ORIGINAL ARTICLE

## Quality Evaluation of Advising Services for Medical Students and Identifying Opportunities for Enhancement

Lida Jarahi[1], Mahsa Mohammadian[2], Fatemeh Moghaddas[3,*], Seyed Mojtaba Mousavi Bazaz[1]
[1]Department of Community Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[2]School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[3]Research Council of Amir Al-Momenin Hospital, Semnan University of Medical Sciences, Semnan, Iran

[*]Semnan University of Medical Sciences, Payambaran St. Semnan, 9944235147 Iran

Tel: +989122318173
Email: drmoghaddas@yahoo.com

**Background:** The demanding academic and professional environment faced by medical students renders them susceptible to mental health challenges. Tailored academic advising (AA) services are crucial in catering to the distinct requirements of medical students. This study evaluates the quality of AA from the perspective of medical students and proposes improvements in the AA approach.
**Method:** The study comprised 250 pre-clinical year students from Mashhad Medical School. A valid AA quality evaluation questionnaire was used to measure students' perception and attitude towards AA, to evaluate the performance of students and advisors, and factors affecting its quality. Chi-square, t-test, ANOVA, and logistic regression were used for data analysis.
**Results:** Although a majority of medical students exhibited a favorable disposition towards AA, 37% acknowledged never utilizing the AA, with only 10.4% engaging in regular consultations. The satisfaction rate with AA stood at 47%. Obstacles concerning advisor performance were identified as more prevalent reasons for student discontent, including deficiencies in advisory skills, unfamiliarity with educational protocols, low time, and low motivation. Alongside academic concerns, 36% of students sought advice for psychological issues. Logistic regression analysis showed that counselors' performance, students' knowledge, and students' positive attitudes increased the rate of students using AA.
**Conclusion:** Enhancing AA services necessitates augmenting students' awareness regarding the available support mechanisms and upgrading the skills and commitment levels of advisors. While faculty advisors play a pivotal role in career progression, the efficiency of AA services could be heightened by incorporating an assistant psychologist alongside specialized training for faculty advisors.
**Keywords:** Academic Advising Process, Consulting Program, Faculty Member Advisor, Medical Students, Advisors, Advisee

## تقييم جودة الخدمات الاستشارية لطلاب الطب وتحديد فرص التحسين

**الخلفية:** إن البيئة الأكاديمية والمهنية الصعبة التي يواجهها طلاب الطب تجعلهم عرضة لتحديات الصحة العقلية. تعتبر خدمات الإرشاد الأكاديمي (AA) المصممة خصيصًا أمرا بالغ الأهمية لتلبية المتطلبات المتميزة لطلاب الطب. تقوم هذه الدراسة بتقييم جودة AA من وجهة نظر طلاب الطب وتقترح تحسينات في نهج AA.
**الطريقة:** شملت الدراسة ٢٥٠ طالبًا في السنة ما قبل السريرية من كلية الطب في مشهد. تم استخدام استبيان صالح لتقييم جودة AA لقياس إدراك الطلاب واتجاههم نحوAA ، ولتقييم أداء الطلاب والمرشدين، والعوامل التي تؤثر على جودته. تم استخدام مربع كاي واختبار t و ANOVAوالانحدار اللوجستي لتحليل البيانات.
**النتائج:** على الرغم من أن غالبية طلاب الطب أبدوا استعدادًا إيجابيًا تجاهAA ، إلا أن ٣٧٪ أقروا بعدم استخدام AA مطلقًا، مع مشاركة ١٠،٤٪ فقط في استشارات منتظمة. وبلغت نسبة الرضا عن47 AA ٪ .تم تحديد العوائق المتعلقة بأداء المرشد باعتبارها الأسباب الأكثر شيوعًا لسخط الطلاب، بما في ذلك أوجه القصور في المهارات الاستشارية، وعدم الإلمام بالبروتوكولات التعليمية، وقلة الوقت، وانخفاض الحافز. وإلى جانب المخاوف الأكاديمية، طلب ٣٦٪ من الطلاب المشورة بشأن المشكلات النفسية. أظهر تحليل الانحدار اللوجستي أن أداء المرشدين، ومعرفة الطلاب، واتجاهات الطلاب الإيجابية زادت من معدل استخدام الطلاب لـ AA.
**الاستنتاج:** إن تعزيز خدمات AA يتطلب زيادة وعي الطلاب فيما يتعلق بآليات الدعم المتاحة ورفع مستوى المهارات ومستويات التزام المرشدين. بينما يلعب مستشارو هيئة التدريس دورًا محوريًا في التقدم الوظيفي، يمكن زيادة كفاءة خدمات AA من خلال دمج طبيب نفساني مساعد جنبًا إلى جنب مع التدريب المتخصص لمستشاري هيئة التدريس.
**الكلمات المفتاحية:** عملية الإرشاد الأكاديمي، البرنامج الاستشاري، مستشار عضو هيئة التدريس، طلاب الطب، المرشدون، المستشار

