



# Korean medical students' attitudes toward academic misconduct: a cross-sectional multicenter study

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**Purpose:** This study investigated medical students' attitudes toward academic misconduct that occurs in the learning environment during the pre-clinical and clinical periods.

**Methods:** Third-year medical students from seven medical schools were invited to participate in this study. A total of 337 of the 557 (60.5%) students completed an inventory assessing their attitudes toward academic misconduct. The inventory covered seven factors: scientific misconduct (eight items), irresponsibility in class (six items), disrespectful behavior in patient care (five items), dishonesty in clerkship tasks (four items), free riding on group assignments (four items), irresponsibility during clerkship (two items), and cheating on examinations (one item).

**Results:** Medical students showed a strict attitude toward academic misconduct such as cheating on examinations and disrespectful behavior in patient care, but they showed a less rigorous attitude toward dishonesty in clerkship tasks and irresponsibility in class. There was no difference in students' attitudes toward unprofessional behaviors by gender. The graduate medical school students showed a stricter attitude toward some factors of academic misconduct than the medical college students. This difference was significant for irresponsibility in class, disrespectful behavior in patient care, and free riding on group assignments.

**Conclusion:** This study indicates a critical vulnerability in medical students' professionalism toward academic integrity and responsibility. Further study evidence is needed to confirm whether this professionalism lapse is confined only to this population or is pervasive in other medical schools as well.

**Key Words:** Professional misconduct, Ethics, Medical students, Medical professionalism

## Introduction

With the growing maturity of the 21st-century knowledge-based society, discourses related to academic

honesty and research ethics are active in both domestic and international academic communities. These discussions begin with reflection on learning and research practices, and they emphasize the honesty, transparency, and accountability of learning and research [1]. Medical

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education is no exception.

Over the last few decades, new light has been shed on teaching and learning in medical professionalism in response to public concern over misconduct by doctors and the increasing awareness of medical ethics and social responsibility of the medical society [2]. It is well known that unprofessional physician behavior negatively influences patient-doctor relationships as well as patient safety and quality of care [3,4]. The importance of professionalism education in medical schools has been raised after research evidence showed that unprofessional behavior in medical schools was strongly associated with subsequent disciplinary action by medical boards [5,6]. Teherani et al. [7] identify three critical domains of unprofessional behavior in medical students that are associated with subsequent disciplinary action: poor reliability and responsibility, lack of self-improvement and adaptability, and poor initiative and motivation. Previous studies suggest the importance of early detection and remediation of professional deficiencies in medical students [8]. If unprofessional behavior at the undergraduate level and future physician practice are related, medical students' attitudes and actual performance with respect to medical professionalism must be rigorously explored.

At the undergraduate level, academic misconduct is a crucial part of medical professionalism. Honesty and sincerity as core human values and essential components of physicians' professionalism are mainly expressed in academic integrity during school life. To reinforce medical students' academic integrity, we should first accurately identify the current status, including students' attitudes toward learning ethics and their actual behaviors [2]. Many studies have attempted to assess the types or degrees of academic misconduct carried out by medical students [9]. Several studies have assessed the prevalence of attitudes toward and willingness to report

different forms of academic dishonesty among medical students [7,10]. Unethical behavior related to learning and academic life has included committing fraud in preparing for examinations, cheating, plagiarism—including inadequate reference citations—and other undesirable conduct, which hinder other students' learning in the classroom. Reported professionalism lapses during clerkship rotation have included copying residents' medical records, describing unexamined data as negative in medical records, saying one's name for roll call, talking about patients in public spaces or on the Internet, and leaking patient information.

As mentioned above, there have been many studies on students' unprofessional behaviors or perceptions of medical professionalism. However, these have mostly been conducted at a single institution; multi-institutional studies on medical professionalism at the undergraduate level are rare in Korea. In this study, the authors investigate the attitudes of medical students across the nation toward academic misconduct.

