Effects of Clinical Practice Stress, Stress Coping, and Empathy on Clinical Competency among Paramedic Students

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ABSTRACT

The purpose of the study aimed to investigate the effects of clinical practice stress, stress coping, and empathy on clinical competency among paramedic students. A total of 194 paramedic students filled out the questionnaire after informed consent. The questionnaire consisted of general characteristics of the subjects, 23 items of clinical practice stress, 20 items of stress coping, 27 items of empathy, and 26 items of clinical performance. Paramedic students did not have high levels of stress coping. Empathy was not as high among students in emergency management. Paramedic students' clinical performance was high and highly concerned about following the rules of the training organization. Students with basic life support providers certification had higher stress coping and this explained that the certificate in clinical practice skills made the students confident in emergency scenes.

Keywords: *Clinical practice stress, Stress coping, Empathy, Clinical competency, Emergency medical service, Paramedics, Paramedicine.*

INTRODUCTION

Paramedics are the first emergency medical service providers at the scene of an emergency (Edelson et al., 2012). They must be the first on the scene to perform a rapid assessment of the patient. To be a competent paramedic, students must learn to connect their knowledge of emergency medicine with real-world situations to provide appropriate field response skills (Donisi et al., 2022). Clinical training in a hospital emergency department is more effective than theoretical classes because it provides direct patient contact (Milton et al., 2023). Clinical training in the emergency department is a guide to choosing a career after graduation (Chahabouina and Gantare, 2023), and plays an important role in cultivating the qualities of emergency medical personnel, such as providing an opportunity to improve communication and problem-solving skills through interaction with patients and emergency medical personnel (Steinmair et al., 2022). Students are exposed to a variety of stresses that are intense due to the unexpected situations they encounter in clinical practice sites. Hands-on training is the most important part of education because it allows students to experience maximum learning in the emergency department (Milton et al., 2023). To maximize learning, students need to manage clinical practice stress well; therefore, it is necessary to find out the variables that affect clinical practice stress. The purpose of this study is to determine how clinical practice stress, stress coping, and empathy affect students' clinical performance.

LITERATURE REVIEW

Empathy and self-regulation in the emergency setting tend to make students less stressed (Yu et al., 2022). Empathy is a mindset that accepts the feelings, states of mind, and experiences of others as if they were one's own, and it is the ability to feel and recognize the inner experiences of others (Sang et al., 2022). Empathy for emergency patients encountered in the medical field can have a positive impact on students, improving the quality of their practice (Delgado et al., 2023). Self-regulation is the ability to change and maintain one's cognitions, motivations, emotions, and behaviors in a desirable direction (Cichoń et al., 2022). Many scenes encountered by EMTs are urgent and unstable (Edelson et al., 2012), and EMT students become anxious when

they experience them, which affects their self-regulation (Lee et al., 2023). Stress is inevitable for EMTs, and students also experience stress during clinical practicum. Students engage in clinical practice with specialized knowledge, patient encounters, relationship building, and responsibility (Liu et al., 2022). In the literature, clinical practicum stress has been widely studied in health-related undergraduate students (Mirzaei et al., 2022), but clinical practicum stress in paramedic students has not been studied. It is important to understand the impact of empathy and stress regulation on the clinical performance of paramedic students to provide appropriate emergency medical care (Wu et al., 2022). Hospital emergency department practice is very important to improve communication and problem-solving skills through interaction with patients and emergency medical personnel (Ma et al., 2022). Therefore, managing the stress caused by clinical practice for maximum learning effect is a way to improve learning effectiveness. Therefore, it is necessary to specifically explore the variables that affect clinical practice stress.

Previous studies have confirmed that people who are more empathetic and self-regulated toward the site or object tend to experience less stress (Wu et al., 2022). Empathy is a way of thinking that considers the emotions, mental states, or experiences of others as one's own, and it is the ability to feel and recognize the inner experience of others in every moment. In the case of students experiencing clinical practice, empathy for the situation of emergency patients encountered in the medical field positively affects their adaptation to the medical field and changes the quality of practice. Self-regulation is the ability of an individual to change and maintain their cognitions, motivations, emotions, and behaviors in a desirable direction to achieve what they want. The various scenes that paramedics encounter is out of the ordinary and unstable, and paramedic students experience them as well, which can make them anxious and affect their self-regulatory capacity, leading to stress (Ma et al., 2022). As stress is an inevitable aspect of being an emergency medical worker, paramedic students also face stress during clinical practicum. Stress in clinical practice situations, which require specialized knowledge, patient encounters, relationship building, and responsibility, makes clinical practice more challenging.