## ارزیابی کیفیت برنامه مشاوره دانشگاهی برای دانشجویان پزشکی و شناسایی فرصت های ارتقا

**زمینه و هدف:** شرایط دشوار تحصیلی و شغلی، دانشجویان پزشکی را در معرض چالش های سلامت روان قرار می دهد و ضرورت برنامه های مشاوره متناسب برای رفع نیازهای منحصر به فرد دانشجویان را نشان می دهد. این مطالعه کیفیت برنامه مشاوره دانشگاهی را از دیدگاه دانشجویان پزشکی ارزیابی و رویکردی برای بهبود ارائه می نماید.
**روش:** شرکت کنندگان ۲۵۰ دانشجوی مقطع علوم پایه دانشکده پزشکی مشهد بودند. آگاهی و نگرش دانشجویان درباره برنامه مشاوره، عملکرد دانشجویان و مشاوران و عوامل مؤثر بر کیفیت برنامه، با استفاده از پرسشنامه ارزیابی کیفیت مشاوره پس از تأیید روایی آن، بررسی شد. آزمون کای اسکوئر، تی تست، آنوا و رگرسیون برای تحلیل استفاده شد.
**یافته ها:** اگرچه اغلب دانشجویان نگرش مثبتی به برنامه مشاوره داشتند، ۳۷٪ دانشجویان هرگز از خدمات استفاده نکرده بودند و تنها ۱۰/۴٪ جلسات منظمی با مشاوران داشتند. میزان رضایت از خدمات مشاوره ۴۷٪ بود. بیشترین علت نارضایتی، درباره عملکرد مشاوران شامل مهارت ناکافی، عدم آگاهی از مقررات آموزشی، انگیزه ضعیف و تخصیص زمان ناکافی بود. به جز مسائل تحصیلی، ۳۶٪ دانشجویان برای مسائل روانی و شخصی به مشاوران مراجعه کرده بودند. رگرسیون لجستیک نشان داد که عملکرد مشاوران، آگاهی دانشجویان و نگرش مثبت دانشجویان میزان استفاده از برنامه مشاوره را افزایش می دهد.
**نتیجه گیری:** بهبود برنامه مشاوره دانشجویان پزشکی مستلزم افزایش آگاهی دانشجویان درباره حیطه جستجوی کمک و بهبود مهارت و انگیزه مشاوران است. گرچه مشاوران هیأت علمی برای دستیابی به اهداف شغلی ضروری هستند، کارآمدی برنامه مشاوره می تواند با بکارگیری روانشناسان علاوه بر آموزش اعضای هیأت علمی، افزایش یابد.
**واژه های کلیدی:** برنامه مشاوره، اعضای هیأت علمی، دانشجویان پزشکی، روانشناس

