



Original Research

Factors Affecting the Level of Reflective Thinking and Clinical Decision-Making Skills in Medical Faculty Students

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Abstract

Objectives: The aim of this study is to evaluate the reflection skills of students at the Faculty of Medicine and the factors influencing these skills, as well as to measure the impact of students' reflection skills on their clinical decision-making.

Methods: This study is an educational research project conducted on fifth-year Ear Nose Throat (ENT) interns at Vakif University's Faculty of Medicine. The "Reflective Thinking Level Determination Scale" and the "Clinical Decision-Making Scale," which are valid and reliable, were used to assess the reflection skills and clinical decision-making abilities of the 125 students participating in the study.

Results: In our study, the mean score of the sub-dimensions of the Groningen Reflection Skills Scale was 77.04±5.14 for the fifth-year student population surveyed. Scores from the "Self-Reflection" and "Reflective Communication" sub-dimensions of the Groningen Reflection Skills Scale were compared based on gender, participation in summer internships, receipt of scholarships, membership in social sciences clubs, place of residence, school attended, diary-keeping habits, study styles, and cities of residence. Although there were some differences between the groups, these differences were not statistically significant. The total scores of the students on the Clinical Decision-Making Scale sub-dimensions ranged from 98 to 169, with a mean score of 146.18±10.97. A statistically positive and moderate correlation was found between the total scores of the participants on the Groningen Reflection Skills Scale and the total scores they obtained on the Clinical Decision-Making Scale ($r=0.403$; $p=0.001$).

Conclusion: Consequently, an increase in the reflection skills of participants is associated with higher clinical decision-making scores. Reflection is the primary means of transitioning students from novices to experts, enhancing both comprehensive learning and learning experiences. Therefore, every medical school should develop a training program for student reflection, along with a feedback and assessment system integrated into the curriculum.

Keywords: Clinical decision making, medical education, reflection, reflective thinking

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Reflection is a metacognitive process considered crucial in medical education.^[1] Educators argue that the emergence of reflective practice represents a shift recog-

nizing the necessity for students to engage in professional thinking and behavior as an integral aspect of their learning journey, bridging the gap between theory and practice

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from the outset. While it is asserted that the technique of reflective thinking can be applied across all educational fields, its utilization in clinical education, particularly within the Faculty of Medicine, enables students to learn from their experiences, gain self-awareness about their actions, assess their decisions, and take responsibility for their own learning. Indeed, reflective capacity is widely regarded as an indispensable attribute of professional competence. Moreover, the application of reflection in clinical education is believed to contribute significantly to the development of students' critical thinking, problem-solving abilities, communication skills, and management competencies.^[2]

In the context of the rapidly evolving information age, marked by advancements in science and technology, individuals are encountering increasingly complex challenges. Reflective thinking is seen as one of the methods that empowers individuals to analyze the issues they encounter and formulate solutions.^[3] Consequently, reflective thinking positively influences clinical decision-making skills by enabling individuals to engage in creative and critical thinking when problem-solving. In medical literature, reflection has emerged as a means to assist practitioners in comprehending their actions and making informed clinical decisions. As a mechanism for promoting excellence in clinical practice, reflection empowers healthcare professionals to analyze and apply their existing knowledge to provide optimal care for their patients.^[4]

Clinical decision-making entails the integration and synthesis of information derived from a clinical case, incorporating the physician's or student's knowledge and experience, and applying it to diagnose the patient's condition and manage their care. Clinical competence is the fundamental competency expected of a physician upon completing their medical education, and a key component of clinical competence is the ability to make informed clinical decisions. As efforts to enhance medical education persist, studies focusing on the acquisition, monitoring, and assessment of clinical reasoning skills are gaining momentum and significance.^[5]

In the scope of this study, our objective is to assess the reflection skills of students within the Medical Faculty, examine the factors influencing these skills, and evaluate the impact of these reflection skills on clinical decision-making. We anticipate that the data we gather will contribute to future research in this field and heighten awareness about the importance of reflective practices in medical education.

Methods

This study constitutes an application of educational research conducted with students undertaking their 5th-year Ear Nose

Throat (ENT) internship at the Faculty of Medicine of Vakif University. The selection of 5th-year students is predicated on their exposure to clinical practice areas. Ethical clearance for this research was obtained from the University Non-Interventional Research Ethics Committee of Bezmialem Vakif University (Approval No: 05.12.2019-8284). Following a comprehensive explanation of the study's objectives, voluntary informed consent was obtained from each participating student. The study adhered to the principles of the Declaration of Helsinki (as revised in 2013).

