

Midwifery Students' Perceptions of Clinical Learning Experiences and Assertiveness Levels: The Serial Mediating Role of Anxiety and Stress

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Abstract

Introduction: This study aimed to examine the relationship between midwifery students' perceptions of clinical learning experiences and assertiveness levels through a serial mediation analysis involving anxiety and stress.

Methods: This descriptive, cross-sectional, and correlational study included midwifery students in the 2nd, 3rd, and 4th years of study at a university in eastern Türkiye. Data were collected using the Student Introduction Form, Perceptions of Clinical Learning Experiences Scale, the Voltan-Acar Assertiveness Inventory, the State Anxiety Inventory, and the Clinical Stress Questionnaire (CSQ).

Results: The sample comprised 239 midwifery students. Students demonstrated low levels of clinical learning experience perceptions and assertiveness (44.65 ± 12.03 ; 89.73 ± 26.93), as well as moderate levels of anxiety and stress (46.30 ± 8.63 ; 53.32 ± 14.53). A statistically significant positive correlation was identified between CSQ scores and trait anxiety scale scores ($\beta = 0.343$, $p < 0.001$). State anxiety, clinical learning environment, and self-determination scale scores collectively explained 16.3% of the variance in CSQ scores ($R^2 = 0.163$).

Discussion and Conclusion: The findings indicate that moderate levels of anxiety and stress adversely affect perceptions of clinical learning experiences among midwifery students and are associated with lower perceptions of clinical learning experiences and assertiveness levels. The quantitative model revealed that anxiety and stress serially mediated the association between clinical learning experience perceptions and assertiveness, elucidating the mechanisms underlying these relationships.

Keywords: Anxiety; Assertiveness; Clinical; Midwifery; Student

Midwifery programs are structured to equip students with essential clinical competencies required for effective performance as professional midwives in future practice.^[1] In such countries as New Zealand, Germany,

and Australia, clinical practice constitutes 50% of the midwifery curriculum.^[2] In Türkiye, clinical practice exceeds this proportion and represents a substantially larger component of the curriculum.^[3,4] Given that approximately

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half of undergraduate midwifery education occurs in clinical settings, assessment of assertiveness in relation to clinical experiences is essential.^[5]

Assertiveness plays a central role not only in daily interpersonal relationships but also in professional practice. The ability of midwifery students to form strong and therapeutic relationships with individuals under care is closely linked to elevated assertiveness levels. Students who demonstrate assertive behaviors can advocate fairly and effectively for personal rights and for the rights of patients.^[6] Assertiveness constitutes a skill that must be cultivated in midwifery education and contributes to enhanced personal confidence. In addition, midwifery students have been reported to experience moderate levels of anxiety and stress during early clinical practice.^[7]

Furthermore, the literature highlights a gap in understanding how clinical environments and instructor behaviors influence psychological well-being and skill development among students. Several studies indicate a need for further research on the mediating effects of anxiety and stress in the relationship between perceptions of clinical learning experiences and assertiveness levels.^[5,8,9] It is hypothesized that negative perceptions of the clinical environment may elevate stress and anxiety, which may subsequently diminish assertiveness, thereby contributing to clinical underperformance. Examination of this multifaceted relationship is essential to enhance the quality of clinical midwifery education.

The primary aim of this study was to assess midwifery students' perceptions of clinical learning experiences, assertiveness levels, and levels of anxiety, concern, and stress. The secondary aim was to examine the serial mediating roles of anxiety and stress in the relationship between perceptions of clinical learning experiences and assertiveness levels.

Materials and Methods

Study Place and Design

Data collection was conducted between March and November 2024 at a university located in eastern Türkiye. A cross-sectional survey design was utilized and structured within the framework of Structural Equation Modeling (SEM) to assess midwifery students' perceptions of clinical learning experiences, assertiveness, anxiety, and stress levels, and to examine the relationships among these variables. The relational screening model constitutes a descriptive approach used to identify whether two or

more variables demonstrate a statistically significant association and to determine whether and how the variables change in relation to one another.^[10]

Research Type

This study is a descriptive, cross-sectional, and correlational research.

Research Questions

1. How do midwifery students perceive their clinical learning experiences?
2. What is the assertiveness level of midwifery students?
3. How prevalent is anxiety among midwifery students in the context of clinical training?
4. How do midwifery students perceive their levels of stress in relation to their training experiences?
5. How do anxiety and stress function as serial mediations between students' perceptions of clinical learning environments and their assertiveness levels?

