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Mediating Effect of Communication Skills on the Relationship Between Emotional Intelligence and Clinical Leadership of Health Sciences Students: A Descriptive and Correlational Study

Sağlık Bilimleri Öğrencilerinin Duygusal Zekâları ile Klinik Liderlikleri Arasındaki İlişkide İletişim Becerilerinin Aracılık Etkisi: Tanımlayıcı ve İlişkisel Bir Çalışma

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ABSTRACT Objective: This study aimed to describe the structural relationships between emotional intelligence, communication skills, and clinical leadership and to present a model. **Material and Methods:** The present study is a descriptive and correlational research. The sample of the study consisted of 453 health sciences students determined by using the convenience sample method. Rotterdam Emotional Intelligence Scale, Communication Skills Scale, and Clinical Leadership Scale were used to measure the latent variables of the study. The data of the study were collected between June-July 2021. The data were analyzed using IBM SPSS 24 and Amos 21 programs. The study protocol was approved by the ethics committee of a public university to conduct the study. **Results:** The relationships between the latent variables of the study were in the expected direction and statistically significant ($p<0.001$) and the proposed final conceptual model fit the data. It was found that emotional intelligence had a direct positive effect on communication skills, while communication skills had a direct positive effect on clinical leadership. While emotional intelligence did not have a direct effect on clinical leadership, it was found to have a positive effect through communication skills. In the final model, while emotional intelligence explained 76% of communication skills, emotional intelligence and communication skills explained 50% of clinical leadership. **Conclusion:** This research shows that health sciences students with high levels of emotional intelligence can demonstrate clinical leadership characteristics by communicating more effectively. The results emphasize that these skills should be considered to develop clinical leadership in healthcare workplaces.

Keywords: Emotional intelligence; communication; leadership; mediation analysis

ÖZET Amaç: Bu araştırmanın amacı; duygusal zekâ, iletişim becerisi ve klinik liderlik arasındaki yapısal ilişkileri tanımlamak ve bir model ortaya koymaktır. **Gereç ve Yöntemler:** Bu, tanımlayıcı ve ilişkisel bir araştırmadır. Kolayda örnekleme yöntemi kullanılarak belirlenen 453 sağlık bilimleri öğrencisi araştırmanın örneklemini oluşturdu. Çalışmanın gizil değişkenlerini ölçmek için "Rotterdam Duygusal Zekâ Ölçeği", "İletişim Beceriler Ölçeği" ve "Klinik Liderlik Ölçeği" kullanıldı. Araştırmanın verileri Haziran Temmuz 2021 tarihleri arasında toplandı. Veriler, IBM SPSS Statistics 24 and Amos 21 programları aracılığıyla analiz edildi. Araştırma gerçekleştirilebilmesi için çalışma protokolü bir kamu üniversitesinin etik kurul tarafından onaylandı. **Bulgular:** Araştırmanın gizil değişkenleri arasındaki ilişkiler beklenen yönde ve istatistiksel olarak anlamlıydı ($p<0,001$) ve önerilen kavramsal model verilere uyum gösterdi. Duygusal zekânın iletişim becerileri üzerinde doğrudan olumlu etkisi, iletişim becerilerinin klinik liderlik üzerinde doğrudan olumlu etkisi olduğu saptandı. Duygusal zekâ klinik liderlik üzerinde doğrudan bir etkiye sahip olmamakla birlikte, iletişim becerileri aracılığıyla olumlu etkiye sahip olduğu belirlendi. Son modelde, duygusal zekâ iletişim becerilerinin %76'sını açıklarken, duygusal zekâ ve iletişim becerileri klinik liderlik becerilerinin %50'sini açıkladı. **Sonuç:** Bu araştırma, duygusal zekâ düzeyi yüksek olan sağlık bilimleri öğrencilerinin daha etkili bir iletişim kurarak klinik liderlik özellikleri sergileyebildiğini göstermektedir. Sonuçlar, sağlık bakım iş yerlerinde klinik liderliğin gelişmesi için bu becerilerin dikkate alınması gerektiğinin altını çizmektedir.

Anahtar Kelimeler: Duygusal zekâ; iletişim; liderlik; aracılık analizi

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Although factors such as the global increase in competition, changes in consumer demands, and manpower shortage make healthcare services more expensive, the need to improve healthcare is always at the center of the system.[1] To cope with these problems and improve care, it is critical for the members of all health disciplines to show effective leadership behaviours and to develop their individual leadership qualities and competencies.[2] For this reason, clinicians, who are providers of healthcare services, should actively participate in the leadership process and they should be supported at all levels, regardless of both profession and position.[3]