## طبی طلباء کے لیے مشورے کی خدمات کے معیار کا جائزہ اور اضافہ کے مواقع کی نشاندہی

**پس منظر:** طبی طلباء کو درپیش تعلیمی اور پیشہ ورانہ ماحول انہیں ذہنی صحت کے چیلنجوں کا شکار بناتا ہے۔ طبی طلباء اور AA نقطہ نظر میں بہتری کی تجویز پیش کرتے ہیں۔
**طریقہ:** مطالعہ میں مشہد میڈیکل اسکول کے ۲۵۰ پری کلینیکل سال کے طلباء شامل تھے۔ ایک درست AA معیار کی تشخیص کے سوالنامے کا استعمال AA کے بارے میں طلباء کے تاثرات اور رویہ کی پیمائش کرنے کے لئے، طلباء اور مشیروں کی کارکردگی اور اس کے معیار کو متاثر کرنے والے عوامل کا جائزہ لینے کے لئے کیا گیا تھا۔ -اسکوائر، ٹی ٹیسٹ، انووا، اور لاجسٹک ریگریشن کو ڈیٹا کے تجزیہ کے لیے استعمال کیا گیا۔
**نتائج:** اگرچہ میڈیکل طلباء کی اکثریت نے AA کے لیے سازگار رویہ کا مظاہرہ کیا، ۳۷٪ نے تسلیم کیا کہ AA کو کبھی استعمال نہیں کیا، صرف ۱۰،٤٪ باقاعدہ مشاورت میں مشغول ہیں۔ AA کے ساتھ اطمینان کی شرح ٤٧٪ رہی۔ مشیر کی کارکردگی سے متعلق رکاوٹوں کو طالب علم کی عدم اطمینان کی زیادہ عام وجوہات کے طور پر شناخت کیا گیا، بشمول مشاورتی مہارتوں میں کمی، تعلیمی پروٹوکول سے ناواقفیت، کم وقت، اور کم ترغیب۔ تعلیمی خدشات کے ساتھ ساتھ، ۳٦٪ طلباء نفسیاتی مسائل کے لیے مشورہ طلب کیا۔ لاجسٹک ریگریشن تجزیہ سے پتہ چلتا ہے کہ مشیروں کی کارکردگی، طلبہ کے علم اور طلبہ کے مثبت رویوں نے AA استعمال کرنے والے طلبہ کی شرح میں اضافہ کیا۔
**نتیجہ :** AA خدمات کو بڑھانے کے لیے دستیاب سپورٹ میکانزم کے بارے میں طلباء کی آگاہی کو بڑھانے اور مشیروں کی مہارتوں اور عزم کی سطح کو اپ گریڈ کرنے کی ضرورت ہے۔ جب کہ فیکلٹی ایڈوائزر کیریئر کی ترقی میں اہم کردار ادا کرتے ہیں، فیکلٹی ایڈوائزرز کے لیے خصوصی تربیت کے ساتھ ساتھ ایک اسسٹنٹ سائیکالوجسٹ کو شامل کرکے AA خدمات کی کارکردگی کو بڑھایا جا سکتا ہے۔
**مطلوبہ الفاظ:** تعلیمی مشورے کا عمل، مشاورتی پروگرام، فیکلٹی ممبر ایڈوائزر، میڈیکل اسٹوڈنٹس، ایڈوائزر، ایڈوائزر

## INTRODUCTION

Academic advising serves as a vital support system for students in higher education, offering guidance on academic and personal matters (1). The National Academic Advising Association (NACDA) is dedicated to advancing modern advising practices globally, tailored to the unique needs of various institutions (1,2). Particularly beneficial for freshmen and sophomores adjusting to a new academic and social environment, academic advising plays a pivotal role in addressing the challenges students face (2,3).

Extensive research illustrates the significant impact of AA on student outcomes, including retention rates, satisfaction, timely graduation, academic progress, desirable grade point average, resilience, and the cultivation of essential skills like decision-making and critical thinking (4,5). Effective advising not only influences academic success but also empowers students to realize their long-term objectives (5). By prioritizing quality academic advising, educational institutions aim to enhance student performance, reduce stress, and bolster overall success and retention rates (1-3).

AA is delivered through various advising models that are tailored to the resources and objectives of each institute. These models can include traditional face-to-face communication, phone calls, group discussions, online advising through social media or websites, as well as counseling, support, mentoring, and teaching, depending on the institute's policies (1, 6).

The frequency of interactions between the advisor and the student typically varies from at least once per semester to regularly every week, depending on the advising methods employed. In the AA process, most advisors are faculty members who have either volunteered or been invited to participate in the program. It is important to note that advising is not their primary role, although in certain institutions, academic advisors are designated as primary role advisors (2, 6).

AA holds particular significance for freshmen and sophomores who may find the college environment, lacking in support, more challenging compared to their high school experience within a family setting. By considering students' perspectives on the academic advising process, policymakers, and academic advisors can identify the obstacles and areas for improvement. This study aims to assess the quality of the academic advising process and identify any hindrances from the viewpoint of pre-clinical year medical students at Mashhad University of Medical School, which is recognized as one of the top five medical schools in Iran.