According to previous studies, clinical practice stress has been actively studied in health-related undergraduate students, but there is still a lack of research on clinical practice stress in emergency medicine students. Therefore, this study aims to identify the effects of empathy and self-regulation on clinical practice stress in emergency medical students and to explore ways to reduce clinical practice stress.
The purpose of this study is to identify the effects of emergency medical students' empathy and stress coping ability on clinical practice performance and to find ways to reduce clinical practice stress.
First, the effects of practice stress, stress coping ability, and empathy on clinical practice performance according to the general characteristics of paramedic students were identified.
Second, to identify the relationship between empathy and stress coping ability of paramedic students.
Third, to identify factors affecting clinical practice stress among paramedic students.

RESEARCH METHODOLOGY

Research Subjects

A structured questionnaire was filled out by 194 paramedic students in Korea. The questionnaire consisted of general characteristics of the subjects, 23 items of clinical practice stress, 20 items of stress coping, 27 items of empathy, and 26 items of clinical performance.
The general characteristics of the 194 subjects in this study are shown in Table 1.

There were 57.7% female students, more than 42.3% male students. More than half of the students had no religion (60.8%), followed by Christianity (13.4%), Catholicism (12.9%), Buddhism (9.3%), and others (3.6%). In terms of living arrangements, 49.5% lived in a dormitory, 31.4% lived on their own, 17.5% lived at home, 1.0% lived with relatives, and 0.5% lived elsewhere. 46.9% practiced in a hospital once, 32.0% twice, and 21.1% three or more times. 87.1% of students were BLS Providers certified and 12.9% were not.

73.2% of students chose EMT because it was a good fit, 9.8% because it was a specialty, 6.7% because others recommended it, 5.7% because of the high job placement rate, and 4.6% because of their high school grades. 56.7% were satisfied with their clinical experience, compared to 10.3% who were dissatisfied. 67.6% of students were satisfied with their major, while 1.0% were dissatisfied.

Table 1: General characteristics of the study subjects

Category		Frequency (person)	Percentage (%)
Gender	Male	82	42.3
	Female	112	57.7
Religion	Christianity	26	13.4
	Catholicism	25	12.9
	Buddhism	18	9.3
	No.	118	60.8
	Others	7	3.6
Living arrangement	Living at home	34	17.5
	Dormitory	96	49.5
	Living alone	61	31.4
	Living with relatives	2	1.0
	Others	1	0.5
Number of clinical practices	1	91	46.9
	2	62	32.0
	≥3	41	21.1
Certificate of BLS Providers	Yes.	169	87.1
	No.	25	12.9
Choice of paramedicine	Good fit	142	73.2
	High job placement rate	11	5.7
	High school grade	9	4.6
	Others' recommendation	13	6.7
	Specialty	19	9.8
Satisfaction of clinical practice	Very satisfied	36	18.6
	Satisfied	74	38.1
	Average	64	33.0
	Dissatisfied	17	8.8
	Very dissatisfied	3	1.5
Satisfaction of major	Very satisfied	56	28.9
	Satisfied	75	38.7
	Average	61	31.4
	Dissatisfied	2	1.0
	Very dissatisfied	-	-
Total	194	100.0	

Measurement Tools

The reliability of the measurement tools in this study is shown in Table 2.
As shown in Table 2, Cronbach's α was 0.94 for clinical practice stress, 0.79 for stress coping, 0.80 for empathy, and 0.95 for clinical performance, which were all appropriate.

