

# Moral Skills Among a Group of Iranian Dental Students

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## Abstract

**Objective(s):** The purpose of teaching professional ethics in dentistry is to cultivate dentists who adhere to ethical principles in their profession. The present study aimed to evaluate moral skills among a group of dental students. **Methods:** A cross-sectional study was conducted on dental students in Isfahan, Iran in 2024. Applying a stratified random sampling method, 396 volunteer dental students filled in Chambers Moral Skills Inventory including four domains of sensitivity, reasoning, integrity and moral courage. Independent t-tests and one-way analysis of variance (ANOVA) served for statistical analysis ( $p < 0.05$ ). Data was analyzed using SPSS version 27. **Results:** Among the participants (response rate=97%), with mean  $\pm$  standard deviation (SD) age of  $23.97 \pm 3.00$  years (range: 19-39), 59.1% were women. Mean  $\pm$  SD score of moral skills among the students was  $15.79 \pm 3.08$  (range: 8-26, scaled mean: 49.34%). A significant difference revealed between the domains ( $p < 0.05$ ). The highest score belonged to the domain of sensitivity (4.70) and the lowest score to the domain of reasoning (2.90). Moral skills showed no significant association with participants' age ( $p = 0.51$ ) and gender ( $p = 0.93$ ), however, students with father's education lower than diploma showed significantly lower score of moral skills than those with higher father's education ( $p = 0.02$ ). In addition, moral skills among third year dental students was significantly lower than that of fourth- and fifth-year students ( $p = 0.01$ ). **Conclusion:** Moral skills among Iranian dental students was moderate. Given the importance of ethical competencies in dental profession, it is recommended to incorporate relevant topics in to curriculum. Moreover, early exposure to ethics education should be provided for students, alongside continuing professional development opportunities for graduated dentists.

**Keywords:** Moral Skills; Dental Students; Iran

## Introduction

The term "ethics" originates from the Greek word "ethos", meaning custom or character. As a branch of philosophy, it addresses behavior, justice, and the principles of right and wrong<sup>1, 2</sup>. In the 21<sup>st</sup> century, increasing attention has been devoted to ethics<sup>3</sup>. While ethics refers to formal codes and professional standards, and provides a framework for evaluating decisions and guiding professional conduct, morality reflects individual values shaped by life experiences, culture, and beliefs. Ethics helps establish shared expectations and evaluate actions within clinical and societal contexts<sup>4</sup>.

Moral values are vital in medicine and dentistry, influencing interactions with patients, colleagues, and society<sup>5,6</sup>. As ethical challenges in clinical practice increase, medical ethics become a core component of professional education<sup>7</sup>. Teaching ethics aims to develop clinicians who are technically skilled and morally responsible<sup>8</sup>. Dentists are expected to demonstrate honesty, integrity, and respect for patient rights—such as confidentiality, informed consent, and cultural sensitivity—while also addressing unprofessional behaviors among peers<sup>9</sup>.

Several studies have explored ethical awareness in dental education. In India, Kezavan et al., found that most dentists were aware of professional ethics.<sup>1</sup> In Iran, Elyasi et al.

reported positive attitudes toward ethics among dental students<sup>10</sup>. However, Mosavi et al., identified a gap between actual and ideal moral skills among dental students, highlighting obstacles such as personal interests and insufficient role modeling<sup>11</sup>. Internationally, similar challenges have been observed highlighting the importance of improving ethics education in dentistry. In Saudi Arabia, Al-Subaihi et al. reported that dental students in Makkah exhibited limited moral reasoning,<sup>12</sup> and Al-Mutlaq et al., found low familiarity with ethical principles among dental students and dentists in Riyadh<sup>13</sup>. In Sudan, Elsheikh et al., reported that 75% of dental students acknowledged the importance of incorporating ethics and professionalism into their training<sup>14</sup>. In India, Kaur et al., highlighted limited awareness of the Code of Ethics and the need to better integrate ethics into clinical practice<sup>15</sup>. These findings underscore the global relevance of ethics education to better equip students with the moral competencies required for professional practice.

Chambers' Moral Skills Inventory defines four key domains: moral sensitivity (recognition of ethical issues), moral reasoning (ethical decision-making), moral integrity (adherence to values), and moral courage (ethical action despite pressure)<sup>16,17</sup>. Although previous studies in dentistry have primarily focused on ethical awareness and attitudes,

there has been limited attention to the assessment of moral skills as multidimensional competencies. In particular, domains such as moral sensitivity, reasoning, integrity, and courage—while theoretically emphasized—have rarely been empirically measured among dental students.

Despite ongoing efforts, further evaluation and enhancement of moral competencies in dental education remain necessary<sup>18</sup>. Assessing moral skills among dental students provides not only an evaluation of their current competencies, but also critical insights to guide curriculum development and targeted educational interventions. Therefore, the aim of this study was to assess moral skills among Iranian dental students to identify their strengths and areas for improvement.

