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ALTRUISM LEVELS OF MEDICAL STUDENTS: A COMPARATIVE PERSPECTIVE

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Abstract. Altruism levels of medical students: a comparative perspective. Oktar Süleyman, Oktar Saliha. *This study aims to compare the altruism levels of medical faculty students with other students and to understand the reasons for the decline of altruism in the medical profession. The sample consists of a total of 454 university students, comprising 309 females and 145 males, selected through random sampling from the faculties of medicine, education, and engineering. Data on altruism were obtained using the Altruism Scale, a Likert-type measurement tool that measures four sub-dimensions: family, social, helpful, and responsibility. The results revealed that medical students had significantly lower total altruism scores compared to both education and engineering students. This difference emerged most prominently in the "helpful" and "responsibility" sub-dimensions and could not be explained by demographic factors such as age and gender, or personality traits like extroversion. Furthermore, the findings showed that medical students already begin their education with a low level of altruism, and these levels remain statistically low without significant change throughout the preclinical years. The study concluded that the low altruism in medical students is not a result of an educational "erosion" of initially high ideals, but rather stems from structural factors. It is suggested that the student selection system for medical schools, which is highly competitive and based solely on multiple-choice tests, prioritizes academic achievement over humanistic values and thereby selects students who are motivated by status and career security rather than a desire to help. Additionally, the theory-heavy, competitive, and patient-distant preclinical educational environment fails to nurture or develop altruistic values. These findings challenge the dominant erosion narrative and indicate that a fundamental re-evaluation of student selection criteria and the educational curriculum is necessary to actively select for and cultivate altruism, a core value of the medical profession. It is recommended that longitudinal studies be conducted to follow students into their clinical years to observe further developments.*

Реферат. Рівень альтруїзму студентів-медиків: порівняльна перспектива. Октар Сулейман, Октар Саліха. *Метою цього дослідження є порівняння рівня альтруїзму студентів медичних факультетів з іншими студентами та розуміння причин зниження альтруїзму в медичній професії. До вибірки увійшли 454 студенти університету (309 жінок та 145 чоловіків), відібраних шляхом випадкового вибору з медичного, педагогічного та інженерного факультетів. Дані про альтруїзм були отримані за допомогою Шкали альтруїзму – інструменту вимірювання типу Лайкерта, що оцінює чотири підкатегорії: сімейний, соціальний, допомагаючий та відповідальний. Результати показали, що студенти-медики мали значно нижчі загальні бали альтруїзму порівняно зі студентами педагогічних та інженерних факультетів. Ця різниця найяскравіше проявилася в підкатегоріях «допомагаючий» та «відповідальний» і не могла бути пояснена демографічними факторами, такими як вік та стать, або особистісними рисами, як-от екстраверсія. Крім того, результати показали, що студенти-медики вже починають навчання з низьким рівнем альтруїзму, і цей рівень залишається статистично низьким без суттєвих змін протягом доклінічних років. У дослідженні зроблено висновок, що низький рівень альтруїзму в студентів-медиків не є результатом освітньої «ерозії» початково високих ідеалів, а випливає зі структурних факторів.*

Припускається, що система відбору студентів до медичних шкіл, яка є висококонкурентною та базується виключно на тестах з вибором відповідей, надає пріоритет академічним досягненням над гуманістичними цінностями, тим самим відбираючи студентів, мотивованих статусом та кар'єрною безпекою, а не бажанням допомагати. Крім того, теоретично насичене, конкурентне та віддалене від пацієнтів доклінічне освітнє середовище не сприяє вихованню чи розвитку альтруїстичних цінностей. Ці висновки кидають виклик домінантному наративу «ерозії» та вказують на необхідність фундаментального перегляду критеріїв відбору студентів та освітньої програми для активного відбору та культивування альтруїзму — основної цінності медичної професії. Рекомендується проведення поздовжніх досліджень для спостереження за студентами під час років їхнього клінічного навчання для вивчення подальших змін.

Altruism is considered a fundamental characteristic of the medical profession, with its roots tracing back to the Hippocratic Oath [1]. This concept remains one of the humanistic qualities at the core of medical professionalism, as Meskó and Spiegel (2022) emphasize that the spirit of compassion and responsibility embedded in the Hippocratic tradition continues to guide physicians and shape contemporary medical ethics in the digital health era [2]. As the medical profession is expected to involve compassionate care and helping behaviors, the view that medical professionals should be altruistic has long been prevalent [3]. Indeed, many physicians attribute their motivation for choosing medical school to altruism, often framed as a "calling" [4, 5]. Altruistic motivations, such as the desire to help people, are among the most dominant reasons for students to choose medical school [6, 7]. Along with values, compassion, honesty, and trustworthiness, altruism is so crucial to the nature of a physician's work that it is very difficult for any physician not deeply committed to these values to be a complete healer [8, 9]. In other words, physician behavior in health economics is modeled as incorporating patient health benefits directly into the physician's utility function, reflecting an altruistic concern that distinguishes medical decision-making from purely profit-maximizing conduct [10].