Clinical leadership, which is recently considered as a driving force for a cost-effective, safe, and quality service in healthcare environments, defines the leadership qualities that professionals specialized in healthcare should have.[4] This model, which focuses on ensuring interdisciplinary collaboration to meet humans' needs, implementing good practices, and transforming the services provided, suggests that clinical and managerial roles should be undertaken together.[5,6] According to the clinical leadership model, which is centred on the concept of shared leadership, leadership traits, and acts can be typical of any clinician, rather than a specific individual.[7] This contemporary leadership model which is specific to the healthcare sector has a multidisciplinary approach and addresses each clinician individually.[6] It also motivates and influences all key stakeholders (such as managers, clinicians, and students) both inside and outside healthcare organizations.[8]

It has been suggested in the literature that clinical leadership, which is critical for improving negative outcomes in healthcare environments, and for the effective functioning of organizations, is influenced by many individual factors.[9,10]

It is a known fact that emotional intelligence is defined as an indispensable tool for clinical leadership, has significant contributions to effective and strong leadership in healthcare environments, and has become one of the basic characteristics and skills required to fulfill tasks.[11] As a matter of fact, it is suggested that one of the four components in a model developed to reveal the basic knowledge and skills of clinical leadership is emotional intelligence.[12]

In addition, one of the components of the behaviour and skill set required for clinical leadership is interpersonal communication which is considered as one of the basic building blocks of clinical leadership.[13,14] Previously conducted reviews on clinical leadership emphasize that clinical leaders focus on effective and constructive communication and clinical leadership and communication skills are related.[15]

When the literature on clinical leadership is reviewed, it can be seen that most of the previously conducted studies were conducted on clinicians in the field. However, it was emphasized that the development of clinical leadership is an ongoing process and recommended that novice clinicians should be addressed as well as senior clinicians.[16] In addition, it was also argued that the clinical leadership qualities of young clinicians and students will provide real benefits in the delivery of health services and reported a need for research.[10] Despite this need, little is known about clinical leadership qualities of health sciences students and the effects of individual characteristics on clinical leadership qualities remain unclear. The aim of this study was to research the structural relationships between emotional intelligence, communication skills and clinical leadership and to create a model by determining the degree of effects (Figure 1). The following hypotheses were tested in the study:

H1: Emotional intelligence has a positive effect on communication skills.

H2: Communication skills have a positive effect on clinical leadership.

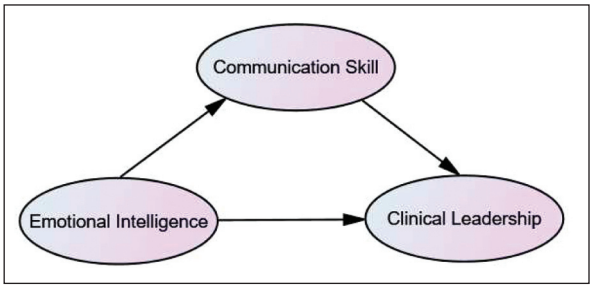

FIGURE 1: The proposed conceptual model.

H3: Emotional intelligence has a positive effect on clinical leadership.

H4: Communication skills have a mediating effect in the relationship between emotional intelligence and clinical leadership.

MATERIAL AND METHODS

STUDY DESIGN, SETTING, AND SAMPLE

This descriptive and correlational study was conducted in the health sciences faculty of a state university in the İstanbul province of Türkiye. The structural equation modelling (SEM) approach was used to test the main hypotheses of the study. There is no universally accepted method to determine sample size in SEM studies that are statistically robust and suitable for complex models.[17] It was reported that there is a need for at least 20 participants for each estimated variable in the model.[18] A minimum of 260 participants is required since there are 13 variables in the conceptual model that were proposed in the current study. In addition, most researchers emphasize that large samples should be reached and the data work better when the sample size is 400 or larger.[19] For this reason, the present study aimed to extract 400 health sciences students to obtain robust results.

The convenience sample method was used to determine the health sciences students who participated in the study. Criteria for inclusion of the students in the present study were a) being a student currently enrolled in full-time undergraduate education, b) agreeing to participate in the study. A total of 686 students were invited to the study and 453 students who met these criteria constituted the sample of the study. The overall response rate was 66% and the sample size was sufficient to test the model.

MEASURES

Personal Information Form

This form consisted of 12 questions on general characteristics of health sciences students (age, sex, marital status, maternal employment status, paternal employment status, maternal educational status, paternal educational status, level of income, department, grade, the status of having received education on management, the status of having received education on leadership).

Emotional Intelligence

Rotterdam Emotional Intelligence Scale developed by Pekaar et al. was used to evaluate emotional intelligence.[20] The 28-item scale consists of four sub-dimensions as "self-focused emotion appraisal (7 items)", "other-focused emotion appraisal (7 items)", "self-focused emotion regulation (7 items)" and "other-focused emotion regulation (7 items)". The scale has a 5-Likert type design and responses vary between 1=Totally disagree and 5=Totally agree. The scores obtained from the scale vary between 28 and 140. Increasing scores indicate an increase in the level of emotional intelligence (>84). Turkish validity-reliability of the scale was conducted by Tanrıöğen and Türker, and Cronbach's alpha coefficient was found as 0.94.[21] Similarly, Cronbach's alpha coefficient was found as 0.94 in the present study.