Table 2: Reliability of the measurement tools

Category	Number of questionnaire items	Cronbach' α
Clinical practice stress	23	0.94
Stress coping	20	0.79
Empathy	27	0.80
Clinical performance	26	0.95

DATA ANALYSIS

The data collected in this study were analyzed using the Statistical Package for the Social Science WIN 27.0 program. Frequencies and percentages were used to determine the general characteristics of the participants. Descriptive statistics, t-test, and one-way ANOVA were used to measure clinical practice stress, stress coping,

empathy, and clinical performance of undergraduate students of emergency medical services. Correlation was conducted to determine the relationship between clinical practice stress, stress coping, empathy, and clinical performance of emergency medical services students. Multiple regression analysis was used to examine the effects of clinical practice stress, stress coping, and empathy on clinical performance of paramedic students.

RESULT AND DISCUSSION

Clinical Practice Stress, Stress Coping, Empathy, and Clinical Performance

Clinical Practice Stress

As shown in Table 3, the mean of clinical practice stress among emergency medical services students was 3.16 out of 5, indicating that emergency medical services students' clinical practice stress was not high. This is the result of clinical practice stress. The mean of the items "When hospital paramedics are wary of, dislike, or are not interested in practicing students" was 3.88, "When practicing student roles or tasks are not clear in the practicing place" was 3.60, "When hospital paramedics ignore and talk back to practicing students" was 3.55, "When there is a lack of space and facilities for practicing students" was 3. 47, "Inadequate space and facilities for practicum," 3.41, "Non-educational tasks assigned to practicum students," 3.31, "Purpose of practicum not accurately identified," 3.28, "Too many practicum tasks," 3.23, "Fellow practicum buddies blame me," 3.22, and "Patients make unreasonable demands," 3.16.

The lowest score was 2.66 for "Difficulty establishing rapport with patients. "Feeling overwhelmed to prepare for emergencies during practice" was 2.72, "Too much work during practice" was 2.85, and "When hospital paramedics show behaviors that differ from the principles", "Practicing in situations with violent patients", and "When patients distrust and reject students" were 3.01.

Table 3: Clinical practice stress

Category	Mean	SD
When the purpose of the training is not clearly understood.	3.28	1.11
Unclear role and tasks at the training site.	3.60	1.14
Lack of space and facilities.	3.47	1.08
When the contents of education at school and clinical practice are different.	3.02	1.09
When the training site feels that the student's work is not for educational purposes but only as a labor force.	3.41	1.18
Hospital paramedics are not interested in practicum students.	3.88	1.12
When hospital paramedics lack knowledge because they do not study consistently.	3.06	1.12
The hospital paramedic makes you do tasks you don't want to do.	3.10	1.13
The hospital paramedic ignores the student.	3.55	1.21
A hospital paramedic does something different from the rules when performing an emergency.	3.01	1.07
Excessive workload for students during practicum.	2.85	1.20
Students are given non-educational tasks.	3.31	1.17
When students are given too many lab assignments.	3.23	1.19
Students feel pressured to be prepared for emergency at all times while practicing.	2.72	1.24
Poor relationships with hospital medical staff.	3.07	1.12
Poor relationships between students and professors.	3.03	1.16
Too many conflicts with classmates.	3.12	1.18
When your classmates' mistakes come back to haunt you.	3.22	1.20
Difficulty forming relationships with patients.	2.66	1.10
Physical threats from patients.	3.02	1.19
You have a hostile patient.	3.01	1.19
When a patient distrusts and refuses to allow you to perform an emergency.	3.01	1.09
Patients make unreasonable demands.	3.16	1.13
Clinical Practice Stress	3.16	0.77

As you can see, paramedicine students did not experience very high levels of stress in their clinical experiences. Stress was high when hospital paramedics were wary or uninterested in the students, and low when it was difficult to establish a rapport with patients.

Coping With Stress

The results of the students' coping with stress are shown in Table 4, with a mean of 3.15 out of 5.

This is the result of stress coping. 'Talk to someone who can help' was 3.79. "I try to put myself in someone else's shoes" was 3.77, "I caused the problem" was 3.70, "I don't let my feelings get in the way of other things" was 3.66, "I make changes to make things work" was 3.55, "I analyze the problem in detail to understand it better" was 3.47, "I try to get something good out of it" and "I resign myself to it" were 3.43, and "I rely on past experiences. Something similar has happened before" was 3.33, and "I sleep longer than usual" was 3.15. The lowest mean was 2.07 for "I take my anger out on people who aren't involved. "I get angry at the person who caused the problem" was 2.39, "I generally avoid socializing and stay alone" was 2.66, "I ignore it" was 2.72, and "I pretend it didn't happen" was 2.76.