Despite the deep interconnection between the medical profession and altruism, there is a growing concern in the literature, especially in recent times, about the decline of altruism during the course of medical education [11]. Research demonstrates that medical students often enter their training with strong idealistic motivations; however, as their education progresses, these altruistic ideals and empathy tend to diminish or erode [12]. This phenomenon, commonly referred to as the "erosion of humanistic qualities," highlights the tendency of students to become less sensitive over time [13, 14]. While some research focuses this decline on the clinical clerkships during the clinical years of education [12], more recent studies suggest that this decline in idealism begins much earlier [13, 14, 15]. Longitudinal studies, however, indicate that this decline particularly peaks during the clinical phase [1]. As highlighted by Lertsakulbunlue et al. (2024), the decline in empathy is largely driven by heavy workloads, stressful externship experiences, and non-humanistic informal practices within the medical culture – the so-called hidden curriculum [16]. Emotional loneliness, stressful clinical demands, and non-humanistic practices within the hidden curriculum can foster emotional suppression and academic burnout among medical trainees [17, 18]. Burnout, in turn, is consistently linked to diminished empathy and altruistic attitudes, particularly through its negative association with cognitive empathy and patient-centered engagement [19, 20].

In this context, it is crucial to understand whether this decline in altruism in medical education is unique to the nature of the medical profession or if it is a general consequence of a demanding higher education process. This study aims to comparatively examine the altruism levels of medical students with those of students from the faculty of education, where altruistic behavior is also expected (such as in teaching), and students from the faculty of engineering. Through this comparison, the goal is to understand the potential underlying reasons for differences in altruism levels and to evaluate the relationship of these differences with demographic factors such as age, gender, and academic level.

MATERIALS AND METHODS OF RESEARCH

This study was conducted based on a re-analysis of an existing dataset used in a study we previously published [21]. This study was approved by the Human Research Ethics Committee (the letter number: 35877407/39) and was conducted in compliance with the requirements of the Declaration of Helsinki. The participants signed the written informed consent. The study was designed in a cross-sectional research model that examines the correlational structure between university students' altruism levels and their demographic characteristics.

The population of the research consists of students studying at a university (Konya, Türkiye). The sample is composed of a total of 454 university students selected through random sampling from among students in the faculties of medicine, education, and engineering. Of the participants, 309 were female (68.1%) and 145 were male (31.9%); the age range of the sample varies from 18 to 36.

The following criteria were established for participation in the study:

- Inclusion criteria: Being an undergraduate university student, attending formal (in-person) education, and having Turkish as a native language.

- Exclusion criteria: Being a postgraduate (master's or doctoral) student, being enrolled in distance or online education programs, and not having Turkish as a native language.

Demographic data includes: age, gender, faculty type, and class level. The author used the following measurement tools: Altruism Scale, Eysenck's Personality Inventory – Extroversion Subscale, and Social Problem-Solving Inventory – Short Form. The data obtained from the personality and problem-solving inventories were presented in the previous study [21]. Since the purpose of this study is to determine and interpret the altruism levels of medical students, only the data from the altruism scale were methodologically analyzed.

Altruism scale – to measure the altruism levels of the participants, the Altruism Scale, originally developed by London and Bower [22] and for which the Turkish validity and reliability study was conducted by Akbaba [23], was used. The scale consists of four sub-dimensions: family, social, helpfulness, and responsibility. It is a five-point Likert-type scale (scored from 1-5), with the lowest possible score being 20 and the highest 100. A higher score indicates a higher level of altruism. In the reliability study conducted in Türkiye by Akbaba [23], the correlation coefficient between the odd and even-numbered items on the scale was found to be significant at 0.81 ($p<0.01$). In the present study, the Cronbach's Alpha internal consistency coefficient for the scale was calculated as 0.798. In the analysis to determine the sample adequacy for the scale, the KMO (Kaiser-Meyer-Olkin) value was 0.785, and the Bartlett's test result was found to be statistically significant ($\chi^2=2461.131$; $p<0.001$).

