



A Multidimensional Evaluation of Paramedical Students' Satisfaction with Educational and Welfare-Cultural Services at a Military Medical University

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Abstract

Background: Student satisfaction is an important indicator of educational quality and overall well-being, particularly in paramedical education, where both academic and nonacademic support structures play essential roles.

Objectives: This study aimed to evaluate paramedical students' satisfaction with the educational services and welfare and cultural facilities provided by a military medical university and to examine the demographic variables associated with their satisfaction.

Methods: This descriptive-analytical cross-sectional study included 200 paramedical students at AJA University of Medical Sciences. Data were collected using a researcher-developed multidimensional satisfaction questionnaire encompassing six domains: Academic Advisors, Faculty Members, Educational Services, Auxiliary Educational Services, Welfare Facilities, and Cultural Facilities. Associations between satisfaction scores and demographic characteristics were assessed using nonparametric statistical methods, specifically the Kruskal-Wallis and Mann-Whitney U tests.

Results: Overall satisfaction ranged from moderate to high. The highest median satisfaction score was observed for Academic Advisors (75.0; IQR, 43.75), whereas the lowest was observed for Welfare Facilities (38.89; IQR, 40.98). Satisfaction was significantly associated with gender, place of birth, and field of study, whereas age and marital status showed no significant associations. Female students, students born in Tehran, and Emergency Medical Services students reported higher satisfaction in specific domains. These findings indicated a clear imbalance between academic and nonacademic services.

Conclusions: Although educational and advising services were generally perceived positively, shortcomings in welfare and cultural facilities reduced overall satisfaction. Targeted improvements in nonacademic support are needed to strengthen student-centered services in military medical universities.

Keywords: Student Satisfaction, Military Medical University, Student Evaluation

1. Background

Educational systems that prioritize student motivation and satisfaction are widely recognized as key determinants

of success in higher education institutions (1). Upon entering university, students bring diverse experiences, needs, and expectations, and the extent to which institutions respond to these expectations plays a decisive

role in shaping students' academic attitudes and overall satisfaction (2, 3). As the primary recipients of educational services, students' satisfaction is considered a valid indicator of both the effectiveness of the educational system and the quality of associated welfare-cultural facilities (4). Insufficient satisfaction may pose substantial challenges to achieving the core objectives of higher education, particularly the development of competent and committed human resources (5).

Monitoring student satisfaction enables universities to systematically review educational programs, align them with learners' needs, and enhance organizational responsiveness. Student satisfaction has also been linked to institutional effectiveness and competitive advantage in higher education (6, 7). Conversely, dissatisfaction with the educational environment can disrupt learning, reduce academic engagement, and adversely affect students' academic performance, personal development, and social growth (5).

Empirical evidence indicates that student satisfaction is influenced by interconnected factors, including student-faculty interactions, peer relationships, access to material and nonmaterial support, the quality of educational technologies, and students' perceived self-efficacy (8, 9). National and international studies also suggest that organizational climate, participation, perceived autonomy, and interpersonal relationships play important roles in shaping satisfaction (3).

Findings across institutions remain inconsistent. Some studies have reported low satisfaction due to inadequate educational and support services (10-12), whereas others have reported moderate to high satisfaction (13, 14). These discrepancies highlight the influence of contextual and institutional factors and underscore the need for context-specific institutional evaluations.

Despite the growing body of research, many previous studies have focused narrowly on a single aspect of student services, such as classroom instruction (15), clinical training (16), or specific educational environments (10). Consequently, comprehensive studies that simultaneously assess educational services and welfare-cultural facilities remain limited. Addressing this gap is particularly important in specialized academic settings, in which institutional structures and student needs may differ substantially from those at general universities.

AJA University of Medical Sciences, a military medical university, plays a pivotal role in training health care

professionals, particularly in paramedical disciplines. Given the direct association between educational quality and graduates' future professional performance, evaluating students' satisfaction with both educational services and welfare-cultural facilities is important. To date, no comprehensive assessment of these services has been conducted in the School of Paramedical Sciences at this university.

2. Objectives

This evaluation is particularly important at a military medical university, where students operate under unique regulations, hierarchical structures, and mission-oriented pressures that may influence their service expectations and satisfaction differently from those of students at civilian institutions (17, 18). Therefore, this study aimed to evaluate paramedical students' satisfaction with educational services and welfare-cultural facilities at AJA University of Medical Sciences. The findings were expected to provide actionable evidence to inform institutional planning and targeted quality-improvement initiatives.

3. Methods

3.1. Study Design and Setting

This descriptive-analytical cross-sectional study was conducted at AJA University of Medical Sciences in Tehran, Iran. Data were collected from April 10 to 30, 2024, during the second academic semester of the 2024 academic year.