The assessment of reflection skills and clinical decision-making abilities took place between 2020-2021 and 2021-2022, primarily through an online platform (Google Mon-key) due to the COVID-19 pandemic. Printed forms of the assessment scales were distributed to students on the first day of their internship during the first semester of the 2019-2020 academic year. The assessment scales employed in this study were the "Reflective Thinking Level Determination Scale" and the "Clinical Decision-Making Scale."

A Personal Information Form was administered, which encompassed thirteen questions pertaining to students' gender, Grade Point Average (GPA), fourth-year scores, participation in summer internships, receipt of scholarships, membership in social sciences clubs, place of residence, alma mater, diary-keeping habits, study styles, GPA (again), and city of origin.

Groningen Scale of Reflection Skill (GRAS)

The Groningen Scale of Reflection Skill-Türkiye (GRAS-TR) was employed in this study, adapted by Şenol et al. from the original Groningen Reflecting Ability Scale developed by Aukes et al.^[6-7] The scale was specifically tailored for the Turkish sample to facilitate the collection of quantitative data regarding individual levels of reflective ability. GRAS-TR comprises 19 items, with each item rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale exhibits a two-dimensional structure, encompassing "self-reflection" (13 items) and "reflective communication" (6 items). Reverse scoring was applied to items 3, 4, 12, and 17. Scores on the scale range from 19 to 95. "Self-reflection" involves the introspective examination of experiences as a prerequisite for shaping one's thoughts, emotions, beliefs, norms, or methods. On the other hand, "reflective communication" relates to the outward expression of self-reflection, encompassing interpersonal interactions.

Clinical Decision-Making Scale

The Clinical Decision-Making Scale, initially developed by Jenkins, was adapted into Turkish by Durmaz-Edeer and Sarıkaya.^[8,9] The Cronbach's alpha reliability coefficient for the original scale was 0.83, while the Turkish version ex-

hibited a reliability coefficient of 0.78. Comprising 40 items and four sub-dimensions, this scale explores "Searching for options and ideas," "Investigating goals and values," "Evaluating results," and "Searching for information and adopting information impartially." Each sub-dimension consists of 10 items. Among the scale's items, 22 (1, 3, 5, 7, 8, 9, 10, 11, 14, 16, 17, 18, 20, 26, 27, 28, 29, 33, 35, 36, 37, 38) are positively worded, while 18 (2, 4, 6, 12, 13, 15, 19, 21, 22, 23, 24, 25, 30, 31, 32, 34, 39, 40) are negatively worded and reverse-scored. Respondents rate each item on a scale of 5 = Always, 4 = Often, 3 = Sometimes, 2 = Rarely, and 1 = Never. Scores on the scale range from 40 to 200, with each sub-dimension yielding scores between 10 and 50. A higher score on the scale indicates a stronger decision-making skill, whereas a lower score signifies a weaker one.

Data Analysis

Data were analyzed using the Number Cruncher Statistical System (NCSS) 2007 Statistical Software package program (Utah, USA). Descriptive statistics such as mean, standard deviation, median, frequency, percentage, minimum, and maximum were utilized to evaluate the data. The normal distribution of quantitative data was assessed using the Shapiro-Wilk test and graphical examinations. For normally distributed quantitative variables, independent samples t-test was employed for comparisons between two groups, whereas the Mann-Whitney U test was utilized for non-normally distributed quantitative variables. One-way analysis of variance was employed for comparisons involving more than two normally distributed quantitative variables, while the Kruskal-Wallis test was used for those with more than two non-normally distributed quantitative variables. Spearman correlation analysis was applied to assess the relationships between quantitative variables. Statistical significance was considered at $p < 0.05$.

Results

The study involved a total of 125 participants, consisting of 39.1% ($n=49$) males and 60.9% ($n=76$) females. Descriptive characteristics of the participants are summarized in Table 1. The distribution of participants' responses to the Groningen Reflection Skills Scale questions is presented in Table 2. The total scores obtained by participants from the sub-dimensions of the Groningen Reflection Skills Scale ranged from 64 to 90, with a mean score of 77.04 ± 5.14 . For the "Self-Reflection" sub-dimension of the Groningen Reflection Skills Scale, scores ranged from 45 to 64, with an average score of 54.66 ± 3.92 . In the "Reflective Communication" sub-dimension, scores ranged from 15 to 30, with an average score of 22.38 ± 2.85 .