## Methods

### Study design and sampling

A cross-sectional study was carried out involving dental students in Isfahan, Iran in 2024. Only students who had clinical experience with patients (6<sup>th</sup>–12<sup>th</sup> semesters) were included.

A stratified sampling method was applied with two strata: the dental schools (Islamic Azad University of Isfahan and Isfahan University of Medical Sciences), and the students' academic years (3<sup>rd</sup> to 6<sup>th</sup> year). Students were selected from each stratum to ensure proportional representation across institutions and years. Eligible participants were dental students enrolled in the third to sixth academic years (at least one year of pre-clinical training) at either of the two universities during the study period, who were also willing to provide informed consent. Students in the first and second academic years, and individuals who submitted incomplete questionnaires were excluded from participation in the study.

### Sample size

The required sample size was calculated to estimate the mean score of moral skills based on the following formula:

$$N = \left( \frac{Z_{1-\alpha/2} \times \sigma}{\epsilon} \right)^2$$

Where N is the required sample size,  $Z_{1-\alpha/2}$  is the standard normal deviate at the 95% confidence level (1.96),  $\sigma$  is the standard deviation (SD) of the outcome variable, and  $\epsilon$  is the margin of error. Since no reliable prior estimate of  $\sigma$  was available, we defined the margin of error as a proportion of the SD ( $\epsilon=0.1\sigma$ ), meaning that the acceptable estimation error was 10% of the variability. Substituting these values into the formula yielded  $N = (1.96/0.1)^2 \approx 384.16$  which was rounded up to 385 participants. This precision-based approach, in which the margin of error is defined as a fraction of the SD, is commonly applied in sample size estimation when no prior estimate of variability is available and has been recognized in methodological guidelines<sup>19</sup>.

### Data Collection

The data was collected via self-administered questionnaires. This questionnaire comprised of two parts: I) Background information: gender, age, parents' education, academic year, and type of university (public or private). II) Short version of Chambers Moral Skills Inventory, evaluating four domains: moral sensitivity, moral reasoning, moral integrity (perfection), and moral courage, via 16 questions (Appendix I)<sup>16</sup>. Validity and reliability of the Persian version of the questionnaire were confirmed by Khosravi et al.<sup>20</sup> Internal consistency of the questionnaire in the study was calculated to be 0.754.

Scoring: Points were assigned as shown in Table 1. Each domain score ranged from 0 to 8, and total scores ranged from 0 to 32. Higher scores indicated greater moral skills. Percentage scores were categorized as: Low: 0–33.3%, Moderate: 33.3–66.6%, and High: 66.6–100%.

Table 1- Scoring of Chambers Moral Skills Inventory

Domain	Items	Response option A	Response option B	Response option C	Score range
Moral sensitivity	1–4	points 2	point 1	point 0	0-8
Moral reasoning	5–8	point 0	point 1	points 2	0-8
Moral integrity	9–12	points 2	point 1	point 0	0-8
Moral courage	13–16	point 0	point 1	points 2	0-8
Total score	-	-	-	-	0-32

To facilitate the interpretation and comparison, the raw scores of moral skills (ranging from 0 to 32) were transformed into scaled scores ranging from 0 to 100 by the following formula:

$$\text{Scaled score (\%)} = \frac{\text{Raw score} - \text{Minimum possible score}}{\text{Maximum possible score} - \text{Minimum possible score}} \times 100$$

This scaled score expressed each participant's moral skills as a percentage of the maximum achievable score, allowing easier comparison across domains and participants.

### Statistical analyses

Student's t-test was employed to compare the mean moral skill scores between two independent groups (e.g., gender, type of university). One-way analysis of variance (ANOVA) was applied to compare mean scores across more than two groups (e.g., academic year, parents' education). Association between continuous variables, such as age and total score of moral skills, was evaluated using the Pearson correlation coefficient. To analyze the factors associated with moral skills among dental students, a linear regression model was fitted to the data. Data was analyzed using the Statistical Package for

the Social Science (SPSS for Windows, version 27.0/PC; SPSS, Chicago, IL, USA). All statistical tests were performed at a significance level of 0.05.

### Ethical considerations

Ethical approval for this research was obtained from the Ethics Committee of the Islamic Azad University of Isfahan (IR.IAU.KHUISF.REC.1403.095). All participants were informed about the study objectives, consented voluntarily, and completed questionnaires anonymously.

### Results

Of 408 questionnaires, 396 of them were completely filled out and included in the analysis (response rate: 97%). 48.7% of the participants were from a private university (Islamic Azad University of Isfahan). Mean  $\pm$  SD of age was  $23.97 \pm 3.00$  years (range: 19-39), and 59.1% were women (Table 2).

Mean  $\pm$  SD score of moral skills among dental students was  $15.79 \pm 3.08$  (range: 8-26; scaled mean: 49.34%). As shown in Table 3, the majority of students demonstrated a moderate level of moral skills overall (92.4%). Domain-specific analyses indicated that 57.6% of students scored moderately in moral sensitivity, 48.5% in moral reasoning, 71.7% in moral integrity, and 58.8% in moral courage. Lower and higher levels of skills were observed in smaller proportions across all the domains.

