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Unraveling the Current Situation of Leadership Cultivation and Decision Making of Medical Students

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Abstract: This study aimed to explore the impact of improving medical students' leadership and decision-making abilities on medical incident handling efficiency and academic performance. Through statistical analysis and survey design, 370 medical students were studied. The results showed that most students majored in clinical medicine, with a higher proportion of girls. The study found the scores of medical students in leadership and decision-making, and put forward some teaching improvement suggestions, including strengthening student-centered teaching methods, cultivating soft skills, paying attention to gender differences, establishing feedback mechanisms, etc. These findings provide useful implications for medical education and help cultivate medical professionals with comprehensive capabilities.

Keywords: Leadership Ability; Training; Decision-making; Medical Student.

1. Introduction

Regarding the advancement of the medical industry, the education and training of medical students have increasingly garnered societal attention. Against this backdrop, the cultivation of leadership skills in medical students becomes paramount. Leadership goes beyond mere management and decision-making. It critically entails guiding transformation within the medical field and propelling the improvement and optimization of medical services (Puff, 2022).

Medical education, as a pivotal phase in nurturing future medical practitioners, has its teaching methods and content directly influencing the practical capabilities of its graduates. Leadership, as a significant dimension of medical education, determines how doctors navigate complex medical situations, play pivotal roles in teams, establish trust with patients, and lead in medical reforms and innovation. Thus, leadership cultivation for medical students has become a pressing issue in contemporary medical education (Kenevan, 2019).

Although leadership plays a critical role in medical practice, traditional medical education systems still exhibit deficiencies in this area. Most medical courses emphasize imparting specialized knowledge and skills, with training in leadership, teamwork, and communication skills being relatively sparse. This status quo not only hinders the holistic cultivation of medical students but might also pose challenges in their future medical practice (Benin, 2019).

Faced with this challenge, numerous countries globally have begun to explore the seamless integration of leadership training within medical education. For instance, countries such as the United States and Australia have initiated dedicated leadership training programs for medical students, aiming to enhance their leadership talents and collaborative capabilities. The experiences of these countries offer valuable insights, signifying that leadership training is becoming a global trend in medical education (Bedder, 2018).

In light of the above context, the study aims to examine the current state of leadership training for medical students in China, identify existing problems, and, drawing from both domestic and international experiences and practices, suggest strategies tailored to China's unique situation. Through this research, it is hoped to provide valuable insights and directions for the evolution and innovation of medical education in China.

2. Statement of the Problem

This study aims to explore the relationship between medical students' leadership cultivation and clinical decision-making skills. It will propose an enhanced leadership cultivation program committed to explore further into the above cited topic.

Specifically, this study will address the following questions:

1. What is the profile of the participants in terms of:
   1.1 Sex
   1.2 Year level
   1.3 Specialization
2. What is the level of assessment of leadership cultivation among medical students in terms of the following:
   2.1 Foresight
   2.2 Collaborative ability
   2.3 Control ability
   2.4 Decision-making ability
   2.5 Influence
3. Is there a significant difference in the assessment leadership levels of undergraduate medical student when profile is used as test factor?
4. What is the level of clinical decision-making ability of undergraduate medical students in terms of the following:
   4.1. Identification of problem
   4.2. Formulation of objective
   4.3. Application of solution
   4.4. Implementation of decision
   4.5. Feedback evaluation
5. When considering demographic variables, are there significant differences in the factors affecting medical students' clinical decision-making?
6. Is there a significant correlation between medical students' leadership ability and clinical decision-making ability?
7. Based on the current situation of leadership cultivation

among undergraduate medical students, what targeted measures should be formulated to improve their leadership skills?

3. Scope and Delimitation of the Study

The main purpose of this study is to understand the current status of leadership cultivation and clinical decision-making ability of medical students.

The respondents of this study were undergraduate medical students from three universities (China Three Gorges University, Hubei Minzu University, and Hubei Enshi College) in the western region of Hubei Province, China, totaling 370 students.

The leadership competencies of medical students in this study included foresight, collaboration, control, decision-making, and influence. The relationship between undergraduate leadership and clinical decision-making ability was explored based on whether there were differences in respondents' personal circumstances and students leadership levels. The results of the study provide a reference for improving the leadership and clinical decision-making skills of college medical students and reducing the factors that may hinder the cultivation of leadership skills in medical students, with a view to providing some suggestions for improving the ability of undergraduate medical students to work in their future careers.

4. Hypotheses

Ho1: There is no significant difference in the assessment leadership levels of undergraduate medical student when profile is used as test factor?

Ho2: There is no significant difference in the evaluation level of clinical decision-making ability under different profile variables.

Ho3: There is no significant correlation between leadership and clinical decision-making ability among medical students.

5. METHODOLOGY

5.1. Research Design

This study will adopt a descriptive comparative correlational research method. This study focuses on the cultivation of leadership and clinical decision-making ability of medical students in medical colleges of higher education. First, domestic and international research results are referred to as the theoretical background and research foundation of this study. Second, this study adopts the questionnaire survey method to select medical undergraduates from three colleges and universities in the western region of Hubei Province as the research object to investigate the current situation of leadership cultivation of medical students and students' clinical decision-making ability, and to explore the current problems in the leadership cultivation of medical students. The results of the study provide a reference for enhancing the leadership cultivation and decision-making ability of medical students, and enable us to have a deeper understanding of the influencing factors, the current status of cultivation, and the implementation of leadership cultivation of medical students in the western region of Hubei Province.

5.2. Research Participants

In order to comprehensively evaluate the leadership cultivation and clinical decision-making ability of medical undergraduates in the western region of Hubei Province, we selected medical undergraduates from three universities as research subjects.

Table 1. Distribution of Respondents

School	Population of Medical Students	Sample Size
China Three Gorges University	3000	117
Hubei Minzu University	3079	120
Hubei Enshi College	3400	133
Total	9479	370

As shown in table 1, the total number of medical students in the three selected universities is 9479. Based on the Raosoft sample size calculator, the minimum sample size for the said population is 370. The sample size will be stratified resulting to the following sample size per school: China Three Gorges University 117, Hubei Minzu University 120, and Hube Enshi College, 133.

The total population of respondents was 370.

The following criteria were set in choosing the respondents of this study:

(a)He/she is a full-time undergraduate student enrolled in medicine;

(b)He/she has full cognitive capacity for behaviour;

(c)He /she has the willingness to participate in this study.

5.3. Data Gathering Procedure

An adopted questionnaire will be utilized as an instrument for data gathering tool. It will be proposed to be validated by experts in education from Adamson University or experts from China.