Communication Skills

Communication Skills Scale (CSS) developed by Korkut Owen and Bugay was used to evaluate the communication skills of university students.[22] This 25-item scale consists of four factors as "communication principles and basic skills (10 items)", "self-expression (4 items)", "active listening and non-verbal communication (6 items)" and "willingness to communicate (5 items)". The scale has a 5-Likert type design, and responses vary between 1=Always and 5=Never. Scores obtained from the scale vary between 25 and 125. Higher scores mean better communication skills (>75). Cronbach's alpha coefficient of the total scale was found as 0.88. In the present study, Cronbach's alpha coefficient for CSS total was found as 0.91.

Clinical Leadership

Leadership qualities of students in the field of health were evaluated by using the Clinical Leadership Scale developed by the National Health Services Leadership Academy within the framework of the Clinical Leadership Competence Model.[23] This scale consists of 40 items and five factors as "personal qualities (8 items)", "working with others (8 items)",

"managing services (8 items)", "improving services (8 items)" and "setting direction (8 items)". The scale has a 3-Likert type design and responses are as 1=Almost never, 2=Sometimes, 3=Almost always. Scores obtained from the scale vary between 40 and 120. High scores indicate that individuals have clinical leadership qualities (>80). Turkish validity-reliability of the scale was conducted by Budak, and Cronbach's alpha coefficient was found as 0.85.[24] In the present study, Cronbach's alpha coefficient was found as 0.92.

DATA COLLECTION

Before starting to collect data, preliminary interviews were conducted with heads of departments and student representatives and they were informed about the study. To reach potential participants, a link specific to this study was created by using Google Forms (Google, USA) and shared with all health sciences students in the faculty through student representatives. This link directed students to an information page initially. The information page explained the aim and content of the study and ethical issues in detail. The students who agreed to participate in the study could access the measures after they ticked the box at the end of the page electronically. It was possible to fill in the measures anonymously by using computers, tablets, or smartphones. The system did not allow for submitting incomplete surveys to increase the quality of data. It took approximately 15-20 minutes to complete the online survey link. The research data were collected between June and July 2021.

DATA ANALYSIS

IBM SPSS (USA) Statistics 24 and Amos 21 programs were used to analyse the research data. Descriptive statistics (number, percentage, minimum, maximum, mean, standard deviation) were used to determine the general characteristics of health sciences students who participated in the study and to calculate the survey scores. The correlations between emotional intelligence, communication skills, and clinical leadership were evaluated with Pearson correlation analysis. SEM approach was used to test the mediating effect of communication skills between emotional intelligence and clinical leadership and evaluations were made through the following fit indices: X^2=Chi-square, X^2/df=Chi-square/degrees of freedom, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR). A bootstrap estimation procedure was used to establish the direct and indirect effects of latent variables on each other (a bootstrap sample of 5000 was specified). $p<0.05$ was considered as statistically significant for all analyses.

ETHICAL CONSIDERATIONS

The research protocol was approved by the İstanbul Medeniyet University Ethics Committee (date: May 17, 2021, no=2021/27) and written permission was obtained from the dean of the Faculty of Health Sciences of the state university where the research was conducted. Written permission was obtained from the owners of each scale used in the study via e-mail. All of the participants who agreed to participate in the study were informed about the aim, scope, content, method of the study, confidentiality, and anonymity of data, and their informed consents were taken. Participation was voluntary and the participants who wished to stop responding could withdraw directly from the research link. This study was conducted in accordance with the Declaration of Helsinki.

RESULTS

CHARACTERISTICS OF HEALTH SCIENCES STUDENTS

The ages of 453 health sciences students who participated in this study were between 18 and 35 (mean=20.46, SD=1.87). A great majority of the students were female (83.4%) and almost all were single (99.1%). Mothers of 45.3% and fathers of 31.8% were primary education graduates. While the fathers of 76.2% were employed, the fathers of only 18.3% were employed. Families of most of the participants (74.2%) had a moderate level of economic status. 40.2% of the participants were students at the nursing department, 46.6% were students at the health man-

agement department and 13.2% were students at the nutrition and dietetics department. 28.9% of the students were freshmen, 31.1% were sophomores, 27% were juniors and 13% were seniors. Finally, a great majority reported that they did not receive a specific education on management and leadership (73.5% and 79.5%, respectively) (Table 1).

