Original Research

An Examination of Professional Attitudes and Associated Factors Among Paramedics and Emergency Medical Technicians

[Paramedikler ve Acil Tıp Teknisyenlerinde Mesleki Tutumlar ve İlişkili Faktörlerin İncelenmesi]

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Özet

Giriş: Hastane öncesi sağlık personelinin profesyonel tutumu, hasta güvenliği ve hizmet kalitesi için önemlidir.

Amaç: Çalışma, hastane öncesi alanda görev yapan Paramedik ve Acil Tıp Teknisyenlerinin (ATT) mesleki tutumlarını ve bazı değişkenleri incelemek amacıyla yapılmıştır.

Yöntem: Bu çalışma, tanımlayıcı ve kesitsel tiptedir. Araştırma verileri, Artvin İl Sağlık Müdürlüğü'ne bağlı 112 istasyonlarında görev yapan 64 ATT ve 88'i paramedik olmak üzere 152 katılımcıdan toplanmıştır. Veriler, "Sosyodemografik Bilgi Formu", "Meslekte Profesyonel Tutum Envanteri (MPTE)" ve arrest ritimleri tanımaya yönelik "Arrest Ritimleri Bilgi Düzeyi (ARBD) Formu" kullanılarak elde edilmiştir. Veriler SPSS 23.0 programı ile analiz edilmiş olup anlamlılık düzeyi p<0,05'tir.

Bulgular: Katılımcıların MPTE puan ortalaması 142,9 ± 9,7 olarak bulunmuştur. ARBD puan ortalaması ise %77,2'dir. MPTE ile sosyodemografik değişkenler arasında anlamlı farklılık saptanmamıştır. Güncel kılavuzları takip edenlerin MPTE puanları, takip etmeyenlere göre anlamlı düzeyde yüksektir (p<0,05). MPTE ile ARBD puanları arasında istatistiksel ilişki bulunmamıştır (p>0,05).

Sonuç: Çalışma, Paramedik ve ATT'lerin mesleki tutumlarının yüksek olduğunu göstermektedir. Sosyodemografik özellikler ve hizmet içi eğitime katılım, mesleki tutumda farklılık oluşturmamış, güncel kılavuzları takip eden personelde ise anlamlı ilişkili bulunmuştur.

Abstract

Introduction: The professional attitude of pre-hospital personnel is important for patient safety and quality of care.

Purpose: This study was conducted to examine the professional attitudes of paramedics and emergency medical technicians (EMTs) working in the prehospital setting, as well as certain related variables.

Method: This study is descriptive and cross-sectional in nature. Research data were collected from 152 participants, including 64 EMTs and 88 paramedics, working at 112 stations affiliated with the Artvin Provincial Health Directorate. Data were collected using the "Sociodemographic Information Form," the "Professional Attitude Inventory in the Profession (MPTE)," and the "Arrested Rhythms Knowledge Level (ARBD) Form" designed to assess knowledge of arrested rhythms. Data were analyzed using SPSS 23.0 software, with a significance level of p<0.05.

Findings: The mean MPTE score for participants was 142.9 ± 9.7. The mean ARBD score was 77.2%. No significant differences were found between MPTE scores and sociodemographic variables. MPTE scores were significantly higher among those who followed current guidelines compared to those who did not (p < 0.05). No statistical relationship was found between MPTE and ARBD scores (p > 0.05).

Conclusions: The study demonstrates that the professional attitudes of paramedics and emergency medical technicians are high. Sociodemographic characteristics and participation in in-service training did not result in differences in professional attitudes; however, a significant association was found among personnel who followed current guidelines.

