ORIGINAL ARTICLE

CONTENTS

Relationship between emotional intelligence (EI), locus of control (LOC), and academic achievements among nursing students: across sectional study

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ABSTRACT

Aim: This study aimed to investigate how Emotional Intelligence and Locus of Control contribute to the academic performance of nursing students at the Jeddah and Riyadh campuses at Saudi Arabia.

Materials and Methods: A cross-sectional study design was employed, involving 424 nursing students from Jeddah (N=213) and Riyadh (N=211) campuses, recruited through convenient sampling. Two validated and reliable assessment tools were used to measure Emotional Intelligence and Locus of Control. Data were collected between January and April 2024.

Results: In Jeddah, 58.2% of students were aged 20–23, while in Riyadh, this age group accounted for 74.9%. More students in Jeddah (63.4%) were at the 8-12 academic level compared to Riyadh (54.1%). A strong positive correlation was found between emotional intelligence (EI) and locus of control (LOC) ($r = .730$, $p < .001$), indicating that higher EI is significantly associated with a stronger internal LOC. Additionally, both LOC and EI had weak but statistically significant positive correlations with GPA, with LOC showing $r = .171$ ($p < .01$) and EI showing $r = .122$ ($p < .05$).

Conclusions: This study underscores the importance of Emotional Intelligence and Locus of Control in shaping academic performance among nursing students. The findings contribute to a deeper understanding of psychological dynamics within nursing education. Recommendations: Nursing Institutions should integrate targeted training programs and mentorship initiatives to foster EI and an internal LOC among nursing students.

KEY WORDS: Academic Achievements Emotional Intelligence, Locus of Control, Nursing Students, Saudi Arabia, Jeddah and Riyadh Campus

Wiad Lek. 2025;78(7):1279-1290. doi: 10.36740/WLek/205299 DOI

INTRODUCTION

In the realm of nursing education, psychological elements like emotional intelligence (EI) and locus of control (LOC) play a crucial role in shaping students' capacity to handle stress, tackle academic hurdles, and maneuver through clinical settings. EI, which is the ability to identify, manage, and effectively use emotions, provides nursing students with essential interpersonal skills necessary for patient care and teamwork [1,2]. Likewise, LOC pertains to a person's belief in their influence over life events, with an internal LOC associated with active problem-solving and resilience, whereas an external LOC is linked to passivity or dependence on outside factors [3-7]. These characteristics are especially important in nursing, where high-stress situations require both emotional stability and self-confidence [3,8].

Globally, research highlights the importance of EI in improving clinical decision-making and resolving conflicts [3,4], while an internal LOC encourages persistence and academic involvement in demanding programs [9,10]. For example, students with high emotional intelligence show better stress management and adaptability, which positively affects their academic and clinical outcomes [5,11]. Similarly, those with an internal LOC take more responsibility for their learning results, allowing them to succeed despite obstacles [12]. However, despite their acknowledged significance, there is limited research on EI and LOC in the context of Saudi Arabian nursing education, where cultural and institutional factors might influence these psychological traits differently.[10]

This study seeks to fill this gap by examining the connection between EI, LOC, and academic performance among nursing students at the Jeddah and Riyadh campuses. Previous research has mainly concentrated on Western settings, leaving the distinctive educational environment of Saudi Arabia largely unexplored. By exploring how EI and LOC relate to academic success in

this context, the study aims to guide the development of tailored interventions such as EI training workshops or mentorship programs that align Saudi nursing education with international standards while addressing local requirements.

THEORETICAL FRAMEWORK

Albert Bandura [13] developed the Social Cognitive Theory (SCT), which can be applied to study the complex dynamics between personal, environmental, and behavioral factors that influence nursing students' academic achievement. Academic achievement, the dependent variable, is the culmination of students' interactions with their environment, including emotional regulation, perceived control over outcomes, and utilization of effective learning strategies. Emotional Intelligence (EI) and Locus of Control (LOC) are independent variables that reflect individuals' abilities to manage emotions and beliefs about control over their lives. Within the SCT framework, these personal factors shape students' emotional responses, motivation, and engagement with learning activities, ultimately influencing their academic achievement.

Furthermore, the belief in one's ability to achieve success in tasks and goals, known as self-efficacy, plays a crucial role in academic achievement. This belief acts as an intermediary variable, connecting personal factors such as emotional intelligence and locus of control to academic success. Self-efficacy is an essential component of social cognitive theory, which suggests that emotional intelligence and locus of control may impact self-efficacy by influencing an individual's confidence in their ability to regulate their emotions and control academic outcomes. In addition, environmental factors, such as the educational setting and support systems, interact with personal and behavioral factors to further influence academic achievement. Teaching methods, resources, and other aspects of the learning environment can impact student engagement and motivation, while social support from peers and educators can play a role in influencing emotional well-being and persistence in academic pursuits.