## METHODS

The research study enrolled 250 participants who were in their pre-clinical years of study (first, second, and early third-year students) at Mashhad Medical School. The participants were selected using a simple random sampling method. The sample size was determined based on the Morgan table, which estimates the sample size relative to the total population of freshman and sophomore medical students at Mashhad Medical University. In 2021, the total population was approximately 750 students.

To evaluate the implementation of the academic advising (AA) process, an instrument was developed based on the validated questionnaire for assessment of knowledge and attitude of students about academic advising and their performance (7). This questionnaire was developed based on the Delphi method regarding the opinions of eight medical education experts. The final questionnaire consisted of four domains: a) students' knowledge about the tasks and process of the AA program, b) students' attitudes towards the importance and necessity of the advising program in addressing their academic and personal issues, c) their utilization of the advising program for seeking help, and d) the assessment of academic advisors from the students' perspective.

The content validity ratio (CVR) was assessed through Lawshe's method to determine agreement among subject-matter experts (SMEs) on the importance of each questionnaire item. SMEs rated each item on a three-point scale: 'essential,' 'useful but not essential,' and 'not necessary' (8). The draft questionnaire was then validated by medical education experts. Inappropriate questions were eliminated, while questions with acceptable CVRs were included in the final questionnaire. Messick's validity framework was also utilized to ensure that all domains were adequately covered and that questions were relevant to the correct domain (i.e., each question represented the construct domain being assessed) (9).

The reliability of the final questionnaire was evaluated using Cronbach's alpha, which was 0.96 overall and above 0.90 for each domain. Participants responded to the questionnaire using a five-point Likert scale, ranging from 1 to 5 (very low to very high). The total score of the questionnaire varied from 44 to 243, with the minimum and maximum scores in each domain as follows: 4-20 for students' information, 17-85 for students' attitude, 7-42 for student performance, and 16-96 for academic advisors' performance. The cut-off point for each domain was established at 50% of the total score, with scores below this threshold deemed inappropriate.

The data collected were analyzed using IBM SPSS 20 statistical software. Chi-square, t-test, analysis of variance, and logistic regression were employed for data analysis. The level of statistical significance was set at less than 0.05.

The study was conducted following the Helsinki Declaration guidelines, and ethical considerations were reviewed and approved by the ethics committee of Mashhad University of Medical Sciences, Mashhad, Iran. Approval for the study was granted by the Vice-Chancellor's Office for Research of Mashhad University of Medical Science, and all participants consented after being informed.

## RESULTS

The academic advising (AA) program is presented to all incoming freshman students during the orientation ceremony at Mashhad Medical School. While participation in the program is optional, students are strongly encouraged to seek guidance from the faculty advisors who have been assigned to them. Out of the 250 students who were invited, 241 completed the survey. The mean age of the students was

20 ± 3 years, with 52.7% being female and 94.1% being single. Moreover, 62.2% of the students were local (from Mashhad city), while the remaining students were from other cities and often resided on campus. Within the pre-clinical medical student cohort, 14.9% were identified as at-risk students who had a higher likelihood of facing academic challenges based on their previous academic performance and grade point average from the previous semester. These at-risk students were provided with specific recommendations to seek guidance from their academic advisors.

Table 1 displays the descriptive ratings of the AA evaluation questionnaire across four domains: student's information, student's attitude, student's performance, and advisor's performance. Among the students, 71% had limited knowledge about the AA, including the roles and responsibilities of advisors, the available resources, and how to seek assistance. Furthermore, 65% expressed a favorable outlook on the overall objectives of the AA program and emphasized its importance in shaping their academic path. The attitude scores of pre-clinical medical students were satisfactory, surpassing the 50% mark of the total questionnaire score. However, their ratings for information, performance, and advisor's performance fell below 50%, indicating room for improvement. The evaluation of students' engagement in the AA program revealed that 36.5% never sought academic guidance, 53.1% rarely utilized the program, and only 10.4% regularly met with their advisors. Notably, there were no significant variations based on students' gender and their decision to self-refer to the AA program.

There were no significant differences observed in the mean scores across the four domains based on the students' gender and marital status ($p=0.81$, 0.16, respectively). However, a significant difference was found in the performance scores based on the students' residency ($p=0.008$, 0.02, respectively). Non-native students exhibited more seeking behaviors from the AA program and evaluated the advisors' performance better than native students ($p=0.03$, 0.04, respectively). Furthermore, there was a significant difference in the attitude scores between students who had used the AA program once during their schooling compared to those who had not used it ($p=0.02$). Additionally, a significant difference was observed in the attitude scores between at-risk students and the rest ($p=0.04$).

