuable resource for educators and policymakers to implement targeted interventions, support services, and curriculum adjustments addressing the most pressing stressors identified in this study. The identification of a cut-off point further enhances its practical application in distinguishing between varying stress levels, ensuring timely and effective responses to the needs of medical students.

Strengths and Limitations: This study demonstrated key strengths, including the use of stratified sampling and a comprehensive evaluation of the KMSSS Scale's validity and reliability through various methods. The determination of the cut-off point using ROC analysis also enhances the credibility of the results. Nonetheless, some limitations should be considered. The study was limited to third- and fourth-year medical academicians from Tehran universities, which may restrict the generalizability of the findings to other academic institutions or medical disciplines both within Iran and internationally. Expanding the sampling to include different universities, regions, and academic levels could help capture a wider array of stress factors not identified in this study.

Additionally, the cross-sectional design prevents establishing any causal relationships between stressors and their outcomes. Longitudinal studies could provide more insight into how stress levels change over time and in response to varying conditions. Another limitation is the potential for sampling bias, as those who chose to participate may exhibit different stress levels than those who declined or were unable to participate, which could influence the results. A further limitation relates to the potential influence of cultural differences on the KMSSS Scale's applicability beyond Iran. Although the scale was adapted to suit the Iranian context, the distinct cultural and academic challenges experienced by medical students in Tehran may not fully align with those in other regions or countries. Factors such as financial strain, the focus on memorization in education, and hierarchical academic structures may vary significantly in different cultural settings, which could affect the scale's broader relevance.

Future research should aim to compare stressors across diverse cultural and academic environments to improve the scale's cross-cultural validity.

Addressing these limitations in future studies would contribute to a more nuanced understanding of stress among medical academicians, potentially paving the way for more targeted and culturally appropriate interventions.

8- Your tables must have all lines –vertical and horizontal-, simply drawn without any shadow or color.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

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Table 1. Number of academicians and samples in different universities and statistical methods used in the study

University name	Number of academicians		Number of samples			
	Third year	Fourth year	Concurrent validity	EFA	CFA	Reliability
Shahed	40	40	4	15	13	6
Army	60	60	7	22	19	9
Tehran	180	180	19	67	57	29
Iran	220	220	23	82	70	35
Baqiyatallah	80	80	9	30	26	13
Shahid Beheshti	200	200	21	74	64	32
Islamic Azad	160	160	17	60	51	26
Total	940	940	100	350	300	150

Table 2. Frequency and percentage based on types of validity and reliability in academicians

		Concurrent number(%)	Exploratory number(%)	Confirmatory number(%)	Reliability number(%)	Total number(%)
Age	less than 20 years old	5 (5.30)	36 (10.60)	27 (9.10)	15 (10.20)	83 (9.40)
	between 21 and 23 years old	47 (49.50)	140 (41.10)	121 (40.90)	50 (34.00)	358 (40.70)
	between 24 and 26 years old	28 (29.50)	105 (30.80)	93 (31.40)	60 (40.80)	286 (32.50)
	between 27 and 29 years old	8 (8.40)	44 (12.90)	48 (16.20)	19 (12.90)	119 (13.50)
	above 29 years old	7 (7.40)	16 (4.70)	7 (2.40)	3 (2.00)	33 (3.80)
Gender	boy	36 (37.90)	164 (48.10)	155 (52.40)	78 (53.10)	433 (49.30)

	girl	59 (62.10)	177 (51.90)	141 (47.60)	69 (46.90)	446 (50.70)
Marital status	married	20 (21.10)	79 (23.20)	71 (24.00)	45 (30.60)	215 (24.50)
	single	75 (78.90)	262 (76.80)	225 (76.00)	102 (69.40)	664 (75.50)
Course	third year	45 (47.40)	178 (52.20)	148 (50.00)	72 (49.00)	443 (50.40)
	fourth year	50 (52.60)	163 (47.80)	148 (50.00)	75 (51.00)	436 (49.60)
Residence status	native	57 (60.00)	212 (62.20)	167 (56.40)	87 (59.20)	523 (59.50)
	non-native	38 (40.00)	129 (37.80)	129 (43.60)	60 (40.80)	356 (40.50)