Finally, behavioral factors, such as study habits and motivation, are crucial in shaping academic performance by influencing students' learning strategies, time management skills, and intrinsic motivation to succeed. Researchers can gain valuable insights into the complex interplay between personal, environmental, and behavioral factors that contribute to nursing students' academic success by considering these variables within the SCT framework. By taking a holistic approach, it is possible to develop a deeper understanding of the mechanisms underlying academic achievement. This, in turn, informs the development of targeted interventions aimed at supporting students' learning and well-being.

SIGNIFICANCE OF THE STUDY

Nursing education in Saudi Arabia holds a crucial position in the healthcare sector, especially in major cities like Jeddah and Riyadh. Despite its importance, there is a notable lack of research on how emotional intelligence and locus of control influence the academic performance of nursing students. This research gap presents a valuable opportunity to investigate the correlation between emotional intelligence, locus of control, and academic achievement among nursing students. By examining these factors, we can gather valuable insights to develop targeted interventions and support systems that enhance learning outcomes, promote student well-being, and enhance the nursing curriculum. Ultimately, this research can help prepare nursing students with the necessary skills and knowledge to excel in their academic and professional pursuits.

AIM

The aim of this study is to investigate the relationship between Emotional Intelligence and Locus of Control and their impact on academic achievement among nursing students in Jeddah and Al-Riyadh. Specifically, the study aims to:

- Identify the levels of emotional intelligence and locus of control among nursing students.
- Compare emotional intelligence and locus of control between students at the Jeddah and Al-Riyadh campuses.
- Examine the relationship between emotional intelligence and locus of control and their effects on students' GPA.
- Analyze the association between emotional intelligence, locus of control, and students' backgrounds.

RESEARCH QUESTIONS

This study seeks to answer the following research questions

1. What are the levels of emotional intelligence (EI) and locus of control (LOC) among students at both campuses?
2. Are there differences in emotional intelligence and locus of control between students at the Jeddah and Al-Riyadh campuses?
3. What is the relationship between emotional intelligence and locus of control among nursing students at both campuses?

4. What is the association between socio-demographic backgrounds and the levels of emotional intelligence and locus of control among nursing students at both campuses**?**

MATERIALS AND METHODS

DESIGN

A cross-sectional correlational comparative design was employed to achieve the objectives of the current study. Cross-sectional designs are well-suited for studies examining relationships among variables at a single point in time, allowing researchers to identify associations and differences within a population without requiring longitudinal follow-up [14,15]. This design is also efficient for measuring psychological traits like emotional intelligence and locus of control, as it captures data that is relatively stable over time [16].

SETTING AND SAMPLE SELECTION

This study was conducted at the College of Nursing campuses in Jeddah and Riyadh, affiliated with King Saud University for Health Sciences. A convenience sampling technique was utilized to recruit nursing students from levels 7 to 12, targeting a population of approximately 600 students across both campuses. Recruitment involved outreach through nursing department chairpersons, who provided access to students through personal communications and social networking platforms. Additionally, information leaflets and brief discussions were conducted to introduce the study's purpose, encouraging student participation. A fig.1. illustrating the recruitment and selection stages is included for visual clarity.

INCLUSION AND EXCLUSION CRITERIA

Students enrolled in levels 7–12 were included in the study, as they have a more advanced understanding of nursing education and are expected to benefit from emotional intelligence and locus of control skills in clinical settings. Students outside these levels were excluded to maintain consistency within the sample and focus on those closer to clinical practice**.**

SAMPLE SIZE CALCULATION

A Roe-soft program was used to calculate the sample size. Calculator by Rao soft, Inc. [17]. The total number of students on both campuses is 600; therefore, the required sample size was estimated at a 95 percent confidence level with an estimated 50% response distribution and a margin of error of ±5%. The minimum required sample size was estimated to be 235.

TOOLS OF THE STUDY

To achieve the objectives of the current study, three main tools were used:

1. Demographic and personal information: This includes questions about age, campus name, academic level, academic GPA, marital status, living accommodation, urban or rural residence, number of family members, and birth order rank.
2. The Schutte Self-Report Emotional Intelligence Test (SSEIT)

The SSEIT, proposed by Schutte et al. [18], was adapted to measure undergraduate nursing students' emotional intelligence levels. The scale consists of 33 items categorized into appraisal and expression of emotions (13 items), regulation of emotions (10 items), and utilization of emotions (10 items). Responses were measured on a five-point Likert-type scale ranging from 1 to 5 (1=strongly disagree, 5=strongly agree). The total SSEIT score ranges from 33 to 165, with low EI (33-77), moderate EI (78-121), and high EI (122-165) categories. Higher scores indicate higher emotional intelligence levels.