Table 1. Distributions of Descriptive Characteristics

| | n (%) |
|--|-----------------|
| Gender | |
| Male | 49 (39.1) |
| Female | 76 (60.9) |
| GPA | |
| Ort \pm SD | 3.24 \pm 0.38 |
| Median (Min-Maks) | 3.2 (2-4.6) |
| Grade 4 scores | |
| Ort \pm SD | 3.39 \pm 0.39 |
| Median (Min-Maks) | 3.4 (24-4.6) |
| Summer Internship | |
| No | 100 (80.0) |
| Yes | 25 (20.0) |
| Scholarship | |
| No | 36 (28.8) |
| Yes | 89 (71.2) |
| Social Sciences club membership | |
| No | 90 (72.0) |
| Yes | 35 (28.0) |
| Residential locations | |
| With family | 71 (56.8) |
| Alone (house) | 31 (24.8) |
| Friends (house) | 15 (12.0) |
| Dormitory | 8 (6.4) |
| Graduated School | |
| Anatolian High School | 73 (58.4) |
| Science High School | 22 (17.6) |
| Private High School | 21 (16.8) |
| State High School | 9 (7.2) |
| Keep a diary | |
| No | 108 (86.4) |
| Yes | 17 (13.6) |
| The most efficient study style | |
| Listening in class | 7 (5.6) |
| Active participation (PBL) | 26 (20.8) |
| With friends | 2 (1.6) |
| Repeating to myself | 74 (59.2) |
| By researching myself from different sources | 16 (12.8) |
| City of origin | |
| Istanbul | 92 (73.6) |
| Out of Istanbul | 33 (26.4) |

The scores of participants in the "Self-Reflection" and "Reflective Communication" sub-categories of the GRAS-TR Scale were analyzed with regard to various factors, including gender, GPA, fourth-year scores, participation in summer internships, receipt of scholarships, membership in social sciences clubs, residential locations, alma mater, diary-keeping habits, study styles, GPA (again), and cities of origin. There was no statistically significant difference found in their scores based on these factors.

Table 2. Distribution of the Responses of the Participants to the Groningen Reflection Skills Scale Questions

| | I never agree | | I do not agree | | I'm not sure | | I agree | | I definitely agree | |
|--|---------------|------|----------------|------|--------------|------|---------|------|--------------------|------|
| | n | % | n | % | n | % | n | % | n | % |
| 1. I want to know why I do what I do | 1 | 0.8 | 0 | 0.0 | 2 | 1.6 | 38 | 30.4 | 84 | 67.2 |
| 2. I am aware of my feelings that affect my behavior | 1 | 0.8 | 4 | 3.2 | 6 | 4.8 | 81 | 64.8 | 33 | 26.4 |
| 3. I don't like having my thoughts discussed by others | 5 | 4.0 | 58 | 46.4 | 36 | 28.8 | 21 | 16.8 | 5 | 4.0 |
| 4. I do not welcome comments about my personal activities | 10 | 8.0 | 59 | 47.2 | 27 | 21.6 | 23 | 18.4 | 6 | 4.8 |
| 5. I take a close look at how I think | 0 | 0.0 | 0 | 0.0 | 12 | 9.6 | 75 | 60.0 | 38 | 30.4 |
| 6. I can evaluate my own behavior from a third-person perspective | 0 | 0.0 | 7 | 5.6 | 29 | 23.2 | 69 | 55.2 | 20 | 16.0 |
| 7. I find it important to know what certain rules and principles are based on | 0 | 0.0 | 0 | 0.0 | 9 | 7.2 | 61 | 48.8 | 55 | 44.0 |
| 8. I understand and sympathize with people of different cultural/religious backgrounds | 0 | 0.0 | 0 | 0.0 | 6 | 4.8 | 43 | 34.4 | 76 | 60.8 |
| 9. I can give an account of the words I said | 0 | 0.0 | 1 | 0.8 | 13 | 10.4 | 67 | 53.6 | 44 | 35.2 |
| 10. I reject ways of thinking that differ from my own | 68 | 54.4 | 35 | 28.0 | 12 | 9.6 | 2 | 1.6 | 8 | 6.4 |
| 11. I can see an experience from different angles | 0 | 0.0 | 1 | 0.8 | 23 | 18.4 | 80 | 64.0 | 21 | 16.8 |
| 12. I take responsibility for the words I say | 1 | 0.8 | 0 | 0.0 | 7 | 5.6 | 72 | 57.6 | 45 | 36.0 |
| 13. I am open to discussion of my ideas | 2 | 1.6 | 5 | 4.0 | 12 | 9.6 | 75 | 60.0 | 31 | 24.8 |
| 14. I am aware of my limits | 1 | 0.8 | 4 | 3.2 | 27 | 21.6 | 67 | 53.6 | 26 | 20.8 |
| 15. Sometimes I find that I have difficulties explaining an ethical stance | 6 | 4.8 | 31 | 24.8 | 38 | 30.4 | 48 | 38.4 | 2 | 1.6 |
| 16. I want to understand myself | 1 | 0.8 | 2 | 1.6 | 7 | 5.6 | 40 | 32.0 | 75 | 60.0 |
| 17. I am aware of the possible effects of information about others on them | 0 | 0.0 | 3 | 2.4 | 15 | 12.0 | 74 | 59.2 | 33 | 26.4 |
| 18. I can empathize with the situation of others | 1 | 0.8 | 0 | 0.0 | 1 | .8 | 72 | 57.6 | 51 | 40.8 |
| 19. I am aware of the emotions that affect my thoughts | 0 | 0.0 | 3 | 2.4 | 8 | 6.4 | 79 | 63.2 | 35 | 28.0 |