Table 4: Coping with stress

Category	Mean	SD
To analyze the problem in detail, it is better to understand it.	3.47	0.96
Compromise to get something desirable out of the situation.	3.43	0.87
Talk to someone who can help.	3.79	0.90
Realize that I caused the problem.	3.70	0.86
Change something to make things work better.	3.55	0.89
Rely on past experience. Something similar has happened before.	3.33	0.97
Think about the problem from someone else's perspective.	3.77	0.77
Things will change over time, so it's better to just wait it out.	3.06	1.09
Act as if nothing happened.	2.76	1.05
Trying to look on the bright side of the event or situation.	2.92	1.06
Sleeping more than usual.	3.15	1.29
Get angry at the person who caused the problem.	2.39	1.08
Eating, smoking, or drinking to make yourself feel better.	2.98	1.35
Avoiding socializing and trying to be alone.	2.66	1.20
Taking it out on others who have nothing to do with the problem.	2.07	1.09
Ignore the problem.	2.72	1.18
Resign myself to the fact that I can't do anything about it and accept it for what it is.	3.43	1.01
I don't let my feelings interfere too much with other things.	3.66	1.01
Praying that things will go well for me.	3.14	1.27
Go for a jog or other exercise.	3.08	1.23
Coping with stress	3.15	0.48

As you can see, paramedic students did not have high levels of stress coping. "Talking to someone who can help" was the highest, and "Taking it out on someone unrelated" was the lowest.

Empathy

Table 5 shows the results of empathy among paramedicine students. The average score was 3.38 out of 5.

"I consider people with different opinions before making a decision" was the highest with a mean of 3.88. "Sometimes I try to put myself in my friends' shoes to better understand them" was 3.83, "I try to understand before I criticize others" was 3.76, "When someone is in trouble, I want to help them" was 3.73, "I try to understand that there are two sides to every question" was 3.71, "I try to understand things that might happen to me" was 3.61, "When I am angry with someone, I try to understand them" was 3.58, and "I get anxious in emergency situations" was 3.55.

"When I believe I am right about an issue or situation, I don't listen to others after that" was the lowest at 2.43. "When someone is being wronged, I don't feel sympathy for them," 2.49; "When other people have problems, I don't care much about them," 2.52; "I can't get lost in a good book or movie," 2.54; and "When I watch a movie

or play, I don't pay attention to the content because I am objective," 2.64.
Empathy was not as high among students in emergency management. "I consider the position of people with different opinions before making a decision." was the highest.

Table 5: Empathy

Category	Mean	SD
I try to put myself in someone else's shoes before criticizing them.	3.76	0.82
I don't listen to others when I believe I am right about an issue or situation.	2.43	0.96
I try to put myself in my friends' shoes to better understand them.	3.83	0.81
I believe that there are two sides to every question and try to consider them.	3.71	0.86
I find it difficult to consider the other person's point of view.	3.27	1.06
I try to consider the point of view of people with whom I disagree before decision making.	3.88	0.72
When I am angry with someone, I try to put myself in their shoes.	3.58	0.85
When I read an interesting story or book, I think about what it would be like if I were the main character.	3.48	0.98
When I read a book, I try to get deeply involved with the main character.	3.39	1.02
When I watch a movie or play, I rarely get caught up in the story because I am watching it from an objective position.	2.64	1.06
When I watch a movie or play, I feel like I am the main character.	3.03	1.11
I often imagine about things that might happen to me.	3.61	0.92
I rarely get lost in a good book or movie.	2.54	1.05
When watching a movie, I easily put myself in the shoes of the main character.	3.38	0.93
When someone is being taken advantage of, I want to save them.	3.73	0.86
When someone is being wrong, I feel no sympathy for them.	2.49	0.98
When I see people who are less fortunate than me, I have feelings of concern for them.	3.53	0.91
I consider myself a very warm-hearted person.	3.37	1.00
I don't feel much pain when other people have problems.	2.52	0.96
Other people's misfortunes have never caused me much distress.	2.92	0.93
I am often moved by the things that happen around me.	3.35	1.00
I fall too deeply in those who needs help in an emergency.	3.28	1.01
I feel helpless in emotionally charged situations.	3.32	0.96
I feel anxious in emergency situations.	3.55	0.98
I am generally very good at dealing with emergencies.	3.19	0.86
I can remain calm even when I see someone else being hurt.	3.48	0.90
I lose control of myself in an emergency.	2.73	1.01
Empathy	3.38	0.37