Mean  $\pm$  SD score of moral sensitivity was  $4.70 \pm 1.68$ , moral reasoning was  $2.90 \pm 1.74$ , moral integrity was  $3.84 \pm 1.41$ , and moral courage was  $4.35 \pm 1.62$ . Mean score of moral sensitivity was significantly higher compared to mean scores of moral reasoning ( $p < 0.001$ ), moral integrity ( $p < 0.001$ ), and moral courage ( $p = 0.01$ ). Furthermore, mean score of moral

reasoning was significantly lower compared to mean score of moral integrity ( $p < 0.001$ ), and moral courage ( $p < 0.001$ ). Moreover, mean score of moral integrity was significantly lower than that of moral courage ( $p < 0.001$ ).

**Table 2- Demographic characteristics of the included dental students (N=396)**

Variable	N (%)
Age (years)	
19-22	127 (32.1)
23-26	207 (52.3)
27-30	48 (12.1)
>30	14 (3.5)
Gender	
Men	162 (40.9)
Women	234 (59.1)
University type	
Private	193 (48.7)
Public	203 (51.3)
Academic year	
3th	82 (20.7)
4th	105 (26.5)
5th	102 (25.8)
6th	107 (27.0)
Father's education	
Lower than high school	25 (6.3)
High school	84 (21.2)
Bachelor's degree	132 (33.30)
Master's degree	84 (21.2)
PhD	71 (17.9)
Mother's education	
Lower than high school	32 (8.1)
High school	112 (28.3)
Bachelor's degree	160 (40.4)
Master's degree, PhD	92 (23.2)

**Table 3- The level of moral skills in different domains among the participants (N=396)**

Category	Moral Sensitivity N (%)	Moral Reasoning N (%)	Moral Integrity N (%)	Moral Courage N (%)	Moral Skills N (%)
Low	39 (9.8)	178 (44.9)	67 (16.9)	58 (14.6)	17 (4.3)
Moderate	228 (57.6)	192 (48.5)	284 (71.7)	233 (58.8)	366 (92.4)
High	129 (32.6)	26 (6.6)	45 (11.4)	105 (26.5)	13 (3.3)

Table 4 shows the mean score of moral skills and the domains based on participants' demographic characteristics. Total score of moral skills and the domains showed no significant association with participants' age ( $p = 0.51$ ), gender ( $p = 0.93$ ), and type of the university ( $p = 0.38$ ), except for the students from private university who revealed higher score of moral integrity than those from public university ( $p = 0.04$ ). The mean score of moral skills was significantly associated with students' academic year ( $p = 0.01$ ). Third-year dental students revealed significantly lower score of moral skills than the fourth- and fifth-year students ( $p < 0.05$ ). Moreover, mean score of moral sensitivity showed significant difference based on students' academic year ( $p = 0.001$ ). However, considering the effect size values for total score of moral skills ( $f = 0.027$ ),

and moral sensitivity ( $f = 0.039$ ), the practical impact of such differences was small.

Mean score of moral skills was significantly associated with father's educational level ( $p = 0.02$ ). Students with fathers' education of less than high school diploma revealed significantly lower score of moral skills than those with higher fathers' educational levels ( $p < 0.05$ ). However, considering the effect size values ( $f < 0.05$ ), the effect of father's education on students' moral skills was small.

Mean score of moral skills was also significantly associated with mother's level of education ( $p = 0.04$ ). Students with mothers' education of less than high school diploma showed significantly lower score of moral skills than those with higher educational levels ( $p < 0.05$ ). Moreover, mean score of

moral reasoning among students showed significant difference based on the mother's level of education ( $p=0.05$ ). Considering the effect size values for total score ( $f=0.022$ ),

and moral reasoning ( $f=0.02$ ), the practical impact of these differences was also small.

**Table 4- Mean scores of moral skills in different domains according to dental students' demographic characteristics (N=396)**