Cardiovascular diseases remain the leading cause of mortality worldwide and constitute a major public health problem, accounting for a substantial proportion of sudden deaths and emergency medical interventions [1,2]. Cardiac arrest, in particular, represents one of the most critical conditions encountered in prehospital emergency care, where early recognition and timely intervention are vital for patient survival [3]. Emergency Medical Services (EMS) personnel play a pivotal role in the management of cardiac arrest cases in the prehospital setting. Beyond technical competence, professional attitudes—such as responsibility, ethical awareness, adherence to clinical protocols, teamwork, and effective communication—are essential for ensuring safe, consistent, and high-quality patient care [4,5]. Professionalism has been identified as a core component of healthcare practice and is closely linked to patient safety and care outcomes [6,7]. Professional attitudes among healthcare workers are influenced by a range of factors, including education level, clinical experience, working conditions, and organizational culture [8,9,10]. In emergency settings characterized by time pressure and high cognitive demands, insufficient knowledge may negatively affect confidence, increase stress levels, and lead to deviations from professional standards [11,12]. Conversely, adequate knowledge has been associated with improved clinical judgment, protocol compliance, and professional behavior [13]. One of the most critical knowledge domains for EMS personnel is the recognition and management of cardiac arrest rhythms. Accurate identification of arrest rhythms is fundamental for determining appropriate interventions, such as defibrillation and advanced life support, in accordance with current resuscitation guidelines [14,15]. Previous studies have demonstrated that deficiencies in arrest rhythm recognition and cardiopulmonary resuscitation (CPR) knowledge are common among prehospital emergency personnel and may adversely affect the quality of resuscitation efforts [16,17,18]. Inadequate knowledge of arrest rhythms may not only result in delayed or inappropriate clinical interventions but also increase uncertainty and stress during resuscitation, potentially influencing professional conduct in high-pressure situations [19,20,21]. Despite the recognized importance of both professional attitudes and clinical knowledge in emergency medical practice, these constructs have generally been examined independently in the literature. Limited attention has been given to the relationship between arrest rhythm knowledge and professional attitudes among EMS personnel [22,23].

Valuing knowledge, clinical competence, and structured professional education plays a crucial role in strengthening professionalism within emergency medical systems. In paramedicine, professionalization has been closely linked to formal education, certification, and integration into broader healthcare structures. Bowen et al. (2017) reported that paramedic students' perceptions of professionalism are shaped by educational frameworks and professional identity development [13]. In addition, large-scale evaluations of emergency medical systems have demonstrated that standardized certification and structured training programs enhance professional integration and workforce performance [24,25]. In Turkey, studies conducted with paramedics and EMTs have mainly focused on clinical competencies such as CPR knowledge, arrest rhythm recognition, and defibrillation skills [20,21,26]. Although these studies demonstrate adequate clinical knowledge levels, research specifically examining professional attitudes among paramedics and EMTs remains limited.

To understand professionalization and occupational evolution in paramedics and EMTs, it is essential to gain a perspective by closely examining their behaviors within a societal context and to analyze their identity as clinical practitioners, which represents an important contemporary issue [27]. Although the literature on professionalism among paramedics is limited, it has been observed that this topic has gradually begun to develop in recent years [28].

Therefore, the present study aims to evaluate the professional attitudes of paramedics and emergency medical technicians (EMTs) and to examine the relationship between these professional attitudes and associated factors, including sociodemographic variables and arrest rhythm knowledge level (ARKL). By exploring these relationships, the study seeks to contribute to the existing literature on professionalism in prehospital emergency care.

MATERIAL AND METHODS

This study was designed as a descriptive cross-sectional study. It aims to investigate the effects of in-service training and sociodemographic variables on the professional attitudes of paramedics and emergency medical technicians, and to examine the relationship between professional attitudes and arrest rhythm knowledge level (ARKL). Research questions are as follows.

- What are the levels of professional attitude (PAIP) and ARKL scores among paramedics and EMTs?
- Do the professional attitude scores (PAIP) of paramedics and EMTs differ significantly according to sociodemographic characteristics, including gender, marital status, education level, type of high school, job title, adherence to current guidelines, and completion of the Basic Module (B-Module), Trauma and Resuscitation Course (TRC), Pediatric Advanced Life Support (PALS), and Adult Advanced Life Support (ALS) courses?
- Is there a statistically significant difference in the professional attitude scores (PAIP) of paramedics and EMTs according to age and years of work experience?

