Investigating the moral intelligence in medical students of Hormozgan University in 2016

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Abstract

**Background and aim:** Today, it seems that one of the important duties of universities is to pay attention to moral values as well as students’ individual, emotional, and personal growth. Therefore, the purpose of this study was to investigate the moral intelligence of medical students of Hormozgan University of Medical Sciences in 2016.

**Method:** This is a cross-sectional descriptive study which was conducted on undergraduate students of Hormozgan University of Medical Sciences in 2016. The study population of this study were all 250 students of Hormozgan University of Medical Sciences from whom 122 students were entered into the study using convenience sampling method. The data gathering tool was a two-part questionnaire, the first part included demographic characteristics of the subjects, and the second part contained 40-item questionnaire of Lennick and Kiel's moral intelligence scale which had four dimensions (integrity, accountability, compassion and forgiveness) and 10 indicators. Data were analyzed using descriptive statistics, independent sample t-test, and one way ANOVA using IBM SPSS 19 statistical software. P values less than 0.05 were considered statistically significant.

**Results:** 154 questionnaires were distributed, of which 147 were completed and returned (95.45%). Fifteen students were (10.2%) 18 years old, 38 (25.9%) were 19, 41 (27.9%) were 20, 38 (25.9%) were 21, 8 (7.4%) were 22, and the rest were over 23 years old, with an average age of 20.29 years with a standard deviation of 2.37 years. There was no significant difference between the level of income and the level of education of parents with any of the indicators of moral intelligence and its final score. There were significant differences between different age

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groups regarding accountability (P = 0.02) and forgiveness (P = 0.04). However, no difference was found between indicators of integrity (P =0.3), compassion (P = 0.2) and the final score of the moral intelligence. There was also no significant difference between the sex of students and their moral intelligence indicators and their final score (P > 0.05), but there was a significant relationship between the place of residence and the forgiveness index (P = 0.01).

**Conclusion:** In general, students at Hormozgan University of Medical Sciences had a reasonably acceptable moral intelligence. However, due to the development of this characteristic, it is necessary to provide a supportive environment to encourage students towards the moral values with the help and cooperation of faculty members and professors.

**Keywords:** moral intelligence, students, university

1. **Introduction**

1.1 **Background**

Today ethics is a common challenge among students (1). On the other hand, identification of correct and false ethics is one of the concerns of human societies and it has always been a part of the scientific and philosophical issues studied by researchers (2). On the other hand, the entrance of students into higher education institutions throughout the country is increasing. Therefore, it seems that one of the important tasks of the universities is to pay attention to moral values as well as students' individual, emotional, and personal growth (3). In other words, although the teaching of scientific skills and issues are the main responsibilities of universities, promotion of social and ethical values should also regarded as important in higher education planning (4).

Medical science is a mixture of science, art, and experience, which is committed to providing, maintaining, and promoting the health of the community. Given the task a physician has in diagnosing, treating, and preventing illnesses, it seems that this profession has special values compared to other occupations and professions. Responsibility, compassion, devotion, interest, skillfulness, forgiveness, and continuous study are among the attributes and characteristics of an ideal physician (5). Ethics is one of the main factors for successful performance in all stages of education and work. Failure to pay attention to ethics, especially in the medical profession, will lead to great
complications for both the physician and the patient (6). In fact, it seems that the development of moral intelligence in medical students is of great importance (1).

1.2 Statement of the problem

Moral intelligence, a new concept in science, means the use of ethical principles accepted by the people of the world in the activities and goals of the individual (8). Moral intelligence is commonly found in different cultures, in fact, it is the individual's deep beliefs and values, in a way that the thoughts and activities of the individual are influenced by moral intelligence and do not depend on gender, race, nationality, and religion. In some ways, morality is a priority, and individuals have an inner desire for action with responsibility, integrity and generosity (9). Borba defines moral intelligence as the capacity and ability to distinguish right from wrong, which means having strong moral beliefs, acting on them, and behaving in the right way (1). According to Lennick and Kiel, moral intelligence is the ability of an individual to identify the right from wrong. They define four dimensions for it:

1- Integrity: That is, doing things that are in accordance with the principles, values, and beliefs.


3- Compassion: Paying attention to and sympathy with others.

4- Forgiveness: The ability to ignore the mistakes of others (1).