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## Methods

### 1. Participants

Third-year medical students from seven medical schools were invited to participate in this study. Participation was voluntary, and all responses were kept anonymous. The seven medical schools were purposefully sampled from among 40 schools in Korea. Four of these schools are located in metropolitan city areas, and three are in the capital city of each province. Of the seven schools, four are private and three are national universities. Regarding matriculation type, one school is a medical college (MC), three are graduate medical schools (GMS), and three are a combination of an MC

and a GMS. The participating schools provided a mandatory medical professionalism curriculum either through an independent professionalism course (i.e., A, D, G, and F school in Table 1) or through a combined humanities course, such as a patient, doctor, and society course (i.e., B, C, and E school in Table 1). Among the seven participant schools, it was found that four courses were taught during clinical periods (years 3 and 4) and three during pre-clinical periods. None of them operated a longitudinal or continuous medical professionalism course across the entire 4 years. The assigned academic credit points were between 1 and 2 credits (Table 1). The code of professionalism conduct A total of 337 of the 557 (60.5%) third-year medical students completed the inventory assessing their attitudes toward academic misconduct.

Approval was obtained by the Korea University Institutional Review Board on behalf of the participating schools (approval no., 1040548-KU-IRB-17-140-A-1).

## 2. Data collection

We surveyed the students electronically in October 2017. A cover letter stated that the purpose of the survey was to explore medical students' attitudes toward academic misconduct and to identify how medical schools could make changes to prevent such misconduct. Participants were asked to complete their questionnaires only after all participants had given consent. Their

attitudes toward academic misconduct were assessed using an inventory developed by Kwon et al. [11], which was psychometrically validated. This inventory comprises 30 items that ask students whether or not a particular unprofessional behavior can be allowed; students responded using a 4-point Likert scale (1=never, 2=seldom, 3=sometimes, 4=always). The inventory covered seven factors: scientific misconduct (eight items), irresponsibility in class (six items), disrespectful behavior in patient care (five items), dishonesty in clerkship tasks (four items), free riding on group assignments (four items), irresponsibility during clerkship (two items), and cheating on examinations (one item). The internal consistency (Cronbach's  $\alpha$ ) of the 30 items of this study was 0.92. Cronbach's  $\alpha$  for each factor was as follows: 0.83 (scientific misconduct), 0.82 (irresponsibility in class), 0.82 (disrespectful behavior in patient care), 0.78 (dishonesty in clerkship tasks), 0.74 (free riding on group assignments), and 0.67 (irresponsibility during clerkship). Kwon et al. [11] in 2013 reported that the coefficient  $\alpha$  for each factor varied between 0.80-0.90.

## 3. Statistical analysis

For each item, the number of respondents (%) was given, and the mean  $\pm$  standard deviation was calculated for all factors. The Mann-Whitney U-test was used to determine significant differences in the factors according

Table 1. Medical Professionalism Curriculum in the Seven Medical Schools

Medical schools	Matriculation type	Title of course	Phase (year) of teaching	Academic credit
A	MC/GMS	Ethics & professionalism	Clinical (year 3)	1
B	GMS	Doctor & society	Pre-clinical (year 1)	1
C	MC/GMS	Patient, doctor, & society	Clinical (year 3)	1
D	MC	Professionalism	Clinical (year 4)	1
E	GMS	Doctor & patient	Pre-clinical (year 2)	1
F	MC/GMS	Professionalism	Pre-clinical (year 2)	2
G	GMS	Medical professionalism	Clinical (year 4)	1

MC: Medical college, GMS: Graduate medical school.

to gender and medical school matriculation type. All analyses were performed using IBM SPSS software ver. 23.0 (IBM Corp., Armonk, USA).

## Results

The study participants comprised 215 (63.7%) male students and 122 (36.3%) female students. According to their matriculation status, 202 (59.8%) were MC students, and 135 (40.2%) were GMS students. Most students, regardless of matriculation type, showed a strict attitude toward academic misconduct such as cheating on examinations and disrespectful behavior in patient care.

The mean scores toward cheating on examinations were the lowest ( $1.28 \pm 0.48$ ), and that of disrespectful behavior in patient care followed as the second lowest ( $1.38 \pm 0.56$ ). Compared to these two categories, however, students showed a less rigorous attitude toward unprofessional behaviors including dishonesty in clerkship tasks ( $2.08 \pm 0.85$ ) and irresponsibility in class ( $2.00 \pm 0.85$ ). In addition, the attitudes toward free riding on group assignments ( $1.80 \pm 0.75$ ), scientific misconduct ( $1.75 \pm 0.73$ ), and irresponsibility during clerkship ( $1.73 \pm 0.73$ ) tended to be somewhat lenient (Table 2).