Out of the 152 students who consulted faculty advisors, 53% expressed dissatisfaction, while 47% were satisfied with the AA process. The majority of dissatisfied students mentioned reasons such as advisors lacking proper consulting and communication skills, insufficient knowledge about university policies and regulations, poor motivation, inadequate time allocation for student meetings, and a lack of interest in maintaining student files for future reference (Table 2).

The main reason students sought help was related to academic and educational issues (82.6%), with a significant portion (35.8%) also turning to faculty advisors for psychological and personal concerns. A notable difference was observed in the satisfaction rates of students regarding advising experiences in academic matters compared to personal-psychological issues (41% vs. 28%, $p=0.04$).

The logistic regression analysis revealed that advisors' performance ($p=0.001$, OR=42.5), students' access to information ($p=0.03$, OR=11.8), and students' positive attitude ($p=0.02$, OR=7.2) were key factors influencing students' decision to seek advice from advisors. Moreover,

**Table 1. Descriptive of the scores of the academic advising evaluation questionnaire**

| Questionnaire domains | Students' information | Students' Attitude | Students' Performance | Advisors' Performance |
|---|---|---|---|---|
| Minimum score | 4 | 17 | 7 | 16 |
| Maximum score | 20 | 85 | 42 | 91 |
| The cut-point score | 12 | 51 | 17.5 | 54 |
| Descriptive index | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) |
| Total Students (N=241) | 8.1(3.6)* | 52.3(12.7)** | 15.1(7.1)* | 43.8(17.3)* |
| Students used the AA (N=152) | 9.2(3.2)* | 54.6(11.0)** | 18.4(6.7)** | 53.1(16.8)* |
| Students did not use the AA (N=88) | 6.1(2.4)* | 46.8(14.0)* | 9.3(3.0)* | 27.8(10.2)* |
| Academically at-risk students (N=36) | 7.9(3.6)* | 54.2(9.2)** | 17.1(2.3)** | 48.1(13.2)* |
| Non-at-risk students (N=204) | 7.4(3.4)* | 51.1(10.5)** | 14.7(3.1)* | 42.7(10.5)* |

SD: Standard Deviation
AA: Academic Advising
At-risk students: Students with important educational problems
* Inappropriate
** Appropriate

advisors' performance ($p<0.001$, OR=81.1) and students' access to information ($p=0.01$, OR=10.8) significantly impacted students' satisfaction with the advising process.

According to students, the success of the AA program hinges largely on advisors' performance, encompassing aspects such as approachability, communication skills, guidance on course selection and academic matters, support for research endeavors, and opportunities for personal growth and skill development including learning strategies, problem-solving techniques, decision-making abilities, and stress management skills to address both academic and psychological needs (Table 3).

## DISCUSSION

The assessment of academic advising (AA) at Mashhad Medical School showed that 65% of pre-clinical year medical students had a positive view of AA, yet the majority (71%) lacked awareness of its purpose, process, and available assistance areas. The study also revealed that 36.5% of medical students never sought academic advising, and among those who did, less than half reported satisfaction with the AA.

A separate study at Urmia University in Iran discovered that 78% of students recognized the importance of academic advising (AA), but only 31% were content with the guidance provided by their faculty advisors (10). Similar research in medical universities in Iran demonstrated that approximately 50% of medical students utilized AA services, such as 51% at Ahwaz Jundishapur University and 52% at Urmia University, aligning with the current study's results (7, 10). These studies also highlighted that a large percentage of students (over 70%) viewed AA as essential, yet only a small fraction were satisfied with their faculty advisors' performance (31% at Urmia and 19% at Ahwaz Jundishapur University) (7, 10).

Different surveys conducted in various countries have revealed that students hold a favorable view towards academic advising (AA) and believe that it can effectively cater to their academic and psychological needs (11, 12). In a study conducted at a state university in Ankara, Turkey, involving 840 undergraduate students, advisors and their students would meet once or twice during an academic semester for brief meetings lasting less than 15 minutes. These meetings primarily focused on discussing course selection and registration issues. However, students expressed dissatisfaction with their advisors and reported a lack of motivation towards advising, unlike their engagement in other aspects of academic life (12).

To achieve the desired objectives and outcomes of AA, it is crucial for students to actively participate in the process and maintain a positive attitude, while advisors must adopt an exemplary approach (5).