This kind of intelligence, in addition to providing a robust and defensible framework for human activity, has many applications in the real world and directs all other types of human intelligence towards performing valuable works (10). In a similar study conducted by Rafati and his colleagues in Tehran in 2013, the moral intelligence indicators among medical students were lower than the average test score. Also, the results showed that
there is a positive and significant relationship between age and educational level with moral intelligence (1). Arasteh et al. investigated the status of students' moral intelligence at Tehran state universities. The findings of this study showed that students had acceptable moral intelligence, but they needed a supportive environment to grow it (2).

1.3 Objectives
Therefore, the study of students' moral intelligence is a subject of considerable importance (1). For these reasons, the purpose of this study is to investigate the extent of moral intelligence in medical students.

2. Method

2.1 Study design and setting
This is a cross-sectional descriptive study which was conducted on undergraduate students of Hormozgan University of Medical Sciences in 2016 in order to assess their moral intelligence.

2.2 Sampling size
The study population of this study were all 250 students of Hormozgan University of Medical Sciences from whom 122 students were entered into the study using convenience sampling method and the following formula: ( $\alpha = 0.05, Z_{\alpha/2}=1.96$, $d=0.6$, $\sigma = 3.4$)

$$n = \left( \frac{Z_{\alpha/2}}{d} \right)^2 \sigma^2$$

2.3 Measurement tool
The data gathering tool was a two-part questionnaire, the first part included demographic characteristics of the subjects, and the second part contained 40-item questionnaire of
Lennick and Kiel's moral intelligence scale which had four dimensions (integrity, accountability, compassion and forgiveness) and 10 indicators (action based on the principles of values and beliefs, truthfulness and insistence on the right, endurance, devotion, responsibility for personal decisions, confessions of mistakes and failures, acceptance of responsibility for serving others, being actively interested in others, ability to forgive one's own mistakes, ability to forgive mistakes of others). Each of these 10 indicators has 4 questions from the questionnaire. Respondents answered the 5 scale Likert questionnaire in which 1 means never and 5 means always. Thus, each respondent earned a score between 5 and 20 for each indicator. Given that the questions have 10 indexes, the total score was between 40 and 200, which was then divided by 2 and final points were between 20 and 100. Scores between 90-100, 80-89, 70-79 were considered as excellent, very good, and good respectively and those below 69 were considered weak. This method was suggested by the designers. The validity of this test has been reported 0.94 by Lennick and Kiel (2005). Bahrami (1391) reported the reliability of 0.894 for the questionnaire, and its alpha coefficient was announced 0.838 by Eskandari et al. The questionnaires which were over the sample size, were distributed among the students with the necessary explanations for the correct completion.

2.4 Ethical issues
In this study, ethical considerations were observed, information was only obtained from the students who wished to cooperate, and it was kept completely confidential.

2.5 Study statistics
Data were analyzed by descriptive statistics, independent sample t-test, and one-way ANOVA using IBM SPSS 19 statistical software. P values less than 0.05 were considered statistically significant.
3. Results

3.1 Demographics

Total number of 154 questionnaires were distributed, of which 147 were completed and returned (95.45%). According to Table 1, 15 were (10.2%) 18 years old, 38 (25.9%) were 19, 41 (27.9%) were 20, 38 (25.9%) were 21, 8 (7.4%) were 22, and the rest were over 23 years old, with an average age of 20.29 years with a standard deviation of 2.37 years. The minimum age was 18 years and the maximum age was 37 years. Most people were 20 years old. 25% of people aged less than 19 years old and 25% older than 21 years.

Table 1. The frequency of different age groups.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 years</td>
<td>15</td>
<td>9.7</td>
<td>10.2</td>
</tr>
<tr>
<td>19 years</td>
<td>38</td>
<td>24.7</td>
<td>25.9</td>
</tr>
<tr>
<td>20 years</td>
<td>41</td>
<td>26.6</td>
<td>27.9</td>
</tr>
<tr>
<td>21 years</td>
<td>38</td>
<td>24.7</td>
<td>25.9</td>
</tr>
<tr>
<td>22 years</td>
<td>8</td>
<td>5.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Over 23</td>
<td>7</td>
<td>4.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
<td>95.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Lost</td>
<td>7</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>154</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Among the students, 78 people (53.8%) had family income less than 3 million, 52 (35.9%) had between 3 to 6 million, and the rest had more than 6 million. Seventy seven people (51%) lived in the dormitory and the rest resided outside the dormitory. Also, 81 (52.9%) were native and the rest were non-native.
Twenty seven (17.8%) had fathers with a degree below diploma, 43 (28.3%) with diploma degree, 17 (11.2%) with associate degree, 40 (26.3%) with Bachelor degree, 14 (9.2%) with Master degree, and 11 (7.2%) had Ph.D. and higher.