Variable	Moral Sensitivity	Moral Reasoning	Moral Integrity	Moral Courage	Total score
<b>Age</b>					
Pearson correlation coefficient	0.03	-0.01	0.04	0.01	0.03
p-value	0.54	0.87	0.45	0.89	0.51
<b>Gender</b>					
Male	4.67	2.91	3.82	4.36	15.77
Female	4.73	2.88	3.85	4.34	15.80
p-value	0.76	0.87	0.86	0.89	0.93
<b>University</b>					
Private	4.79	2.90	3.98	4.26	15.93
Public	4.63	2.90	3.69	4.44	15.66
p-value	0.34	0.10	<b>0.04</b>	0.27	0.38
<b>Father's education</b>					
Less than high school diploma	4.00	2.36	3.64	4.04	14.04
High school diploma	4.92	3.05	3.88	4.49	16.33
Bachelor's	4.69	3.02	3.87	4.33	15.92
Master's	4.79	2.90	3.77	4.23	15.69
PhD	4.63	2.66	3.86	4.48	15.63
p-value	0.19	0.29	0.93	0.65	<b>0.02</b>
<b>Mother's education</b>					
Less than high school diploma	4.34	2.31	3.75	4.09	14.50
High school diploma	4.71	3.21	3.81	4.42	16.15
Bachelor's	4.91	2.79	3.89	4.38	15.96
Master's, PhD	4.48	2.90	3.80	4.30	15.49
p-value	0.14	<b>0.05</b>	0.94	0.77	<b>0.04</b>
<b>Academic year</b>					
3 <sup>th</sup>	4.10	2.79	3.65	4.43	14.96
4 <sup>th</sup>	5.04	2.84	4.09	4.34	16.30
5 <sup>th</sup>	4.74	3.16	3.77	4.47	16.14
6 <sup>th</sup>	4.81	2.79	3.79	4.19	15.58
p-value	<b>0.001</b>	0.37	0.17	0.61	<b>0.01</b>

In multivariate analysis, controlling for socio-demographic characteristics, being in the 4<sup>th</sup> ( $p=0.02$ ), and 5<sup>th</sup> ( $p=0.03$ ) academic years were significantly associated with higher moral skills scores compared to the 3<sup>rd</sup> year students. In

addition, students whose fathers had a high school diploma reported higher scores compared to those whose fathers had less than high school diploma ( $p=0.04$ ) (Table 5).

**Table 5- Factors associated with total moral skills score among the participants based on a linear regression model (N=396)**

Variable	$\beta$ (Unstandardized)	SE	p-value
Sex (female)			
Male	0.02	0.32	0.94
Age	0.03	0.06	0.60
University (Private) <sup>a</sup>			
Public	-0.09	0.332	0.80
Academic year (3 <sup>th</sup> ) <sup>a</sup>			
4 <sup>th</sup>	1.13	0.46	<b>0.02</b>
5 <sup>th</sup>	1.06	0.49	<b>0.03</b>
6 <sup>th</sup>	0.41	0.48	0.39
Father's education (Less than high school diploma) <sup>a</sup>			
High school diploma	1.60	0.79	<b>0.04</b>
Bachelor's	1.23	0.80	0.12
Master's	1.11	0.82	0.18
PhD	0.97	0.857	0.26
Mother's education (Less than high school diploma) <sup>a</sup>			
High school diploma	1.16	0.72	0.11
Bachelor's	1.18	0.73	0.11
Master's, PhD	0.88	0.79	0.27

## Discussion

In the present study, scaled mean score of moral skills among dental students indicated a moderate level. This result is

generally in line with previous research conducted in Iran, although the reported values varied depending on the study population and the instruments used. For instance, Mousavi et al., using the 40-item Chambers questionnaire, reported a somewhat higher level of moral skills among Iranian dental students in clerkship courses<sup>11</sup>. Similarly, dental students at Shahed University achieved higher level of moral skills in the study by Afshar et al.<sup>21</sup> Yazdani et al., surveying general dentists nationwide with a questionnaire comparable to the present study, also reported relatively higher scores<sup>22</sup>. In contrast, Vardian-Tehrani and Bazmi, also using the 40-item Chambers questionnaire, observed a lower mean score among dental students and dentists<sup>23</sup>. These comparisons indicate that moderate levels of moral skills are consistently observed across studies, although variations may reflect differences in sample characteristics, instruments, or educational contexts. The moderate level of moral skills observed in this study may partly reflect the current structure of the undergraduate dental curriculum in Iran. According to the Council for Dental Education of the Iranian Ministry of Health and Medical Education in Iran, the program spans six years, including two years of general courses and basic sciences, followed by four years of preclinical and clinical training<sup>24</sup>. Although competences such as “Communication skills”, as well as “Ethics and professionalism” are addressed with more emphasis within the latest version of the curriculum, recent evaluation of senior dental students by Salmani et al., revealed that non-clinical competencies, such as professional behaviour may have not received adequate attention in the curriculum<sup>25</sup>. These findings highlight the need for enhanced and structured integration of ethics education across the dental curriculum to better cultivate moral skills.

Given that the university education period represents a critical stage for acquiring ethical principles and fostering professional conduct, it is imperative to incorporate practical ethics education into dental curricula<sup>17</sup>. Studies in dental and medical students have demonstrated that structured ethics training—through case-based learning or blended learning approaches combining theoretical instruction, case discussions, and online assignments—significantly improves moral reasoning and ethical decision-making<sup>6, 26</sup>. These findings reinforce the necessity of integrating practical ethics education into dental curricula.