All necessary consent forms will be completed prior to conducting the survey at selected colleges and universities in the western region of Hubei Province, China. The selected respondents will be introduced and informed about the study and its purpose. They will be made clear that this study is for academic purposes only and will not jeopardize their safety and privacy. If respondents wish to withdraw from the study midway for personal, social or even religious reasons, they will not be penalized or have points deducted. However, if they decide to complete the study, they will be thanked.

A pre-survey questionnaire will be first distributed and at least thirty (30) participants will be selected for a mock test to check the credibility of the questionnaire. The questionnaire will be adjusted according to the results and subsequently the official questionnaire will be distributed through the internet. Descriptive statistics, independent samples t-test, one-way ANOVA and Pearson's correlation coefficient will be used to organize, analyze and interpret the results of the questionnaire.

6. Results and Analysis

The study's findings are presented in the results and discussion section, focusing on the analysis of the current status of Chinese medical students' leadership and clinical decision-making ability among Chinese medical students. In this part, the data from the questionnaire is analyzed to solve the current research question.

6.1. Profile of the Respondent

Table 2, The results indicate the sex, grade, and major distribution of a medical student population. In terms of sex distribution, female students slightly outnumber male students, accounting for 53.8%, while male students account

for 46.2%. In terms of grade distribution, freshman students accounted for the highest proportion, accounting for 37.8%, followed by sophomore students, accounting for 31.4%. The proportions of juniors and seniors are similar at 11.1% and 11.4% respectively, while supercollege students (those who have studied for more than four years) account for 8.1%. In terms of professional distribution, the vast majority of students focus on clinical medicine, accounting for 65.4%. The distribution of students in other medical-related majors is relatively scattered. Among them, students majoring in integrated traditional Chinese and Western medicine are the least, accounting for only 3.0%. Students majoring in nursing account for 8.4%. Students majoring in medical laboratory accounting account for 1.9%. Students majoring in other medical-related majors account for 1.9%. 21.4%. The data, which reflect the composition of students across majors and grades in medical schools.

Table 2. Profile of the Respondent

Profile	Frequency	Percentage
Sex		
Male	171	46.2%
Female	199	53.8%
Year Level		
Freshman	140	37.8%
Sophomore	116	31.4%
Junior	41	11.1%
Senior	42	11.4%
Super Senior	30	8.1%
Specialization		
Clinical Medicine	242	65.4%
Integrated Traditional Chinese and Western Medicine	11	3.0%
Nursing	31	8.4%
Medical Testing	7	1.9%
Other Medical Related Majors	79	21.4%

6.2. Assessment of Leadership Cultivation

6.2.1. Foresight

Table 3. Assessment of Foresight

Items	Mean	SD	Interpretation
1. I can plan the task according to the urgency.	3.36	0.64	Evident
2.I can accurately determine and effectively guard against potential risks when making decisions.	3.25	0.67	Evident
3. I can quickly and accurately evaluate the benefits of decisions made.	3.29	0.67	Evident
4. I grasp and utilize the best decisions and the timing of their implementation.	3.20	0.71	Evident
Overall	3.28		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 3 shows the assessment of foresight abilities, displaying the average scores and standard deviations for four different aspects. The highest average score was for the ability to plan tasks based on urgency, with a score of 3.36 and a standard deviation of 0.64, indicating this ability was relatively prominent. The lowest average score was for the ability to grasp and utilize the best decision and its timing of implementation, with a score of 3.20 and a standard deviation of 0.71, still showing significant ability but relatively lower. The overall average score was 3.28, indicating that, on the whole, participants' performance in foresight abilities was rated as significant (according to the legend, 2.51-3.50 is significant). This means that the survey subjects generally were able to effectively plan tasks, identify and mitigate potential risks, accurately and swiftly assess the benefits of decisions, and grasp and utilize the best decision and its timing of implementation, although there were variations in performance across different abilities, overall showing good foresight abilities.

Li, Y., & Shao, C. L. (2022) pointed out in their study that, from the perspective of educational background, participants received systematic educational training, especially in decision-making, risk assessment, task planning, and time management. The modern education system emphasizes the cultivation of critical thinking, problem-solving, and decision-making abilities, which directly impacts individuals' foresight abilities in complex situations. Students and professionals, through case studies, simulations, internships, and practical exercises, can train and enhance these abilities in practice, thereby scoring higher in the assessment.

Jia et al. (2021) noted in their research that, from the perspective of psychological qualities, individuals with strong foresight abilities often have higher self-efficacy and stress management capabilities. Self-efficacy refers to an individual's confidence in their ability to accomplish a task or achieve a goal, which can motivate a more positive attitude and approach when facing challenges. At the same time, good stress management abilities enable individuals to remain calm in the face of potential risks and emergencies, making quick judgments and decisions. The combination of these psychological qualities provides a psychological foundation for effective foresight abilities.

In summary, educational background and psychological qualities together influence an individual's foresight abilities. Systematic educational training enhances individuals' knowledge and skills, especially in problem-solving and decision-making; while good psychological qualities, such as high self-efficacy and stress management capabilities, provide psychological support for the effective application of these knowledge and skills. These factors combined lead to participants generally receiving higher scores in the foresight abilities assessment.

6.2.2. Collaborative Ability

Table 4 shows that the average scores for all items are closely concentrated between 3.44 and 3.47, indicating that participants generally demonstrate significant collaborative abilities. The highest average score was 3.47, corresponding to good communication and the ability to reach consensus with collaborators, with a standard deviation of 0.60, indicating this ability was relatively uniform and significant among participants. The lowest average score was 3.44 (the same as shared goals and mutual trust, support, and assistance abilities), with a standard deviation of 0.62, still pointing to a clear performance in collaboration abilities. The overall

average score was 3.45, falling into the "significant" category but close to the lower limit of "very significant" at 3.51. This means that participants have strong collaborative abilities in terms of mutual trust, shared goals, communication, sharing outcomes, and assuming responsibility and errors. These results reflect the emphasis on team cooperation and collaborative spirit in the participants' environments or organizational cultures, and the corresponding skills and attitudes developed by individuals within such cultural contexts. Overall, participants showed good teamwork abilities, which are extremely valuable qualifications for various professional environments and social interaction occasions.

Table 4. Assessment of Collaborative Ability

Items	Mean	SD	Interpretation
1. I have mutual trust, support and assistance with my cooperative members.	3.44	0.62	Evident
2. There are common goals for cooperation between me and my cooperative members.	3.44	0.62	Evident
3. I have good communication and good consensus with my collaborators.	3.47	0.60	Evident
4. I share the fruits of my cooperation with my cooperative members and take responsibility and mistakes together.	3.46	0.62	Evident
Overall	3.45		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Li, S. S., & Li, L. (2021) pointed out in their study that from the perspective of education and training, the current education system increasingly focuses on the cultivation of teamwork and communication skills. Schools and universities encourage students to develop mutual trust, support, and effective communication abilities through group projects, team discussions, and collaborative problem-solving teaching methods. Additionally, various workshops and training courses are specifically designed to enhance the spirit of cooperation and awareness of common goals among team members. This systematic education and training not only improve individuals' theoretical knowledge but also strengthen their ability to apply these skills in practice, thereby displaying higher collaborative abilities in assessments.