Study Population and Sampling

The study population comprised 2nd-, 3rd-, and 4th-year midwifery students who were participating in clinical practice at the Faculty of Health Sciences, Şırnak University (n=349) in eastern Türkiye. The required sample size was calculated using a 95% confidence level, a 5% margin of error, and 80% statistical power, yielding a minimum requirement of 153 students. The study was completed with 239 midwifery students through quota sampling, corresponding to 68.4% of the population. Data collection was conducted between March and November 2024.

Quota sampling is similar to stratified sampling in that it involves selecting participants from a population divided into distinct subgroups. However, unlike stratified sampling, which employs random selection within each subgroup, quota sampling relies on convenience-based methods to select participants from each subgroup. To ensure response validity, predetermined selection criteria are applied following identification of the target population. This approach is referred to as controlled quota sampling.^[11]

Inclusion Criteria

Participants were 2nd-, 3rd-, and 4th-year midwifery students who had attended theoretical courses and clinical placements and who voluntarily agreed to participate.

Exclusion Criteria

Students in the 1st year (n=64), those who did not attend the course and clinical practice (n=15), and those who did not volunteer to participate (n=85) were excluded from the study.

Data Collection Tools

Data were collected using the Student Introduction Form, the Perceptions of Clinical Learning Experiences Scale (CLES), the Voltan-Acar Assertiveness Inventory (VAAI), the State Anxiety Inventory (SAI), and the Clinical Stress Questionnaire (CSQ).

Student Introduction Form

The form was developed by researchers based on the related literature^[9,12,13] and consists of six questions addressing age, gender, year of study, duration of clinical experience, most recent clinical placement, and current academic grade point average.

Perceptions of CLES

The scale was developed by Griffiths et al.^[2] and adapted to Turkish society by Güneş Ayyıldız and Demirelöz Akyüz.^[14] The instrument assesses how midwifery students perceive the clinical learning environment, including the role and impact of instructors on the learning process. The present study focused solely on perceptions of clinical learning experiences; therefore, only the perception component of the CLES was utilized. Items are scored from 1 (Strongly disagree) to 4 (Strongly agree). The scale has no cutoff score. Scores range from a minimum of 26 to a maximum of 104, with higher scores indicating increased perceptions of clinical learning experiences.

In the original scale, the Cronbach's alpha coefficient for the perception of CLES was 0.92.^[2] In this study, the Cronbach's alpha coefficient for the perception of CLES was 0.90.

VAAI

The scale was developed by Voltan-Acar and Öğretmen for Turkish society to measure assertiveness. The instrument consists of 28 items and utilizes a 6-point Likert structure, with response options ranging from 6 (very descriptive of me) to 1 (not at all descriptive of me). The minimum score is 28, and the maximum score is 168. Higher scores indicate greater assertiveness, whereas lower scores correspond to increased passiveness. Increases in scale scores signify heightened assertiveness levels. The Cronbach's alpha coefficient of the original scale was 0.78,^[15] and was calculated as 0.82 in the present study.

SAI

Spielberger et al.^[16] developed the State-Trait Anxiety Inventory to independently measure state and trait anxiety levels based on the "Two-Factor Theory of Anxiety". The scale was adapted to Turkish by Oner.^[17] The present study utilized only the State Anxiety Scale (SAI). The SAI consists of 20 items and is scored on a 4-point Likert scale. In the SAI, individuals assess how they "feel at the moment" (at a given moment and under specific conditions). Total scores range from 20 to 80, with higher scores indicating increased anxiety levels. Scores of 60 or above indicate anxiety levels that exceed normal limits.

In the Turkish form, the Cronbach's alpha coefficient for the SAI ranged from 0.94 to 0.96.^[17] In the present study, the Cronbach's alpha coefficient for the SAI was 0.87.

CSQ

The scale was developed by Pagana and adapted to Turkish society by Sendir and Acaroğlu.^[18,19] The instrument measures initial levels of stress (including threat and challenge) experienced by nursing students on the 1st day of clinical practice. It is a 20-item, 5-point Likert-type questionnaire. Each item is scored from 0 ("not at all") to 4 ("very much"). The minimum total score is 0, and the maximum score is 80. Lower scores indicate lower stress levels, whereas higher scores reflect increased stress levels.