3. Locus of Control Scale

The TSLOC scale is a 30-item self-report measure developed by Santokhie and Lipps (19) to assess university students' beliefs about control over their academic outcomes. It includes three subscales: Internal LOC, External LOC, and External LOC (Powerful Others), each with 10 items. The total score ranges from 30 to 150, with higher scores indicating higher external LOC. The subscale scores range from 10 to 50. The scale has demonstrated reliability and validity in previous studies.

VALIDITY AND RELIABILITY OF THE TOOLS

Both SSEIT and TSLOC have shown strong reliability in previous studies. Internal consistency was assessed using Cronbach's alpha, resulting in values of 0.96 for the total scale and 0.87, 0.88, and 0.86 for the subscales, ensuring high reliability for the sample population. Pilot testing with a subset of nursing students confirmed the instruments' suitability for the Saudi context and their significant correlation with other measures of locus of control, academic self-efficacy, and academic performance [20, 21].

DATA COLLECTION PROCEDURE

The Fig. 1. illustrating the stage of selecting participants and analysis:

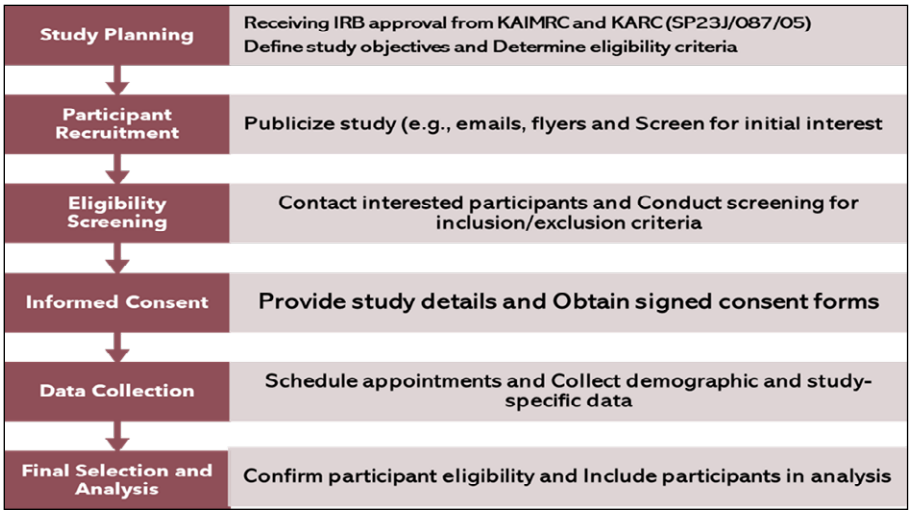

Fig. 1. Data collection procedure flow chart of study sample recruitment and

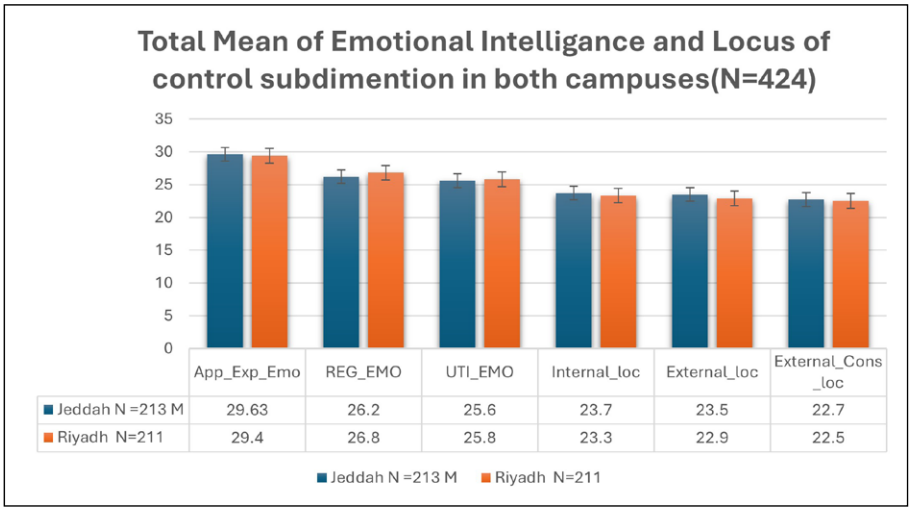

Fig. 2. Means of emotional intelligence and locus of control in both campuses N= 424