In terms of the domains, the present study, consistent with the findings of Kazemipour et al.,<sup>17</sup> among general dentists in Yazd, Iran revealed that moral sensitivity had the highest score, while moral reasoning had the lowest. However, this pattern was not consistent across all studies. For instance, a national study among Iranian general dentists reported the highest scores in moral reasoning and the lowest in moral sensitivity,<sup>22</sup> whereas Mosavi et al., found moral reasoning to be the highest and moral integrity the lowest<sup>11</sup>. These discrepancies highlight that the relative strength of moral skills domains may vary depending on the study population,

professional exposure, and contextual factors such as institutional training, regional culture, or the educational environment. Therefore, moral skills should be understood as multidimensional constructs influenced by both educational and professional contexts, rather than following a uniform pattern across different groups.

In the present study, no significant gender difference was found in moral skills. This is in line with the results of other studies among dentists or dental students<sup>12, 14, 17, 22</sup>. In contrast, based on the results of Khosravi et al.,<sup>20</sup> the total score of moral skills, as well as moral sensitivity, moral reasoning, and moral courage was higher among female dental students in Tehran University of Medical Sciences than among men. You and Bebeau<sup>27</sup> also reported gender difference among dental students at the University of Minnesota in various aspects of moral skills, with the exception of moral sensitivity. These differences may be attributed to the influence of the educational environment, as well as the cultural context, social norms, and prevailing beliefs within each society<sup>22</sup>.

In the present study, there was no significant relationship between participants' age and their moral skills, which aligned with previous evidence in professional ethics<sup>14, 17, 28</sup>. Kazemipour et al., reported no significant correlation between moral skills and age among Iranian dentists<sup>17</sup>. Similarly, in a study by Elsheikh et al. on the professional performance and ethical attitudes of dental students in Sudan, no significant correlation was found between students' age and their ethical attitudes<sup>14</sup>. Razavi et al. also found that age was not significantly related to the attitude of Iranian dentists towards professional ethics principles.<sup>28</sup> However, some studies have reported differing patterns. Chambers et al., observed a positive association between moral skills and participants' age,<sup>16</sup> whereas Yazdani et al., found significantly higher moral skills among younger graduates<sup>22</sup>. These inconsistencies may be attributed to several factors, including differences in study populations, educational contexts and curricula, cultural and regional influences, and the measurement instruments used for assessing moral skills. For instance, practicing dentists may have accumulated more professional experience, potentially affecting their ethical decision-making, while younger graduates may have received more recent ethics training, leading to higher scores in some studies. Studies involving a broad age range such as dentists are more likely to detect age-related trends, whereas research limited to homogeneous groups, such as dental students or recent graduates, may not reveal such correlations. Collectively, these findings suggest that age alone does not consistently predict moral skills, and contextual and educational factors likely play a more significant role.

The results of this study showed that the type of university (public vs. private) was not significantly associated with the overall moral skills score. This result aligned with the study by Al-Subaihi et al.,<sup>12</sup> which found no differences in ethical

reasoning skills among dental students in Saudi Arabia based on university type.

The overall score of moral skills in this study varied according to the students' academic year. Specifically, third-year students demonstrated significantly lower total scores compared to fourth- and fifth-year students. Similarly, Mousavi et al.,<sup>11</sup> reported that senior dental students scored above average in overall moral skills, while junior students scored below average. Moreover, moral sensitivity was higher among senior students than their junior counterparts. Interestingly, in the domain of moral reasoning and moral courage, fifth-year students—who were in their first year of clinical training—achieved higher scores than both fourth- and sixth-year students. Al-Zain et al.,<sup>29</sup> also reported higher level of moral skills among senior students than among first-year students. In contrast, no significant association was revealed between moral skills and academic year in the studies by Khosravi et al.,<sup>20</sup> and Razeghi et al.<sup>30</sup> The absence of a significant relationship between academic year and moral skills observed in the aforementioned studies may be attributed to the insufficiency of ethics education within university curricula, which failed to properly prepare final-year students to effectively navigate ethical challenges.

In the present study, students whose fathers had an educational attainment below a high school diploma demonstrated lower levels of moral skills. This finding aligned with the results of several previous studies that had reported a positive relationship between paternal education and the development of moral skills<sup>17,22</sup>. Nevertheless, some studies, such as those conducted by Khosravi et al.,<sup>20</sup> and Razeghi et al.,<sup>30</sup> did not find a statistically significant relationship between these variables.

Although in univariate analysis a positive association was observed between students' moral skills and their mothers' level of education, this finding was not supported by the results of multivariate regression model. This is in line with several previous studies<sup>12, 17, 20, 30</sup>. For instance, in the study conducted by Al-Subaihi et al.,<sup>12</sup> among dental students in the Makkah Region of Saudi Arabia, no statistically significant relationship was found between the stages of moral reasoning and parents' educational attainment. One possible explanation for our findings is that in the Iranian socio-cultural context, paternal education is often more strongly linked with the family's socioeconomic status and access to resources, which may create a more favorable environment for students' moral and professional development. Alternatively, this association may reflect broader socioeconomic factors rather than paternal education per se. Therefore, these findings should be interpreted with caution, and future studies are needed to disentangle the potential mechanisms underlying this association.