3.2. Study Population and Sampling Strategy

The study population included all undergraduate students at the associate and bachelor's degree levels enrolled in the School of Paramedical Sciences across 6 fields: Laboratory Sciences, Anesthesia, Radiology, Operating Room Technology, Health Information Technology, and Emergency Medical Services. First-semester students were excluded to ensure that participants had sufficient exposure to the university environment and its services. The sampling frame was derived from the complete roster of eligible students (N = 250) obtained from the faculty's educational affairs office. Because of the limited population size, a census approach was used. Inclusion criteria were 1) completion of at least 1 academic semester and 2) provision of voluntary informed consent. Exclusion criteria were withdrawal of consent or submission of an incomplete questionnaire.

3.3. Data Collection Procedure

After ethical approval was obtained from the Research Ethics Committee of AJA University of Medical Sciences and permission was obtained from the dean of the faculty, the research team administered the questionnaires during the first few minutes of classroom sessions. Before distributing the questionnaires, the researchers explained the study objectives, confidentiality protections, and the voluntary nature of participation. Of the 250 eligible students, 200 submitted complete questionnaires and were included in the statistical analysis, yielding a response rate of 80%. Figure 1 presents the participant selection and recruitment process.

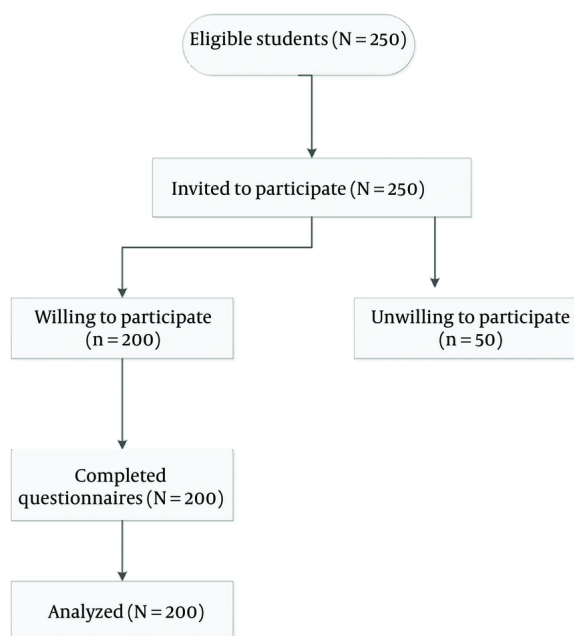


Figure 1. Participant recruitment flow diagram

3.4. Instrument

A researcher-developed questionnaire was used to assess student satisfaction with educational services and welfare-cultural facilities. The instrument was developed based on the study objectives, a systematic literature review, and adaptations of 2 existing tools: the questionnaire developed by the Deputy for Education and Training of AJA and the Student Satisfaction Inventory.

Items were tailored to the context of a military medical university and the paramedical student population. Of the initial 55 items, 41 remained after face and content validity evaluation. The final instrument was named the AJA Paramedical Student Satisfaction Inventory (APSSI).

The APSSI comprised 2 parts. Part 1 collected demographic information on age, gender, field of study, marital status, and place of birth. Part 2 contained 41 items across 6 predefined domains, each rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree):

- 1) Academic Advisors: 4 items, including accessibility and quality of guidance
- 2) Faculty Members: 6 items, including teaching quality and communication
- 3) Educational Services: 7 items, including curriculum relevance and assessment methods
- 4) Auxiliary Educational Services: 10 items, including the library, laboratories, and information technology infrastructure
- 5) Welfare Facilities: 9 items, including dormitories, dining halls, and sports complexes
- 6) Cultural Facilities: 5 items, including student clubs and auditoriums

The complete English version of the APSSI is provided as Appendix 1 in Supplementary File 1.

3.5. Validity and Reliability

3.5.1. Validity

A panel of 10 specialists in health education and promotion, nursing education, and medical education assessed the instrument's face and content validity. The preliminary draft was reviewed for clarity, relevance, and comprehensiveness. Based on expert feedback, several items were reworded or removed to improve face validity. Quantitative content validity was assessed using the content validity ratio (CVR) and content validity index (CVI) according to Lawshe's method. The CVR was 0.97, indicating excellent essentiality, and the relevance-based CVI was 1.00, indicating complete agreement among experts regarding item relevance and clarity.

Exploratory or confirmatory factor analysis was not performed because of the exploratory, descriptive nature of the research and the relatively limited sample size for factor-analytic techniques ($n = 200$). The 6-domain structure was derived theoretically from the literature and

expert consensus during the content-validity phase. Future research with larger samples should examine the factorial validity of the APSSI.

3.5.2. Reliability

Reliability was evaluated in a pilot study of 30 nonparamedical students from a similar academic setting. Internal consistency was assessed using standardized Cronbach α coefficients. The coefficient for the total scale was 0.97, indicating excellent reliability. As shown in Table 1, coefficients for the 6 domains ranged from 0.864 to 0.937.