All statistical analyses were performed using SPSS v.24 software (provided under an institutional license from Pamukkale University), and the significance level was set at $p<0.05$. The methodological basis for using parametric tests was confirmed by assessing the normality of the data distribution. Normality was assessed by examining Skewness and Kurtosis values [24]. As all Skewness values were found to be within the acceptable range of -1 to +1, the data were considered sufficiently normal to proceed with parametric tests. Therefore, Pearson correlation coefficient, independent samples t-test, and one-way ANOVA were used for the evaluation [25]. Quantitative data were presented as median and interquartile range (25th-75th percentiles), while qualitative data were presented as frequency (n) and percentage (%). Although the data met the assumptions for parametric testing, median and interquartile ranges were reported in accordance with the journal's statistical reporting preferences.

In the analyses conducted to compare the total altruism and altruism sub-dimension scores according to faculty types, the Games-Howell post-hoc test was preferred for the "helpful" sub-dimension, where variances were not homogeneously distributed. For the total altruism score and the "family," "social," and "responsibility" sub-dimensions, where variances were homogeneous, the post-hoc Hochberg test was applied, taking into account the significant differences in the sample sizes (n numbers) of the groups. In the analyses comparing the total altruism and altruism sub-dimension scores of medical students according to their class (grade) levels, the post-hoc Gabriel test was used due to the similar sample sizes (n numbers) in the groups.

RESULTS AND DISCUSSION

According to the comparison among education, engineering, and medical students, the altruism levels of medical students are significantly lower than those of the other students (Table 1).

Table 1

Total altruism and sub-dimension scores by faculty [median (Q1-Q3)]

	Education (n=164)	Engineering (n=107)	Medicine (n=183)
Family	**20 (18-22)**	**20 (18-22)**	**19 (17-22)**
Social	**15 (12-18)**	**15 (12-18)**	**14 (11-17)**
Helpful	**18 (15-20)**	**17 (15-20)**	**16 (13-19)***
Responsibility	**18 (16-20)**	**19 (17-20)**	**17 (15-19)***
Altruism total	**72 (64-77)**	**70 (63-77)**	**66 (60-74)***

Notes: N=454; * $p<0.05$; ** $p<0.01$; *** $p<0.001$; in post-hoc comparisons, the Games-Howell test was performed for "helpful" and the Hochberg test was performed for the other sub-dimensions.

To investigate this, medical students were compared with students from other faculties in terms of age and gender. The median age of medical students was lower than that of students in the other faculties, and this difference was statistically significant (one-way ANOVA, $p<0.05$). However, although the median age of medical students increased significantly across class years, with students in higher years being older than those in earlier years (one-way ANOVA, $p<0.05$), their altruism levels remained similar across classes (Table 2).

Table 2

Comparison of total altruism and sub-dimension scores of medical students by year of study [median (Q1–Q3)]

	Family	Social	Helpful	Responsibility	Altruism total
Class 1, n=71	**19 (17-22)**	**14 (10-17)**	**16 (13-20)**	**17 (15-20)**	**64 (59-75)**
Class 2, n=62	**21 (17-22)**	**15 (11-17)**	**17 (14-19)**	**18 (16-19)**	**69 (62-75)**
Class 3, n=50	**19 (17-21)**	**14 (11-17)**	**15 (12-19)**	**17 (16-18)**	**63 (60-71)**

Notes: N=183; values are presented as median (Q1-Q3); no statistically significant differences were observed across class levels (one-way ANOVA, $p>0.05$).

Correlation analysis showed a weak but statistically significant positive association between age and the helpfulness sub-dimension when all students were analyzed ($r=0.132$, $p=0.005$), while no significant associations were found for total altruism or the other sub-dimensions. Among medical students, age was not significantly associated with altruism or any of its sub-dimensions (all $p>0.05$). Looking at the gender distribution, the gender distribution of medical students is similar to that of the faculty of education (Table 3).

Table 3

Gender distribution of students by faculty [n (%)]

	Education n (%)	Engineering n (%)	Medicine n (%)	Total n (%)
Female, n (%)	**133 (81.1)**	**44 (41.1)**	**132 (72.1)**	**309 (68.1)**
Male, n (%)	**31 (18.9)**	**63 (58.9)**	**51 (27.9)**	**145 (31.9)**
Total, n (%)	**164 (100)**	**107 (100)**	**183 (100)**	**454 (100)**

Note. Percentages are calculated within faculty; associations between gender and faculty were examined using the chi-square test ($\chi^2=49.94$, $df=2$, $p<0.001$).

In both faculties, the proportion of females is quite high. In the faculty of engineering, the proportion of males is significantly higher than in the other faculties. Accordingly, gender does not explain the difference in altruism among the faculties.