RESULTS OF THE VARIABLES OF THE STUDY

Total scores of 453 health sciences students from the scales were 110.68 (SD=15.75) for emotional intelligence, 106.08 (SD=11.48) for communication skills and 105.05 (SD=9.85) for clinical leadership (Table 2).

The correlations between the latent variables in the proposed model were in the expected direction and statistically significant ($p<0.001$). Emotional intelligence was positively and significantly correlated with both communication skills and clinical leadership ($r=0.690$, $r=0.543$, respectively). In addition, there was a positive and significant relationship between communication skills and clinical leadership ($r=0.664$) (Table 3).

THE RESULTS OF THE PROPOSED CONCEPTUAL MODEL

The fit of the proposed conceptual model to the data was evaluated with SEM analysis. Modification indices were examined to improve the model fit and covariance links were added between the error pairs of the observed variables (e9-e10, e6-e8 and e2-e4, respectively). It was found that the fit indices of the final model were improved: $X^2=202.841$ ($df=59$, $p<0.001$), $X^2/df=3.438$, GFI=0.937, AGFI=0.903, NFI=0.939, RFI=0.920, IFI=0.956, TLI=0.942, CFI=0.956, RMSEA=0.073 (90% CI=0.063-0.085), SRMR=0.0555. Factor loads of all observed variables varied between 0.51 and 0.87 and they were found to be significant. These results showed that the latent variables were well-represented. In the final model, while emotional intelligence explained 76% of communication skills, emotional intelligence and communication skills explained 50% of clinical leadership (Figure 2).

The results of the study showed that emotional intelligence had a direct positive effect on communi-

TABLE 1: Health sciences students' characteristics (n=453).

Characteristics	$\bar{X}$±SD or n (%)
Age (Minimum: 18, Maximum: 35)	20.46±1.87
Sex	
Female	378 (83.4)
Male	75 (16.6)
Marital status	
Single	449 (99.1)
Married	4 (0.9)
Mother education	
Illiterate	38 (8.4)
Literate	24 (5.3)
Primary school	205 (45.3)
Secondary school	102 (22.5)
High school	63 (13.9)
University	19 (4.2)
Graduate	2 (0.4)
Father education	
Illiterate	5 (1.1)
Literate	8 (1.8)
Primary school	144 (31.8)
Secondary school	111 (24.5)
High school	117 (25.8)
University	59 (13.0)
Graduate	9 (2.0)
Mother working status	
Yes	83 (18.3)
No	370 (81.7)
Father working status	
Yes	345 (76.2)
No	108 (23.8)
Family economic situation	
Bad	27 (6.0)
Middle	336 (74.2)
Good	90 (19.8)
Department	
Nursing	182 (40.2)
Health management	211 (46.6)
Nutrition and dietetics	60 (13.2)
Grade	
1	131 (28.9)
2	141 (31.1)
3	122 (27.0)
4	59 (13.0)
Management-related education	
Yes	120 (26.5)
No	333 (73.5)
Leadership-related education	
Yes	93 (20.5)
No	360 (79.5)

SD: Standard deviation.

TABLE 2: Descriptive statistics of emotional intelligence, communication skills, and clinical leadership (n=453).

Variables	Score range	Minimum-Maximum	Mean (SD)
Emotional intelligence	28-140	63-140	110.68±15.75
Self-focused emotion appraisal	7-35	14-35	28.38±4.85
Other-focused emotion appraisal	7-35	16-35	28.83±4.59
Self-focused emotion regulation	7-35	10-35	26.05±5.42
Other-focused emotion regulation	7-35	13-35	27.42±5.10
Communication skills	25-125	55-125	106.08±11.48
Communication principles and basic skills	10-50	25-50	43.18±4.68
Self-expression	4-20	6-20	16.74±2.56
Active listening and non-verbal communication	6-30	12-30	25.86±3.33
Willingness to communicate	5-25	10-25	20.29±3.05
Clinical leadership	40-120	79-120	105.05±9.85
Personal qualities	8-24	14-24	20.29±2.11
Working with others	8-24	12-24	21.06±2.23
Managing services	8-24	15-24	21.67±2.34
Improving services	8-24	12-24	21.52±2.53
Setting direction	8-24	12-24	20.51±2.86

SD: Standard deviation.