Table 1. Standardized Cronbach α Coefficients for the 6 Domains and Total AJA Paramedical Student Satisfaction Inventory

Row	Domain	Number of items	Standardized Cronbach α
1	Academic Advisors	4	0.928
2	Faculty Members	6	0.864
3	Educational Services	7	0.869
4	Auxiliary Educational Services	10	0.904
5	Welfare Facilities	9	0.937
6	Cultural Facilities	5	0.903
7	Total	41	0.970

3.6. Scoring and Data Transformation

Each domain's raw score was calculated by summing its item scores. To facilitate consistent interpretation and comparison across domains with different numbers of items, raw scores were converted to a linear scale ranging from 0 to 100 using the following formula:

$$\text{Standardized score} = 25 \times \frac{\text{sum of item scores} - \text{number of items}}{\text{number of items}}$$

In this formula, n is the number of items in the domain, and n_i is the score of each item in that domain. For a domain with k items, each scored from 1 to 5, the minimum possible score is k and the maximum is $5k$. Thus, a score of 0 represents the lowest possible satisfaction, and a score of 100 represents the highest. The total satisfaction score was obtained by averaging the 6 transformed domain scores. For descriptive purposes, total scores were categorized as low (0 - 33.3), moderate (33.4 - 66.6), or high (66.7 - 100).

3.7. Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics, version 16.0. For normally distributed variables, descriptive results were expressed as mean $\pm$ SD; for variables with a nonnormal distribution, medians and interquartile ranges (IQRs) were reported. The Kolmogorov-Smirnov test was used to assess normality. Most variables significantly departed from a normal distribution ($P < 0.05$); therefore, inferential analyses used nonparametric methods. The Mann-Whitney U test was used to compare 2 independent groups, such as gender groups, and the Kruskal-Wallis H test was used for comparisons involving more than 2 groups, such as fields of study. When a Kruskal-Wallis test was significant, post hoc pairwise comparisons were conducted using the Dunn test with *Bonferroni correction*. *Bonferroni*-adjusted P values were reported for all pairwise comparisons.

For significant comparisons, the Mann-Whitney U and Kruskal-Wallis H statistics and their degrees of freedom, when applicable, were reported. Effect sizes were calculated using rank-biserial correlation for Mann-Whitney tests and epsilon squared (ϵ^2) for Kruskal-Wallis tests, with values of 0.1, 0.3, and 0.5 interpreted as small, medium, and large effects, respectively. No additional adjustment was made for multiple demographic comparisons, such as comparisons across gender, field of study, and birthplace, because each demographic variable was tested independently. *Bonferroni* adjustment was applied only to post hoc pairwise comparisons following Kruskal-Wallis analyses. Statistical significance was set at $P < 0.05$. This study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for cross-sectional studies (19).

4. Results

4.1. Participant Characteristics

Of the 250 eligible students, 200 agreed to participate and submitted complete questionnaires for analysis. The participant recruitment and selection process is shown in Figure 1. Table 2 summarizes the participants' demographic characteristics. The mean age was 21.57 years (SD, 1.57), and most participants (81.5%) were aged 20 - 23 years. Most participants were male (75%). The largest group studied Operating Room Technology (30%), followed by Laboratory Sciences (19%), Anesthesia (16.5%), Radiology (16.5%), Emergency Medical Services (11%), and Health Information Technology (7%). Most students were single (95.5%); 27.5% were born in Tehran, and 72.5% were born in other cities.

Table 2. Sociodemographic and Educational Profile of the Study Sample (N = 200)

Variables	No. (%)
Age	
< 20	13 (6.5)
20 - 23	163 (81.5)
≥ 24	24 (12.0)
Gender	
Male	150 (75.0)
Female	50 (25.0)
Field of study	
Laboratory Sciences	38 (19.0)
Anesthesia	33 (16.5)
Radiology	33 (16.5)
Operating Room Technology	60 (30.0)
Health Information Technology	14 (7.0)
Emergency Medical Services	22 (11.0)
Marital status	
Married	9 (4.5)
Single	191 (95.5)
Place of birth	
Tehran	55 (27.5)
Other	145 (72.5)

4.2. Overall Satisfaction Across Domains

Student satisfaction scores across the 6 measured domains are presented in Table 3. The highest median satisfaction was observed for Academic Advisors (median, 75.00; IQR, 43.75), whereas the lowest was observed for Welfare Facilities (median, 38.89; IQR, 40.98). The IQRs indicated variability in responses, with the greatest dispersion in the Academic Advisors and Welfare Facilities subscales and the least dispersion in the Auxiliary Educational Services subscale. Collectively, these findings indicate higher and more consistent satisfaction with academic advising than with Welfare Facilities and Cultural Facilities.