The distribution of participants' responses to the Clinical Decision-Making Scale questions is illustrated in Table 3.

The total scores obtained by participants from the Clinical Decision-Making Scale sub-dimensions ranged from 98 to 169, with a mean score of 146.18 ± 10.97 . For the "Exploring Options and Ideas" sub-dimension of the Clinical Decision-Making Scale, scores ranged from 23 to 45, with an average score of 38.35 ± 3.59 . In the "Investigation of Goals and Values" sub-dimension, scores ranged from 23 to 41, with an average score of 34.64 ± 3.03 . For the "Evaluating Results" sub-dimension, scores ranged from 20 to 48, with an average score of 38.42 ± 4.31 . In the sub-dimension "Searching for Knowledge and Adopting New Knowledge Impartially," scores ranged from 27 to 42,

and the average score was determined as 34.78 ± 2.81 . In our study, the Cronbach's Alpha coefficient of the Clinical Decision-Making Scale was 0.763, indicating a high level of reliability.

The relationship between the Groningen Reflection Skill Scale and the Clinical Decision-Making Scale is presented in Table 4.

Discussion

Personal reflection, as a metacognitive process, involves the critical examination and evaluation of one's own thoughts, feelings, and behaviors.^[10] Reflective thinking, on the other hand, entails the ability to assess information critically and consider alternative perspectives. It is influenced by vari-

Table 3. Distribution of Responses to the Questions on the Clinical Decision-Making Scale