Li et al. (2023) noted in their research that social and cultural factors are also an important consideration. In many cultures, teamwork and collective success are highly valued, and individuals are encouraged to work for the benefit of the team. This cultural backdrop prompts individuals to learn from an early age how to work effectively in teams, achieving common goals through sharing information, resources, and responsibilities. With the deepening of globalization, collaboration in cross-cultural teams has become increasingly common, further enhancing individuals' collaborative abilities in diverse cultural environments, enabling them to communicate and cooperate effectively with people from different social and cultural backgrounds.

In summary, the emphasis on education and training, along with the social and cultural emphasis on the value of teamwork, together contribute to the good results displayed by individuals in the assessment of collaborative abilities. Through the continuous cultivation of these abilities both within and outside the education system, individuals can demonstrate efficient collaborative abilities in various team and organizational environments, benefiting not only their personal career development but also crucial for the overall progress and development of society.

6.2.3. Control Ability

Table 5. Assessment of Control Ability

Items	Mean	SD	Interpretation
1. I have established various good relationships with cooperative members.	3.43	0.60	Evident
2. I am able to resolve problems and conflicts between members of the cooperative in a communicative and coordinated manner.	3.43	0.60	Evident
3. I can grasp the development and change of the organization and the direction of development.	3.28	0.67	Evident
4. I am able to balance the interests of the members of the partnership in terms of behavior and outcomes.	3.34	0.63	Evident
Overall	3.37		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 5 shows that in the assessment of control abilities, the average scores for all items indicate that participants generally perform significantly in this area. The highest average scores, at 3.43 with a standard deviation of 0.60, were for the ability to establish various good relationships with partners and to resolve issues and conflicts among partners, showing these abilities were relatively consistent and evident among participants. The lowest average score was for the ability to grasp the development changes and direction of the organization, at 3.28 with a standard deviation of 0.67, which, although still significant, was relatively lower. The ability to balance the interests of partner members scored 3.34 with a standard deviation of 0.63. The overall average score reached 3.37, falling within the "significant" range, indicating that participants possess a certain level of control ability, capable of effectively establishing and maintaining good cooperative relationships, resolving conflicts, and having some insight into organizational development, able to balance the interests of members to some extent. These results reflect participants' capabilities in leading and managing teams, especially in promoting team cooperation and handling internal issues with significant ability.

Liao, et al. (2022) pointed out in their research that from the perspective of the organizational environment, a supportive and open work environment is crucial for cultivating individuals' control abilities. In such an environment, individuals not only have the opportunity to

establish and maintain good relationships with partners but also receive sufficient support and resources when solving problems and conflicts. Moreover, organizational culture that encourages transparent communication and teamwork helps improve individuals' efficiency and effectiveness in coordination and problem-solving. When organizations provide continuous learning and development opportunities, individuals can better understand the direction of organizational development and play a positive role in this process.

Zheng et al. (2023) noted in their research that from the perspective of personal capabilities, participants possess strong interpersonal skills and conflict resolution abilities. These skills include not only effective communication techniques but also the ability to understand and balance the needs of different stakeholders. Emotional intelligence (EQ) plays a crucial role in this process, allowing them to show empathy and understanding when dealing with interpersonal relationships and internal conflicts within the organization. Additionally, sensitivity and adaptability to organizational changes are key factors, enabling individuals to make quick and effective decisions in a constantly changing environment, maintaining consistency between organizational goals and individual actions.

In summary, the supportiveness and openness of the organizational environment, along with individuals' interpersonal skills, conflict resolution abilities, and adaptability to change, collectively contribute to the good results displayed by participants in the assessment of control abilities. These factors interact to not only enhance individuals' management and leadership capabilities but also help form a more efficient and harmonious working environment, thereby improving the performance and efficiency of the entire organization.

6.2.4. Decision-making Ability

Table 6. Assessment of Decision-making Ability

Items	Mean	SD	Interpretation
1 .I am able to set common goals with the partners and have the ability to ensure that they are achieved.	3.38	0.63	Evident
2. I am able to make a decisive decision with all opinions in mind.	3.33	0.65	Evident
3.I can make accurate judgments about the internal and external environment of the organization.	3.35	0.64	Evident
4. I have a common, concise and feasible cooperation process with the partners.	3.39	0.61	Evident
Overall	3.36		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 6 shows that in the assessment of decision-making abilities, data indicate that all items' average scores fall within the "significant" range, demonstrating participants' significant abilities in decision-making. The highest average score was for the ability to establish a common, concise, and feasible cooperation process with partners, at 3.39, with a standard deviation of 0.61, indicating participants have a strong capability in formulating cooperation processes. The lowest average score was the ability to consider all opinions and make decisive decisions, at 3.33, with a standard deviation of 0.65. Despite being the lowest, this score still indicates a significant ability to make decisions after considering various opinions. The overall average score of 3.36 further confirms participants' significant capabilities in decision-making, effectively setting and achieving common goals, accurately assessing internal and external organizational environments, and making decisive decisions after considering various opinions. These results reflect that participants possess key abilities for effective decision-making, crucial for the success and efficiency of any organization or team.

Wu, et al. (2022) pointed out in their research that personal experience plays an important role in enhancing decision-making capabilities. Individuals with rich experience can better understand and predict the consequences of different decisions, as they learn from past successes and failures. This experience, gained through work, study, or life encounters, enables individuals to quickly draw upon relevant knowledge and experience when faced with new decision-making challenges, effectively assessing the pros and cons of different options. For example, by participating in diverse projects and teamwork, individuals accumulate experience on how to set common goals, formulate cooperation processes, and make decisive decisions while considering all opinions.

Chen, et al. (2021) noted in their study that cognitive abilities, including problem-solving skills, critical thinking, and situational judgment abilities, are equally crucial for improving decision-making capabilities. Critical thinking enables individuals to analyze problems from multiple perspectives, identify and evaluate different solutions, thereby making more rational and effective decisions. Situational judgment ability, or the accurate understanding of internal and external organizational environments, allows individuals to predict the changes and outcomes brought by different decision choices, making adaptable decisions in complex and changing environments. These cognitive abilities are further developed and honed through education, training, and daily intellectual challenges.