This study was designed as a descriptive cross-sectional study. The dependent variable of the study was the Professional Attitude Inventory in the Profession (PAIP) score. The independent variables included sociodemographic characteristics (age, gender, marital status, educational level, professional title, and years of professional experience), participation in in-service training programs B-Module, TRC, PALS, and ALS, adherence to current clinical guidelines, and arrest rhythm knowledge level (ARKL).

The study population consisted of all paramedics and emergency medical technicians (EMTs) actively working in 112 Emergency Health Service Stations affiliated with the Provincial Health Directorate of Artvin, Türkiye. Data were collected between February 7, 2021, and April 30, 2021.

Inclusion criteria: Being actively employed as a paramedic or EMT in prehospital emergency health services, Voluntarily agreeing to participate in the study, Completing the online questionnaire form in full.

Exclusion criteria: Not actively working during the data collection period, Incomplete questionnaire responses, Refusal to provide informed consent.

A total of 152 volunteers participated in the study, including 64 EMTs and 88 paramedics. Data were collected via an online survey platform (Google Forms) due to COVID-19 restrictions. Participants provided informed consent electronically prior to participation.

Participants' professional attitudes were assessed using the Professional Attitude and Professionalism Scale (PAIP), a unidimensional, five-point Likert-type scale consisting of 32 items, developed and validated by Erbil and Bakır. This scale evaluates attitudes toward professional education, development, and problem-solving techniques. The total score ranges from 32 to 160, with higher scores indicating higher levels of professional attitude [6]. In addition to the PAIP, the ARKL Form, developed by the authors in accordance with the 2020 AHA Guidelines, was used to assess participants' theoretical knowledge of cardiac arrest rhythms [14]. To ensure content validity, the draft form was reviewed by five field experts with experience in emergency healthcare and education. Based on their feedback, necessary revisions were made. The revised form was then piloted with 15 EMTs and paramedics to assess clarity and applicability. Following this pilot test, minor adjustments were made, and the final version consisting of 21 items with a max. score of 100 was established. The ARKL form was used because the management of cardiac arrest in prehospital emergency care is a complex process that requires the highest level of professionalism from paramedics and EMTs and involves the application of knowledge, skills, and competencies within algorithm-based interventions.

A Sociodemographic Information Form was also used to collect data on participants age, gender, education level, marital status, professional title, years of work experience, participation in in-service training, and adherence to current clinical guidelines. Participants were also asked whether they had completed certified training programs such as ALS, TRC, PALS, or the B-Module course. The B-Module course is a national in-service training program provided by the Turkish Ministry of Health for prehospital emergency medical personnel. It covers essential topics such as basic and advanced life support, trauma management, airway management, and scene safety, aiming to standardize the competencies of EMTs and paramedics across the country. The completion of the online questionnaire took approximately 8 minutes.

Statistical analyses were performed using IBM SPSS Statistics version 23.0. The distribution of continuous variables was assessed using the Kolmogorov–Smirnov test. Variables with a normal distribution were expressed as mean ± standard deviation, whereas non-normally distributed variables were presented as median (minimum–maximum). For comparisons between two independent groups, the independent samples t-test was used when the assumption of normality was met, and the Mann–Whitney U test was applied when it was not. For comparisons involving more than two groups, one-way analysis of variance (ANOVA) was used for normally distributed variables, while the Kruskal–Wallis test was applied for non-normally distributed variables. Following the Kruskal–Wallis test, mean rank values were reported for group comparisons. A p value < 0.05 was considered statistically significant.

RESULTS

A total of 152 paramedics and emergency medical technicians (EMTs) were included in the study. The majority of the participants were female (63.2%), while 36.8% were male. In terms of marital status, 53.3% were single and 46.7% were married. Regarding educational background, more than half of the participants (57.9%) held an associate degree, 28.9% had a bachelor's degree, and approximately 13% were high school graduates. Most participants (86.2%) had graduated from a Health Vocational High School (HVHS), whereas 13.8% had graduated from other types of high schools. Professionally, 57.9% of the participants were paramedics and 42.1% were EMTs. A large majority (80.3%) reported that they followed current professional guidelines, while 19.7% stated that they did not (Table 1).