While educational concerns were the primary reason for students seeking assistance, more than one-third of students also sought academic advising (AA) for psychological and personal matters. A cross-sectional study conducted among medical students in Saudi Arabia revealed that the most

**Table 2. Important items for dissatisfaction from faculty advisors' performance**

| High important items | Percent of students' agreement |
|---|---|
| Improper skills of the advisor in consulting | 68% |
| The poor motivation of advisors | 61% |
| Insufficient knowledge of university policies and regulations | 58% |
| Poor interest of advisors to record the personal student file for future meetings | 47% |
| Inadequate communicating skills | 46% |
| Insufficient time allocated to meet the advisees | 45% |

**Table 3. The highly important items for faculty advisors' performance**

| High important items | Percent of students' agreement |
|---|---|
| The appropriate and friendly manner of the faculty advisor | 87% |
| The advisor's communication skills | 86% |
| Encourage the students to do the research | 78% |
| Advisor's information about taking the courses and academic issues | 78% |
| Providing opportunities for flourishing and development of individual skills | 77% |
| The role of the advisor in engaging extracellular activity | 72% |
| The advisor's skills in solving the student's academic problems | 72% |
| The advisor's skills for helping with student's psychological needs | 72% |
| The advisor's interest in guiding and counseling | 68% |

common type of advising requested by students was related to psychological issues. However, the study reported that the advising program had no significant impact on student academic performance (11).

From the perspective of Mashhad medical students, the effectiveness of academic advising (AA) is highly reliant on the performance of advisors, a conclusion also supported by other studies (3, 6, 11, Macaulay 2007).

Studies have indicated a positive correlation between the frequency of advising sessions and student satisfaction. However, due to advisors' limited time, some research has suggested utilizing online communication tools like websites and social networks for improved time management. The utilization of software tools for student information management and performance analysis has also been recommended (3, 6, 12). Furthermore, technology-based systems can offer essential information about institute programs and courses, along with crucial guidelines presented in simple step-by-step formats for students, aiding in saving advisors' time (3, 6).

Medical students typically adhere to a fixed schedule with minimal flexibility, sharing similar schedules except for special cases like at-risk or foreign students, or those who have dropped courses. Consequently, they may not perceive the necessity of academic advising in these areas. Nevertheless, medical students encounter stressful conditions and psychological hurdles due to a heavy course load, intense class schedules, pressure to excel, and limited leisure time. Consequently, stress, anxiety, depression, substance abuse, and suicidal thoughts are prevalent among medical students (13).

In medical schools, faculty members act as academic advisors and offer essential guidance on schedule planning, learning enhancement, research, residency applications, career goals clarification, and building relationships with medical students in educational and clinical settings (14, 15). However, the effectiveness of academic advising by faculty depends on their interest and capability. Many faculty advisors struggle to find time for advising due to heavy workloads and multiple responsibilities. Time constraints, workload, and a large number of advisees are commonly cited reasons for lack of availability in various studies (12). A study by Columbia University College of Physicians and Surgeons highlighted limitations and negative feedback from medical students about faculty advisors, indicating a perceived disconnect between faculty and students before revising its advising approach (14). Furthermore, some faculty advisors may lack the necessary knowledge and experience in advising (3, 12).

In certain higher education advising programs, specialized general advisors focusing on physiological subjects are preferred. However, this model presents challenges in medical schools as they may not be well-versed in the complex curriculum and specific areas of medical education and future career paths.

Considering the pros and cons of faculty academic advisors and general advisors, it appears that medical students benefit from both types of advisors. Faculty academic advisors offer valuable insights into the lifestyle and academic paths of medical students, while general advisors can support faculty advisors in addressing specific psychological issues and providing overall guidance for better decision-making. Additionally, faculty members should undergo training to enhance their advising skills and communication abilities (6).

## CONCLUSION

Based on the findings of this study, it appears that enhancing academic advising services for medical students necessitates a dual focus on augmenting students' understanding and advisors' interpersonal and motivational skills. It is essential to tackle the psychological obstacles that numerous medical students encounter in order to provide effective academic guidance. To enhance the efficacy of academic advising services, the addition of a counseling psychologist, alongside professional development for faculty advisors, could prove advantageous.

### Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The ethics committee of Mashhad University of Medical Sciences approved this research.

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