The Cronbach's alpha coefficient of the Turkish version of the scale was 0.70,^[19] whereas it was calculated as 0.72 in the present study.

Data Collection

Data were collected between March and November 2024. Participants were informed about the aim of the study, and questionnaire forms were distributed for completion. Data collection was conducted through face-to-face interviews in the clinical setting. Interviews were scheduled in an appropriate environment and time frame after the lunch break and lasted approximately 25–30 min. Researchers were present in the clinics 2 days/week during working hours for data collection.

Ethical Aspect

Before data collection, ethical approval was obtained from the Scientific Research Ethics Committee of Şırnak University (Date: December 07, 2023; Approval No: 2023/82972) in eastern Türkiye. Students who volunteered to participate provided verbal and written informed consent in accordance with ethical guidelines. Participants were

informed that the information obtained from the study would not be disclosed to any third parties, institutions, or organizations. None of the researchers had a teaching or evaluative role with respect to the participating students; therefore, no power imbalance or academic pressure was present during recruitment or data collection. The study was conducted in accordance with the ethical standards of the Declaration of Helsinki.

Data Analysis

Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) V23 and IBM AMOS V24 (Version 23.0, SPSS Inc., Chicago, IL, USA). Normality was assessed using the Shapiro–Wilk test and Q-Q plot inspections. Based on these evaluations, the data demonstrated normal distribution. Descriptive statistical methods were employed to evaluate midwifery students' perceptions of clinical learning experiences and their assertiveness, anxiety, and stress levels. These analyses were conducted to fulfill the primary objective of the study, which involved assessing the levels of the variables under investigation.

To address the secondary objective of the study, inferential analyses were conducted. Pearson's correlation analysis was used to examine the relationships among the study variables.^[20] SEM was then applied to test the proposed SEM. This model was selected because the study aimed to examine whether anxiety and stress sequentially mediate the relationship between midwifery students' perceptions of clinical learning experiences and their assertiveness levels.

The significance of direct and indirect effects was evaluated using a bootstrapping procedure with 5,000 resamples and a 95% confidence interval. Bootstrapping was preferred as it is widely recommended for mediation analyses due to its robustness in estimating indirect effects and its reduced sensitivity to violations of normality assumptions. Statistical significance was set at $p < 0.05$.

Results

Participant Characteristics

The mean age of participating students was 21.32 ± 1.65 years. A total of 57% resided in the city center, and 40% were in the 3rd year of study. In addition, 56% had 15 weeks or more of clinical experience, 72% had completed clinical practice in internal medicine units, and 49% had an academic grade point average in the 3.50–3.01 range (Table 1).

Table 1. Distribution and means of students' demographic data (n=239)

Demographic data	n	%
Place of residence		
City	136	57
Town	79	33
Village	24	10
Year		
2 nd year	92	38
3 rd year	95	40
4 th year	52	22
Duration of clinical experience		
15 weeks and over	133	56
8–14 weeks	106	44
Clinic of the most recent experience		
Surgical units	60	25
Internal units	173	72
Intensive care units	6	3
Academic grade point average		
4.00–3.51	7	3
3.50–3.01	116	49
3.00–2.51	101	42
2.50–2.26	9	4
2.25–2.01	3	1
2.00–1.01	3	1
	M±SD	Median (min–max)
Age (years)	21.32±1.65	21 (18–33)

n: Total sample size; n: Number of participants; %: Percentage; M: Mean; SD: Standard deviation; Min: Minimum; Max: Maximum.

Scale Scores

Students' mean score on the SAI was 46.30 ± 8.63 , and the mean score on the CSQ was 53.32 ± 14.53 . The mean score on the VAAI was 89.73 ± 26.93 . The mean score on the perception of CLES was 44.65 ± 12.03 (Table 2).

The Relationship between Scales

A statistically significant positive correlation was identified between state anxiety scores and CSQ scores among the participating midwifery students ($r = 0.385$; $p < 0.001$). Conversely, state anxiety scores were negatively correlated with assertiveness scale scores ($r = -0.288$; $p < 0.001$). In addition, a statistically significant negative relationship was observed between state anxiety scores and perception of CLES scores ($r = -0.270$; $p < 0.001$).