Table 1. Socio-demographic characteristics of paramedics and EMTs (n = 152)

Variable	n	%
Gender		
Female	96	63.2
Male	56	36.8
Marital Status		
Married	71	46.7
Single	81	53.3
Education Level		
High School	20	13.2
Associate Degree	88	57.9
Bachelor's Degree	44	28.9
Type of High School		
Health Vocational High School (HVHS)	131	86.2
Other	21	13.8
Professional Title		
Paramedic	88	57.9
EMT	64	42.1
Following Current Guidelines		
Yes	122	80.3
No	30	19.7

With respect to in-service training participation, 73.0% of the participants reported attending basic in-service training programs (B-Module). Participation rates varied across advanced training courses. Less than half of the participants attended trauma and resuscitation courses (TRC) (46.1%), and 41.4% participated in Pediatric Advanced Life Support (PALS) courses. Slightly more than half (53.3%) reported attending Adult Advanced Life Support (ALS) courses. These

findings indicate that while participation in basic in-service training is relatively high, attendance in specialized advanced life support and trauma-related programs remains comparatively limited (Table 2).

Table 2. Distribution of paramedic and EMT participation in in-service training

Variable		Number	Percentage (%)
Basic Module Training Course	Yes	111	73.0
	No	41	27.0
Trauma and Resuscitation Course	Yes	70	46.1
	No	82	53.9
Child Advanced Life Support Course	Yes	63	41.4
	No	89	58.6
Adult Advanced Life Support Course	Yes	81	53.3
	No	71	46.7

Descriptive statistics for ARKL and PAIP scores demonstrated that ARKL scores ranged from 35 to 100, with a mean of 77.2 ± 12.69. PAIP scores ranged from 111 to 160, with a mean of 142.9 ± 9.77. The relatively high mean PAIP score suggests that participants generally exhibited a high level of professional attitude. Similarly, the mean ARKL score indicates a moderate to high level within the measured construct. The relatively narrow standard deviation of PAIP scores reflects a fairly homogeneous distribution of professional attitude levels among participants (Table 3).

Table 3. Comparison of PAIP scores according to participation in in-service training (mean rank values)

Variable	Minimum	Maximum	Mean	St. Dev.
ARKL	35	100	77.2	12.696
PAIP	111	160	142.9	9.770

PAIP scores did not show a normal distribution; therefore, the Kruskal–Wallis test was applied and mean rank values are presented.

Comparisons of PAIP scores according to demographic and professional characteristics were conducted using non-parametric tests (Mann–Whitney U and Kruskal–Wallis tests). No statistically significant differences were identified in PAIP scores based on gender ($p > 0.05$) or marital status ($p > 0.05$). In the present study, the mean PAIP scores according to educational level were 98.5 for high school graduates, 73.5 for associate degree graduates, and 72.4 for bachelor's degree graduates. In addition, a substantial proportion of the sample (86.2%) had received their high school education at Health Vocational High Schools (HVHS). The mean PAIP score of personnel educated at HVHS was 76.1, whereas it was 78.9 for those educated at other types of high schools. Likewise, education level, type of high school graduated, and professional title (paramedic vs. EMT) were not significantly associated with differences in PAIP scores ($p > 0.05$). However, a statistically significant difference was observed in PAIP scores according to adherence to current professional guidelines ($p = .003$). Participants who reported following current guidelines had significantly higher PAIP mean rank scores compared to those who did not. No significant differences were found in PAIP scores with respect to participation in basic in-service training, trauma and resuscitation courses, PALS, or ALS programs ($p > 0.05$) (Table 4).