Table 3. Distribution of Satisfaction Scores by Service Domain ^a

Satisfaction Domain	Median	Q1	Q3	IQR	Range (Minimum - Maximum)
Academic Advisors	75.00	56.25	100.00	43.75	6.25 - 100
Faculty Members	62.50	45.83	82.29	36.46	12.50 - 100
Educational Services	62.50	50.00	85.71	35.71	10.71 - 100
Auxiliary Educational Services	56.25	42.50	75.00	32.50	2.50 - 100
Welfare Facilities	38.89	22.22	63.20	40.98	0 - 100
Cultural Facilities	50.00	35.00	75.00	40.00	0 - 100
Total score	57.31	44.81	76.98	32.17	14.57 - 100

^a Satisfaction scores for each domain range from 0 to 100. Abbreviations: IQR, interquartile range; Q1, first quartile; Q3, third quartile.

4.3. Associations with Demographic Variables

Table 4 presents associations between satisfaction scores and demographic variables. Because the satisfaction scores were nonnormally distributed (Kolmogorov-Smirnov test, $P < 0.05$), medians and IQRs are reported. The table also provides test statistics (U for Mann-Whitney tests and H for Kruskal-Wallis tests) and effect sizes (r for 2-group comparisons and ϵ^2 for multigroup comparisons).

4.3.1. Age

Although students younger than 20 years reported numerically higher mean satisfaction scores across all domains, the Kruskal-Wallis test showed no significant differences for any subscale or the total score (all $P > 0.05$; Table 4).

4.3.2. Gender

Total satisfaction differed significantly by gender (Mann-Whitney $U = 3042.0$, $P = 0.046$; $r = 0.14$, small), with female students reporting greater satisfaction than male students. This difference was particularly evident for Auxiliary Educational Services ($U = 2914.0$, $P = 0.018$; $r = 0.17$) and Welfare Facilities ($U = 3016.0$, $P = 0.038$; $r = 0.15$).

4.3.3. Place of Birth

Satisfaction with Welfare Facilities differed significantly by place of birth (Mann-Whitney $U = 3163.5$, $P = 0.028$; $r = 0.16$, small), with students born in Tehran reporting greater satisfaction than those born in other cities.

4.3.4. Academic Discipline

The Kruskal-Wallis test showed significant differences among fields of study for Faculty Members ($H = 15.755$, $df = 5$, $P = 0.008$; $\epsilon^2 = 0.079$, medium) and Welfare Facilities ($H = 15.350$, $df = 5$, $P = 0.009$; $\epsilon^2 = 0.077$, medium).

Post hoc pairwise comparisons using the Dunn test with *Bonferroni correction* showed that Emergency Medical Services students reported significantly greater satisfaction with Faculty Members than Operating Room Technology students (adjusted $P = 0.015$). Emergency Medical Services students also reported significantly greater satisfaction with Welfare Facilities than Operating Room Technology students (adjusted $P = 0.019$). No other pairwise comparison was significant after *Bonferroni* adjustment (all adjusted $P > 0.05$).

Table 4. Domain-Specific and Total Satisfaction Scores Stratified by Demographic Subgroup^a