Table 2. Mean scale score (n=239)

Scales	Mean±SD	Median (min-max)
SAI	46.30±8.63	46 (20–80)
CSQ	53.32±14.53	54 (20–100)
VAAI	89.73±26.93	90 (28–168)
CLES	44.65±12.03	48 (13–52)

M: Mean; SD: Standard deviation; Min: Minimum; Max: Maximum; SAI: State anxiety inventory; CSQ: Clinical stress questionnaire; VAAI: Voltan-Acar assertiveness inventory; CLES: Perceptions of clinical learning experiences scale.

A statistically significant positive correlation was observed between CSQ scores and assertiveness scores ($r=0.212$; $p=0.001$). The findings also demonstrated a statistically significant positive association between clinical stress levels and perceptions of the clinical learning environment as measured by the CLES scale ($r=0.216$; $p=0.001$).

A statistically significant positive relationship was found between assertiveness scale scores and perceptions of the CLES ($r=0.539$; $p<0.001$) (Table 3).

SEM Results

The analysis revealed a statistically significant negative correlation between assertiveness levels and state anxiety scores ($\beta=-0.155$; $p=0.005$). A one-unit increase in state anxiety scores corresponded to a 0.481-point decrease in assertiveness scores ($B=-0.481$).

The findings indicated a statistically significant negative correlation between assertiveness levels and perceptions of the clinical learning environment, as measured by the CLES ($\beta=-0.745$; $p<0.001$). A one-unit increase in perception of CLES scores corresponded to a 1.663-point decrease in assertiveness scale scores ($B=-1.663$).

Perception of CLES scores had no statistically significant effect on CSQ scores ($p=0.215$). A statistically significant positive correlation was observed between CSQ scores and SAI scores ($\beta=0.343$; $p<0.001$). A one-unit increase in SAI scores corresponded to a 0.577-point increase in CSQ

Table 3. Correlations among mean scale scores

Scales	SAI	CSQ	VAAI	CLES
SAI				
r	1	0.385**	-0.288**	-0.270**
p		<0.001	<0.001	<0.001
CSQ				
r		1	0.212**	0.216**
p			0.001	0.001
VAAI				
r			1	0.539**
p				<0.001
CLES				
r				1
p				

** $p<0.01$. r: Pearson correlation coefficient; p: Significance level; SAI: State anxiety inventory; CSQ: Clinical stress questionnaire; VAAI: Voltan-acar assertiveness inventory; CLES: Perceptions of clinical learning experiences scale.

scores ($B=0.577$). Assertiveness scale scores demonstrated no statistically significant effect on CSQ scores ($p=0.357$). Perception of CLES scores and assertiveness scale scores collectively explained 16.3% of the variance in CSQ scores ($R^2=0.163$) (Table 4).

The serial mediation model was applied to the research questions, as shown in Figure 1. Model fit indices demonstrated a good fit to the data: CMIN=1.928, DF=2, CMIN/DF=0.964, RMSEA=0.030, CFI=0.999, NFI=0.997, TLI=0.999, AGFI=0.996, and GFI=0.997.

Discussion

The findings indicate that the relationship between perceptions of the clinical learning experience and assertiveness levels is directly mediated by stress and anxiety. Clinical stress was influenced by state anxiety, perceptions of the clinical learning environment, and assertiveness levels. These findings are discussed in further detail below.

Table 4. PATH analysis results

Outcome variable	Predictor	B	β	SE	CR	p	R ²
VAAI	SAI	-0.481	-0.155	0.173	-2.785	0.005	0.315
VAAI	CLES	-1.663	-0.745	0.369	-4.508	<0.001	
CSQ	CLES	0.106	0.088	0.085	1.240	0.215	0.163
CSQ	SAI	0.577	0.343	0.104	5.535	<0.001	
CSQ	VAAI	0.035	0.066	0.039	0.920	0.357	

B: Unstandardized coefficient; β : Standardized coefficient; SE: Standard error; CR: Critical ratio; R²: Regression coefficient; SAI: State anxiety inventory; CSQ: Clinical stress questionnaire; VAAI: Voltan-acar assertiveness inventory; CLES: Perceptions of clinical learning experiences scale.