Clinical Performance

Table 6 shows the results of the clinical performance of paramedicine students. The mean score was 3.71 out of 5, indicating high clinical performance. The highest mean was 4.10 for 'I follow the rules of the practicum organization'. "Seek help from professors and paramedics for problems I cannot solve on my own" was 4.10, "Take vital signs" was 3.96, "Understand administrative structure and authority" was 3.92, "Consider safe care environment" was 3.91, "Understand and carry out delegated care orders and reconfirm delegator's orders" and "Use equipment, materials, and supplies appropriately" were 3. 84, respectively .84, "Accept and improve upon constructive criticism" at 3.83, "Listen to patients and caregivers" at 3.79, "Understand and use instruments for the treatment of emergency patients" at 3.76, and "Plan treatment based on the condition of emergency patients" at 3.75. The lowest score was 2.75 for "Create an uneasy atmosphere when talking to patients. "Collect health-related data" was 3.27, "Make an accurate diagnosis based on patient information" was

3.52, "Perform accurate resuscitation and appropriate nursing care" and "Work efficiently and accurately in emergency situations" were 3.62, and "Strive to meet the emotional needs of patients" was 3.65. Paramedic students' clinical performance was high. They were highly concerned about following the rules of the training organization.

Table 6: Clinical performance

Category	Mean	SD
Gather health-related data (mental, sociocultural, and developmental).	3.27	0.86
Perform accurate procedures to ensure safety of medications and treatments.	3.68	0.70
Perform accurate instrumentation and technical nursing care.	3.62	0.73
Work efficiently and accurately in emergency situations.	3.62	0.75
Understand and carry out delegated care orders and reaffirms delegator's instructions when necessary.	3.84	0.76
Accurately communicate objective facts and subjective opinions orally or in writing.	3.72	0.77
Assume responsibility for all care provided under his/her direction.	3.67	0.78
Inspires confidence in others as a practicum student.	3.67	0.79
Listen to and show concern for the patient or guardian.	3.79	0.81
Strive to establish an atmosphere of mutual trust and respect with other health care personnel in the hospital.	3.69	0.82
Make an accurate diagnosis based on patient information.	3.52	0.83
Inform patients and their caregivers of treatment and care needs and confirm them.	3.70	0.78
Follow the rules of the practicing organization.	4.10	0.79
Understand and accept administrative structure and authority.	3.92	0.77
Use equipment, materials, and supplies appropriately.	3.84	0.82
Create a reassuring atmosphere when interacting with patients.	2.75	1.18
Know and perform priorities of care for emergencies in the field.	3.71	0.77
Understand and use instruments used in the treatment of emergency patients.	3.76	0.73
Attempt to meet the emotional needs of patients.	3.65	0.86
Refer problems that cannot be resolved independently to faculty and first responders.	4.01	0.78
Participate in learning opportunities for personal and professional growth.	3.72	0.87
Accept and improve upon constructive criticism.	3.83	0.77
Consider a safe care environment.	3.91	0.75
Measure vital signs.	3.96	0.80
Perform a physical assessment (examination, palpation, touch, etc.).	3.71	0.91
Plan care based on the emergency patient's condition.	3.75	0.82
Clinical performance	3.71	0.54

Clinical Practice Stress, Stress Coping, Empathy, and Clinical Performance by General Characteristics
Clinical Practice Stress

The following Table 7 shows the differences in clinical practice stress according to the general characteristics of paramedicine students. Female students had higher clinical practice stress than male students, but the difference was not significant. Students with religion had higher clinical practice stress than students without religion, but the difference was not significant. Students living at home had higher clinical practice stress, but this was not statistically significant. Students with one hospital rotation had the highest clinical rotation stress, while students with two rotations had slightly lower stress. Students with BLS Providers certification had higher clinical rotation stress, but this was not statistically significant. Students who chose paramedicine because of the high employment rate and specialization. Students who were dissatisfied with their clinical experience had higher clinical experience stress, with a significant difference by satisfaction ($F=2.72$, $p<.05$). Students who were dissatisfied with their major had higher clinical practice stress, and there was a significant difference ($F=3.72$, $p<.05$).