TABLE 3: Correlation analysis of emotional intelligence, communication skills, and clinical leadership (n=453).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.EI	1															
2.SFEA	0.793*	1														
3.OFEA	0.820*	0.606*	1													
4.SFER	0.757*	0.477*	0.415*	1												
5.OFER	0.796*	0.447*	0.617*	0.451*	1											
6.CS	**0.690***	0.560*	0.679*	0.379*	0.587*	1										
7.CPABS	0.622*	0.511*	0.632*	0.389*	0.454*	0.876*	1									
8.SE	0.513*	0.461*	0.459*	0.256*	0.463*	0.785*	0.526*	1								
9.ALANC	0.663*	0.512*	0.652*	0.374*	0.577*	0.881*	0.726*	0.606*	1							
10.WC	0.493*	0.382*	0.492*	0.206*	0.498*	0.803*	0.534*	0.649*	0.605*	1						
11.CL	**0.543***	0.425*	0.514*	0.294*	0.500*	**0.664***	0.559*	0.570*	0.554*	0.560*	1					
12.PQ	0.449*	0.379*	0.409*	0.264*	0.379*	0.542*	0.471*	0.474*	0.477*	0.401*	0.709*	1				
13.WWO	0.394*	0.331*	0.378*	0.188*	0.365*	0.560*	0.457*	0.513*	0.452*	0.485*	0.795*	0.583*	1			
14.MS	0.432*	0.349*	0.417*	0.216*	0.399*	0.522*	0.434*	0.438*	0.430*	0.465*	0.854*	0.494*	0.611*	1		
15.IS	0.454*	0.347*	0.433*	0.251*	0.417*	0.517*	0.436*	0.426*	0.432*	0.449*	0.849*	0.445*	0.557*	0.693*	1	
16.SD	0.473*	0.329*	0.447*	0.270*	0.459*	0.561*	0.477*	0.475*	0.467*	0.472*	0.846*	0.445*	0.530*	0.663*	0.706*	1

*p<0.001; Bold values are correlations between the latent variables of the study; EI: Emotional intelligence; SFEA: Self-focused emotion appraisal; OFEA: Other-focused emotion appraisal; SFER: Self-focused emotion regulation; OFER: Other-focused emotion regulation; CS: Communication skills; CPABS: Communication principles and basic skills; SE: Self-expression; ALANC: Active listening and non-verbal communication; WC: Willingness to communicate; CL: Clinical leadership; PQ: Personal qualities; WWO: Working with others; MS: Managing services; IS: Improving services; SD: Setting direction.

cation skills (β=872) and communication skills had a direct positive effect on clinical leadership (β=0.567). It was also found that emotional intelligence did not have a direct significant effect on communication skills (β=0.152). However, it was found that emotional intelligence had an indirect effect on clinical leadership (β=0.495) through communication skills (Table 4).

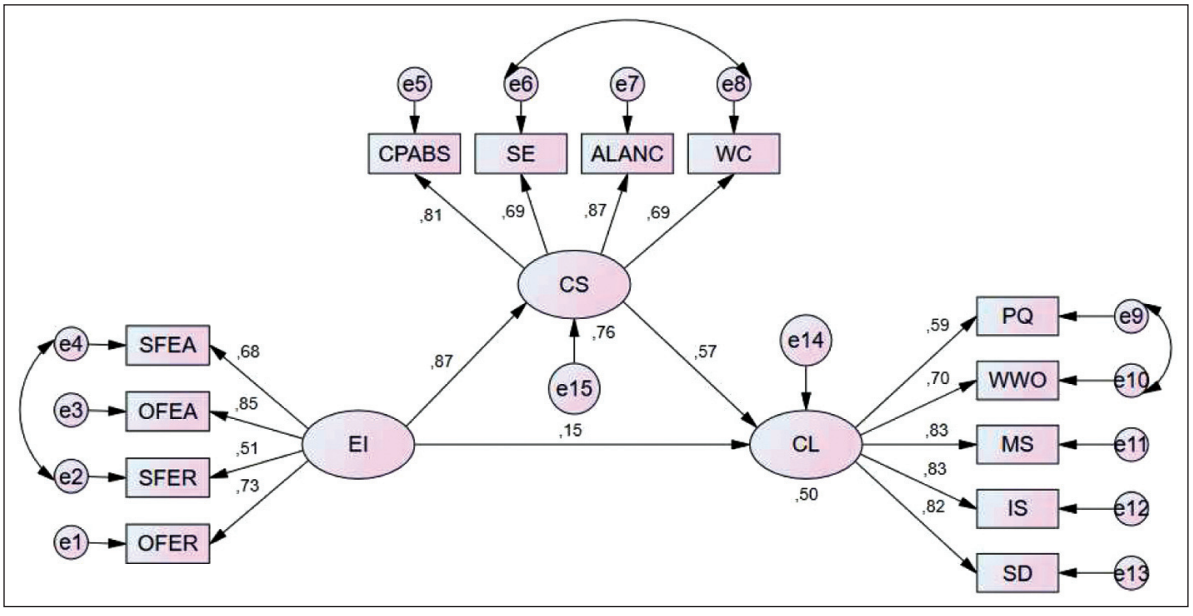

FIGURE 2: Final modified model.