Table 4. Comparison of PAIP scores according to participant characteristics (mean rank values)

Variable	n	Mean Rank	Test	p
Gender			Mann–Whitney U	
Female	96	78.7	Z = -0.787	.431
Male	56	72.8		
Marital Status			Mann–Whitney U	
Married	71	73.4	Z = -0.817	.414
Single	81	79.2		
Education Level			Kruskal–Wallis	
High School	20	98.5	KW = 5.806	.055
Associate Degree	88	73.5		
Bachelor's Degree	44	72.4		
Type of High School			Mann–Whitney U	
HVHS	131	76.1	Z = -0.267	.789
Other	21	78.9		
Professional Title			Mann–Whitney U	
Paramedic	88	75.4	Z = -0.351	.726
EMT	64	77.9		
Following Current Guidelines			Mann–Whitney U	
Yes	122	81.8	Z = -2.988	.003*
No	30	55.0		
B-Module			Mann–Whitney U	
Yes	111	72.8	Z = -1.687	.092
No	41	86.4		
TRC			Mann–Whitney U	
Yes	70	73.1	Z = .884	.377
No	82	79.4		
PALS			Mann–Whitney U	
Yes	63	72.1	Z = -1.048	.295
No	89	79.7		
ALS			Mann–Whitney U	
Yes	81	75.5	Z = .310	.756
No	71	77.7		

Group comparisons were performed using Mann–Whitney U and Kruskal–Wallis tests. Values represent mean ranks

Spearman's rank correlation analysis was performed to examine the relationships between PAIP scores and age, years of professional experience, and ARKL scores. No significant correlation was found between PAIP scores and age ($r = .064$, $p > 0.05$) or years of professional experience ($r = .064$, $p > 0.05$). Additionally, the correlation between PAIP and ARKL

scores was not statistically significant (p > 0.05). These findings indicate that professional attitude levels, as measured by the PAIP scale, were not significantly influenced by age, length of professional experience, or ARKL scores within this sample (Table 5).

Table 5. Relationship between PAIP and certain variables in paramedics and EMTs

Variable	n	r	r^2	p
Age	152	.064	.004	.433
Working Years	152	.064	.004	.435
ARKL	152	.026	.000	.751

Spearman's rank correlation analysis was used to examine the relationships between PAIP scores and age, years of professional experience, and ARKL scores.

DISCUSSION

In this study, the average PAIP score for paramedics and EMTs was 142.9 ± 9.7, which is lower than the score reported in Kaya's study with nurses (144.4) [8]. In a descriptive study conducted by Dowson in 2003 in the United States with paramedics and EMTs, it was reported that personnel had high job satisfaction and perceived themselves as professionals [11]. In the study, a higher level of PAIP score was found compared to other studies involving midwives and nurses, indicating that their professional attitudes were at a high level, in accordance with the literature [9,10,22]. The professional attitude of 185 nurses working in teaching hospitals affiliated with Tabriz University of Medical Sciences was found to be at a moderate level [29]. Glerean reported that although nurses are perceived as independent professionals, nursing is regarded as an occupation with a low level of autonomy [30].

When examining the relationship between the average PAIP score and ARKL scores, the average PAIP score for paramedics and EMTs was 142.9 ± 9.7. The average ARKL score was found to be 77.2 ± 12.6, and no statistically significant relationship was found between the PAIP score and ARKL (p > 0.05). It has also been reported that among paramedics and EMTs who demonstrate high job satisfaction, those who achieve greater satisfaction in terms of teamwork and professional professionalism exist, indicating a relationship between occupational satisfaction and teamwork [31]. In the current study, the ARKL score was determined to be 77.2. A study conducted in the USA reported that the success rate in cardiac arrest management was 64% for EMTs and 76% for paramedics [11]. In a study conducted with paramedics working in pre-hospital emergency services, 88.5% of participants were able to recognize VF and 83.6% were able to recognize VT, indicating a high level of knowledge [18]. Similarly, another study involving paramedics demonstrated that 83.4% correctly identified non-shockable rhythms and 86.7% identified shockable rhythms [20,21]. Moreover, paramedics were shown to be successful in rhythm recognition, defibrillation, and cardioversion. A study including both student and working paramedics and EMTs also found that participants effectively recognized arrest rhythms [19]. In light of these comparable findings in the literature, the present results suggest that paramedics and EMTs possess a high level of knowledge in arrest rhythm recognition.