Table 7: Clinical practice stress

Category		N	Mean	SD	t or F	P
Gender	Male	82	3.07	0.89	-1.45	0.148
	Female	112	3.23	0.67		
Religion	Yes.	76	3.18	0.74	0.27	0.789
	No.	118	3.15	0.79		
Living arrangement	Living at home	34	3.24	0.78	0.17	0.841
	Dormitory	96	3.15	0.79		
	Living alone/Others	64	3.15	0.74		
Number of clinical practices	1	91	3.22	0.80	0.78	0.461
	2	62	3.06	0.66		
	≥3	41	3.20	0.87		
Certificate of BLS Providers	Yes.	169	3.19	0.77	1.26	0.215
	No.	25	2.99	0.74		
Choice of paramedicine	Good fit	142	3.17	0.75	0.63	0.639
	High job placement rate	11	3.26	0.44		
	High school grade	9	3.14	0.98		
	Others' recommendation	13	2.86	1.03		
	Specialty	19	3.26	0.82		
Satisfaction of clinical practice	Very satisfied	36	2.90	0.82	2.72*	0.046
	Satisfied	74	3.12	0.82		
	Average	64	3.29	0.70		
	Dissatisfied	20	3.40	0.60		
Satisfaction of major	Very satisfied	56	2.96	0.75	3.72*	0.026
	Satisfied	75	3.16	0.84		
	Below average	63	3.34	0.66		

Coping with stress

The results of examining the differences in stress coping according to the general characteristics of students are shown in Table 8.

Table 8: Stress coping

Category		N	Mean	SD	t or F	P
Gender	Male	82	3.24	0.52	2.10*	0.038
	Female	112	3.09	0.44		
Religion	Yes.	76	3.17	0.44	0.52	0.607
	No.	118	3.14	0.50		
Living arrangement	Living at home	34	3.20	0.45	0.77	0.466
	Dormitory	96	3.18	0.48		
	Living alone/Others	64	3.09	0.49		
Number of clinical practices	1	91	3.18	0.53	1.21	0.301
	2	62	3.08	0.35		
	≥3	41	3.21	0.52		
Certificate of BLS Providers	Yes.	169	3.17	0.48	1.02	0.313
	No.	25	3.07	0.44		
Choice of paramedicine	Good fit	142	3.16	0.45	0.66	0.623
	High job placement rate	11	2.97	0.27		
	High school grade	9	3.27	0.55		
	Others' recommendation	13	3.22	0.54		
	Specialty	19	3.11	0.68		
Satisfaction of clinical	Very satisfied	36	3.25	0.56	0.90	0.440
	Satisfied	74	3.17	0.53		

practice	Average	64	3.09	0.37		
	dissatisfied	20	3.14	0.45		
Satisfaction of major	Very satisfied	56	3.22	0.52	0.95	0.389
	Satisfied	75	3.14	0.49		
	Below average	63	3.11	0.42		
Total		194	3.15	0.48		

Male students had higher stress coping than female students, and there was a significant difference by gender (t=2.10, p<.05). Religious students had higher stress coping. Students living at home had the highest stress coping. Students with three or more hospital practicums had the highest stress coping. Students with BLS Providers certification had higher stress coping. Students who were very satisfied with their clinical experiences had the highest stress coping. Students who were very satisfied with their majors had higher stress coping.

Empathy

Table 9 shows the differences in empathy according to the general characteristics of paramedic students. Female students had higher empathy than male students, and there was a significant difference by gender (t=-2.59, p<.05). Students with no religion were more empathetic. Students living at home were more empathetic, but this was not statistically significant. Students with fewer hospital experiences were more empathetic, but the difference was not significant. Students with BLS Providers certification were more empathetic. Students who chose paramedicine based on their high school grades were the most empathetic, while those who chose paramedicine based on high employment rates were less empathetic. Students who were satisfied with their clinical training were more likely to be empathetic (F=3.37, p<.05). Students who were satisfied with their major had higher levels of empathy (F=6.28, p<.01). Female students and students who were satisfied with their clinical practice and major had higher empathy.