Among students’ mothers, 49 (32%) had a degree below diploma, 43 (28.1%) had diploma, 14 (9.2%) had associate degree, 29 (19%) had Bachelor degree, 12 (7.8%) had Master degree, and 6 (3.9%) had Ph.D. and higher.

### 3.2 Main results

According to the results, 41 (31.3%) of the subjects were weak regarding the moral intelligence, 65 (49.6%) were good, 24 (15.6%) were very good, and one person (0.8%) was excellent.

Table 2 shows the level of moral intelligence, integrity, accountability, forgiveness, and compassion among medical students of Hormozgan University of Medical Sciences in 2016.

Table 2. Levels of moral intelligence among the participants.

<table>
<thead>
<tr>
<th></th>
<th>Range of scores</th>
<th>Frequency</th>
<th>mean</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrity</td>
<td>4-20</td>
<td>154</td>
<td>14.80</td>
<td>1.62</td>
<td>10.50</td>
<td>19.00</td>
</tr>
<tr>
<td>Accountability</td>
<td>4-20</td>
<td>154</td>
<td>14.66</td>
<td>1.67</td>
<td>9.00</td>
<td>18.00</td>
</tr>
<tr>
<td>Forgiveness</td>
<td>4-20</td>
<td>154</td>
<td>14.90</td>
<td>1.86</td>
<td>10.00</td>
<td>19.00</td>
</tr>
<tr>
<td>Compassion</td>
<td>4-20</td>
<td>154</td>
<td>14.40</td>
<td>2.68</td>
<td>7.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

By dividing each score by the number of questions in that index, the range of variations of the score can be equalize over all the characteristics. For example, the integrity index was made up of 4 questions, so the final score was divided by 4. Before the division of the range, the changes in the integrity score were between 16 and 80, which changed into 4-20 by dividing the scores by 4. On the other indices, the same method was used, thus
the accountability index was divided by 3, the index of forgiveness was divided by 2, and the compassion index remained unchanged. By doing so, the scores of four indices could be compared with each other.

According to the results, compassion had the lowest score (rank 4), accountability was in the second place (rank 3), the integrity was in the 3rd place (rank 2), and the forgiveness had the 4th place (rank 1) with the highest score among the students.

According to one-way ANOVA, there was not a significant difference between the income level and the level of education of parents with any of the moral intelligence indicators and its final score. Also, there was a significant difference between age groups regarding accountability and forgiveness indices, but not between indices of integrity, compassion and final score of moral intelligence (Table 3).

Table 3. The results of One way ANOVA comparing the moral intelligence levels among age groups

<table>
<thead>
<tr>
<th>Age</th>
<th>18 years</th>
<th>19 years</th>
<th>20 years</th>
<th>21 years</th>
<th>22 years</th>
<th>Over years</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
<td>Mean</td>
<td>Standard deviation</td>
<td>Mean</td>
<td>Standard deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>Moral Intelligence</td>
<td>75.73</td>
<td>5.98</td>
<td>74.23</td>
<td>7.85</td>
<td>75.17</td>
<td>6.86</td>
<td>72.50</td>
</tr>
<tr>
<td>Integrity</td>
<td>59.54</td>
<td>6.20</td>
<td>60.09</td>
<td>6.42</td>
<td>59.89</td>
<td>6.17</td>
<td>58.27</td>
</tr>
<tr>
<td>Accountability</td>
<td>45.38</td>
<td>4.31</td>
<td>43.62</td>
<td>5.28</td>
<td>45.41</td>
<td>4.94</td>
<td>43.43</td>
</tr>
</tbody>
</table>

*P < 0.05
According to the independent t test, there was no significant difference between the two sexes regarding the indices of moral intelligence and its final score, but there was a significant relationship between the place of residence and the forgiveness index (Table 4). Also, there was a significant relationship between the indigeneity score and the forgiveness score (Table 5).