The present study had some limitations and strengths. The cross-sectional nature of this study limited the ability to draw definite cause-and-effect relationship between students'

moral skill and their demographic characteristics. Moreover, the social desirability should be considered due to the use of a self-reported questionnaire. However, the large sample size of students from both public and private universities in Isfahan strengthened the generalizability of the findings.

In summary, this study revealed that Iranian dental students exhibit a moderate level of moral skills, with domain-specific differences such as higher moral sensitivity and lower moral reasoning. These results highlight the educational importance of integrating ethics into dental curricula to better prepare dental students for the moral and professional challenges of clinical practice. Early and continuous exposure to practical ethics education — integrated across pre-clinical and clinical years — may help students develop the capacity to navigate complex ethical challenges in patient care. Furthermore, establishing lifelong professional development programs can reinforce these competencies beyond graduation.

In addition, the findings support a call for longitudinal research to monitor the effectiveness of ethics education over time, and to identify strategies that strengthen moral competencies throughout undergraduate training.

## Conclusion

The present study demonstrated that dental students revealed a moderate level of moral skills, highlighting a gap between the ethical demands of dental practice and students' current competencies. These findings underscore the need for further development of ethics education within dental curricula. Rather than focusing solely on cognitive knowledge, dental curricula should aim to foster critical ethical reasoning, moral sensitivity, and professional integrity and courage.

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H.S.; contributed to the conceptualization and design of the study, reviewed & edited the manuscript, supervised the study. She was the project administrator.

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**Informed Consent Statement:** Participation in this study was voluntary. All students provided their informed consent and filled in anonymous questionnaires.

**Data Availability Statement:** The datasets generated during

and/or analyzed during the current study are available from the corresponding author upon reasonable request.