Table 9: Empathy

Category		N	Mean	SD	t or F	p
Gender	Male	82	3.30	0.33	-2.59*	0.010
	Female	112	3.43	0.39		
Religion	Yes.	76	3.37	0.36	-0.17	0.862
	No.	118	3.38	0.38		
Living arrangement	Living at home	34	3.43	0.48	0.49	0.610
	Dormitory	96	3.36	0.34		
	Living alone/Others	64	3.36	0.36		
Number of clinical practices	1	91	3.41	0.42	2.64	0.074
	2	62	3.40	0.32		
	≥3	41	3.26	0.29		
Certificate of BLS Providers	Yes.	169	3.38	0.37	0.06	0.952
	No.	25	3.37	0.38		
Choice of paramedicine	Good fit	142	3.40	0.38	1.33	0.258
	High job placement rate	11	3.16	0.32		
	High school grade	9	3.41	0.28		
	Others' recommendation	13	3.38	0.30		
	Specialty	19	3.30	0.35		
Satisfaction of clinical practice	Very satisfied	36	3.54	0.41	3.37*	0.020
	Satisfied	74	3.37	0.34		
	Average	64	3.32	0.38		
	dissatisfied	20	3.29	0.30		
Satisfaction of major	Very satisfied	56	3.46	0.39	6.28**	0.002
	Satisfied	75	3.43	0.36		
	Below average	63	3.25	0.33		
Total		194	3.38	0.37		

Clinical Performance

The differences in clinical performance among emergency medical services students are shown in Table 10. Male students had higher clinical performance than female students, but there was no significant difference. Students with religion had higher clinical performance, but it was not significant. Students living at home had the highest clinical performance. Students with two hospital practicums had the highest clinical performance. Students with BLS Providers certification had higher clinical performance, but the difference was not significant. Students who chose paramedicine due to the recommendation of others had the highest clinical performance. Students who were satisfied with their clinical practicum had higher clinical performance (F=10.28, p<.001). Students who were satisfied with their majors had higher clinical performance (F=12.52, p<.001). Students who were satisfied with clinical practice and major had higher clinical performance.

Table 10: Clinical performance

Category		N	Mean	SD	t or F	p
Gender	Male	82	3.73	0.55	0.56	0.575
	Female	112	3.69	0.53		
Religion	Yes.	76	3.74	0.61	0.64	0.524
	No.	118	3.69	0.49		
Living arrangement	Living at home	34	3.73	0.53	0.13	0.876
	Dormitory	96	3.72	0.55		
	Living alone/Others	64	3.68	0.55		
Number of clinical practices	1	91	3.69	0.57	0.09	0.914
	2	62	3.73	0.47		
	≥3	41	3.71	0.59		
Certificate of BLS Providers	Yes.	169	3.71	0.53	0.30	0.770
	No.	25	3.67	0.62		
Choice of paramedicine	Good fit	142	3.70	0.54	1.53	0.196
	High job placement rate	11	3.38	0.43		
	High school grade	9	3.74	0.59		
	Others' recommendation	13	3.91	0.50		
	Specialty	19	3.77	0.55		
Satisfaction of clinical practice	Very satisfied	36	4.07	0.55	10.28^{***}	0.000
	Satisfied	74	3.75	0.48		
	Average	64	3.53	0.52		
	dissatisfied	20	3.48	0.47		
Satisfaction of major	Very satisfied	56	3.95	0.59	12.52^{***}	0.000
	Satisfied	75	3.71	0.45		
	Below average	63	3.48	0.50		
Total		194	3.71	0.54		

Correlation between Clinical Practice Stress, Stress Coping, Empathy, And Clinical Performance

The relationship between clinical practice stress, stress coping, empathy, and clinical performance of paramedic students is shown in Table 11. Clinical practice stress had a statistically significant positive correlation with stress coping (r=.167, p<.05). Stress had a statistically significant negative correlation with empathy (r=-.331, p<.001) and clinical performance (r=-.303, p<.001). Stress coping was not statistically significantly correlated with empathy, but it was statistically significantly positively correlated with clinical performance (r=.205, p<.01). Empathy had a statistically significant positive correlation with clinical performance (r=.455, p<.001). Higher clinical practice stress was associated with lower clinical performance, and higher stress coping and empathy were associated with higher clinical performance.