Demographic variable	Academic Advisors	Faculty Members	Educational Services	Auxiliary Educational Services	Welfare Facilities	Cultural Facilities	Total score
Age group							
< 20	100.0 (28.1)	75.0 (31.3)	67.9 (39.3)	70.0 (46.3)	50.0 (44.4)	60.0 (52.5)	74.7 (36.6)
20 - 23	75.0 (43.8)	62.5 (33.3)	60.7 (35.7)	57.5 (32.5)	38.9 (41.7)	50.0 (40.0)	57.9 (30.4)
≥ 24	78.1 (56.3)	54.2 (33.3)	60.7 (36.6)	55.0 (29.4)	34.7 (28.5)	47.5 (38.8)	49.8 (32.9)
Kruskal-Wallis H (df = 2)	5.243	2.860	4.274	2.874	4.783	0.854	4.843
P value	0.073	0.239	0.118	0.238	0.092	0.653	0.089
Gender							
Male	75.0 (50.0)	60.4 (30.2)	60.7 (28.6)	55.0 (32.5)	36.1 (33.3)	50.0 (40.0)	54.5 (29.6)
Female	90.6 (43.8)	72.9 (34.4)	73.2 (36.6)	67.5 (31.9)	47.2 (35.4)	55.0 (50.0)	68.7 (32.1)
U (Mann-Whitney)	3188.0	3357.0	3221.0	2914.0	3016.0	3178.0	3042.0
P value	0.106	0.276	0.135	0.018 ^b	0.038 ^b	0.106	0.046 ^b
Effect size (r)	0.11	0.08	0.11	0.17 (small)	0.15 (small)	0.11	0.14 (small)
Field of study							
Laboratory Sciences	65.6 (45.3)	66.7 (30.2)	64.3 (25.9)	61.3 (28.1)	40.3 (47.9)	52.5 (46.3)	57.0 (34.3)
Anesthesia	93.8 (40.6)	62.5 (43.8)	64.3 (46.4)	55.0 (46.3)	38.9 (40.3)	60.0 (57.5)	62.0 (38.3)
Radiology	75.0 (50.0)	66.7 (27.1)	60.7 (42.9)	57.5 (36.3)	41.7 (23.6)	50.0 (52.5)	58.6 (35.5)
Operating Room Technology	75.0 (50.0)	54.2 (25.0)	57.1 (31.3)	52.5 (31.9)	31.9 (35.4)	47.5 (25.0)	51.0 (26.5)
Health Information Technology	78.1 (31.3)	64.6 (24.0)	60.7 (26.8)	48.8 (35.0)	33.3 (25.7)	52.5 (37.5)	57.8 (25.4)
Emergency Medical Services	81.3 (37.5)	70.8 (32.3)	73.2 (41.1)	63.8 (30.0)	58.3 (37.5)	62.5 (27.5)	66.3 (27.4)
Kruskal-Wallis H	5.845	15.755	5.165	7.761	15.350	5.199	7.925
df	5	5	5	5	5	5	5
P value	0.322	0.008 ^c	0.396	0.170	0.009 ^c	0.392	0.160
Effect size (e ²)	-	0.079 (medium)	-	-	0.077 (medium)	-	-
Marital status							
Married	75.0 (46.9)	54.2 (35.4)	75.0 (21.4)	62.5 (40.0)	41.7 (41.7)	50.0 (37.5)	66.1 (35.1)
Single	75.0 (43.75)	62.5 (37.5)	60.7 (35.7)	55.0 (32.5)	38.9 (41.7)	50.0 (40.0)	57.0 (32.5)
Mann-Whitney U	788.0	813.0	574.0	732.5	856.5	770.0	785.0
P value	0.667	0.784	0.092	0.454	0.986	0.597	0.661
Place of birth							
Tehran	81.3 (50.0)	66.7 (37.5)	64.3 (39.3)	57.5 (37.5)	44.4 (38.9)	60.0 (50.0)	59.5 (37.9)
Other	75.0 (43.8)	62.5 (33.3)	60.7 (28.6)	55.0 (29.4)	36.1 (34.7)	50.0 (40.0)	56.6 (30.4)
U (Mann-Whitney)	3874.0	3376.0	3425.0	3441.5	3163.5	3444.5	3408.0
P value	0.809	0.107	0.140	0.153	0.028 ^b	0.155	0.129
Effect size (r)	-	-	-	-	0.16 (small)	-	-

^a Data are presented as median (IQR). Effect sizes are r for Mann-Whitney U tests and e² for Kruskal-Wallis tests.

^b Significant differences are indicated by P < 0.05 after Bonferroni correction.

^c Significant differences are indicated by P < 0.01 after Bonferroni correction.

4.3.5. Marital Status

Marital status was not significantly associated with satisfaction in any domain (Table 4).

5. Discussion

This study examined paramedical students' satisfaction with educational services and welfare-cultural facilities at AJA University of Medical Sciences. Overall satisfaction was moderate, with substantial variation across domains. Satisfaction was highest for Academic Advisors and lowest for Welfare Facilities. This pattern suggests that, although

the university performs relatively well in academic guidance and core educational services, shortcomings in nonacademic domains, particularly welfare-cultural infrastructure, continue to adversely affect students' overall educational experience.

The marked variability across domains underscores the multidimensional nature of student satisfaction, as documented in national and international literature (1, 4). Previous studies have emphasized that satisfaction in higher education is shaped not only by instructional quality but also by psychosocial, environmental, and organizational factors (20-22). In this study, relatively high satisfaction with Academic Advisors and Faculty Members highlights the importance of effective student-faculty interaction, accessibility, and constructive academic guidance. Conversely, lower median scores and wider dispersion for Welfare Facilities and Cultural Facilities indicate heterogeneous student experiences and unmet expectations. Low satisfaction with welfare facilities is consistent with findings from another Iranian medical university, in which dissatisfaction with educational services and facilities has been reported (23). Similar international patterns reinforce the importance of welfare-cultural facilities in shaping students' sense of belonging and their overall perceptions of the university environment (2, 7). The wide IQRs for these domains further suggest that the quality and accessibility of these services may be unevenly distributed among students.

From a post-COVID-19 perspective, recent studies indicate that, although virtual and hybrid education models have increased flexibility and access to learning, reduced social interaction and limited cultural engagement have adversely affected student satisfaction (14). In contrast to Mohtaram et al. (24), who reported the highest mean satisfaction among medical students for facilities and equipment, the present study found that paramedical students at a military medical university were most satisfied with Academic Advisors. This discrepancy may reflect the practical orientation of paramedical disciplines, the organizational structure of military universities, and differences between the post-COVID-19 study period and the peak of the pandemic. Dissatisfaction with cultural facilities may partly reflect limited opportunities for extracurricular activities, social participation, and informal peer interaction—factors that may be particularly salient for a young, predominantly single population in a residential or semiresidential academic setting.