| | Never | | Rarely | | Occasionally | | Often | | Always | |
|---|-------|------|--------|------|--------------|------|-------|------|--------|------|
| | n | % | n | % | n | % | n | % | n | % |
| If a clinical decision is vital and there is time, I will do a thorough search for options | 0 | 0.0 | 1 | 0.8 | 9 | 7.2 | 49 | 39.2 | 66 | 52.8 |
| The patient's receiving health care services precedes his/her cultural values and beliefs | 2 | 1.6 | 0 | 0.0 | 12 | 9.6 | 44 | 35.2 | 67 | 53.6 |
| Before making a decision, factors related to the patient's situation determine the number of options I will explore | 0 | 0.0 | 3 | 2.4 | 13 | 10.4 | 75 | 60.0 | 34 | 27.2 |
| Trying to access new information to make a decision does more harm than good | 20 | 16.0 | 62 | 49.6 | 37 | 29.6 | 3 | 2.4 | 3 | 2.4 |
| I use books or scientific/professional publications to research things I don't understand | 0 | 0.0 | 3 | 2.4 | 30 | 24.0 | 61 | 48.8 | 31 | 24.8 |
| A random approach when looking at options works great for me | 19 | 15.2 | 69 | 55.2 | 26 | 20.8 | 9 | 7.2 | 2 | 1.6 |
| Brainstorming is a method I use to come up with ideas for options | 2 | 1.6 | 12 | 9.6 | 30 | 24.0 | 52 | 41.6 | 29 | 23.2 |
| When I need to make a decision, I use different ways to gather as much information as possible | 0 | 0.0 | 3 | 2.4 | 35 | 28.0 | 60 | 48.0 | 27 | 21.6 |
| I help patients exercise their right to make decisions about their own care | 1 | 0.8 | 2 | 1.6 | 17 | 13.6 | 75 | 60.0 | 30 | 24.0 |
| When my values conflict with the patient's values, I am objective enough in making the decision necessary for the situation in question | 1 | 0.8 | 2 | 1.6 | 12 | 9.6 | 71 | 56.8 | 39 | 31.2 |
| I listen to or consider expert advice or opinion, even though it is not an option I would prefer | 1 | 0.8 | 0 | 0.0 | 8 | 6.4 | 74 | 59.2 | 42 | 33.6 |
| Using my current knowledge, I solve the problem or make a decision in a timely manner without consulting anyone | 1 | 0.8 | 21 | 16.8 | 52 | 41.6 | 46 | 36.8 | 5 | 4.0 |
| I never take the time to examine all the possible consequences of a decision I have to make | 48 | 38.4 | 56 | 44.8 | 11 | 8.8 | 8 | 6.4 | 2 | 1.6 |
| I consider the future health and well-being of the individual and family when making a clinical decision about the individual | 1 | 0.8 | 0 | 0.0 | 2 | 1.6 | 51 | 40.8 | 71 | 56.8 |
| I have little time and energy to access information | 8 | 6.4 | 21 | 16.8 | 61 | 48.8 | 27 | 21.6 | 8 | 6.4 |
| I make a list of options in my head/mind before making a decision | 0 | 0.0 | 6 | 4.8 | 17 | 13.6 | 65 | 52.0 | 37 | 29.6 |
| When examining the consequences of options I might choose, I usually think if I do this | 7 | 5.6 | 13 | 10.4 | 11 | 8.8 | 48 | 38.4 | 46 | 36.8 |
| I consider even the farthest consequences before making a decision | 1 | 0.8 | 9 | 7.2 | 30 | 24.0 | 56 | 44.8 | 29 | 23.2 |
| It is important for me to have the same opinion of my co-workers when making decisions | 3 | 2.4 | 7 | 5.6 | 29 | 23.2 | 74 | 59.2 | 12 | 9.6 |
| I include patients in my sources of information when clinical decision making | 2 | 1.6 | 19 | 15.2 | 24 | 19.2 | 59 | 47.2 | 21 | 16.8 |
| When thinking about my possible decisions, I consider what my co-workers have to say | 0 | 0.0 | 3 | 2.4 | 9 | 7.2 | 72 | 57.6 | 41 | 32.8 |
| If the trainer suggests an option in a clinical decision-making situation, I will adopt it rather than explore other options | 7 | 5.6 | 21 | 16.8 | 47 | 37.6 | 34 | 27.2 | 16 | 12.8 |
| If something is really useful, I prefer it regardless of the risks | 7 | 5.6 | 46 | 36.8 | 45 | 36.0 | 20 | 16.0 | 7 | 5.6 |
| I randomly search for new information | 6 | 4.8 | 39 | 31.2 | 53 | 42.4 | 24 | 19.2 | 3 | 2.4 |
| My past experiences have little influence on the decisions I make about the patient | 33 | 26.4 | 60 | 48.0 | 20 | 16.0 | 10 | 8.0 | 2 | 1.6 |
| As I examine the consequences of the options I may choose, I am aware of the positive consequences for my patient | 0 | 0.0 | 1 | 0.8 | 10 | 8.0 | 80 | 64.0 | 34 | 27.2 |
| I prefer options that I have used successfully in similar situations in the past | 0 | 0.0 | 2 | 1.6 | 9 | 7.2 | 88 | 70.4 | 26 | 20.8 |
| I refuse if the risks of my decision cause serious problems | 2 | 1.6 | 4 | 3.2 | 34 | 27.2 | 59 | 47.2 | 26 | 20.8 |