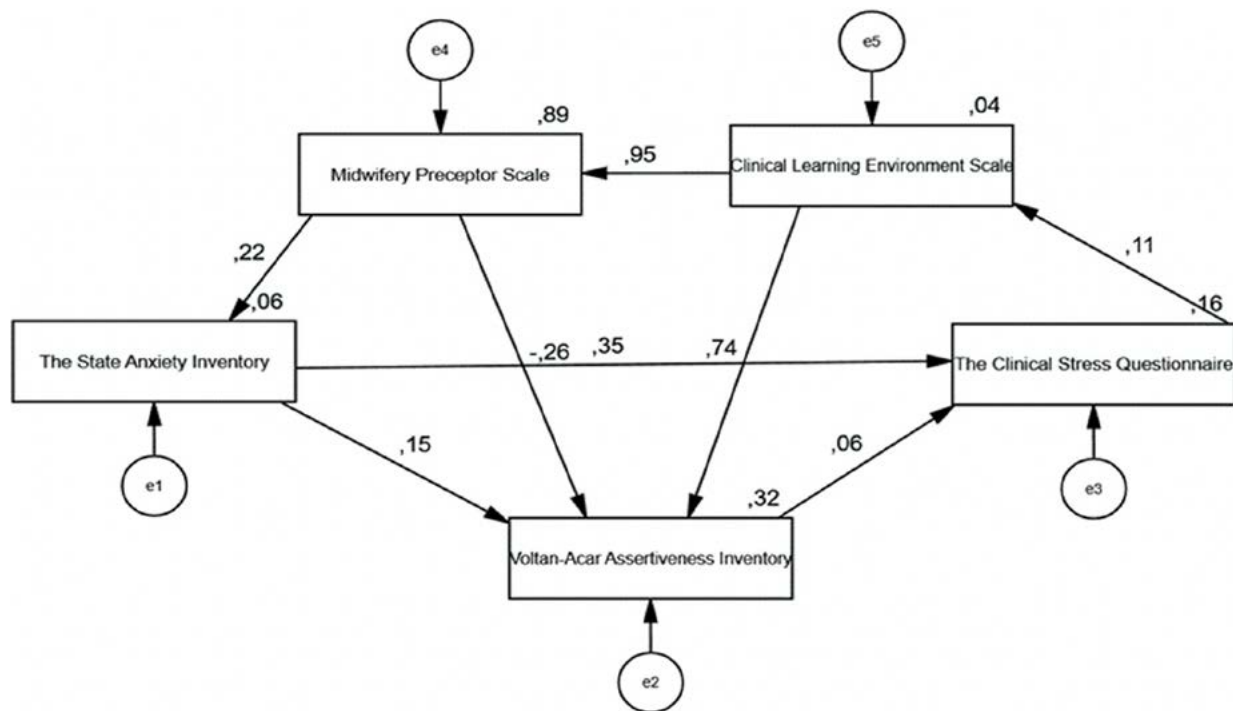


Figure 1. Standardized path coefficients.

In the study, midwifery students demonstrated moderate levels of state anxiety and clinical stress, low levels of assertiveness, and moderate perceptions of clinical learning experiences. A study reporting that assertiveness and psychological empowerment among nursing and midwifery students were at moderate levels also identified a positive and significant correlation between the variables.^[12] Perceptions of clinical learning experiences are influenced by positive instructor attitudes.^[21,22] Although a negative relationship between stress and assertiveness would be expected within the theoretical framework, a positive association was identified in this study. This finding suggests that assertiveness may have emerged as a coping strategy under stress. In this respect, improved management of stress and anxiety may lead to higher levels of assertiveness among students.

Research examining students' perceptions of clinical learning environments and instructors across diverse sample populations consistently indicates that both are generally evaluated as adequate.^[21,22] It has been reported that midwifery students in Türkiye hold highly positive perceptions of their clinical learning experiences, particularly with respect to the development of clinical skills.^[13] Despite these reported findings, students in the present study appeared to experience psychological factors at levels capable of influencing clinical education processes, suggesting that such factors may play a role in learning.

Midwifery students may encounter stressful experiences, particularly in relation to instructor characteristics and the clinical environment, which may affect theoretical and practical skill development. A study conducted in Iran found that midwifery students experienced considerable stress in clinical settings and that instructor-related factors contributed substantially to this stress.^[9] Ziba et al.^[23] reported that frequent contact and supervision from dedicated instructors positively influenced the clinical perceptions of nursing and midwifery students. These varied findings highlight the need to further investigate the influence of instructors on students' anxiety levels.