EI: Emotional intelligence; SFEA: Self-focused emotion appraisal; OFEA: Other-focused emotion appraisal; SFER: Self-focused emotion regulation; OFER: Other-focused emotion regulation; CS: Communication skills; CPABS: Communication principles and basic skills; SE: Self-expression; ALANC: Active listening and non-verbal communication; WC: Willingness to communicate; CL: Clinical leadership; PQ: Personal qualities; WWO: Working with others; MS: Managing services; IS: Improving services; SD: Setting direction.

TABLE 4: The direct, indirect and total effects of variables (n=453).

			BC 95% CI		
Variables	***β***	**SE**	**Lower bounds**	**Upper bounds**	**p value**
Direct effect					
EI → CS	0.872	0.026	0.821	0.921	<0.001
CS → CL	0.567	0.159	0.887	-0.055	0.001
EI → CL	0.152	0.155	-0.159	0.457	0.299
Indirect effect					
EI → CS → CL	0.495	0.141	0.230	0.797	0.001
Total effect					
EI → CL	0.647	0.038	0.569	0.716	<0.001

BC: Bias-corrected; CI: Confidence interval; *β*: Standardized effect; SE: Standardized error; EI: Emotional intelligence; CS: Communication skills; CL: Clinical leadership.

DISCUSSION

The present study tested a conceptual model including the variables of emotional intelligence, communication, skills, and clinical leadership. It was thought that this study, which reveals the role and effects of emotional intelligence and communication skills in students who are future health care professionals' ability to exhibit effective leadership skills in the clinical environment in their professional lives, will contribute to the development of education and clinical practice strategies and policies.

In the present study, H1 that was proposed the positive relationship between emotional intelligence levels and communication skills of health sciences students was supported. This result, which shows that students with high emotional intelligence showed more positive and effective communication skills, is in parallel with previously conducted studies.[25,26] This statistically significant relationship is probably the re-

sult of the fact that emotional intelligence is a source that contributes to individuals' skills to remain calm under pressure, to reflect and manage their emotions, and to listen and negotiate with others.[12] Emotional intelligence focuses on an inner potential to create a positive interaction and the ability to communicate effectively can be an example of emotional intelligence in action.[27] For this reason, according to the results of the present study, it can be said that the emotional intelligence levels of students may be effective in their communication skills. It is very important to create training and mentoring programs (interactive exercises such as simulations, group discussions, role plays, drama/narrative) to improve students' emotional intelligence levels by academicians, clinicians and administrators in the field of health. Such trainings may increase the professional skills of students and contribute to achieving more positive results in relationships with the healthcare team and patients/patient relatives in the clinical environment after graduation.[28,29]

H2 regarding the effect of communication skills on clinical leadership was confirmed. This result means that health sciences students with good communication skills can show clinical leadership qualities. Communication skills are included among the leadership skills of 21st-century health practitioners.[30] In parallel with this relationship, it was found in a previously conducted study that nursing students considered communication skills as a means in the solution of difficulties and as the foundation of clinical leadership.[9] This was also supported by Jack et al. who argued that clinical leadership was based on inter-professional and intra-professional relationships and communication skills rather than task-oriented skills.[31] Therefore, it can be said that the interpersonal communication skills of health sciences students can be effective in their clinical leadership qualities. Based on the results obtained from the study, it is recommended that educators, clinicians and administrators adopt an integrated approach. Evaluating students in terms of communication skills and giving individual feedback on their strengths and weaknesses, creating coaching programs that enable communication, activating the institutional support system, and developing organizational policies and strategies can help increase leadership capacities.[32,32]

While H3, which argued that emotional intelligence was effective in clinical leadership, was rejected; H4, which argued that communication skills mediated the relationship between emotional intelligence and clinical leadership, was confirmed. This result, which shows that emotional intelligence does not predict clinical leadership is not in parallel with a study previously conducted on a different sample.[33] In a study conducted on nursing students, no relationship was found between emotional intelligence and defining oneself as a leader, in parallel with the present result.[34] Although it is commonly accepted in the relevant literature that there is a relationship and causality between these variables, no consensus was found. It was shown in the present study that communication skills had a mediating role in the model consisting of emotional intelligence and clinical leadership. This means that health sciences students with high emotional intelligence demonstrate clinical leadership qualities by communicating well. The indirect effect found in this study is probably related to the fact that emotional intelligence strengthens individuals' communication skills (such as softening relationships with people, and actively listening to others).[35] The results of the study provide a new perspective that the relationship between emotional intelligence and clinical leadership may be resulting from mediating factors and that it should be researched. For this reason, it is very important to develop and implement curricular or extracurricular programs that enable students, who are future health professionals, to develop both emotional intelligence and communication skills so that they can have clinical leadership qualities.