In summary, individuals' practical experience and advanced cognitive abilities jointly contribute to the enhancement of decision-making capabilities. Experience allows individuals to learn from past actions and apply them to new situations, while cognitive abilities provide critical analysis and comprehensive evaluation for the decision-making process. The combination of these abilities not only enhances individuals' performance in setting goals, solving problems, and formulating cooperation processes but also enables them to make effective and decisive decisions in complex organizational environments.

6.2.5. Influence

Table 7 shows that in the assessment of influence, data indicate that all items' average scores are closely concentrated between 3.44 and 3.46, classified as "significant." The highest average score, at 3.46, occurred in two items: first, possessing noble ideals, firm beliefs, and high self-confidence; and second, having abundant experience and wisdom, with standard deviations of 0.62 and 0.61, respectively. This indicates that participants particularly excel in these areas.

The lowest average score was 3.44, corresponding to providing support to organizational members and recognizing and appreciating their contributions, with a standard deviation of 0.60. The overall average score reached 3.45, also reflecting a significant level. These results collectively reflect participants' overall capabilities in influence, including supporting and motivating others, possessing and demonstrating personal values and confidence, leading by example, and using personal experience and wisdom to guide others. This display of influence is a key factor for individuals in establishing trust, promoting teamwork, and leading change within an organization.

Table 7. Assessment of Influence

Items	Mean	SD	Interpretation
1. I can not only provide support for the members in the organization, but also recognize and appreciate their contributions.	3.44	0.60	Evident
2.I have lofty ideals, firm beliefs and high self-confidence.	3.46	0.62	Evident
3.I set an example of what I expect them to do.	3.45	0.62	Evident
4.I have rich experience and wisdom.	3.46	0.61	Evident
Overall	3.45		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Luo, et al. (2016) pointed out in their research that personal traits, such as leadership, self-confidence, and commitment to personal and team success, are crucial for building and demonstrating influence. Individuals with noble ideals, firm beliefs, and high self-confidence are more likely to attract others' attention and respect, as these traits not only guide their own behavior but also provide a positive example for team members. Moreover, these traits enable individuals to remain steadfast in the face of challenges and uncertainty, thus more effectively guiding and motivating others.

Yang, et al. (2020) noted in their study that the socialization process, including an individual's experiences, education, and career development, also plays a key role in an individual's ability to build influence. Through the socialization process, individuals learn how to effectively communicate and cooperate with others and how to take on leadership roles within teams and organizations. Rich experience and wisdom come not only from one's career and life experiences but also from reflecting on and learning from these experiences, allowing individuals to provide valuable support and guidance to others. Additionally, recognizing and appreciating others' contributions can enhance team cohesion and motivation, further strengthening an individual's influence.

In summary, personal traits and the socialization process together contribute to the good results displayed by participants in the assessment of influence. Leadership, self-confidence, and noble ideals enable individuals to become role models and sources of inspiration for others, while experiences and wisdom accumulated through the socialization process provide them with the necessary resources and abilities to effectively support and guide others. This influence is crucial for establishing efficient team and organizational cultures, promoting mutual support and cooperation among team members, and achieving common goals.

Table 8. Assessment of Leadership Cultivation

Domains	Mean	Interpretation
1. Foresight	3.28	Evident
2. Collaborative Ability	3.45	Evident
3. Control Ability	3.37	Evident
4. Decision-making Ability	3.36	Evident
5. Influence	3.45	Evident
Overall	3.38	Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 8 shows that in the assessment of leadership development, the average scores in various domains indicate that participants generally demonstrate "significant" performance across all leadership-related abilities. The highest average scores, at 3.45, were observed in two domains: collaboration abilities and influence, indicating that these areas of ability stand out most among participants. The lowest score was in foresight abilities, with an average score of 3.28. Despite being the lowest, this score still falls within the "significant" range, indicating that even in relatively weaker areas, participants' abilities are considered notable. The overall average score of 3.38 further confirms that participants have significantly displayed in all aspects of leadership development. These data collectively reflect participants' capabilities in key leadership aspects such as forward-thinking, teamwork, control, decision-making, and influencing others, which are essential for effective leadership and team management. This broad display of abilities indicates a balanced leadership development strategy aimed at comprehensively enhancing leaders' multifaceted skills.

Bao, C. Y., Dong, P., Li, H. W. (2013) pointed out in their research that systematic leadership training programs play a central role in enhancing participants' abilities in all aspects of leadership. These training programs often include a variety of methods such as theoretical learning, case analysis, role-playing, and simulation exercises, aimed at strengthening participants' forward-thinking, teamwork capabilities, decision-making, and the ability to influence others. Through such diversified learning approaches, participants are able not only to understand the importance of leadership theoretically but also to apply this knowledge in practice, thus showing higher scores in assessments. Moreover, these trainings typically emphasize the importance of self-reflection and continuous learning, encouraging participants to identify and reinforce their leadership strengths while working to improve weaknesses.

Sun, B. Z., Wen, D. L., Tong, C. (2012) noted in their study that individual initiative also plays a key role in the development of leadership. Participants' personal motivation and initiative determine how much they benefit from leadership training. Those who actively seek growth opportunities, are willing to step out of their comfort zones, and apply learned knowledge in their actual work can enhance their leadership more effectively. Individual initiative also includes building networks of interpersonal relationships, seeking feedback and guidance, and adopting a proactive attitude when facing challenges. Through such active exploration and practice, participants can gain a deeper understanding of various aspects of leadership, thus showing

more significant abilities in assessments.

In summary, systematic leadership training combined with individuals' initiative and motivation collectively promotes significant improvement in participants' abilities in all aspects of leadership. This combination not only helps participants achieve balanced development theoretically and practically but also provides them with the key skills needed to effectively lead and manage teams in a constantly changing work environment.

6.3. Comparison of Leadership Cultivation Based on Profile

6.3.1. Foresight

Table 9. Comparison of Foresight

Profile	df	t	F	Sig	Interpretation	Ho Decision
Sex	368	1.063		.288	Not Significant	Do Not Reject
Year Level	368		1.893	.111	Not Significant	Do Not Reject
Specialization	369		1.574	.181	Not Significant	Do Not Reject

Table 9 shows that there is no significant difference between the means of foresight based on the profile of the respondents. It means that sex, year level, and specialization are not factors to the respondents' foresight. The results show that there are no significant differences in foresight abilities among sex, grades, and majors. This means that in this assessment, these different groups did not exhibit statistically significant differences in foresight abilities, indicating that foresight abilities are influenced by factors other than sex, grade, or major.

Kong, Y. J., Zhang, W. H., Wang, P. C., et al. (2010) pointed out in their research that although sex is considered a factor affecting individual abilities and behaviors in many studies, the lack of significant sex differences in the specific assessment of foresight abilities suggests that this ability is universally present among both males and females, or that sex differences have a minimal impact on foresight abilities. This is because foresight abilities rely more on an individual's experience, knowledge, and way of thinking, which vary greatly among individuals across sex, rather than on uniform sex characteristics.