When comparing the total altruism and altruism sub-dimension scores of medical students by their class level, no significant differences were found (Table 2). At the same time, the altruism and subscale scores are similar for both female and male medical students (Table 4).

Across all students, altruism and most of its sub-dimensions did not differ by gender; however, female students scored higher on the helpfulness sub-dimension. This difference could not be explained by age, as age differences between females and males were not statistically significant either in the overall sample or among medical students (data not shown). In terms of personality, differences were examined with respect to extroversion-introversion, and extroversion levels were found to be similar across groups (data not shown), suggesting that the observed differences are unlikely to be attributable to personality traits.

Table 4

Comparison of total altruism and subscale scores of medical students by gender [median (Q1–Q3)]

	Family	Social	Helpful	Responsibility	Altruism total
Female, n=132	**19 (17-22)**	**14 (11-17)**	**17 (13-20)***	**17 (15-19)**	**66 (61-74)**
Male, n=51	**19 (17-22)**	**15 (11-17)**	**16 (12-19)**	**17 (16-19)**	**65 (60-73)**

Notes: N=183; values are presented as median (Q1-Q3); comparisons between female and male students were performed using the independent samples t-test; $p<0.05$ indicates a statistically significant difference between genders.

The first significant finding of this study is that the altruism levels of medical school students are significantly lower compared to their peers in both the education and engineering faculties. While medical and teaching candidates are generally expected to be altruistic due to the human-oriented nature of their professions [26], [27], recent evidence indicates that engineering students can display higher altruism scores than medical students. The fact that altruism – recognized as a central tenet of medical professionalism and a protective factor against burnout and stress [28, 29] – is lower among the very candidates for this profession, and that this deficit, particularly evident in the 'helpfulness' and 'responsibility' dimensions, cannot be accounted for by basic demographic or personality traits such as gender, age, or extroversion [21], indicates that its origins should be sought in structural and educational factors rather than individual temperament. The second important finding is that medical students possess a low level of altruism even in their first year of training, and this does not change in subsequent years. In other words, medical students are already distant from an altruistic motivation when they begin their professional journey. Despite this early deficit, recent systematic evidence shows that interventions such as reflective practice, peer feedback, and hidden curriculum exposure can foster empathy, compassion, and altruism among medical students, yet the sustainability of these gains remains uncertain [30]. Our findings indicate that the future practitioners of the profession are starting out with a deficit in this fundamental value.

Among the structural factors that need analysis, one of the most important is the student selection system for medical schools. For example, the student selection system in Türkiye is highly problematic: university admission is based on a multiple-choice central examination based on the high school curriculum, and no criteria other than academic achievement (such as interviews or social skills assessment) are included in student selection. A similar student selection system is implemented in many countries. Research shows that such examination systems hinder students' humanistic development and favor socioeconomically advantaged groups [31]. The fact that medical faculties admit students from the highest score brackets in this system means that these students have gone through a grueling pace of academic competition even before starting university. As this intense competition rewards academic success more than humanistic values, it causes the "new generation" of students to be driven not by altruistic motives like a traditional "calling" [5, 26, 30] or a 'desire to help' [27], but by more professional and materialistic motives such as the social status, job security, or financial expectations that come with winning this race. Evidence from recent studies further shows that stress, burnout, and competitive pressures erode empathy and altruism among medical trainees, reinforcing this shift toward pragmatic and material concerns [18, 19, 20]. Indeed, students with low levels of altruism are more inclined to choose high-income specialties [7] and are more sensitive to financial incentives [32]. While the "family" and "social" scores of medical students are similar to other students, their specifically low scores in "helpfulness" and "responsibility" suggest that they are consciously holding back in these areas and focusing their energy on their academic careers. This type of selection model for medical school also explains why our findings contradict the dominant "erosion" narrative in the international literature.

Many longitudinal studies in the literature suggest that students start medical school as idealists and that these ideals "erode" over time [11, 12] or they develop "emotional suppression and burnout" [17] due to the hardships of education (the hidden curriculum, stress, etc.). This decline can occur particularly with the start of the clinical period or sometimes at an earlier stage of training [33]. However, our cross-sectional findings show that medical students have lower altruism scores than other faculties even in their first year, and there is no significant change (decrease

or increase) in these scores as they advance to upper classes (2nd and 3rd years). This "static" situation is partially supported by some other studies [34]. This indicates that the problem is not just an "erosion" experienced during education, but that its origin may largely lie at the point of entry into the faculty, that is, in the exam-oriented selection system [31].