In the present study, no statistically significant difference was found between PAIP scores and gender. Similar findings have been reported in previous studies conducted with nurses and midwives, indicating that gender may not be a determining factor in professional attitude levels [8,9]. Likewise, marital status was not found to have a significant effect on PAIP scores in this study. This result is consistent with earlier studies reporting that marital status does not significantly influence professional attitudes among healthcare professionals [22,23]. Differences in PAIP mean scores according to educational level and type of high school graduated from were not statistically significant. In a study conducted with nurses, similar results were obtained, whereas in another study involving nurses, the PAIP score of nurses with master's degrees was found to be higher than that of nurses with other educational levels [8,32].

In the study, the differences in mean PAIP scores according to educational level were 98.5 for high school graduates, 73.5 for associate degree graduates, and 72.4 for bachelor's degree graduates, respectively. In addition, a substantial proportion of the sample (86.2%) had received their high school education at Health Vocational High Schools (HVHS). The mean PAIP score of personnel educated at HVHS was 76.1, whereas it was 78.9 for those educated at other types of high schools. The differences in mean PAIP scores according to educational level and type of high school graduated from were found to be statistically insignificant. In a study conducted with nurses, similar results were obtained, whereas another study involving nurses reported that the PAIP score of nurses with master's degrees was higher than that of nurses with high school and associate degree education levels [8, 32].

A study conducted with nurses in 2017 reported that although postgraduate graduates had a high mean PAIP score (143.46), no statistically significant difference was observed with respect to educational level. Similarly, a study involving midwives found no significant difference, consistent with the findings of the present study [9,23]. Although educational level is generally assumed to be associated with increased knowledge, the absence of a significant relationship between educational level and professional attitude in the present study may be explained by comparable work roles and practices despite differences in formal education, participation in similar theoretical and practical training programs, and the long-term adoption of a shared, team-based approach to patient care, which may lead to convergence in attitudes, knowledge, and experience. Although numerical variations in PAIP scores were observed across educational groups, these differences were not statistically significant. In line with the present findings, studies conducted with nurses, midwives, and prehospital emergency medical services personnel (112 emergency health services) have also demonstrated no significant association between educational level and professional attitude [7,9,20]. In contrast, Sökmen (2018) reported that associate degree graduates had significantly higher mean PAIP scores than master's degree graduates in a study of midwives [9].

In an exploratory study conducted in 2005 on the level of professionalism among certified midwives and nurses, the relationship between educational level and professionalism was examined. The results show that midwives and nurses demonstrate a high degree of professionalism in their practice. The findings also support the idea that there is a causal relationship between educational level and professionalism [33]. Hickey's 2010 study reported that although professional experiences were generally positive, there were significant differences in practice between those actively working in the field and newly graduated practitioners, and that the most effective form of clinical experience for achieving professional competence was mentorship-based experience.Nursing education should re-examine current approaches to clinical professional education and support methods that will better prepare future nurses [34]. It has been stated that nurses who graduate with a master's degree from schools with a nurse practitioner curriculum are proficient in their job descriptions and that these nurse practitioners possess a high level of professionalism. [35]. The findings of the present study support the view that educational level alone may not be sufficient to explain variations in professional attitude.