Table 3: Rotated Component Matrix

Items	**Factor**						impact facto
	Internship stress	Academic stress	Occupational stress	Interpersonal stress	Health-related stress	Financial stress	
i1	0.15	**0.68**	0.18	0.17	0.10	0.08	2.73
i2	0.17	**0.71**	0.16	0.14	0.07	0.10	3.44
i3	0.16	**0.73**	0.19	0.14	0.10	0.02	3.20
i4	0.20	**0.68**	0.18	0.06	0.11	0.11	2.87
i5	0.24	**0.70**	0.15	0.11	0.16	0.03	3.28
i6	0.17	**0.69**	0.13	0.17	0.09	0.05	4.05
i7	0.24	**0.66**	0.13	0.11	0.13	0.11	3.36
i8	0.22	**0.73**	0.20	0.07	0.04	0.11	3.44
i9	0.22	**0.66**	0.20	0.11	0.05	0.07	4.50
i10	**0.73**	0.16	0.21	0.16	0.10	0.06	4.40
i11	**0.74**	0.17	0.21	0.14	0.08	0.04	4.60
i12	**0.74**	0.20	0.16	0.10	0.15	0.09	4.40
i13	**0.71**	0.18	0.09	0.20	0.12	0.07	4.60
i14	**0.72**	0.21	0.20	0.12	0.07	0.03	4.50
i15	**0.75**	0.14	0.15	0.19	0.10	0.10	2.34
i16	**0.73**	0.15	0.20	0.07	0.07	0.17	3.44
i17	**0.74**	0.22	0.19	0.09	0.09	0.06	4.60
i18	**0.74**	0.24	0.19	0.08	0.07	0.07	4.50
i19	**0.72**	0.17	0.20	0.16	0.02	0.04	3.28
i20	**0.74**	0.21	0.13	0.06	0.14	0.06	2.87
i21	0.33	0.28	0.27	**0.47**	0.17	0.16	2.87
i22	0.31	0.25	0.36	**0.42**	0.10	0.08	4.40
i23	0.35	0.25	0.23	**0.49**	0.17	0.16	3.36
i24	0.21	0.30	0.25	**0.57**	0.20	0.14	4.05
i25	0.43	0.25	0.18	**0.42**	0.10	0.09	4.30
i26	0.29	0.30	0.23	**0.40**	0.20	0.22	3.20
i27	0.30	0.27	0.24	**0.52**	0.16	0.22	3.20
i28	0.21	0.17	**0.71**	0.07	0.12	0.07	2.34
i29	0.18	0.17	**0.73**	0.09	0.17	0.05	4.70
i30	0.13	0.20	**0.68**	0.16	0.18	0.02	3.20
i31	0.20	0.18	**0.68**	0.10	0.12	0.08	4.40
i32	0.23	0.12	**0.72**	0.14	0.04	0.12	1.85
i33	0.19	0.24	**0.70**	0.06	0.13	0.09	4.60
i34	0.21	0.13	**0.73**	0.15	0.04	0.02	4.05
i35	0.17	0.21	**0.75**	0.17	0.11	0.06	2.73
i36	0.14	0.21	0.26	0.13	**0.62**	0.13	4.30
i37	0.22	0.15	0.20	0.15	**0.75**	0.07	3.28
i38	0.16	0.19	0.19	0.15	**0.73**	0.07	4.05
i39	0.18	0.15	0.15	0.18	0.17	**0.74**	4.70
i40	0.16	0.23	0.13	0.17	0.07	**0.75**	3.36

Table 4: ROC for determining the cut-off point for KMSSS scale

cut off point	TP (True Positive)	FN (False Negative)	FP (False Positive)	TN (True Negative)	TPR (True Positive Rate)	FPR (False Positive Rate)	Youden index
70	5	70	0	20	22.22	0	22.22
80	5	70	0	20	22.22	0	22.22
90	10	65	0	20	23.53	0	23.53
100	21	54	1	19	26.03	4.55	21.48
110	72	3	1	19	86.36	1.37	84.99
120	75	0	13	7	1000	14.77	85.23
130	75	0	15	5	1000	16.67	83.33
140	5	70	0	20	1000	16.67	83.33
150	5	70	0	20	1000	16.67	83.33

9- Your reference list was not included in the PDF, however, check them all regarding the page numbers & the abbreviation names of the journals according to Medline.

Authors' response: While thanking you for your valuable comment, the sources were written and added with Endnote

Changes made:

P: 24-27 line: 556-678

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2 Revision 1

4 comments · 7 Oct 2024 – 12 Oct 2024

Referee 2 Reviewer

MINOR REVISION 7 Oct 2024

Hello
I thank the author of the article for addressing the comments.
If possible, use your new reference instead of reference number 33.

Referee 1 Reviewer

MINOR REVISION 10 Oct 2024

Dear Author/s
Well done,
I can see you have done a lot to improve the quality of the manuscript. However, there are still a few minor issues that must be considered before the final call. Please see my comments listed below to help you elevate the quality of the manuscript:
1- Lines 9-14 say the same thing; please remove one of them.
2- Except for 'Iran', none of the keywords could be found in MESH. Please choose keywords that are available in MESH. Then write them in alphabetical order.
3- Please remove those bold subheadings from the discussion.
4- References 7, 10, 11, 13, 21, 29, 35, 40, 41, 42, & 45 lack page numbers; if references 2, 38, 39, & 43 are books, you need to provide the place of publication & the name of the publisher.