Zhang, X. Z. (2011) noted in their study that for the analysis of grade levels, although it could be assumed that students might have better foresight abilities with higher educational levels and more practical opportunities, the lack of significant differences between grades indicates that educational experiences and opportunities are offset by other factors among students of different grades, such as differences in personal initiative for learning and exploration, and variations in the quality and content of education.

Meng, Y., He, J., Luo, C. K. (2014) stated in their research that although different majors may provide varying degrees of opportunities to develop foresight abilities, such as some majors focusing more on critical thinking and future planning, the results show that differences between majors are also not significant. This means that the development of foresight abilities is not only influenced by the content of professional education but also by individual differences, learning methods, and interdisciplinary learning experiences.

In summary, the lack of significant impact of sex grade, and major on foresight abilities suggests that the development and demonstration of foresight abilities are influenced by a variety of factors, including but not limited to the combined effect of an individual's experience, knowledge, learning attitudes, and interdisciplinary skills. These results emphasize the importance of considering individual differences and adopting diversified educational strategies in cultivating foresight abilities.

6.3.2. Collaborative Ability

Table 10. Comparison of Collaborative Ability

Profile	df	t	F	Sig	Interpretation	Ho Decision
Sex	368	0.331		.741	Not Significant	Do Not Reject
Year Level	368		0.859	.489	Not Significant	Do Not Reject
Specialization	369		1.007	.404	Not Significant	Do Not Reject

Table 10 shows that there is no significant difference between the means of collaborative activity based on the profile of the respondents. It means that sex, year level, and specialization are not factors to the respondents' collaborative ability. The results indicate that there are no significant differences in collaboration abilities among sex, grades, and majors, meaning that in this ability assessment, no statistically significant differences were observed among these different groups. These findings reflect the universality and context-transcending nature of collaboration abilities, showing that individuals across different sex, grades, and academic backgrounds can develop similar levels of collaboration abilities.

Chen, et al. (2023) pointed out in their research that the lack of significant sex impact on collaboration abilities suggests that in modern educational and work environments, both men and women are encouraged and have opportunities to develop teamwork and communication skills. This reflects society's emphasis on sex equality and the universal need to enhance the abilities of all members in team cooperation. The absence of sex differences also indicates that collaboration abilities rely more on personal traits, experience, and social skills, which do not significantly vary between sex.

Li, Q., Li, Z. J., & Chen, J. J. (2020) noted in their study that the nonsignificant differences among grades imply that students at all educational levels are exposed to opportunities that promote the development of collaboration abilities, such as team projects, group discussions, and collaborative learning. This suggests that educational institutions emphasize the cultivation of collaboration abilities at all grade levels, thereby making students across different grades similar in this aspect.

Wu, Y., Xiao, G., Pan, M. X., et al. (2021) mentioned in their research that the nonsignificant differences in collaboration abilities among majors reflect the general importance of collaboration across different academic fields. Despite the differences in content and teaching methods among majors, collaboration abilities, as a universal skill, are considered key in every discipline. Moreover, this indicates that students have opportunities to develop and apply collaboration abilities across different professional backgrounds through extracurricular activities, interdisciplinary projects, and internships.

In summary, the nonsignificant impact of sex, grade, and major on collaboration abilities suggests that the development of collaboration abilities is influenced by a variety of factors, including educational practices, socio-cultural expectations, and individual initiative, rather than solely these demographic variables. This emphasizes the importance of fostering collaboration abilities in various environments and the

necessity of providing diverse and inclusive learning opportunities.

6.3.3. Control Ability

Table 11. Comparison of Control Ability

Profile	df	t	F	Sig	Interpretation	Ho Decision
Sex	368	1.055		.292	Not Significant	Do Not Reject
Year Level	368		1.744	.140	Not Significant	Do Not Reject
Specialization	369		1.031	.391	Not Significant	Do Not Reject

Table 11 shows that there is no significant difference between the means of control ability based on the profile of the respondents. It means that sex, year level, and specialization are not factors to the respondents' control ability. In the comparison of control abilities, differences among sex, grades, and majors did not reach a statistically significant level, meaning that there are no significant performance differences among these groups in this ability. These results reveal the universality and widespread development of control abilities as a generic leadership skill across different populations.

Sun, B. Z., Wen, D. L., & Tong, C. (2012) pointed out in their research that the nonsignificant differences in control abilities between sex indicate that in the modern educational and professional development process, men and women are provided with equal opportunities to cultivate and demonstrate their control and management abilities. This reflects society's emphasis on sex equality and the gradual blurring of sex roles in the workplace and educational environments. Additionally, this means that the development of control abilities transcends sex differences, relying more on individual experiences, educational backgrounds, and personal traits.

Chen, S. H., & Liang, T. B. (2022) noted in their study that the nonsignificant differences among grades suggest that students of different academic years exhibit similar performances in control abilities. This is because schools and universities provide opportunities to cultivate this ability at every grade level, through team projects, leadership training, and student organization activities. Moreover, this also indicates that the cultivation of control abilities is closely related to personal initiative in learning and self-development, not just advancement through the formal education system.

Xu, Y. Y. (2023) stated in their research that the nonsignificant differences among majors demonstrate that control abilities are widely regarded as necessary across all fields, not limited to specific majors. Students from different majors have opportunities to develop this ability through their studies and practice, whether through course design, internship experiences, or interdisciplinary projects. This also emphasizes the importance of control abilities as a soft skill valued across a variety of professional backgrounds.

Overall, the nonsignificant impact of sex, grade, and major on control abilities reflects the universality and context-transcending importance of this skill. This highlights the necessity of providing opportunities for individuals from different backgrounds to develop this key skill, while also indicating that the cultivation of control abilities relies more on a combination of personal traits, experiences, and educational opportunities, rather than on singular demographic characteristics.

6.3.4. Decision-making Ability

Table 12. Comparison of Decision-making Ability

Profile	df	t	F	Sig	Interpretation	Ho Decision
Sex	368	1.161		.246	Not Significant	Do Not Reject
Year Level	368		1.293	.272	Not Significant	Do Not Reject
Specialization	369		0.876	.478	Not Significant	Do Not Reject

Table 12 shows that there is no significant difference between the means of decision making activity based on the profile of the respondents. It means that sex, year level, and specialization are not factors to the respondents' decision making ability. In the comparison of decision-making abilities, differences among sex, grades, and majors also did not reach a statistically significant level, indicating that performance in this ability is similar across all groups. These results suggest that the development of decision-making abilities is influenced by a variety of factors, rather than single demographic variables such as sex, grade, or major.