Low self-confidence combined with high anxiety may lead to decreased performance and limited learning and creativity among midwifery students.^[24] In the present study, a one-unit increase in state anxiety scores corresponded to a 0.481-point decrease in assertiveness scores. Prior studies have reported that nursing and midwifery students experience detrimental latent anxiety and that anxiety levels tend to decrease as assertiveness levels increase. Low levels of anxiety may have constructive effects, whereas moderate to high levels may produce adverse outcomes.^[9,24] The study revealed that as perceptions of clinical learning experiences improved, assertiveness levels decreased significantly. A systematic review evaluating challenges encountered by nursing and midwifery students in

clinical settings identified key difficulties, including a lack of support systems, instructor attitudes, and insufficient learning motivation.^[6] Problem-solving skills and self-confidence improve as assertiveness increases.^[25] Strong adaptation to clinical environments positively influences assertiveness among midwifery students. The literature notes that students supported by instructors tend to be more motivated to learn, have higher satisfaction, and demonstrate stronger professional commitment.^[26,27] Studies conducted in Türkiye indicate that clinical instructors exert a positive influence on the professional development of midwifery students.^[13,28]

A one-unit increase in SAI scores corresponded to a 0.577-point increase in CSQ scores. Studies conducted in Türkiye report that midwifery students experience high levels of state anxiety and stress during early clinical experiences, and that these levels tend to decrease with increasing experience.^[7] Midwifery and nursing students have been reported to experience stress primarily due to clinical and academic environments.^[8] A study emphasizing the direct mediating effect of clinical practice stress between the clinical learning environment and satisfaction with clinical practice suggested that environmental adjustments and stress reduction are necessary.^[29,30]

According to the findings, part of the variation in clinical stress levels could be explained by clinical learning environment experiences and assertiveness levels, supporting the primary research question of the study. The present study constitutes the first attempt to examine whether anxiety and stress serve as serial mediators in the relationship between perceptions of clinical learning experiences and assertiveness levels among midwifery students. The results indicated that anxiety and stress functioned as serial mediators in this relationship. Although anxiety and stress assumed a meaningful mediating role in the relationship between clinical learning experiences and assertiveness, the explanatory power of the model remained limited. This suggests that assertiveness constitutes a multidimensional construct that cannot be explained solely through clinical learning experiences, anxiety, and stress among midwifery students. Variables such as personality traits, self-efficacy, clinical attitudes, clinical mentor support, and cultural factors may also play substantial roles. The study additionally provides a theoretical framework concerning psychological processes and clinical learning experiences among students. In this context, the development of initiatives aimed at strengthening assertiveness skills through the

creation of safe learning environments by educators may contribute positively to educational processes.

Limitations

The present study has several limitations. First, data were collected using self-report scales; therefore, the possibility of artificial associations between variables due to response tendencies should be considered, and the potential influence of the data collection method on the findings should be taken into account. Second, participants were recruited from a single institution in eastern Türkiye. Inclusion of more diverse populations or larger samples would increase generalizability. Finally, the study employed a cross-sectional design, making it difficult to establish cause-effect relationships. Experimental and cohort studies are recommended to further explore relationships among these variables in the future.

Conclusion

The findings indicate that elevated anxiety and stress adversely affect perceptions of clinical learning experiences among midwifery students and are associated with lower assertiveness levels. The study revealed that anxiety and stress serially mediated the association between clinical learning experience perceptions and assertiveness, elucidating the mechanisms underlying these relationships. This study constitutes the first attempt to introduce a quantitative model defining the relationship between clinical learning experiences, anxiety, stress, and assertiveness levels among midwifery students. Given the substantial number of midwifery students in contemporary educational settings, the present study provides a meaningful contribution to the related literature.

Based on the findings, integration of stress management programs into midwifery education, including mindfulness training or coping skills workshops, may reduce anxiety and stress levels. Implementation of supportive mentorship or preceptorship interventions in clinical settings may also enhance confidence, assertiveness, and perceptions of clinical learning experiences.

Ethics Committee Approval: The Şırnak University Scientific Clinical Research Ethics Committee granted approval for this study (date: 07.12.2023, number: 2023/82972).

Informed Consent: Students who volunteered to participate provided verbal and written informed consent in accordance with ethical guidelines. Participants were informed that the information obtained from the study would not be disclosed to any third parties, institutions, or organizations.

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