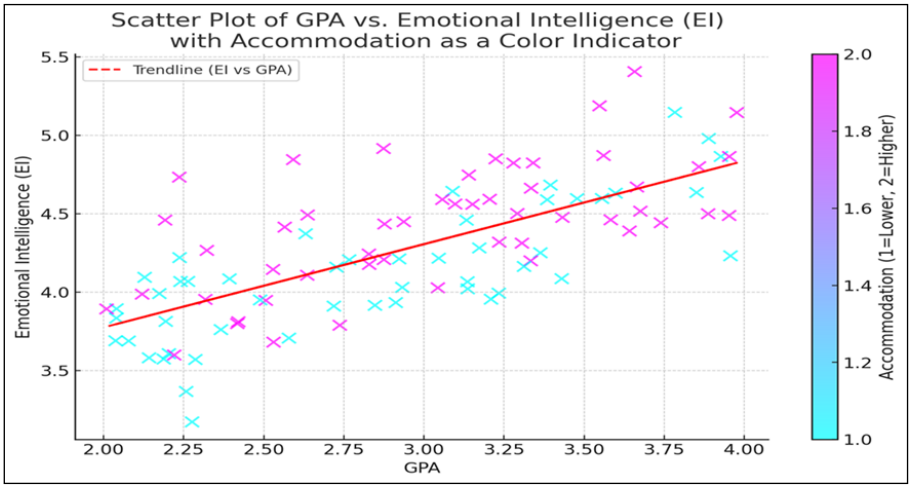

Fig.3. Scatter plot of GPA vs EI with Accommodation

- Official approval to conduct the study was obtained from KAIMRC and IRB (1290/23) SP23J-087-05. The data collection process was initiated.
- All chairpersons of nursing departments in the college of nursing were contacted to facilitate access to students at various levels and departments. This was done through personal contact or via social networking platforms, along with distributing leaflets and providing a brief explanation during the IRB approval process. The purpose of the study was explained to nursing students, and they were encouraged to participate by filling out the survey.
- Participants were required to sign an informed consent form before completing the survey questionnaires.

Table 1. The demographic characteristics of studied students in the two campuses (N=424)

		Campus			
		Jeddah (N=213)		Riyadh (N=211)	
		No.	%	No.	%
Age	18-20	64	30.0%	39	18.5%
	20-23	124	58.2%	158	74.9%
	23-25	25	11.7%	14	6.6%
Academic level	3 -7	78	36.60%	49	23.20%
	8 -12	135	63.40%	161	54.10%
	< 12	0	0.0%	1	0.5%
GPA	4.51-4.75	70	32.9%	28	13.3%
	4.01-4.50	64	30.0%	51	24.2%
	3.51-4.00	55	25.8%	77	36.5%
	3.01-3.50	18	8.5%	37	17.5%
	2.00-3.01	6	2.8%	18	8.5%
Marital status	single	204	95.8%	199	94.3%
	married	7	3.3%	11	5.2%
	widowed	1	0.5%	1	0.5%
	divorced	1	0.5%	0	0.0%
Accom	urban	198	93.0%	191	90.5%
	rural	15	7.0%	20	9.5%
Family members	0 -10	201	94.4%	181	85.80%
	< 11	12	5.7%	30	14.2%

Values are presented as frequency (No.) and percentage (%). GPA - Grade Point Average. Academic level refers to the current academic year of study. Accommodation (Accom) indicates the students' primary residence type. Family members refer to the total number of individuals living in the student's household

DATA MANAGEMENT AND ANALYSIS PLAN

- Data analysis was conducted using SPSS version 24. The following measures were implemented to ensure transparency and rigor in data handling and analysis
- Data Preprocessing: Missing values were assessed, and cases with significant missing data were excluded. Minor gaps were addressed through mean imputation, a common technique to minimize bias [22]
- Data Transformation: Numerical data were checked for normality, and transformations were applied to non-normal variables as necessary to improve model fit [23]. Numerical variables were presented as medians and interquartile ranges (IQRs), while categorical data were shown as frequencies and percentages. This method provided a robust representation of participant characteristics given the data's non-normal distribution [24]. Univariate analyses explored the relationships among emotional intelligence (EI), locus of control (LOC), and demographic variables using: Mann–Whitney U Test for binomial categorical variables to assess differences in EI and LOC scores [25]; Kruskal–Wallis H Test for variables with more than two categories to examine relationships with EI and LOC scores [26]. Key variables identified in univariate analyses were included in multiple linear regression models to determine independent factors associated with EI and LOC. Multiple linear regression was chosen for its ability to model relationships between multiple predictors and outcomes effectively, ensuring a comprehensive and reliable analysis [27]. Statistical significance was set at $p < 0.05$.

ETHICAL CONSIDERATIONS

The study received official approval from the research unit at the nursing college, Jeddah, KAIMRC, and IRB No. (1290/23) (SP23J-087-05). Subsequently, the study subjects were contacted to explain the purposes and procedures of the study. Subjects were informed that their participation was voluntary, and they could withdraw at any time without penalty. They were assured that their responses would remain anonymous and their data confidential. The Principal Investigator (PI) guaranteed that all data, both hard and soft copies, would be stored within MNGHA premises and accessed only by the research team.