Best of luck

Associate Editor

MINOR REVISION 12 Oct 2024

Dear Editor-in-Chief

Based on reviewers' comments, the revised version of the manuscript titled "Multidimensional Assessment and Contextual Refinement of Stress Metrics among Medical Academicians in Iran" needs minor revisions.

Best

Editor-in-Chief

MINOR REVISION 12 Oct 2024

Dear Authors
According to the reviewers' and associate editor's comments, your article requires minor revisions. When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and submit the required files.

3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Reviewers,

Thank you for your valuable feedback on our manuscript titled "Adaptation and Psychometric Features of the Korean Medical Academicians Stress Scale (KMSSS) for Iranian Medical Academicians." We appreciate the time and effort you have invested in reviewing our work and providing insightful comments and suggestions.

We have carefully considered each of your points and have made the necessary revisions to enhance the clarity and robustness of our study. Below, we provide detailed responses to each of your comments, along with the corresponding changes made to the manuscript.

Reviewer 1:
1- Lines 9-14 are telling the same thing, remove one of them please.
Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows
Changes made: **P:1 line: 4-13** **Background** Stress is a major factor affecting the mental health and academic performance of medical academicians, which necessitates the use of valid and reliable tools to measure it according to their cultural and educational contexts. Given the unique conditions of Iranian medical academicians, it is crucial to adapt and validate the Korean Medical Academicians Stress Scale (KMSSS) to ensure it accurately captures the stressors they face. **Objectives** This study aimed to adapt and validate the KMSSS for use among Iranian medical academicians to ensure cultural relevance and accuracy in reflecting the unique stressors they face.
2- Except ‘Iran’, none of the key words could be found in MESH. Please choose keywords which are available in MESH. Then write them in alphabetic order. **Changes made:** **P:2 line: 32** **Keywords:** Iran, Medical, Psychometrics, Questionnaires, Stress

Authors' response: Thanks to your valuable comment, the keywords were rewritten and the link of the new keywords in mesh is as follows:

Psychometrics

Link:

https://meshb.nlm.nih.gov/record/ui?name=Psychometrics

Stress

Link:

https://meshb.nlm.nih.gov/record/ui?ui=D013315

Medical

Link: Medical Faculty (MeSH)

https://meshb.nlm.nih.gov/record/ui?name=Faculty,%20Medical

Questionnaires

Link: Questionnaires (MeSH)

https://meshb.nlm.nih.gov/record/ui?name=Questionnaires

Iran

Link: Iran (MeSH)

https://meshb.nlm.nih.gov/record/ui?name=Iran

3- Please remove those bold subheadings from the discussion.

Authors' response: Thanks for your valuable comment, all items have been removed from the discussion

4- References 7, 10, 11, 13, 21, 29, 35, 40, 41, 42, & 45 lack of page numbers; references 2, 38, 39, & 43, if they are book, you need to provide place of publish

& name of publisher.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 24-27 line: 563-693
6- References

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21. Khosravi, M., *Burnout among Iranian medical students: Prevalence and its relationship to personality dimensions and physical activity.* Eur J Transl Myol, 2021. **31**(1).: p. 9411-9420.
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Engagement in E-Learning Questionnaire in Students of the School of Nursing and Midwifery in Iran. Middle East journal of rehabilitation and health studies, 2023. **10**(3).: p. e134881.
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45. Sanjari, S., et al., *Construction and validation of a self-report violence questionnaire in Iranian women.* Journal of fundamentals of mental health, 2021. **23**(3).: p. 181-189.

Reviewer 2:

If possible, use your new reference instead of reference number 33.

Authors' response: While thanking you for your valuable comment, we would like to remind you that the changes made in the text are as follows

Changes made:
P: 26 line: 651-652

33. Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Research in Science Education. 2018; **48**(6): p. 1273-96.

3 Revision 2

2 comments · 13 Nov 2024 – 16 Nov 2024

Associate Editor

ACCEPT 13 Nov 2024

Dear Editor

I have reviewed the revised version of the manuscript titled "Multidimensional Assessment and Contextual Refinement of Stress Metrics among Medical Academicians in Iran." I think that the current version can be accepted for publication in the journal.

Best.

Editor-in-Chief

ACCEPT 16 Nov 2024

Dear Authors
We are pleased to inform you that your article is accepted for publication in the MEJRHS. We hope to receive other qualified articles from your group.