Wu, R. R., Tang, Y. T., Zou, F., et al. (2022) pointed out in their research that the nonsignificant differences in the impact of sex on decision-making abilities reflect changing perceptions of sex roles in modern society, where men and women have equal opportunities to cultivate decision-making abilities. This is due to the universal emphasis on critical thinking, problem-solving, and decision-making skills in the education system and professional training, which are important for everyone, regardless of sex. Furthermore, this also means that the development of decision-making abilities relies more on an individual's experience, educational background, and personal traits, rather than on sex.

Li, Y., Tao, S. L., Lin, L., et al. (2016) noted in their study that the nonsignificant differences among grades indicate that there are no significant disparities in decision-making abilities among students of different academic years. This is because students are encouraged to participate in decision-making processes from early stages of learning, both academically and in extracurricular activities. Although students encounter more complex decision-making scenarios as they advance in grade, this does not mean their decision-making abilities statistically improve significantly, which relates to individual adaptation and learning capacity in decision-making processes.

Yin, S. Y., Wang, H., Liu, Y., et al. (2023) stated in their research that the nonsignificant differences among majors demonstrate that decision-making abilities are considered a cross-disciplinary universal skill, with educational curricula in various majors including elements to cultivate students' decision-making abilities. Moreover, students from different majors engage in activities requiring decision-making abilities, such as project work, internships, and research projects, which help them develop the ability to make decisions in various contexts.

In summary, the development of decision-making abilities is more influenced by individual experiences, educational methods, and a proactive learning attitude, rather than simple demographic categorizations. This emphasizes the importance of providing opportunities for individuals from diverse backgrounds to develop decision-making abilities in various educational and professional environments, and the necessity of promoting individuals' application and enhancement of this ability in diverse contexts.

6.3.5. Influence

Table 13. Comparison of Influence

Profile	df	t	F	Sig	Interpretation	Ho Decision
Sex	368	0.769		.442	Not Significant	Do Not Reject
Year Level	368		1.392	.236	Not Significant	Do Not Reject
Specialization	369		0.632	.640	Not Significant	Do Not Reject

As presented in Table 13 there is no significant difference between the means of decision making activity based on the profile of the respondents. It means that sex, year level, and specialization are not factors to the respondents' decision making ability. The comparison results regarding influence show that differences among sex, grades, and majors did not reach a statistically significant level, indicating similarity in the ability to exert influence across different groups. These findings point to several key factors that collectively impact the development of influence, rather than single demographic characteristics.

Gao, J. S., Li, Y. S., Wang, H. A., et al. (2018) noted in their research that the nonsignificant differences in influence by sex suggest that in modern society, men and women have equal opportunities and conditions to develop and demonstrate influence. This reflects the improvement of sex equality in education and career development, as well as the reduction of sex differences in the cultivation of leadership and influence. Furthermore, this also means that influence relies more on an individual's traits, abilities, and behaviors, rather than sex itself.

Luo, H. F., Cai, Z. L., Liu, S. Y., et al. (2023) pointed out in their study that the nonsignificant differences among grades indicate that students of different academic years have similar performances in terms of influence. This is because schools and higher education institutions provide a wide range of opportunities for students to develop their leadership and influence, such as through participation in student organizations, leadership training programs, and community service activities. Additionally, this reflects that individuals have the opportunity to develop influence at any stage of learning through personal effort and external opportunities.

Zhou, X., Liu, G. D., Zhang, Y. C., et al. (2023) stated in their research that the nonsignificant differences among majors suggest that influence, as a cross-disciplinary soft skill, is universally present among students of different majors. Whether in the fields of science and engineering, humanities and social sciences, or business, students exercise and demonstrate their influence through various avenues (such as team projects, course discussions, and community service). This indicates that the cultivation of influence is not confined to specific academic areas but is a broader educational and personal development goal.

In summary, the development of influence is influenced by multiple factors, including educational opportunities, personal effort, and socio-cultural backgrounds, rather than single demographic characteristics like sex, grade, or major. This emphasizes the importance of providing equal opportunities for all students to develop leadership and influence, as well as the necessity of nurturing these abilities in diverse environments.

6.4. Assessment of Decision-Making Ability

6.4.1. Decision-Making Ability

Table 14. Assessment of Identification of Problem

Items	Mean	SD	Interpretation
1. When presented with a patient's symptoms, I can quickly recognize the primary issue.	3.18	0.70	Evident
2. I often spot underlying medical issues that others might overlook.	3.06	0.76	Evident
3. When a patient provides their medical history, I can determine which details are most relevant to their current complaint.	3.21	0.68	Evident
4. I consistently ask probing questions to ensure I've identified all potential medical concerns.	3.18	0.70	Evident
5. I am confident in my ability to differentiate between primary and secondary medical issues when assessing a patient.	3.18	0.71	Evident
Overall	3.16		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 14 demonstrates that in the assessment of problem identification abilities, data show participants' capabilities in dealing with patient symptoms and medical issues are generally considered "significant." The highest average score was 3.21, corresponding to the ability to identify the most relevant details based on the patient's medical history, indicating participants perform well in discerning key information from patients' history. The lowest average score was 3.06, related to the ability to identify potential medical issues overlooked by others. Although this was the lowest score, it still falls within the "significant" range. The overall average score of 3.16 further proves participants possess significant abilities in problem identification. These results reflect a balanced performance by participants in evaluating patient symptoms, asking probing questions, distinguishing primary and secondary medical issues, and extracting key information from medical history. This ability is key for medical professionals to conduct effective diagnoses and develop treatment plans.

Zhao, Q. Q., Liu, Y., Cui, H. X., et al. (2023) pointed out in their research that from an educational and training perspective, the medical education system typically cultivates students' diagnostic abilities comprehensively through a broad curriculum, internships, and practical experiences. This includes teaching students how to gather and analyze patient information, identify symptoms, conduct effective communication, and pose key probing questions. Through such training, students can practice these skills in real or simulated medical environments, thus enhancing their ability to identify primary and secondary medical issues. Additionally, medical education emphasizes the importance of critical thinking and lifelong learning, encouraging students to continually update their knowledge base and stay sensitive to new medical information, crucial for identifying overlooked potential medical issues.

Liu, Z. H., Zhang, Q. Y., Du, Y. J., et al. (2023) noted in their study that personal traits and experience also play an

important role in the development of problem identification abilities. Some individuals naturally possess strong observational and analytical skills, allowing them to identify symptoms and related medical issues more quickly. As medical professionals accumulate experience in clinical practice, they become more adept at applying their knowledge and skills to identify complex medical situations. Moreover, experienced doctors develop effective strategies to ask the right questions through interactions with patients and reflection on past cases, ensuring a comprehensive assessment of patients' conditions. This accumulation of experience and personal understanding of medical practice helps enhance their ability to identify and address medical issues.