Table 11: Correlation between clinical practice stress, stress coping, empathy, and clinical performance

Category	Clinical experience stress	Stress coping	Empathy	Clinical performance
Clinical practice stress	1			
Stress coping	0.167* (0.020)	1		
Empathy	-0.331*** (0.000)	0.133 (0.065)	1	
Clinical performance	-0.303*** (0.000)	0.205** (0.004)	0.455*** (0.000)	1

** p<.05, ** p<.01, *** p<.001*

Effects of Clinical Practice Stress, Stress Coping, and Empathy on Clinical Performance

4.4.1. Effects of Clinical Practice Stress on Stress Coping

The effects of clinical practice stress on stress coping of emergency medical technician students are shown in <Table 12>. The model of the effect of clinical practice stress on stress coping of emergency medical students was validated (F=5.485, p<.05) and explained 2.8% (R2=.028). There was a statistically significant positive effect of clinical practice stress (β=.167, p<.05) on stress coping. Higher clinical practice stress was associated with higher stress coping among paramedic students.

Table 12: Effects of clinical practice stress on stress coping

Category	Stress coping			
	B	β	T	p
Clinical practice stress	0.104	0.167	2.342*	0.020
Constants	2.825		19.630***	0.000
R^2	0.028			
F(p)	5.485*(0.020)			

** p<.05, *** p<.001*

4.4.2. Effects of Clinical Practice Stress and Stress Coping on Empathy

The effects of clinical practice stress and stress coping on empathy among emergency medical services students are shown in Table 13. The model of the effect of clinical practice stress and stress coping on empathy of paramedic students was found to be acceptable (F=16.341, p<.001), explaining 14.6% (R2=.146) of the variance. There was a statistically significant negative effect of clinical practice stress (β=-.364, p<.001) and a statistically significant positive effect of coping with stress (β=.193, p<.01) on empathy. Higher clinical practice stress was associated with lower empathy, and higher stress coping was associated with higher empathy.

Table 13: Effects of clinical practice stress and stress coping on empathy

Category	Empathy			
	B	β	t	P
Clinical practice stress	-0.175	-0.364	-5.361***	0.000
Stress coping	0.150	0.193	2.852**	0.005
Constants	3.457		19.062***	0.000
R^2	0.146			
F(p)	16.341***(0.000)			

*** p<.01, *** p<.001*

4.4.3. Effects of Clinical Practice Stress, Stress Coping, and Empathy on Clinical Performance

The effects of clinical practice stress, stress coping, and empathy on clinical performance of emergency medical services students are shown in Table 14.

The model of clinical practice stress, stress coping, and empathy on clinical performance of paramedic students was found to be acceptable (F=23.163, p<.001), explaining 26.8% (R2=.268) of the variance. Clinical practice stress (β=-.217, p<.01) had a statistically significant negative effect on clinical performance, while stress coping (β=.193, p<.01) and empathy (β =.357, p<.001) had a statistically significant positive effect. Higher

clinical practice stress was associated with lower clinical performance, while higher stress coping and empathy were associated with higher clinical performance.

Table 14: Effects of clinical practice stress, stress coping, and empathy on clinical performance

Category	Clinical practice stress			
	B	β	t	P
Clinical practice stress	-0.152	-0.217	-3.208**	0.002
Stress coping	0.219	0.193	3.007**	0.003
Empathy	0.523	0.357	5.321***	0.000
Constants	1.734		4.130***	0.000
R^2	0.268			
F(p)	23.163***(0.000)			

*** p<.01, *** p<.001*

CONCLUSION

Higher clinical practice stress was associated with lower clinical performance,
while higher stress coping and empathy were associated with higher clinical performance. Through this study, it is important to manage the stress coping for the better clinical practice and competency in the paramedic students in emergency room practice.

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