Gender, place of birth, and field of study were significantly associated with satisfaction, whereas age and marital status were not significantly associated with overall satisfaction. This pattern suggests that organizational and contextual factors may play a more decisive role in shaping student satisfaction than stable individual characteristics, consistent with Osman et al. (3) and De-Juan-Vigaray et al. (25). Although students younger than 20 years reported numerically higher satisfaction scores, these differences were not statistically significant, indicating relative consistency in perceived service quality across age groups.

Gender was an important determinant, with female students reporting greater overall satisfaction than male students, particularly for Auxiliary Educational Services and Welfare Facilities. One hypothesis requiring further investigation is that female students may experience more favorable dormitory conditions or may not be required to complete military-related courses during the academic semester, thereby reducing environmental stressors. However, these mechanisms were not measured and remain speculative.

This finding contrasts with that of Moosavi et al. (23), who reported no significant gender-based differences. Differences across studies may reflect contextual and structural differences between institutions, particularly military and civilian universities (17, 18).

Place of birth was significantly associated with satisfaction in the Welfare Facilities domain, with students born in Tehran reporting greater satisfaction than those born elsewhere. One possible explanation is that many Tehran-born students may not reside in university dormitories and may therefore have less exposure to the disciplinary environment of military residential facilities. This interpretation is speculative and should be tested in future studies by directly measuring residential status and its association with satisfaction.

Nonlocal students may face greater challenges related to accommodation, social adaptation, and distance from family, which can negatively affect their assessment of welfare facilities (9). This finding is consistent with reports from a similar institutional context in which familiarity with the environment was associated with greater satisfaction (26), but differs from findings in other settings in which geographic factors may play a less pronounced role (20).

Significant differences in satisfaction were also observed across academic disciplines, particularly for

Faculty Members and Welfare Facilities. Emergency Medical Services students reported greater satisfaction than some other students. One possible explanation is that the structure of the Emergency Medical Services program, including a shorter on-campus duration, earlier clinical exposure, or closer student-faculty interaction, may contribute to greater satisfaction. However, these factors were not directly measured; therefore, this interpretation should be regarded as a hypothesis for future research rather than a confirmed mechanism.

From a theoretical perspective, the findings can be interpreted using Self-Determination Theory (SDT) and Social Cognitive Career Theory (SCCT). According to SDT (27), satisfaction develops when the basic psychological needs for autonomy, competence, and relatedness are fulfilled. In this study, greater satisfaction with Faculty Members and Academic Advisors may reflect fulfillment of competence and relatedness needs, whereas dissatisfaction with Welfare Facilities and Cultural Facilities may indicate unmet needs related to autonomy and personal well-being. Similarly, SCCT (28) emphasizes the role of contextual support in shaping academic satisfaction. Although Educational Services may support students' academic self-efficacy, insufficient environmental and welfare-related support may undermine sustained satisfaction and engagement (5).

5.1. Practical and Managerial Implications

The findings have several practical implications for higher education managers and policy makers. Improving welfare and cultural infrastructure, including dormitory conditions, nutrition services, psychological counseling, and extracurricular activities, may improve overall student satisfaction and academic persistence.

Strengthening the professional competencies of academic advisors, particularly effective communication, academic guidance, and psychosocial support, may reinforce existing strengths in educational services.

Systematic assessment of student satisfaction and implementation of feedback mechanisms may facilitate evidence-based decision-making and continuous institutional quality improvement.

5.2. Limitations and Recommendations for Future Research

This study has several limitations. Its cross-sectional design precludes causal conclusions, and conducting the study at a single military medical university may limit generalizability to other settings. Reliance on self-reported

information may also have introduced response bias. Because detailed demographic data were unavailable for nonrespondents ($n = 50$), the potential effect of nonresponse bias on satisfaction estimates could not be fully assessed.

The study did not directly measure several potential explanatory factors discussed in interpreting the findings, including dormitory exposure, military course burden, residential status, and qualitative reasons for satisfaction differences across demographic groups. These explanations should therefore be regarded as hypotheses requiring direct examination. Future studies should use mixed-methods designs to obtain deeper insight into the contextual factors shaping student satisfaction. Comparisons between military and civilian universities may also help identify structural differences in the provision of educational and welfare services.

5.3. Conclusions

Paramedical students at AJA University of Medical Sciences reported moderate overall satisfaction, with relatively high satisfaction with educational and academic advisory services and comparatively low satisfaction with welfare and cultural facilities. This imbalance highlights the need for an integrated approach to student support that addresses both academic and nonacademic aspects of the educational experience. Strengthening welfare-cultural infrastructure while maintaining educational quality may improve students' overall satisfaction and sense of belonging. These findings provide evidence for institutional planning and policy development aimed at improving educational quality at military medical universities and comparable higher education institutions.