In summary, medical education and training provide the necessary theoretical knowledge and practical opportunities to develop students' problem identification abilities, while personal traits and experience gained through practice further strengthen this capability. This combined effect enables medical professionals to exhibit high efficiency and accuracy in assessing and managing patients.

6.4.2. Formulation of Objective

Table 15. Assessment of Formulation of Objective

Items	Mean	SD	Interpretation
1. Upon diagnosing a patient, I promptly set clear treatment goals for their care.	3.19	0.73	Evident
2. I regularly consult with patients to jointly establish realistic health objectives.	3.24	0.69	Evident
3. I prioritize treatment objectives based on both medical necessity and the patient's personal values.	3.25	0.68	Evident
4. When faced with multiple treatment options, I can clearly define the desired outcome for each option.	3.20	0.72	Evident
5. I consistently reassess and adjust treatment goals as the patient's condition evolves.	3.27	0.66	Evident
Overall	3.23		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 15 shows that in the assessment of goal-setting abilities, data indicate that participants generally perform as "significant" in setting treatment goals for patients. The highest average score was 3.27, related to regularly reassessing and adjusting treatment goals to accommodate changes in patient conditions, showing participants effectively adjust treatment plans when patient conditions change. The lowest average score was 3.19, associated with quickly setting clear treatment goals after diagnosing a patient. Although this was the lowest score, it still falls within the "significant" range. The overall average score of 3.23 further indicates participants possess significant abilities in formulating, evaluating, and adjusting treatment goals. This means medical professionals can prioritize treatment goals based on medical needs and patient personal values in various treatment scenarios, co-create realistic health goals with patients when necessary, and clearly define expected outcomes for various treatment options, ensuring transparency and clarity in the treatment process.

Philips Medical Systems Department. (2012) pointed out in their research that from an educational and professional development perspective, the medical education system has invested considerable resources in cultivating medical professionals' abilities in clinical decision-making and treatment planning. This includes practicing the skills of setting and adjusting treatment goals in controlled and real-world settings through case studies, simulated patient interactions, and clinical internships. Furthermore, continuous medical education and professional development courses emphasize patient-centered treatment approaches, teaching doctors to consider patients' personal values and expectations when formulating treatment plans. This educational approach not only enhances doctors' technical abilities but also improves their communication skills, enabling effective negotiation of treatment goals with patients.

Wang, Y. H., & Zhang, F. L. (2023) noted in their study that from the perspective of practical experience and personal traits, as doctors gain years of experience in the medical field by dealing with various cases, they accumulate valuable experience crucial for quickly identifying patient issues, setting reasonable treatment goals, and adjusting plans according to changes in patient conditions. Experienced doctors are better at integrating patients' medical history, current symptoms, and life background to form a comprehensive treatment plan. Additionally, doctors with high empathy and good communication skills are more likely to build trust with patients and jointly determine treatment goals, with these personal traits helping to ensure treatment plans align with medical guidelines while meeting individual patient needs and expectations.

In summary, the focus of medical education, accumulation of practical experience, and doctors' personal traits and communication skills collectively contribute to the significant performance of medical professionals in setting and adjusting treatment goals. These factors ensure that doctors can provide high-quality patient care while considering the comprehensive well-being of patients.

6.4.3. Application of Solution

Table 16 indicates that in the assessment of solution application abilities, data show that participants generally perform as "significant" in handling complex medical cases and selecting treatment options. The highest average score was 3.38, associated with seeking colleagues' or experts' opinions when uncertain about the best treatment option, demonstrating participants value team collaboration and professional opinions in the decision-making process. The lowest average score was 3.26, related to confidently choosing the most appropriate solution among multiple feasible options that align with established objectives. Despite being the lowest score, it still reflects a significant ability. The overall average score of 3.31 further confirms that participants exhibit balanced and significant abilities in considering the pros and cons of each potential solution, considering patient preferences, selecting the best treatment option, and using evidence-based practice to guide decisions. These results reflect that medical professionals can comprehensively consider multiple factors and adopt systematic and evidence-based methods to formulate treatment plans, ensuring the quality of the decision-making process and treatment outcomes.

Table 16. Assessment of Application of Solution

Items	Mean	SD	Interpretation
1.When confronted with a complex medical case, I systematically weigh the pros and cons of each potential solution before making a decision.	3.33	0.62	Evident
2. I seek input from colleagues or specialists when uncertain about the best treatment solution.	3.38	0.62	Evident
3. I consider the patient's preferences and values when deciding on a treatment plan.	3.33	0.62	Evident
4. When multiple viable solutions are available, I can confidently select the one that aligns best with the established objectives.	3.26	0.65	Evident
5. I routinely use evidence-based practices to guide my decision-making on treatment solutions.	3.28	0.64	Evident
Overall	3.31		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Cao, W. (2013) pointed out in their research that medical education and training play a key role in enhancing medical professionals' abilities to formulate and apply solutions in complex medical situations. Medical education provides rich theoretical knowledge and emphasizes the practice of clinical skills, including systematically evaluating various treatment options in complex cases and making decisions based on the principles of evidence-based medicine. Additionally, medical students and doctors learn how to consider patients' personal preferences and values and seek peer or expert opinions when necessary during their training, which are crucial factors in improving treatment effectiveness and patient satisfaction. This comprehensive educational approach cultivates doctors' ability to make wise choices in various situations, thus exhibiting a high level of solution application ability in actual medical practice.

Xu, R., & Sun, Q. M. (2023) noted in their study that the culture of medical practice, especially the emphasis on teamwork and evidence-based medicine, also plays a significant role in enhancing doctors' performance in applying solutions. The encouragement of interdisciplinary teamwork in the medical field and the emphasis on applying research evidence to clinical decisions prompt doctors to consider a broader perspective and the latest scientific evidence when formulating treatment plans. This cultural background encourages doctors to seek collaboration when uncertain, utilizing the collective wisdom of the team to improve the quality of decisions. Additionally, the focus on patient-centered treatment approaches ensures that patient preferences and values have a place in treatment decisions, not only increasing patients' acceptance of treatment plans but also enhancing doctors' flexibility and sensitivity in practical application.

In summary, the comprehensiveness of medical education and training, along with the culture and values in medical practice, collectively shape medical professionals' ability to effectively formulate and apply solutions in complex medical situations. This ability is based on a deep understanding of clinical experience, scientific research, and individual patient needs, ensuring the quality of the medical decision-making process and treatment outcomes.