Table 4. Relationship between the moral intelligence and the place of residence

<table>
<thead>
<tr>
<th>Place of residence</th>
<th>Dormitory</th>
<th>Non-dormitory</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>Moral Intelligence</td>
<td>74.13</td>
<td>7.86</td>
<td>72.99</td>
</tr>
<tr>
<td>Integrity</td>
<td>59.74</td>
<td>6.56</td>
<td>58.60</td>
</tr>
<tr>
<td>Accountability</td>
<td>44.60</td>
<td>5.01</td>
<td>43.47</td>
</tr>
<tr>
<td>Forgiveness</td>
<td>30.51</td>
<td>3.73</td>
<td>29.07</td>
</tr>
<tr>
<td>Compassion</td>
<td>14.48</td>
<td>2.74</td>
<td>14.34</td>
</tr>
</tbody>
</table>

Table 5. The relationship between the moral intelligence and the indigeneity

<table>
<thead>
<tr>
<th>indigenous</th>
<th>Yes</th>
<th>No</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
<td>Mean</td>
</tr>
<tr>
<td>Moral Intelligence</td>
<td>73.99</td>
<td>7.49</td>
<td>73.18</td>
</tr>
</tbody>
</table>
4. Discussion

The purpose of this study was to investigate the level of ethical intelligence in four dimensions: integrity, accountability, forgiveness, and compassion among medical students of Hormozgan University in 2016. Also, investigating the relationship between ethical intelligence and some of the demographic characteristics of students was another goal of this study. As the results of this research show, students in the index of compassion had the lowest score (rank 4), then in terms of accountability and integrity ranked 2nd and 3rd respectively, and in the dimension of forgiveness, they had the highest score (rank 1). According to the results, moral intelligence score and its dimensions were more than average in Hormozgan University medical students. This is consistent with the results of a study by Arasteh et al, which examined the status of moral intelligence of students in public universities in Tehran (9), but contrary to the results of Rafati et al. (2). Given that the integrity is related to the truth indices, standing-up for rights, devotion, and practice based on principles and values, students have the ability to tell the truth in difficult situations. Arasteh regards self-consciousness and goodwill as an important factor in telling the truth (9). Therefore, students in this study have sufficient self-knowledge and goodwill for telling the truth. Students also showed that they adhere to moral principles in all circumstances and endure justice and truth, adhere to their covenants, and act in accordance with principles, values and beliefs. This indicates the coordination of students' decisions and performances with their values and beliefs (2).
Accountability is another dimension of moral intelligence that is categorized as accountability for serving people, accountability for personal decisions, and confessions of mistakes and failures. Therefore, students showed that serving others is a sign of their belief in ethics, their enjoyment of moral intelligence, and the fact that they consider themselves responsible for improving the lives of others (9). In terms of accountability for personal decisions, students believe they are responsible for all of their actions and both of anticipated and unpredictable consequences of them, and if any mistakes ever are made, they will ready to accept full responsibility for it. The admission and acceptance of one's mistakes and failures not only is not a sign of weakness, but also s sign of strength (9).

Forgiveness is the third dimension of moral intelligence that is associated with the ability to forgive one's own mistakes and others'. Forgiveness stops the inner conflict of the person and is the best way to achieve a health mental state (8). Forgiveness of mistakes does not mean justifying unacceptable behaviors, but it makes the student look for opportunities to compensate for mistakes and avoid negative thinking (2). Concerning the forgiveness of others' mistakes, the findings that amnesty and forgiveness are the principles of communication with people and patients, is consistent with Rafati et al. study (2).

The fourth and last dimension of moral intelligence is compassion, whose indicator is being actively interested in others. In this regard, according to the findings, it seems that students are keen on supporting and caring others. Sometimes this kind of interest in others means that the goals of others have a higher priority over one's own personal goals (9).

Among other objectives of this study, was investigating the relationship between the level of moral intelligence and its dimensions with demographic characteristics of students,
including age, sex, family income, place of residence and education level of parents. According to the results, there was no relationship between the component of moral intelligence and age. This finding is contradictory with previous findings that indicate the increased moral intelligence with age (2, 8, 9), but there was a significant relationship between responsibility and forgiveness with age. Also, there was no significant relationship between the level of moral intelligence and its dimensions with gender. This is consistent with the findings of the Jahanian and colleagues about the uniformity of the moral intelligence among female and male students (8). There is no relationship between family income level and parents' education level with moral intelligence and its dimensions, however there is a significant relationship between the place of residence and the forgiveness dimension.

5. Conclusion
Overall, the results of this study showed that medical students of Hormozgan University of Medical Sciences had good moral intelligence and significant moral merits. However, due to the development of this characteristic, it is necessary to provide a supportive environment to encourage students towards the moral values with the help and cooperation of faculty members and professors. Regarding the importance of observing ethical principles in this profession and its increasing importance over time, it is essential to promote this category in line with clinical education. Among the limitations of this study were the lack of library resources relating to moral intelligence and the reluctance of the medical students to collaborate at higher levels, including physiopathology students, stagers, and interns.
Acknowledgment

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Conflict of interest

There is no conflict of interests to be declared.

References