**Using AI:** AI was only used for editing the English text.

**Conflict of Interest:** No conflicts of interest to declare.

## References

1. Kesavan R, Mary AV, Priyanka M, Reashmi B. Knowledge of dental ethics and jurisprudence among dental practitioners in Chennai, India: A cross-sectional questionnaire study. *J Orofac Sci* 2016;8:128-34. doi: [10.4103/0975-8844.195915](https://doi.org/10.4103/0975-8844.195915)
2. Almoallem A, Almudayfir M, Al-Jahdail Y, Ahmed A, Shaikh A, Baharoon S, et al. Top Ethical Issues Concerning Healthcare Providers Working in Saudi Arabia. *J Epidemiol Glob Health*. 2020; 10:143–52. doi: [10.2991/jegh.k.191211.001](https://doi.org/10.2991/jegh.k.191211.001)
3. Naik S, Nivedan KS, Pinto B, Shobha R, Dutt A, Rahul N. Ethical Issues and Challenges in Dentistry. *I Int J Prev Clin Dent Res*. 2016;3(4):285-7. doi: 10.5005/jp-journals-10052-0063
4. Chaddha R, Agrawal G. Ethics and Morality. *Indian J Orthop*. 2023 ;57(11):1707-1713. doi: [10.1007/s43465-023-01004-3](https://doi.org/10.1007/s43465-023-01004-3)
5. Bashir A, McTaggart IJJJoTUMS. Importance of faculty role modelling for teaching professionalism to medical students: Individual versus institutional responsibility. *J Taibah Univ Med Sci*. 2021;17(1):112-9. doi: [10.1016/j.jtumed.2021.06.009](https://doi.org/10.1016/j.jtumed.2021.06.009)
6. İlgüy M, İlgüy D, Oktay İ. Ethical decision making in dental education: a preliminary study. *BMC Med Ethics*. 2015; 16:52. doi: [10.1186/s12910-015-0046-4](https://doi.org/10.1186/s12910-015-0046-4)
7. Goetz K, Gutermuth AC, Wenz HJ, Groß D, Hertrampf K. Identification of semester-specific teaching contents for dental ethics: development, testing and validation of a questionnaire. *BMC Med Educ*. 2021;21(1):109. doi: [10.1186/s12909-021-02541-x](https://doi.org/10.1186/s12909-021-02541-x)
8. Yazdani R, Zahra Mohebbi S, Mortazavi M, Madankan D. Evaluation of Clinical Competency and the Influential Factors in Dentistry Students Using the Self- Assessment Method. *J Mashhad Dent Sch*. 2019; 42:348-55. [in Persian] doi: [10.22038/jmds.2018.11993](https://doi.org/10.22038/jmds.2018.11993)
9. Alcota M, Ruiz De Gauna P, González FE. Professionalism in dental education. *Rev Fac Odontol Univ Antioq*. 2016; 28:158-178.
10. Elyassi Gorgi N, Bagheri Nesami M, Nahvi A. Attitudes toward professional ethics in dentistry students of faculty of dentistry of Sari. *J Res Dent Sci*. 2021; 18:136-142. [in Persian] doi:[10.52547/jrds.18.2.136](https://doi.org/10.52547/jrds.18.2.136)
11. Mosavi R, Foroughipour F, Kazemipoor M, Keshmiri F. Moral competence of dental students: an explanatory mixed-methods study. *BMC Med Educ*. 2025; 25:118. doi: [10.1186/s12909-025-06636-7](https://doi.org/10.1186/s12909-025-06636-7)
12. Al-Subaihi SA, Al-Jifree HM, Abuznadah WT, Agou SH. Evaluation of moral reasoning skills among dental students in the Makkah Region, Saudi Arabia. *J Pharm Bioallied Sci*. 2023; 15: S396-402. doi: [10.4103/jpbs.jpbs\\_487\\_22](https://doi.org/10.4103/jpbs.jpbs_487_22)
13. Al-Mutlaq R, Al-Feraih B, Al-Aidroos H, Al-Neema H, Al-Asmari R, AlBalawi R, Al-Saffan A. Knowledge of dental students and dentists towards dental ethics in Riyadh city: a cross-sectional study. *J Healthcare Sci*. 2021;1:35-44. doi:[10.52533/JOHS.2021.1105](https://doi.org/10.52533/JOHS.2021.1105)
14. Elsheikh NM, Osman IM, Husain NE, Abdalrahman SM, Nour HE, Khalil AA, et al. Final year dental students' perception and practice of professionalism and ethical attitude in ten Sudanese dental schools: A cross-sectional survey. *J Family Med Prim Care*. 2020; 9:87-92. doi: [10.4103/jfmpc.jfmpc\\_499\\_19](https://doi.org/10.4103/jfmpc.jfmpc_499_19)
15. Kaur N, Nagpal A, Sharma V, Gupta R, Bhalla M, Jaiswal S. Knowledge Regarding Dentists (Code of Ethics) Regulation Among Dental Students in Mathura: A Cross-sectional Study. *J Adv Clin Res Insights* 2021;8(2):30-34. doi:[10.15713/ins.jcri.325](https://doi.org/10.15713/ins.jcri.325)
16. Chambers DW. Developing a self- Scoring Comprehensive Instrument to Measure Rest's Four-Component Model of Moral Behavior: The Moral Skills Inventory. *J Dent Educ*. 2011; 75:23-35.
17. Kazemipoor M, Sadat Hoseini SA, Hasani Satehi F. Investigating the level of ethical skills among general dentists in Yazd. *J Mashhad Dent Sch*. 2023; 47:323-36. [in Persian] doi: [10.22038/jmds.2023.67883.2213](https://doi.org/10.22038/jmds.2023.67883.2213)
18. Patrick AC. A review of teaching ethics in the dental curriculum: challenges and future developments. *Eur J Dent Educ*. 2017; 21: e114-8. doi: [10.1111/eje.12230](https://doi.org/10.1111/eje.12230)
19. National Democratic Institute (NDI). Sample size calculation guide. Washington, DC: NDI; 2010. Available from: [https://www.ndi.org/sites/default/files/sample\\_size\\_calculation.pdf](https://www.ndi.org/sites/default/files/sample_size_calculation.pdf).
20. Khosravi A. Determine level of moral skills among first, third and last year graduate dental students in Tehran University of Medical Science in 2013 [Thesis]: Tehran University of Medical Science); 2014. [In Persian]
21. Afshar L, Rezvani G, Hosseinzadeh M, Samavatiyan Z. Evaluation of Moral Skills of Undergraduate Dental Students at Shahed University Using a Questionnaire. *Bioethics J*. 2017; 7:47-54. [In Persian]
22. Yazdani R, Kharazifard MJ, Morafegh N. Moral skills of Iranian general dentists. *J contemp Med Sci*. 2018; 4:97-101.

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23. Vardian-Tehrani S, Bazmi S. Investigating Ethical Skills in Dentists and Dental Students: A Comparative Study.. *Int J Med Toxicol Forensic Med.* 2020; 10: 27149. doi: [10.32598/ijmtfm.v10i3.27149](https://doi.org/10.32598/ijmtfm.v10i3.27149)
24. Bandehagh A, Khami MR, Farshad F, Hessari H. Community-based dental education in Iranian dental schools. *BMC Oral Health.* 2024; 24(1):526. doi: [10.1186/s12903-024-04290-x](https://doi.org/10.1186/s12903-024-04290-x)
25. Salmani A, Keshavarz H, Akbari M, Kharrazifard MJ, Varmazyari S, Khami MR. Evaluation of national dental curriculum in Iran using senior dental students' feedback. *BMC Oral Health.* 2023; 23(1):45. doi: [10.1186/s12903-023-02757-x](https://doi.org/10.1186/s12903-023-02757-x)
26. Karamzadeh A, Mosalanejad L, Bazrafkan L. Effectiveness of ethics case based on blended learning approaches on medical students' learning: A quasi-experimental study. *J Educ Health Promot.* 2021; 10:331. doi: [10.4103/jehp.jehp\\_59\\_21](https://doi.org/10.4103/jehp.jehp_59_21)
27. You D, Bebeau MJ. Gender difference in ethical abilities of dental students. *J Dent Educ.* 2012; 76:1137-49.
28. Razavi M et al. Evaluation of dentists' attitudes towards principles of professional ethics. *Int Dent J.* 2023; 73:580-6. doi: [10.1016/j.identj.2023.02.001](https://doi.org/10.1016/j.identj.2023.02.001)
29. Al-Zain SA, Al-Sadhan SA, Ahmedani MS. Perception of BDS students and fresh graduates about significance of professional ethics in dentistry. *J Pak Med Assoc.* 2014; 64:118-123.
30. Razeghi S, Yazdani R, Raei A. Evaluation of emotional intelligence and ethical skills' association in third and sixth year dental students of Tehran University of Medical Sciences. *Iran J Med Ethics Hist Med.* 2018; 11:1-3. [In Persian]