Table 2. Comparison between Jeddah and Riyadh campuses in relation to Emotional Intelligence and Locus of control sub-dominations (N=424)

campus		Jeddah		Riyadh		significance	
		No.(%)	M±SD	No.(%)	M±SD	Pearson Chi-Square	P value
Emotional intelligence categories							
Emotion perception	Lower	149(70%	29.63±6.48	152(72%)	29.4±6.59	.224	.636
	Higher	64(30%)		59(28%)			
EI_Utilizing_Emotion_CAT	Lower	93(43.7%)	26.2±7.1	81(38.4%)	26.8±7.5	1.218	.270
	Higher	120(56.3%)		130(61.6%)			
EI_Managing_Emotion_CAT	Lower	100(46.9%)	25.6±7.38	96(45.5%)	25.8±7.42	.090	.765
	Higher	113(53.1%)		115(54.5%)			
Locus of control							
Internal L.C	Lower	118(55.4%)	23.7±6.91	130(61.6%)	23.32±6.7	1.685	.194
	Higher	95(44.6%)		81 (38.4%)			
External L.C	Lower	121(56.8%)	23.5±7.36	130(63.0%)	22.9±6.78	1.710	.191
	Higher	92(43.2%)		78(37.0%)			
External construct L.C	Lower	134(62.9%)	22.7±6.71	137(64.9%)	22.5±6.83	.187	.665
	Higher	79(37.1%)		74(35.1%)			

EI - Emotional Intelligence, L.C - Locus of Control, M±SD - Mean ± Standard Deviation. P-values derived from Pearson Chi-Square tests. Higher/lower indicate category classification

RESULTS

Table 1 presents demographic data for students from two campuses, Jeddah (N=213) and Riyadh (N=211), across various categories. In terms of age distribution, most students in Jeddah are in the 20-23 age group (58.2%), while in Riyadh, the largest proportion falls within the same age range (74.9%). Academic levels show that a higher percentage of students in Riyadh (54.1%) are in the 8-12 range compared to Jeddah (63.4%). Regarding GPA, the most common range in Jeddah is 4.01-4.50 (30.0%), while in Riyadh, it is 3.51-4.00 (36.5%). Most students in both cities are single (Jeddah: 95.8%, Riyadh: 94.3%). Urban accommodation is prevalent in both cities, with 93.0% in Jeddah and 90.5% in Riyadh. Family size indicates that a higher percentage of students in Jeddah (94.4%) have 0-10 family members compared to Riyadh (85.8%).

Table 2 displays the comparison between Jeddah and Riyadh campuses examines emotional intelligence (EI) and locus of control (LC) sub-dimensions within a sample of 424 individuals. There are no significant differences observed in emotional intelligence categories, such as emotion perception (Jeddah: M=29.63, SD=6.48; Riyadh: M=29.4, SD=6.59), utilizing emotion (Jeddah: M=26.2, SD=7.1; Riyadh: M=26.8, SD=7.5), and managing emotion (Jeddah: M=25.6, SD=7.38; Riyadh: M=25.8, SD=7.42). Regarding locus of control, both internal (Jeddah: M=23.7, SD=6.91; Riyadh: M=23.32, SD=6.7) and external (Jeddah: M=23.5, SD=7.36; Riyadh: M=22.9, SD=6.78) categories show similar trends, including external locus of control (Jeddah: M=22.7, SD=6.71; Riyadh: M=22.5, SD=6.83). Despite minor differences in means and standard deviations, the Pearson Chi-Square analysis reveals non-significant differences across all dimensions, with p-values mostly above 0.05, indicating a consistent pattern in emotional intelligence and locus of control profiles between the two campuses.

The fig. 2. displays the average scores of Emotional Intelligence and Locus of Control in Jeddah and Riyadh. The results indicate a significant similarity in emotional intelligence and locus of control between the Jeddah and Riyadh campuses, with no noticeable differences detected between the two locations.

Table 3 displays correlations among locus of control (LOC), emotional intelligence (EI), accommodation (Accom), and grade point average (GPA). There is a strong positive correlation of .730** between LOC and EI, indicating a significant relationship where higher emotional intelligence is associated with a stronger internal locus of control. Additionally, both LOC and EI show weak but statistically significant positive correlations with GPA, with coefficients of .171** and .122* respectively.

Table 4 shows that, Jeddah campus, among participants with 0-10 family members, there is a higher percentage (55.7%) of individuals with a higher internal locus of control compared to those with a lower internal locus of control (44.3%). However, this difference is not statistically significant (Chi-square = 0.190, p = 0.23).