For 11 items out of the 30, more than 50% of the students answered "never be allowed" for certain unprofessional behaviors. Those items were: "submitting

Table 2. Medical Students' Attitudes toward Unprofessional Behaviors

	Never	Seldom	Sometimes	Always	Unknown
Scientific misconduct					
Submitting a task by copying reports or lab results	60 (20.5)	125 (37.1)	116 (31.4)	22 (6.5)	5 (1.5)
Writing reports by stealing other people's ideas	165 (49.0)	151 (44.8)	17 (5.0)	2 (0.6)	2 (0.6)
Writing reports without referencing	106 (31.5)	170 (50.4)	47 (13.9)	9 (2.7)	5 (1.5)
Combining passages from Internet into an article	67 (19.9)	113 (33.5)	123 (36.5)	32 (9.5)	2 (0.6)
Submitting reports or papers purchased online, etc.	222 (65.9)	95 (28.2)	13 (3.9)	6 (1.8)	1 (0.3)
Writing reports or papers by fabricating whole data without experiments or observations	229 (65.9)	95 (28.2)	13 (3.9)	6 (1.8)	1 (0.3)
Writing reports or papers by fabricating partial data without experiments or observations	234 (69.4)	90 (26.7)	8 (2.4)	3 (0.9)	2 (0.6)
Referencing unread articles	109 (32.3)	177 (52.5)	42 (12.5)	6 (1.8)	3 (0.9)
Subtotal score <sup>a)</sup>			1.75 ± 0.73		
Irresponsibility in class					
Saying one's name for roll call	173 (51.8)	119 (35.4)	34 (10.1)	9 (2.4)	2 (0.3)
Being late for class	61 (18.1)	115 (34.1)	127 (37.7)	31 (9.2)	3 (0.9)
Being truant from class	142 (42.1)	114 (33.8)	64 (19.0)	11 (3.3)	6 (1.8)
Leaving the classroom just after roll call	129 (38.3)	150 (44.5)	47 (13.9)	8 (2.4)	3 (0.9)
Being absent during lab and entering for roll call	141 (41.8)	141 (41.8)	42 (12.5)	10 (3.0)	3 (0.9)
Not paying attention to class	48 (14.2)	120 (35.6)	78 (23.1)	82 (24.3)	9 (2.7)
Subtotal score <sup>a)</sup>			2.00 ± 0.85		
Disrespectful behavior in patient care					
Talking about patients in public places	165 (49.0)	141 (41.8)	27 (8.6)	2 (0.6)	2 (0.6)
Talking about patients in personal meetings or on the Internet	201 (59.6)	106 (31.5)	26 (7.7)	1 (0.3)	3 (0.9)
Leaking patients' medical records	245 (72.7)	82 (24.3)	7 (2.1)	2 (0.6)	1 (0.3)
Humiliating patients with rude words	264 (78.3)	64 (19.0)	7 (2.1)	0	2 (0.6)
Talking about patients with colleagues for fun or slander	248 (73.6)	81 (24.0)	5 (1.5)	1 (0.3)	2 (0.6)
Subtotal score <sup>a)</sup>			1.38 ± 0.56		

(Continued to the next page)

Table 2. (Continued)

	Never	Seldom	Sometimes	Always	Unknown
Leaving the hospital while on duty	126 (37.5)	108 (32.1)	88 (26.2)	11 (3.3)	4 (0.9)
Charting without actually seeing patients	114 (33.9)	163 (48.5)	50 (14.9)	9 (2.7)	1 (0.0)
Charting unexamined physical findings as "negative"	110 (32.7)	163 (48.5)	55 (16.4)	7 (2.1)	2 (0.3)
Copying the medical records of interns or residents	56 (16.7)	73 (12.7)	156 (46.4)	48 (14.3)	4 (0.9)
Subtotal score <sup>a)</sup>			2.08 ± 0.85		
Free riding on group assignments					
Free riding without participation in group assignments during clerkship	150 (44.6)	137 (40.8)	43 (12.8)	3 (0.9)	4 (0.9)
Asking or teaching the test questions during clinical skill assessments	79 (23.5)	125 (37.2)	92 (27.4)	35 (10.4)	6 (1.5)
Free riding without participation in group assignments	144 (42.9)	144 (42.9)	41 (12.2)	3 (0.9)	5 (1.2)
Writing an assignment instead	182 (54.2)	131 (39.0)	20 (6.0)	4 (0.9)	1 (0.0)
Subtotal <sup>a)</sup>			1.80 ± 0.75		
Irresponsibility during clerkship					
Being truant during clerkship	195 (58.3)	111 (33.0)	25 (7.4)	3 (0.9)	2 (0.3)
Being late during clerkship	107 (31.8)	146 (43.5)	71 (21.1)	9 (2.7)	4 (0.9)
Subtotal score <sup>a)</sup>			1.73 ± 0.73		
Single item					
Cheating on examinations	245 (72.9)	87 (25.9)	4 (1.2)	0	1 (0.3)
Subtotal score <sup>a)</sup>			1.28 ± 0.48		

Data are presented as number (%) or mean ± standard deviation.