Even if students entered the faculty with some altruistic motivation, the preclinical training environment (1st, 2nd, and 3rd years) where our study was conducted does not seem conducive to the development of these values. As in many countries, preclinical education in Turkey is largely provided by non-physician academics [35]. During this period, students are under intense pressure from theoretical education, and their encounters with patients are quite limited. Worse, there is a profile of a medical student who meets almost no clinicians in the early years of education. However, research shows that narrative-based education and real patient stories play a key role in developing empathy [36]. Despite this, opportunities to observe and interact with professional role models are largely postponed until the later years of medical education. Building on this, Tang et al. (2025) demonstrate through their Bow-Tie model that empathy and perspective-taking are most effectively nurtured when embedded into the curriculum, supported by collective reflection, and enriched by multi-stakeholder involvement [37]. Complementarily, Yang et al. (2025) highlight that empathy evolves from affective to cognitive forms across medical training, requiring sustained role modelling and early exposure to professional exemplars [38]. Taken together, these findings indicate that delaying meaningful role-model exposure to the later stages of training constitutes a structural limitation, depriving students of formative opportunities to integrate humanistic values, professional ethics, and altruistic skills throughout their education. This intense, competitive, and patient-distant environment may also be "flattening" individual differences such as gender. Although there are findings in the literature that female students are generally more altruistic [1] or empathetic, the disappearance of this difference specifically in the medical faculty in our study and in the study by Kraja et al. [34] suggests that the stress and risk of burnout [17] created by the environment suppress individual tendencies.

Recent literature has begun to question altruism in medicine, arguing that its association with self-sacrifice is unsustainable in today's high-stress clinical environment [39]. This concept of "pathological altruism" can lead to burnout and depression in doctors [11]. Recent qualitative research indicates that medical students commonly perceive altruism as an expectation that goes beyond ordinary professional obligations and implies self-sacrifice, which they often regard as unrealistic in practice; consequently, they tend to prefer the broader and more sustainable notion of prosocial behavior when describing their professional motivations and responsibilities. Therefore, it is suggested that medical education adopt the more measurable and balanced concept of prosocial behavior rather than an idealized and difficult-to-operationalize notion of altruism (Jin et al., 2024). Prosocial behavior aims to benefit the patient while also encouraging the physician to balance their own well-being and self-care, thereby preventing burnout [29].

In conclusion, recent studies reveal that the altruism profile of medical students shows a worrying difference when compared to the ethical ideals of the profession and the profiles of students in other disciplines [32, 36, 40]. Our findings suggest that the problem is deeper than the simple "decline over time" or "erosion during training" narrative in the global literature, and the fact that this difference cannot be explained by demographic or basic personality traits places the responsibility directly on the education system itself. It is proposed that, particularly in the Turkish context, this problem stems from (1) a "selection system" that takes academic success as its sole criterion [31] and (2) a "preclinical education" structure that does not nurture altruism [35]. Considering that students who "truly want" to be healthcare personnel have higher levels of altruism [34], there is a risk that the current system is selecting the winners of the exam race instead of these students.

For the medical profession to preserve its nature of prioritizing the patients well-being, it is imperative that both student selection criteria and the educational curriculum re-evaluate altruism not as an assumption, but as a value that must be actively selected, taught, and protected [30, 36]. Furthermore, it is recommended to follow students through longitudinal studies to see if the declining trend in altruism is reversed during clinical training.

CONCLUSIONS

The aim of this study was to compare the altruism levels of medical students with those of students from other faculties (education and engineering) and to explore the possible structural factors underlying these differences.

1. In conclusion, medical students exhibit significantly lower levels of altruism compared to their peers in the faculties of education and engineering.
2. These low scores in altruism are particularly evident in the domains of "helpfulness" and "responsibility."
3. Crucially, this is not a result of an "erosion" of values during medical education; rather, the findings

indicate that students are admitted into the medical faculty with pre-existing low levels of altruism, and this level remains statically low throughout the preclinical years.

4. This problem of low altruism stems not from individual demographic or personality traits, but from systemic, structural factors.

5. The causes for this are twofold: first, a highly competitive, exam-oriented student selection system that prioritizes academic achievement over humanistic qualities, and second, a preclinical curriculum that is theory-heavy, competitive, and disconnected from patient interaction, thereby failing to nurture altruistic values.

6. Therefore, a fundamental reform is imperative in both student selection criteria and the early years of medical education to ensure that future physicians possess core professional values such as altruism.

Contributors:

Oktar Süleyman – conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, writing – original draft, writing – review & editing;

Oktar Saliha – conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, supervision, validation, visualization, writing – original draft, writing – review & editing.

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