Similarly, among participants with 10 or more family members in Jeddah, there is a slightly higher percentage (75.0%) of individuals with a higher internal locus of control compared to those with a lower internal locus of control (25.0%). Again, this difference is not statistically significant

Table 3. Correlation between Locus of control, emotional intelligence and background information N=424

Correlations – Background					
		LOC	EI	Accom	GPA
LOC	Pearson Correlation	1	.730**	.171**	.171**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	424	424	424	424
EI	Pearson Correlation	.730**	1	.122*	.122*
	Sig. (2-tailed)	<.001		.012	.012
	N	424	424	424	424
Accom	Pearson Correlation	.087	.073	1	
	Sig. (2-tailed)	.073	.135		
	N	424	424	424	424
GPA	Pearson Correlation	.171**	.122*		1
	Sig. (2-tailed)	<.001	.012		
	N	424	424	424	424

*Correlation is significant at the 0.05 level (2-tailed), **Correlation is significant at the 0.01 level (2-tailed), LOC - Locus of Control, EI - Emotional Intelligence, Accom - Accommodation, GPA - Grade Point Average

(Chi-square = 0.306, p = 0.409). In the Riyadh campus, similar patterns are observed. However, the differences in the distribution of internal locus of control among participants with different numbers of family members are not statistically significant for both the 0-10 family members group (Chi-square = 0.158, p = 0.223) and the 10 or more family members group (Chi-square = 0.435, p = 0.541)

Table 5 exhibits the binary logistic regression analysis revealed that Emotional Management (EM) and Locus of Control (LOC) had varying impacts on Grade Point Average (GPA). While high levels of Emotional Management did not significantly affect GPA, individuals with a high Locus of Control had lower odds of achieving a higher GPA. Age also played a significant role, with students aged 20-23 and 23-25 having lower odds of achieving a higher GPA compared to those aged 18-20. Students from the Riyadh campus had lower odds of achieving a higher GPA than those from the Jeddah campus. Accommodation type and the number of family members did not show significant effects on GPA. The model explained 14.5% of the variance in GPA, suggesting areas for intervention to improve academic performance (fig.3).

The scatter plot shows a positive correlation between GPA and Emotional Intelligence (EI), indicating that as GPA increases, EI tends to rise as well. This aligns with previous research suggesting a positive relationship between these two factors. The color gradient representing accommodation quality (higher values in magenta and lower values in cyan) reveals that students with better accommodations tend to have higher EI levels, supporting the idea that accommodation quality positively influences EI. However, there is variability in EI scores at different GPA levels, suggesting that factors beyond GPA and accommodation may also impact EI. Outliers, particularly at high EI levels with average GPAs or lower accommodation scores, suggest that some students may achieve high EI through factors other than GPA and accommodation, such as personal experiences or social support. Overall, while GPA and accommodation quality are important predictors of EI, they do not fully explain it, indicating the need to explore additional contributing factors.

DISCUSSION

To our knowledge, this study is the first in Saudi Arabia to investigate the relationship between emotional intelligence (EI), locus of control (LOC), and academic success among nursing students in Jeddah and Al-Riyadh. The findings show that more than 50% of students in both locations have high emotional intelligence levels, which aligns with previous research. Nursing programs that emphasize critical thinking and communication skills help students develop emotional intelligence, enabling them to understand and manage their emotions effectively.

The study also reveals a positive correlation between LOC and EI, indicating that individuals with high emotional intelligence tend to have a strong sense of control over their lives. They are better at managing stress, staying focused, and adapting to different situations. Bandura's Social Cognitive Theory [12] emphasizes the relationship between self-efficacy and control over life situations, suggesting that individuals with high emotional intelligence are proactive in achieving their goals.

Previous research has consistently shown a positive relationship between emotional intelligence and internal locus of control. However, some studies have reported conflicting

Table 4. Correlation between domains of LOC and no of family members between 2 campuses N=424

Camp.	Family member_Grouping	Interna _LOC		Chi-square	Sig.	External LOC		Chi-square	Sig	E L Construct		P Chi	S
		Lower	Higher			lower	higher			L	H		
Jeddah	0 - 10	108 (53.7)	93 (46.3%)	.045	.040	112 (55.7%)	89 (44.3%)	.190	.239	125 (62.2%)	76 (37.8%)	.372	.541
	10 and more	10 (83.3%)	2 (16.7%)			9 (75.0%)	3 (25.0%)			9 (75.0%)	3 (25.0%)		
Riyadh	0 - 10	115 (63.5%)	66 (36.5%)	.158	.223	116 (64.1%)	65 (35.9%)	.435	.541	120 (66.3%)	61 (33.7%)	.306	.409
	10 and more	15 (50.0%)	15 (50.0%)			17 (56.7%)	13 (43.3%)			17 (56.7%)	13 (43.3%)		

LOC - Locus of Control. P-values derived from Chi-square tests comparing internal, external, and external construct LOC across family size groups in Jeddah and Riyadh campuses, EI - Emotional Intelligence