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Supplementary Material

Supplementary material(s) is available [here](#) [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

AI Use Disclosure: For the purpose of text editing, DeepSeek was used to make minor language revisions in the Methods section.

Authors' Contribution: All authors contributed to study conception and design; Data curation and resources: A. K. J. and M. G.; Formal analysis, validation, and visualization: A. K. J., M. H. K. G., and A. M. K.; Methodology: A. K. J., A. D., A. M. K., and M. H. K. G.; Project administration and supervision: A. K. J., with additional supervisory input from A. D., A. M. K., and M. H. K. G.; Writing – original draft: A. K. J. and M. G.; Writing – review and editing: All authors; All authors read and approved the final version.

Conflict of Interests Statement: The authors declared no conflict of interests.

Data Availability: Requests can be made to the corresponding author for the datasets used and analyses.

Ethical Approval: This study received ethical approval from the Research Ethics Committee of AJA University of Medical Sciences (Code: IR.AJAUMS.REC.1403.239).

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Informed Consent: Verbal informed consent was secured from all participating students. All participants provided informed consent after being assured of the voluntary nature of participation, their right to withdraw at any time without penalty, and the strict confidentiality of their data, which was used exclusively for research purposes.

References

- Santini FDO, Ladeira WJ, Sampaio CH, da Silva Costa G. Student satisfaction in higher education: A meta-analytic study. *J Mark High Educ.* 2017;**27**(1):1-18. <https://doi.org/10.1080/08841241.2017.1311980>.
- Kassab SE, Rathan R, Schmidt HG, Hamdy H. Influence of the university campus environment on sociocultural engagement and satisfaction of health professions education students: Role of the sense of belonging. *BMC Med Educ.* 2024;**24**(1): 1512. [PubMed ID: 39709404]. [PubMed Central ID: PMC1662413]. <https://doi.org/10.1186/s12909-024-06534-4>.
- Osman AR, Joarder MHR, Ashraf MA. Determinants of students' satisfaction: Higher education perspective. *Humanit Soc Sci Lett.* 2024;**12**(2):162-175. <https://doi.org/10.18488/73.v12i2.3660>.
- Ikram M, Kenayathulla HB. Education quality and student satisfaction nexus using instructional material, support, classroom facilities, equipment and growth: Higher education perspective of Pakistan. *Front Educ.* 2023;**8**: 1140971. <https://doi.org/10.3389/educ.2023.1140971>.
- Sadeghi A, Mahdavi F. Social-cognitive predictors of Iranian college students' academic well-being. *J Career Dev.* 2020;**47**(5):579-591. <https://doi.org/10.1177/0894845319826275>.
- Chandra T, Hafni L, Chandra S, Purwati AA, Chandra J. The influence of service quality, university image on student satisfaction and student loyalty. *Benchmarking.* 2019;**26**(5):1533-1549. <https://doi.org/10.1108/BIJ-07-2018-0212>.
- Nguyen HV, Vu TD, Saleem M, Yaseen A. The influence of service quality on student satisfaction and student loyalty in Vietnam: The moderating role of the university image. *J Trade Sci.* 2024;**12**(1):37-59. <https://doi.org/10.1108/JTS-12-2023-0032>.
- Wong WH, Chapman E. Student satisfaction and interaction in higher education. *High Educ.* 2023;**85**(5):957-978. [PubMed ID: 35669591]. [PubMed Central ID: PMC9159046]. <https://doi.org/10.1007/s10734-022-00874-0>.
- Yilmaz K, Temizkan V. The effects of educational service quality and socio-cultural adaptation difficulties on international students' higher education satisfaction. *SAGE Open.* 2022;**12**(1): 21582440221078300. <https://doi.org/10.1177/21582440221078316>.
- Safa P, Jafari E, Babaee Hemmati Y, Falahchai M. Analysis of educational service quality in the Faculty of Dentistry at Guilan University of Medical Sciences: A SERVQUAL model study. *Guilan Univ Med Sci.* 2025;**34**(2):142-157. <https://doi.org/10.32598/JGUMS.34.2.1955.1>.
- Tabatabaeichehr M, Babaei S, Dartomi M, Alesheikh P, Tabatabaee A, Mortazavi H, et al. Medical students' satisfaction level with e-learning during the COVID-19 pandemic and its related factors: A systematic review. *J Educ Eval Health Prof.* 2022;**19**(37):10-3352. [PubMed ID: 36579447]. [PubMed Central ID: PMC9899548]. <https://doi.org/10.3352/jeehp.2022.19.37>.
- Zare Z, Babaee M, Balash F. Investigating the effect of virtual education on academic progress and student satisfaction of biology teachers: A case study of a plant physiology laboratory course at Farhangian University. *Teach Learn Res.* 2024;**20**(2):169-181. <https://doi.org/10.18502/jebhpme.v8i4.17762>.
- Seifollahi N, Eskandari N. The role of emotional intelligence and social capital in students' academic satisfaction. *Social Capital Management.* 2021;**8**(1):29-51. <https://doi.org/10.5812/erms-139554>.
- Sharif Nia H, Marôco J, She L, Khoshnavay Fomani F, Rahmatpour P, Stepanovic Ilic I, et al. Student satisfaction and academic efficacy during online learning with the mediating effect of student engagement: A multicountry study. *PLoS One.* 2023;**18**(10): e0285315. [PubMed ID: 37792853]. [PubMed Central ID: PMC10550170]. <https://doi.org/10.1371/journal.pone.0285315>.
- Daryazadeh S, Yavari M, Sharif MR, Azadchahr MJ, Zabihi Hoseini SV, Akbari H. Assessing the quality of educational services from the viewpoint of clinical teachers and medical students using the SERVQUAL model. *Educ Res Med Sci.* 2022;**11**(2): e119417. <https://doi.org/10.5812/erms-119417>.
- Bahramifar S, Ghorbanpour M, Sadri D. Evaluating the degree of satisfaction of students from the clinical departments of the Faculty of Dentistry of Tehran Islamic Azad University of Medical Sciences in the academic year of 2021 - 2022. *Res Dent Sci.* 2025;**22**(1):43-52. <https://doi.org/10.61188/jrds.22.1.43>.
- Nema J, Mankova D, Bures M, Novak J. Sleep quality and duration: A key to life satisfaction among military students. *Mil Psychol.*