LIMITATIONS AND STRENGTHS

To the best of our knowledge, the present study is one of the limited number of studies examining the effects of emotional intelligence, communication, skills and clinical leadership on a sample of health sciences students. Therefore, it is thought that this study contributes to filling the gap in the existing literature on the subject. In addition, examining the direct and indirect relationships between variables using structural equation modeling provides a more comprehensive understanding and information. However, this study

has some limitations. The first one is the fact that the sample group consists of only students of health sciences faculty. The generalisability of the data can be increased by reaching a larger group. The second one is the fact that the data were collected through an online survey method. This limits the results to the students who have internet access. Finally, the characteristics of students can be a confounding factor for the model. For this reason, further studies with different and larger samples should be conducted to generalize the study results.

CONCLUSION

This study evaluated the relationship between clinical leadership, emotional intelligence, and communication skills through a conceptual model. The following results were obtained from the model that showed a good fit with the data: a) students with high emotional intelligence communicate better, b) students with strong communication skills can show clinical leadership qualities, c) although students with good emotional intelligence do not have direct clinical leadership qualities directly, they show clinical leadership qualities indirectly through good communication and relationships.

In addition to understanding the clinical leadership qualities of health sciences students, the present study also shows how effective students' emotional intelligence levels and communication skills are in their clinical leadership. In addition, the study can also contribute to preparing and implementing education programs and workshops to develop clinical leadership qualities with the cooperation of educators, clinicians, and managers. Finally, this study can provide an opportunity for students of health sciences to strengthen their leadership awareness and to improve their leadership knowledge and competence before they start their professional careers.

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Authorship Contributions

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REFERENCES

1. Crowley R, Daniel H, Cooney TG, Engel LS; Health and Public Policy Committee of the American College of Physicians. Envisioning a Better U.S. Health Care System for All: Coverage and Cost of Care. Ann Intern Med. 2020;172(2 Suppl):S7-S32. [Crossref] [PubMed]
2. Barr J, Dowding L. Leadership in Health Care. 5th ed. Thousand Oaks: SAGE Publications; 2022.
3. Barnes T, Yu TW, Webster CS. Are we preparing medical students for their transition to clinical leaders? A national survey. Med Sci Educ. 2020;31(1):91-9. [Crossref] [PubMed] [PMC]
4. Mianda S, Voce AS. Conceptualizations of clinical leadership: a review of the literature. J Healthc Leadersh. 2017;9:79-87. [Crossref] [PubMed] [PMC]
5. Hofmann R, Vermunt JD. Professional learning, organisational change and clinical leadership development outcomes. Med Educ. 2021;55(2):252-65. [Crossref] [PubMed]
6. Jonas S, McCay L, Keogh SB. The importance of clinical leadership. In: Swanwick T, McKim J, eds. ABC of Clinical Leadership. 2nd ed. Hoboken: John Wiley & Sons; 2017. p.1-4.