Table 5. Binary logistic regression of EM and LOC effect on GPA N=424

Covariate	β	P-value	Adjusted OR	95% CI of OR
EM				
Low (Ref)	-	-	-	-
High	-0.050	0.841	0.95	0.58-1.55
LOC				
Low (Ref)	-	-	-	-
High	-0.644	0.010	0.52	0.32-0.86
Age				
18-20 (Ref)	-	-	-	-
20-23	-0.706	0.006	0.49	0.30-0.81
23-25	-1.047	0.010	0.35	0.16-0.78
Campus				
Jeddah (Ref)	-	-	-	-
Riyadh	-1.026	0.001	0.36	0.23-0.54
Accommodation				
Urban (Ref)	-	-	-	-
Rural	-0.324	0.402	0.72	0.34-1.54
Family member				
0-10 (Ref)	-	-	-	-
10 and more	-0.335	0.356	0.72	0.35-1.46

Binary logistic regression examining the effect of Emotional Intelligence (EI) and Locus of Control (LOC) on GPA. OR - Odds Ratio, CI - Confidence Interval, Ref - Reference category. R^2 represents model fit

results, such as a negative relationship between emotional intelligence and internal locus of control in students in India. Overall, the findings highlight the importance of emotional intelligence in academic success and personal development among nursing students.

Concerning the relationship between Emotional Intelligence (EI) and students' Grade Point Average (GPA), the results indicate a weak but notable positive correlation between them. Although the correlation might not be as robust as the one between Locus of Control (LOC) and GPA, it still underscores a positive association. Research indicates that students with high emotional intelligence often establish specific goals and exert more academic and practical effort to attain them [28]. Moreover, earlier research has shown the relationship between the GPA of nursing students and their levels of EI [29,30,31]. Additionally, Dou et al. [32] performed a structural modeling investigation that showed a positive connection between EI scores and the clinical competence of nursing interns. Therefore, it is clear that students with higher emotional intelligence scores demonstrate greater positivity, accuracy, and success in their tasks than those with lower emotional intelligence scores.

Moreover, LOC displays statistically significant positive relationships with GPA, indicating that individuals who possess a stronger locus of control usually achieve better

academic performance. From an educational standpoint, LOC explains how learners assess the elements contributing to their academic success. Students with an external focus think that outside factors shape their actions and affect their future, while those who are internally oriented believe that their own choices, decisions, and efforts control their destiny. Additionally, LOC plays a vital role in improving learning [33-34]. Thus, it is highly linked to educational success [35]. Indeed, Pardede, and Simanjuntak. (36) discovered a notable connection between LOC and Self-Directed Learning readiness levels in nursing students, particularly concerning the internal locus of control. While this discovery does not directly pertain to the connection between LOC and GPA, it clarifies how LOC relates to GPA. Students with an internal locus of control think they need to put in effort to meet their objectives, fostering a desire for self-directed learning that enables them to attain high GPAs. In addition to our results, Pardede, and Simanjuntak [36] and Ozuome et al. [37] discovered that locus of control plays a significant role in student learning achievement with a p value of 0.02. Students with an internal locus of control tend to achieve a higher-grade point average compared to those with an external locus of control. Moreover, Mohamed et al. [38] found a meaningful connection between the locus of control and academic performance in nursing students, and they validated this connection through regression coefficient analysis.

Although family size could be a factor affecting locus of control, its impact may be overshadowed by other significant factors, as shown in Table 4, where the number of family members does not significantly influence individuals' LOC at the two campuses. This suggests that factors like personality, culture, or education may have a greater influence on shaping individuals' LOC. Further studies are needed to confirm this hypothesis and explore potential factors influencing LOC. Some studies have found no significant correlation between family size and LOC. For example, Mitchell et al. [39] found that family structure (single-parent vs. two-parent) was more important than family instability for LOC during adolescence. Alkorashy [40] discovered that family instability negatively affected cognitive abilities and health outcomes but not LOC. On the other hand, Iles-Caven et al. [41] found that individuals from extended families with multiple generations living together tend to have a higher internal LOC than those from nuclear families, attributing this to greater social support and guidance in joint families.

Similarly, Liu and Rahman [42] found that individuals from smaller families with one or two siblings often have a stronger internal LOC compared to those from larger families with four or more siblings, suggesting that larger families may lead to increased competition and conflict, reducing the sense of personal control. Understanding the complexities of human behavior and the various factors influencing the formation of LOC beliefs is crucial. Future research could explore the interplay between family size and socio-cultural factors to better understand their combined impact on locus of control.

In conclusion, the comparison of emotional intelligence and locus of control between Jeddah and Riyadh campuses showed minor differences in means and standard deviations, with no significant discrepancies across all dimensions, indicating a consistent pattern in emotional intelligence and locus of control profiles at both campuses. This uniformity can be attributed to similarities in cultural backgrounds, educational programs, strategies, and extracurricular activities, as well as identical admission standards for students at both campuses. Nursing education programs should implement interventions and support systems to enhance students' emotional intelligence and internal locus of control. Workshops focusing on EI skills like self-awareness and empathy, counseling services, and peer support initiatives can improve students' emotional health and resilience. Incorporating mindfulness and stress relief techniques into the curriculum can help students develop coping mechanisms for academic challenges. Assignments involving reflective practice can promote self-reflection and insight growth, while positive feedback can boost students' confidence. Assessment tools like the SSEIT can support personalized development strategies, and faculty development initiatives should ensure educators can effectively nurture students' emotional growth. By adopting these strategies, educational institutions can create a supportive environment that empowers students to succeed academically and professionally.