- 2024;**36**(6):711-721. [PubMed ID: [37725691](#)]. [PubMed Central ID: [PMC11622618](#)]. <https://doi.org/10.1080/08995605.2023.2259778>.
18. Soh M, Bunin J, Uijtdehaage S, Artino AR, Barry ES, Durning SJ, et al. Well-being at a military medical school and implications for military retention. *Mil Med*. 2023;**188**(2):19-25. [PubMed ID: [37201488](#)]. <https://doi.org/10.1093/milmed/usac120>.
 19. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *Lancet*. 2007;**370**(9596):1453-1457. [PubMed ID: [18064739](#)]. [https://doi.org/10.1016/S0140-6736\(07\)61602-X](https://doi.org/10.1016/S0140-6736(07)61602-X).
 20. Douglas JA, Douglas A, McClelland RJ, Davies J. Understanding student satisfaction and dissatisfaction: An interpretive study in the UK higher education context. *Stud High Educ*. 2015;**40**(2):329-349. <https://doi.org/10.1080/03075079.2013.842217>.
 21. Edenfield C, McBrayer JS. Institutional conditions that matter to community college students' success. *Community Coll J Res Pract*. 2021;**45**(10):718-734. <https://doi.org/10.1080/10668926.2020.1785353>.
 22. Tierney WG, Sablan JR. *Completing college: Rethinking institutional action*. **85**(2). New York, NY: Taylor & Francis; 2014. p. 280-282. <https://doi.org/10.1080/00221546.2014.11777328>.
 23. Moosavi A, Gilavand A, Gilavand S. Evaluating the quality of educational services of nursing students of Dezful University of Medical Sciences in southwest of Iran according to the SERVQUAL model. *J Res Med Dent Sci*. 2019;**7**(1):128-133.
 24. Mohtaram M. Medical students' satisfaction with the quality of e-learning during the COVID-19 pandemic at Shiraz University of Medical Sciences. *Educ Res Med Sci*. 2021;**10**(2). e122190. <https://doi.org/10.5812/erms.122190>.
 25. De-Juan-Vigaray MD, Ledesma-Chaves P, González-Gascón E, Gil-Cordero E. Student satisfaction: Examining capacity development and environmental factors in higher education institutions. *Heliyon*. 2024;**10**(17). e36699. [PubMed ID: [39281635](#)]. [PubMed Central ID: [PMC11402129](#)]. <https://doi.org/10.1016/j.heliyon.2024.e36699>.
 26. Nejad FM, Asadzaker M, Baraz S, Malehi AS. Investigation of nursing student satisfaction with the first clinical education experience in universities of medical sciences in Iran. *J Med Life*. 2019;**12**(1):75-82. [PubMed ID: [31123529](#)]. [PubMed Central ID: [PMC6527407](#)]. <https://doi.org/10.25122/jml-2018-0008>.
 27. Deci EL, Olafsen AH, Ryan RM. Self-determination theory in work organizations: The state of a science. *Annu Rev Organ Psychol Organ Behav*. 2017;**4**(1):19-43. <https://doi.org/10.1146/annurev-orgpsych-032516-113108>.
 28. Lent RW, Brown SD. Social cognitive career theory at 25: Empirical status of the interest, choice, and performance models. *J Vocat Behav*. 2019;**115**. 103316. <https://doi.org/10.1016/j.jvb.2019.06.004>.