Table 3. Distribution of Responses to the Questions on the Clinical Decision-Making Scale

| | Never | | Rarely | | Occasionally | | Often | | Always | |
|---|-------|------|--------|------|--------------|------|-------|------|--------|------|
| | n | % | n | % | n | % | n | % | n | % |
| When evaluating an important clinical decision, I make a list of positive and negative outcomes | 0 | 0.0 | 13 | 10.4 | 21 | 16.8 | 65 | 52.0 | 26 | 20.8 |
| I do not ask my co-workers to suggest options for my clinical decisions | 49 | 39.2 | 55 | 44.0 | 11 | 8.8 | 7 | 5.6 | 3 | 2.4 |
| My professional values or beliefs are inconsistent with my personal values or beliefs | 60 | 48.0 | 36 | 28.8 | 17 | 13.6 | 10 | 8.0 | 2 | 1.6 |
| My finding of options seems largely by chance | 46 | 36.8 | 51 | 40.8 | 18 | 14.4 | 7 | 5.6 | 3 | 2.4 |
| I keep the course objectives in mind in my day-to-day experiences in a clinical setting | 5 | 4.0 | 17 | 13.6 | 20 | 16.0 | 63 | 50.4 | 20 | 16.0 |
| When I have to make a decision, the risks and benefits of the decision are the last thing I think about | 59 | 47.2 | 50 | 40.0 | 10 | 8.0 | 2 | 1.6 | 4 | 3.2 |
| I consider institutional priorities and standards when clinical decision making | 3 | 2.4 | 31 | 24.8 | 40 | 32.0 | 46 | 36.8 | 5 | 4.0 |
| If the situation requires it, I involve others in the decision-making process | 0 | 0.0 | 3 | 2.4 | 20 | 16.0 | 59 | 47.2 | 43 | 34.4 |
| I consider even the most extreme or impractical ideas when making decisions | 4 | 3.2 | 31 | 24.8 | 41 | 32.8 | 33 | 26.4 | 16 | 12.8 |
| Learning about the patient's goals is always part of my clinical decision-making process | 0 | 0.0 | 5 | 4.0 | 24 | 19.2 | 66 | 52.8 | 30 | 24.0 |
| I only examine the risks and benefits of serious decisions | 17 | 13.6 | 46 | 36.8 | 31 | 24.8 | 28 | 22.4 | 3 | 2.4 |
| For me to make a good decision, the patient's values must be consistent with mine | 42 | 33.6 | 28 | 22.4 | 27 | 21.6 | 24 | 19.2 | 4 | 3.2 |

ous factors, including education, experience, and personality traits. Nevertheless, it is important to note that a single factor does not significantly determine an individual's level of reflective thinking. The development of reflective thinking skills is more closely associated with education, training, and practical experience. Individual differences within individuals tend to outweigh any differences observed between them. Factors such as education, training, experience, and personal characteristics all play pivotal roles in shaping both reflective thinking and clinical decision-making skills.^[11]

The scores obtainable from the GRAS-TR scale, which assesses self-reflection skills, ranging from 19 to 95, align with the findings in our present study. This suggests that the level of reflective capacity in the fifth-year student population to which we administered the questionnaire is sufficiently high. Scores were analyzed based on various factors, including gender, participation in summer internships, receipt of scholarships, membership in social sciences clubs, place of residence, school attended, diary-keeping habits, study styles, and cities of origin. No statistically significant differences were observed. The lack of statistical significance may be attributed to the limited sample size and the cumulative experiences gained in medical education by the fifth year, which may have diminished differences among the students.

The study's discovery that students enter their medical education with a relatively high level of reflection ability suggests that they have a foundational capacity for growth in this aspect. However, it also emphasizes the importance of incorporating structured self-reflection exercises throughout the medical education curriculum. By integrating such exercises, medical education programs have the potential to enhance students' reflective thinking skills and foster a deeper understanding of the intricacies of medical practice. Engaging in reflective practices can assist future healthcare professionals in improving their decision-making abilities, communication skills, and overall patient care.^[12]

Reflection imbues experience with meaning and encourages a profound approach to learning. It prompts individuals to reframe problems, challenge their own assumptions, and view situations from multiple perspectives.^[13] Reflective thinking is perceived as a process that is stimulated by social interaction. However, in this study, we did not observe significant differences in students' reflective skills based on their previous life experiences. Previously, it was regarded as primarily an individual process.^[2] Reflective thinking is considered essential for professional practice and growth, as it enables the integration of observations, past experiences, and judgment in clinical decision-making.^[14]