6.4.4. Implementation of Decision

Table 17. Assessment of Implementation of Decision

Items	Mean	SD	Interpretation
1. Once I've made a decision regarding patient care, I'm confident in executing the required steps in a timely manner.	3.31	0.62	Evident
2. I'm able to communicate my decisions effectively to both the medical team and the patient.	3.34	0.60	Evident
3. I always follow through with my decisions, even when faced with unexpected challenges or setbacks.	3.29	0.67	Evident
4. I utilize available resources and technologies efficiently to help implement the decisions I've made.	3.32	0.63	Evident
5. I regularly check the progress and results of the decisions I've implemented to ensure they're on track.	3.34	0.61	Evident
Overall	3.32		Evident

Legend: (3.51-4.0) Very Evident, (2.51-3.0) Evident, (1.51-2.50) Slightly Evident, (1.0-1.50) Not Evident

Table 17 shows that in the assessment of decision implementation, data indicate that participants generally perform as "significant" in translating decisions into concrete actions. The highest average score was 3.34, corresponding to effectively communicating decisions to the medical team and patients, and regularly checking the progress and results of implemented decisions to ensure objectives are achieved, demonstrating participants excel in communication and monitoring decision execution. The lowest average score was 3.29, related to persisting with one's decisions in the face of unexpected challenges or setbacks. Although this was the lowest score, it still shows significant ability. The overall average score of 3.32 further proves that participants have a balanced and significant ability in confidently executing decisions, utilizing resources and technology, and addressing challenges during the implementation process. These results reflect that medical professionals can effectively manage and execute the necessary steps in implementing treatment decisions, ensuring smooth progress of treatment plans and timely adjustments to fit real-life situations.

Li, T., Li, H. H., & Wen, D. L. (2013) pointed out in their research that the depth and breadth of medical education and clinical training play a core role in cultivating medical professionals. Medical education focuses not only on the transmission of theoretical knowledge but also emphasizes the practice and application of clinical skills, including decision-making and implementation. Students learn how to make and carry out decisions in complex medical environments through simulated cases, clinical internships,

and actual interactions with patients. This educational process cultivates doctors' abilities to persist with decisions in the face of challenges, effectively utilize resources and technology, and continuously monitor treatment progress. Additionally, the emphasis on communication skills in medical education ensures that doctors can effectively communicate with medical team members and patients, which is key to the smooth implementation of decisions.

Zhao, J., Li, D. X., Wang, L., et al. (2017) noted in their study that the culture of teamwork in medical practice and the principles of evidence-based medicine also have a significant impact on decision implementation. Medical teams typically consist of healthcare professionals from various specialties, and effective communication and collaboration among team members are fundamental to implementing treatment decisions. In such a team environment, doctors learn how to share decisions, seek opinions, and request assistance when necessary to collectively advance treatment plans. Meanwhile, the principles of evidence-based medicine require doctors to base their decisions on the latest scientific evidence, improving the success rate of treatment plan implementation. As doctors deepen their understanding and application of these practice principles, they act more confidently in implementing decisions and effectively address challenges that arise.

In summary, the systematic cultivation of decision-making and implementation abilities in medical education, along with the emphasis on teamwork and evidence-based medicine principles in medical practice, collectively enhance the significant performance of medical professionals in implementing treatment decisions. These factors ensure that doctors can effectively manage and execute complex treatment plans while ensuring patient welfare.

7. Conclusion

Based on the indicating findings, the following conclusions were drawn from the results of the study:

1. From the perspective of medical students' leadership levels, current data shows significant achievements in cultivating key leadership dimensions such as foresight, collaboration, control, decision-making, and influence in medical education. These abilities are indispensable for medical professionals in their daily work, especially when facing complex medical situations that require teamwork and efficient communication. However, despite the overall significant performance, there are certain differences between various dimensions of leadership, which may reflect the inconsistent emphasis on different leadership skills during the education process. For example, feedback evaluation abilities performed better compared to problem identification and goal-setting abilities, which might point to a strong emphasis on reflection and continuous improvement in medical education, while systematic cultivation for problem identification and goal-setting might be relatively lacking. Therefore, although the overall leadership level of medical students shows positive results, educators need to pay more balanced and in-depth attention to different aspects of leadership training.

2. In terms of decision-making ability levels, data reveals significant capabilities of medical students in key decision-making processes, including identifying problems, setting goals, applying solutions, implementing decisions, and evaluating feedback. These results emphasize the success of medical education in training students to analyze problems, develop viable treatment plans, effectively execute decisions, and continuously optimize treatment approaches. Especially in applying solutions and implementing decisions, medical students demonstrated a high level of ability, reflecting their success in translating theoretical knowledge into practical actions and addressing various challenges in clinical environments. However, the high level of decision-making ability also requires the medical education system to continually update its content and methods, ensuring students can master the latest medical knowledge and technologies to make more accurate and effective decisions.

3.In the analysis of differences and correlations, gender showed significant differences in certain dimensions of leadership and decision-making abilities, while differences between grades and specialties were generally not significant. This finding suggests that although medical education provides consistent educational resources and opportunities for all students, gender traits and socio-cultural factors still influence individuals' leadership and decision-making abilities. Moreover, the high correlation between various leadership dimensions underscores that these abilities are interconnected and interdependent; effective leadership training needs to consider the complex relationships between these dimensions. Therefore, medical educators should adopt more personalized and diverse teaching strategies to meet the needs of students from different backgrounds, while promoting the coordinated development of different leadership skills.

8. Recommendations

Based on the results, the researcher provides the following suggestion:

1. Enhance Teaching Methods that Combine Practice with Theory: Medical education should further strengthen student-centered teaching methods, such as case studies, simulation training, role-playing, and group discussions, to improve students' practical skills and teamwork abilities. Through these methods, students can apply theoretical knowledge in real or realistic medical situations, thereby enhancing their problem-solving, decision-making, and leadership skills.

2. Strengthen Soft Skills Training: In addition to professional knowledge and skills training, medical schools should increase the teaching content of soft skills, such as communication skills, teamwork, conflict resolution, self-reflection, and emotional intelligence. These skills are crucial for medical professionals to effectively lead teams, establish good relationships with patients and their families, and manage complex medical situations in clinical practice.

3. Promote Sex Sensitivity and Diversity: Medical schools should recognize the importance of sex in medical education and career development, and develop and implement training programs aimed at enhancing gender sensitivity and respecting diversity. This includes providing equal learning opportunities, encouraging all students to explore and develop leadership and decision-making abilities, and considering gender differences in teaching content and methods.

4.Establish Ongoing Feedback and Evaluation Mechanisms: Medical schools should establish a systematic feedback and evaluation mechanism, targeting not only students' learning progress and outcomes but also the effectiveness of teaching methods and course content. By regularly collecting and analyzing feedback from students, teachers, and clinical instructors, educators can continuously

adjust and optimize teaching strategies to ensure that educational quality keeps pace with the times.

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