CONCLUSIONS

The present study underscores the significant impact of emotional intelligence (EI) and locus of control (LOC) on the academic performance of nursing students in Saudi Arabia. The absence of substantial differences in EI and LOC between the Jeddah and Riyadh campuses suggests that institutional factors, such as standardized curricula, pedagogical methods, or clinical training environments, may uniformly cultivate these psychological attributes across Saudi nursing programs. This uniformity underscores the potential for national educational strategies to integrate the development of EI and LOC into nursing education, aligning with global calls for psychologically informed training in healthcare disciplines. The positive correlations among EI, LOC, and GPA corroborate existing research indicating that students with elevated emotional intelligence and an internal LOC are more proficient in managing academic stressors and sustaining motivation. These findings align with research emphasizing the role of EI in clinical decision-making and the influence of LOC on resilience in high-pressure contexts. Notably, the asso-

ciation between family size and LOC may reflect cultural factors in Saudi Arabia, where familial support networks could enhance students' sense of agency, warranting further exploration in collectivist societies. Although demographic variables such as housing status did not exhibit a significant relationship with EI or LOC, this reinforces the notion that psychological traits, rather than situational factors, are pivotal to academic success. This study contributes to the understanding of the psychological determinants of nursing students' academic achievement and suggests that educational programs should consider strategies to enhance emotional intelligence and foster an internal locus of control to promote academic success.

LIMITATION OF THE STUDY

- Cross-Sectional Design: The study's design hinders establishing causal relationships between emotional intelligence (EI), locus of control (LOC), and academic outcomes.
- Self-Reported Data: Relying on self-reported surveys may introduce biases due to social desirability or interpretation differences.
- Generalizability: Findings may not apply to all nursing students, as the study was limited to two Saudi Arabian campuses, potentially reflecting cultural biases.

FUTURE RESEARCH

Tracking emotional intelligence (EI) and locus of control (LOC) over time, including cross-cultural comparisons and exploring their influence across different healthcare disciplines, can provide valuable insights into their impact on academic and clinical performance. Evaluating interventions to enhance EI and LOC in nursing education can further improve outcomes, bridging the gap between academic success and professional competence.

RECOMMENDATIONS FOR NURSING EDUCATORS

Based on the findings, nursing educators should focus on developing emotional intelligence and internal locus of control in nursing students. Practical interventions include:

1. Integrating emotional intelligence development into nursing programs through workshops and modules on self-awareness, self-regulation, and empathy.
2. Establishing mentoring programs to enhance emotional intelligence and internal locus of control.
3. Implementing active learning activities to build problem-solving skills and stress management.
4. Using assessment tools like the Schutte Self-Report Emotional Intelligence Test for regular evaluation and feedback.

PRACTICAL IMPLICATIONS

These findings offer actionable strategies for policymakers and nursing educators to enhance nursing students' educational and clinical competence by promoting emotional intelligence and locus of control.

FOR POLICYMAKERS

1. Advocate for the inclusion of emotional intelligence and locus of control development in nursing education policies.
2. Invest in professional development for educators to foster emotional intelligence and locus of control.
3. Develop support programs for students focused on building emotional resilience and self-belief.

FOR NURSING EDUCATORS

1. Integrate emotional intelligence and locus of control into the curriculum through practical components
2. Promote active learning strategies to enhance emotional intelligence and locus of control.
3. Use assessment tools for personalized feedback and support students in developing these competencies.
4. Provide ongoing mentorship to cultivate emotional intelligence and internal locus of control in students.

EFFECT ON CARE STANDARDS

Fostering emotional intelligence and locus of control in nursing students improves academic performance and enhances the quality of care they deliver. Nurses with strong emotional intelligence and internal locus of control exhibit better problem-solving skills, clinical decision-making, and patient outcomes.

In conclusion, developing emotional intelligence and locus of control in nursing students benefits both academic success and patient care. Decision-makers and educators should prioritize these psychological principles in nursing education programs to prepare students for success in their academic and professional roles in healthcare.

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The researchers extend their sincere gratitude to all esteemed students and research units of each college for their invaluable cooperation and support in facilitating the data collection process. Additionally, they would like to express their special appreciation for Dr. Mohammed Eldigire Ahmed, Assistant Professor of Biostatistics, for his constructive guidance and expertise in conducting regression analysis.

CONFLICT OF INTEREST

The Authors declare no conflict of interest

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RECEIVED: 08.01.2025
ACCEPTED: 19.05.2025