Table 4. The Relationship between the Groningen Reflection Skill Scale and the Clinical Decision Making Scale

| Clinical Decision Making Scale | Groningen Reflection Skill Scale | | |
|--|----------------------------------|--------------------------|---------|
| | Self Reflection | Reflective Communication | Total |
| Searching for Options and Ideas | | | |
| r | 0.289 | 0.365 | 0.396 |
| p | 0.001** | 0.000** | 0.000** |
| Investigation of Goals and Values | | | |
| r | 0.159 | 0.094 | 0.195 |
| p | 0.076 | 0.298 | 0.029* |
| Evaluation the Results | | | |
| r | 0.305 | 0.236 | 0.351 |
| p | 0.001** | 0.008** | 0.000** |
| Searching for Information and Adopting New Information Impartially | | | |
| r | 0.327 | .0191 | 0.326 |
| p | 0.000** | 0.033* | 0.000** |
| Total | | | |
| r | 0.359 | 0.256 | 0.403 |
| p | 0.000** | 0.004** | 0.000** |

Medical students acquire reflective skills during their medical education, which aids in the development of their abilities to establish and maintain strong rapport with patients. Furthermore, self-reflection facilitates the integration of existing knowledge with new information. For both medical students and physicians, self-reflection serves as the foundation for lifelong learning and the ability to solve complex medical problems throughout their careers. Understanding students' levels of reflection in medical programs is crucial for effectively teaching and promoting self-reflection.^[15]

As medical students progress in their education, they tend to develop a slightly improved understanding of reflection methods. Effective reflection relies heavily on feedback, which is closely intertwined with self-reflection. Proper feedback plays a significant role in helping students enhance their performance and self-mentoring skills, facilitating critical self-assessment. Consequently, it is imperative that faculty members or advisors take responsibility for providing appropriate feedback to cultivate students' self-reflection skills. The role of faculty members is pivotal in fostering reflective thinking abilities. It is evident that to enhance students' reflection skills, an educational strategy is required, involving the provision of feedback and encouragement for deeper reflection.^[16]

Identifying a pathway to encourage medical students to embrace reflection is of utmost importance, especially since many perceive self-reflection as time-consuming. Educational initiatives designed with the purpose of introducing reflective journals or portfolios can help students recognize the significance and necessity of reflection. Ad-

ditionally, providing students with guides and checklists to assess their level of reflection and competence can be beneficial. Although the preferred timing or method for advanced research is not specified, self-reflection education holds a crucial place in medical education curricula.^[17]

In this study, which aimed to investigate the influence of medical faculty students' reflection skills on their clinical decision-making and the correlation between them, it was observed that the clinical decision-making proficiency of the students was at a decent level. When comparing the results to existing literature, it became apparent that the average scores of the students in our study differed from some other studies.^[18,19] The literature indicates that clinical decision-making skills tend to improve as students gain clinical experience with higher grade levels.^[20] The variance in the students' average scores may be attributed to variations in educational systems, curriculum content, and application environments across different countries where these studies were conducted.

Reflective thinking skills can indeed impact clinical decision-making. It involves actively analyzing one's own thoughts, experiences, and actions to gain insight and enhance future decision-making. By promoting reflective thinking, self-awareness, and a deeper comprehension of complex patient cases, reflective thinking can positively influence clinical decision-making in the healthcare field.^[21] In our study, a statistically positive and significant relationship was identified between participants' total scores on the GRAS-TR Scale and their total scores on the Clinical Decision-Making Scale.

Reflective thinking encourages healthcare professionals to be mindful of their own biases, assumptions, and limitations. This heightened self-awareness promotes a more objective and evidence-based approach to clinical decision-making. For instance, research has shown that physicians may have an idea about their legal obligations, but their awareness may not be sufficient.^[22] Reflective thinking involves analyzing past experiences and clinical encounters to assess what went well and what could have been improved. This ongoing self-assessment contributes to the development of clinical decision-making skills over time. Reflective thinking can assist in resolving complex clinical challenges by encouraging clinicians to consider multiple viewpoints and potential solutions. It represents a crucial element of continuous professional development. By actively engaging in professional development, students can enhance their clinical decision-making abilities and deliver improved patient care.^[23,24]

Conclusion

In conclusion, reflection is the primary pathway for transitioning students from novices to experts. It enhances both their understanding and learning experiences. Therefore, every medical school should develop a training program that incorporates student reflection, along with a feedback and assessment system that actively engages students in reflective experiences as part of the curriculum. This approach ensures that future healthcare professionals not only possess the necessary knowledge and skills but also have the ability to continually learn and adapt, ultimately providing the best possible care to their patients.

Disclosures

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