## Appendix I

### Chambers' Moral Skills Inventory

#### Moral sensitivity

Question 1. Generally

- A. -I tend to see almost every aspect of dentistry as involving an ethical dimension.
- B. -I am pretty sensitive to ethical matters.
- C. -When ethical issues are clear, I am prepared to do my part.

Question 2. Technical quality of dental procedures is

- A. -An ethical issue in every single case.
- B. -An ethical issue when the average level of skill is close enough to the minimal standard that it might cause a problem.
- C. -Clearly an ethical issue if below standard.

Question 3. One of your practice partners teaches part-time at a dental school and wants to participate in a multisite research project. There is a handsome "finder's fee." You would consider enrolling some of your patients in the study if

- A. -The university and its ethics review board have approved the study.
- B. -You can present the study to patients in a way they can agree to.
- C. -Your review of available information shows that the product is potentially very helpful in practice.

Question 4. Access to care is

- A. -Clearly an ethical issue.
- B. -A complex issue with some ethical components.
- C. -Not really an ethical issue.

#### Moral reasoning

Question 5. I tend to decide problematic situations that arise in dentistry

- A. -Based on what gives me the best outcome in each case.
- B. -With a pretty careful eye to what others are doing.
- C. -On principle.

Question 6. A colleague calls requesting the chart of a patient on whom you have completed a fair bit of work but have yet to receive about \$3000 in payment. You consider informing the patient that you cannot release a copy of the chart until you receive at least some of the payment owed. Eventually you decide against this approach because

- A. -It might be illegal.
- B. -It casts a shadow of "commercial interest" on the entire profession.
- C. -It stands in the way of the patient receiving oral health care.

Question 7. Restricting procedures performed to those you like and can do well is perhaps unethical if

- A. -Market segmentation draws the attention of the Federal Trade Commission.
- B. -That is not the custom in the community where you practice.
- C. -All patients count on you to provide comprehensive care.

Question 8. On a state or national policy level, the most appropriate approach to Medicaid is as

- A. -An economic matter, especially considering "no show" rates.
- B. -A political issue involving understanding between the ADA and government groups.
- C. -A matter of distributive justice (people getting their fair share).

#### Moral integrity

Question 9. I place high value on

- A. Projecting my (ethical) character into what I do on all occasions.
- B. -Learning from each ethical situation and taking a broad perspective.
- C. -Making certain I am within my rights.

Question 10. Because dentistry necessarily involves conflicting circumstances and multiple goals, the best policy is usually to

- A. -Be guided by a single standard of integrity in all situations.
- B. -Match each action to the particular situation.
- C. -Respond to others' expectations of you.

Question 11. I admire dentists who

- A. -Place principle above success always.
- B. -Blend principle and success.
- C. -Selectively succeed as long as this does not compromise principle.

Question 12. The reason I value my professional standards is that they

- A. -Anchor my identity and focus my action.
- B. -Ensure my standing in the professional community.
- C. -Create realistic expectations among colleagues and patients.

### **Moral courage**

Question 13. When I see something that does not look fair,

- A. -I am reluctant to get involved because I know I should not stick my nose in other people's business.
- B. -I may speak up if the case is obvious and straight forward.
- C. -I tend to take the initiative to find out what is going on and to try to set things straight.

Question 14. Two separate patients have come to you with questionable work performed by a colleague in your community. You do not disparage your colleague to your patients but you would be willing to talk with your colleague

- A. -If you could be certain there are no extenuating circumstances.
- B. -If a few more similar patients appear.
- C. -Right now.

Question 15. You and a good friend have been talking for years about taking Medicaid patients. You are willing to do so

- A. -When the numbers seem good enough to sustain the viability of this change.
- B. -If your friend does so as well.
- C. -Because you are convinced that the service is needed in your community.

Question 16. Debating anti-fluoridation is

- A. -A waste of time, generally.
- B. -Appropriate for those who have such skills.
- C. -A professional responsibility.