7. National Health Service. Medical Leadership Competency Framework Enhancing - Engagement in Medical Leadership. 3rd ed. Coventry: NHS Institute for Innovation and Improvement; 2010.
8. Swanwick T, Butler J. Developing leadership at all levels. In: Swanwick T, McKim J, eds. ABC of Clinical Leadership. 2nd ed. Hoboken: John Wiley & Sons; 2017. p.81-5.
9. Démeh W, Rosengren K. The visualisation of clinical leadership in the content of nursing education—a qualitative study of nursing students' experiences. Nurse Educ Today. 2015;35(7):888-93. [Crossref] [PubMed]
10. Sadera R. Developing effective leaders. BMJ Lead. 2020;4(Suppl. 2020; 4(Suppl 1):A12. [Crossref]
11. Danquah E. The influence of emotional intelligence on the work engagement of clinical leadership: resilience as a moderator. Hosp Top. 2022;100(2):55-61. [Crossref] [PubMed]
12. Grindel CG. Clinical leadership: a call to action. Medsurg Nurs. 2016;25(1):9-16. [PubMed]
13. Jeon YH, Simpson JM, Li Z, Cunich MM, Thomas TH, Chenoweth L, et al. Cluster randomized controlled trial of an aged care specific leadership and management program to improve work environment, staff turnover, and care quality. J Am Med Dir Assoc. 2015;16(7):629.e19-28. [Crossref] [PubMed]
14. Stanley D, Blanchard D, Hohol A, Hutton M, McDonald A. Health professionals' perceptions of clinical leadership. A pilot study. Cogent Med. 2017;4(1):1321193. [Crossref]
15. Stanley D, Stanley K. Clinical leadership and nursing explored: a literature search. J Clin Nurs. 2018;27(9-10):1730-43. [Crossref] [PubMed]
16. Mianda S, Voce A. Developing and evaluating clinical leadership interventions for frontline healthcare providers: a review of the literature. BMC Health Serv Res. 2018;18(1):747. [Crossref] [PubMed] [PMC]
17. Kyriazos TA. Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. Psychology. 2018;9(8):2207-30. [Crossref]
18. Kline RB. Principles and Practice of Structural Equation Modeling. 5th ed. New York: The Guilford Press; 2023.
19. Tabachnick BG, Fidell LS. Using Multivariate Statistics. 7th ed. New York: Pearson Education; 2019.
20. Pekaar KA, Bakker AB, van der Linden D, Born MP. Self- and other-focused emotional intelligence: Development and validation of the Rotterdam Emotional Intelligence Scale (REIS). Pers Individ Dif. 2018;120:222-33. [Crossref]
21. Tanrıöğen A, Türker Y. Rotterdam Duygusal Zekâ Ölçeği'nin Türkçeye uyarlanması [Adaptation of Rotterdam Emotional Intelligence Scale to Turkish]. Pamukkale Univ J Educ. 2019;47:348-69. [Crossref]
22. Korkut Owen F, Bugay A. İletişim Becerileri Ölçeği'nin geliştirilmesi: geçerlik ve güvenirlik çalışması [Developing a Communication Skills Scale: validity and reliability studies]. Mersin Univ J Fac Educ. 2014;10(2):51-64. [Link]
23. National Health Services Leadership Academy. Self Assessment Tool Leadership in the Health and Care Services Is about Delivering High Quality.; 2012. [Link]
24. Budak F. Klinik Liderlik Ölçeğinin Türkçe geçerlik güvenilirlik çalışması: kamu hastaneleri örneği [Turkish validity and reliability study of Clinical Leadership Scale: Public Hospitals Sample]. Acıbadem Univ Heal Sci J. 2017;(2):85-91. [Link]
25. Jung HY, Kang S. Collective efficacy and communication ability according to emotional intelligence in nursing students. Indian J Public Heal Res Dev. 2020;11(12):154-60. [Link]
26. Raeissi P, Zandian H, Mirzarahimy T, Delavari S, Zahirian Moghadam T, Rahimi G. Relationship between communication skills and emotional intelligence among nurses. Nurs Manag (Harrow). 2019;26(2):31-5. [Crossref] [PubMed]
27. Petrovici A, Dobrescu T. The role of emotional intelligence in building interpersonal communication skills. Procedia-Soc Behav Sci. 2014;116:1405-10. [Crossref]
28. Şen S, Arslan Özkan H, Avşar E, Afacan Karaman S. Hemşirelik öğrencilerinde duygusal zekâ, eleştirel düşünme ve klinik karar verme düzeylerinin incelenmesi [Investigation of emotional intelligence, critical thinking and clinical decision making levels in nursing students]. İstanbul Gelişim Üniversitesi Sağlık Bilim Derg. 2022;18:877-91. [Crossref]
29. Köşgeroğlu N, Balcı Alparslan G, Babadağ B, Öztürk B, Ünver G. Hemşirelik öğrencîlerînîn duygusal zeka düzeyleri ve problem çözme becerîleri [Problem-solving skills and emotional intelligence level of nursing students]. Int J Soc Humanit Sci Res. 2020;7(56):1969-77. [Crossref]
30. Lee E, Daugherty J, Hamelin T. Reimagine Health Care Leadership, Challenges and Opportunities in the 21st Century. J Perianesth Nurs. 2019;34(1):27-38. [Crossref] [PubMed]
31. Jack K, Bianchi M, Costa RDP, Grinberg K, Harnett G, Luiking ML, et al. Clinical leadership in nursing students: a concept analysis. Nurse Educ Today. 2022;108:105173. [Crossref] [PubMed]
32. Bae SH, Park JS. Development and evaluation of extracurricular coaching programs for improving communication skills and leadership among nursing students. J Korean Acad Soc Nurs Educ. 2015;21(2):202-14. [Crossref]
33. Elçi M, Murat Eminoğlu G, Sivrikaya Şerifoğlu F, Çeviker Ay Ş, Keçeci A. Lider etkinliği ve duygusal zeka arasındaki ilişkiler: kadın akademisyenler üzerinde [The relationship between leader effectiveness and emotional intelligence: a study on female academicians]. İşletme ve İktisat Çalışmaları Derg. 2021;9(2):28-41. [Link]
34. Ceylantekin Y, Ocalan D. Hemşirelik öğrencilerinin mesleği ile ilgili düşünceleri ve duygusal zekâ arasındaki ilişki [The relationship between nursing students' emotional intelligence and thoughts on the profession]. J High Educ Sci. 2020;10(3):531-8. [Crossref]
35. Leigh JA, Wild J, Hynes C, Wells S, Kurien A, Rutherford J, et al. Transforming community services through the use of a multidimensional model of clinical leadership. J Clin Nurs. 2015;24(5-6):749-60. [Crossref] [PubMed]