<sup>a)</sup>The mean score of each category was calculated by the 4-point Likert scale (1 = never allowed, 2 = seldom allowed, 3 = sometimes allowed, 4 = always allowed). The maximum score was 4, and the minimum score was 1. The greater score represents more lenient attitudes toward the categories of unprofessional behaviors.

Table 3. Differences in Medical Students' Attitudes toward Academic Misconduct by Gender

	Male	Female	p-value <sup>a)</sup>
Scientific misconduct	1.74 ± 0.51	1.72 ± 0.46	0.816
Irresponsibility in class	1.97 ± 0.64	1.92 ± 0.57	0.521
Disrespectful behavior in patient care	1.37 ± 0.46	1.37 ± 0.39	0.984
Dishonesty in clerkship tasks	2.04 ± 0.66	2.08 ± 0.60	0.512
Free riding on group assignments	1.75 ± 0.61	1.83 ± 0.56	0.238
Irresponsibility during clerkship	1.73 ± 0.70	1.67 ± 0.55	0.416

Data are presented as mean ± standard deviation. The mean score of each category was calculated by means of a 4-point Likert scale (1 = never allowed, 2 = seldom allowed, 3 = sometimes allowed, 4 = always allowed). The maximum score was 4, and the minimum score was 1. The greater score represents more lenient attitudes toward the categories of unprofessional behaviors.

<sup>a)</sup>By Mann-Whitney U-test.

reports or papers purchased online, and so forth," "writing reports or papers by fabricating whole or partial data without experiment and observation," "saying one's name for roll call," "talking about patients in personal meetings or on the internet," "leaking patients' medical records," "humiliating patients with rude words," "talking about patients with colleagues for fun or slander," "writing an assignment instead," "being a truant during

clerkship," and "cheating in examinations" (Table 2).

There was no difference in students' attitudes toward unprofessional behaviors by gender (Table 3). Overall, graduate medical students tended to show a stricter attitude toward professionalism lapses than MC students. These differences were statistically significant for irresponsibility in class, disrespectful behavior in patient care, and free riding on group assignments (Table 4).

Table 4. Differences in Medical Students' Attitudes toward Academic Misconduct by Affiliation

	Graduate medical school students	Medical college students	p-value <sup>a)</sup>
Scientific misconduct	1.68 ± 0.45	1.78 ± 0.52	0.066
Irresponsibility in class	1.82 ± 0.57	2.04 ± 0.63	0.002
Disrespectful behavior in patient care	1.30 ± 0.38	1.42 ± 0.46	0.018
Dishonesty in clerkship tasks	2.01 ± 0.59	2.08 ± 0.68	0.350
Free riding on group assignments	1.67 ± 0.58	1.84 ± 0.59	0.006
Irresponsibility during clerkship	1.69 ± 0.57	1.72 ± 0.71	0.077

Data are presented as mean ± standard deviation. The mean score of each category was calculated by means of a 4-point Likert scale (1 = never allowed, 2 = seldom allowed, 3 = sometimes allowed, 4 = always allowed). The maximum score was 4, and the minimum score was 1. The greater score represents more lenient attitudes toward the categories of unprofessional behaviors.

<sup>a)</sup>By Mann-Whitney U-test.

## Discussion

Core professional values and related codes of conduct should be upheld not only by medical practitioners but also by medical students. Several studies support that unprofessional behaviors observed among medical students are related to negative performance outcomes during medical studies and future physician practice [12,13]. Unprofessional behavior in medical school has been associated with early academic difficulties [14], unsatisfactory progress [15], and poor clinical performance [16] and was a predictor of serious misconduct among practitioners [5,6]. Therefore, there is a consensus that medical professionalism education should be reinforced in all years of medical school.

This study investigated medical students' attitudes toward academic misconduct during the pre-clinical and clinical periods. We found that medical students showed more consistent and stricter attitudes toward academic misconduct such as cheating on examinations and disrespectful behavior in patient care. This is similar to the findings by Anderson and Obenshain [17], who reported that medical students and faculty agree that cheating is unethical. However, the medical students in this study showed a less rigorous attitude toward unprofessional behaviors such as dishonesty in clerkship

tasks and irresponsibility in class. Such lenient attitudes toward irresponsibility can partly be explained by the hidden curriculum that permits undesirable behaviors as unavoidable alternatives for coping with a heavy workload and packed mandatory lecture hours. Because a lenient attitude toward dishonest behaviors may be a potential threat to their professional life, some intervention is necessary to change students' perceptions. This speculation can be supported by the study by Teherani et al. [7] that identifies three critical domains of unprofessional behavior in medical students associated with subsequent disciplinary action: poor reliability and responsibility, lack of self-improvement and adaptability, and poor initiative and motivation. Dishonesty in clerkship tasks and irresponsibility in class can be categorized as poor reliability, responsibility, initiative, and motivation. Therefore, lenient or tolerant attitudes toward such academic misconduct cannot be ignored.

We, the authors, believe that reinforcement of academic integrity at the institutional level should be carried out to change learners' attitudes and subsequent behaviors. As a reason for less strict or lenient attitudes toward some professional behaviors appearing in this study population, we should take into consideration the present curricular structures of participating medical schools. In these schools, most formal education related

to medical professionalism is confined to one academic year, rather than being a longitudinal program. Among the seven medical schools, professionalism courses were taught in the third or fourth year, without earlier exposure. Changing learners' attitudes and behaviors as a socialization process of professionalism cannot be fulfilled only through discrete or one-time education. It should be started early on in professional education and reinforced seamlessly. Therefore, to effectively promote students' professionalism, we should provide students with longitudinal and integrated professionalism education courses that begin on the first day of medical school. In addition to a formal curriculum, every medical school should develop its own framework of medical professionalism and a code of conduct based on that framework. Medical schools should impart their codes of conduct to students continuously and repetitively. In parallel, medical schools should provide students with a better learning environment to prevent burnout—mandatory lecture attendance may be reconsidered in this digital era, and a system to improve student well-being, both mentally and physically, is needed. Uncritical transmission of bad customs from senior to junior students in the hidden curriculum should be eliminated as well. In addition, a screening, monitoring, and remediation system that prevents professionalism lapses in medical schools should be activated.

The participants of this study were third-year medical students. The reason we chose third-year students is because they have completed pre-clinical courses and performed patient-care activities. Hojat et al. [18] found that a significant decline in empathy occurs during the third year of medical school owing to several factors, including the lack of role models, a high volume of material to learn, time pressure, and patient and environmental factors. The study population's academic year may be one factor contributing to the somewhat

lenient attitudes toward unprofessional behaviors. Further studies that include all academic years and comparisons across years, as well as prospective cohort studies, should be conducted to understand medical students' perception of professionalism and to identify whether professionalism tends to decline or increase across the academic years in medical studies.

This study has several limitations. First, the selection of medical schools was not random. Second, this study focuses on identifying medical students' perceptions of academic misconduct, and not on actual performance. Finally, the study is limited by its cross-sectional nature. Studies across academic years and prospective cohort studies should follow. Nonetheless, our study has several strengths. To our knowledge, this is the first multicenter study of academic misconduct in Korean medical students; it includes students attending diverse private and public medical schools spread across Korea. In addition, the instrument we used in our survey is useful in identifying students' ethical standards regarding academics and examining the prevalence of unprofessional behaviors in medical students. Assessing medical students' perceptions of unprofessional behaviors is the first step in identifying the lacunae in professionalism education in each school, and it can provide the relevant information to reinforce professionalism education and prevent future misconduct.

This study reveals a critical vulnerability in medical students' professionalism toward academic integrity and responsibility with a limited participation. Further study evidence is needed to confirm whether this professionalism lapse is confined only to this population or is pervasive in other medical schools as well.

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**Author contributions:** Conception and design of the study: EKC, YML, SJC; acquisition, analysis, and interpretation of data: EKC, YML, SJC; acquisition of study data: EKC, YML, TYY, SJC, SYK, JYP, CSP; drafting the article: EKC; and final approval of the version to be published and agreement to its publication: YML, SJC.

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