When PAIP mean scores were compared according to professional title, the mean PAIP score was 75.4 for paramedics and 77.9 for EMTs, and the difference between paramedics and EMTs was not statistically significant. A study conducted with midwives and nurses reported no difference according to professional title [36]. Other studies conducted with nurses similarly reported no significant relationship between professional position and professionalism level, supporting the findings of the present study [7,23,37]. The lack of a statistically significant difference in PAIP scores according to professional title may be attributed to the team-based nature of work among paramedics and EMTs in the field, their shared responsibilities, their focus on providing optimal patient care, and the prioritization of team success over individual achievement. In England, Australia, and Ireland, the continuing development of professional standards for paramedics has led to expectations that paramedics will go beyond clinical skills after training, demonstrating commitment to professional development and knowledge, as well as communication skills, personal conduct, adherence to current standards and algorithms, and professionalization among paramedics and EMTs [38].

The present study found that participants adhering to current guidelines had an average PAIP score of 81.8, compared to 55.0 among those who did not; this difference was statistically significant ($p < 0.05$). This important finding highlights the need for keeping information up to date and refreshed. Adherence to current clinical guidelines reflects engagement with evidence-based practice and may contribute to more consistent clinical decision-making in prehospital emergency care. In this context, regular follow-up of guidelines can be considered not only a marker of technical competence but also an indicator of professional responsibility and commitment to standardized care practices. Other studies involving paramedics and EMTs reported that personnel following existing guidelines had a higher level of correct responses, while other studies involving nurses and midwives indicated that participation in professional scientific activities positively contributed to professional attitudes, with midwives who read scientific publications having higher average PAIP scores than those who did not [9,10,19,20,39]. Interviews conducted with paramedics, paramedic educators, and paramedic students in England indicated that reforms in paramedic education highlighted two aspects of professionalization and professionalism: the provision of practice-based platforms grounded in clinical experience and service delivery [40]. In-service training, seminars, events, and participation in congresses have been reported to increase the knowledge levels of physicians, and it has been noted that assistant doctors participating in in-hospital CPR practices achieved higher success rates compared to those who did not [41]. There was no significant difference in PAIP scores between paramedics and EMTs who participated in in-service training courses and those who did not ($p > 0.05$). In a study conducted with paramedics working in emergency medical services, it was reported that in-service training improved the professional attitudes of paramedics regarding medication administration, and it was indicated that repeating existing courses and training programs for CPR in infants and children increased the personnel's knowledge level [17,42].

The results of in-service training indicate that it contributes positively to the development of 112 personnel in terms of knowledge, skills, and professionalization [25].

The study failed to find a significant association between PAIP scores and age, professional experience, and ARKL. In this study conducted with paramedics and EMTs, no statistically significant relationship was found between age and mean PAIP scores. Similarly, studies conducted with nurses reported no statistically significant relationship between age and mean PAIP scores, and a study conducted with midwives also reported no statistically significant difference between age and mean PAIP scores [8,9,23,37,43-45]. The absence of a significant relationship between age and professional attitude in the sample may be attributed, in line with the literature, to workload, stress, burnout, and changes in attitudes toward the profession over time.

When years of professional experience and mean PAIP scores were compared, no statistically significant relationship was identified. These findings are consistent with studies conducted with nurses that reported no statistically significant difference between years of professional experience and mean PAIP scores [7,37,43-45]. In a study conducted with midwives, mean PAIP scores were observed to decrease as years of professional experience increased, although this decrease was not statistically significant [9].

The lack of a significant relationship between years of professional experience and professional professionalism may be due to the fact that professionalism is influenced by individual factors and attitudes such as personal motivation, professional commitment, and willingness to work, which may remain relatively stable throughout professional life. Brown (2005), in a study conducted with 1,510 participants, asked respondents to rate the attitudes of the EMTs with whom they worked most closely. It was reported that EMTs with

longer years of experience rated younger and newly employed EMTs significantly lower [31]. In a group of paramedics examined in Poland, differences in motivation, knowledge, and skills were observed. The mean value of the knowledge indicator was higher among professional paramedics with longer years of experience compared to paramedics who had completed only a standard training course [46]. In 2001, at a conference, 502 nurse practitioners completed the Professionalism Attitude Inventory in Nursing. Participants indicated that they represented all states and the most common areas of expertise among nurse practitioners. Sixty-eight percent of participants had been working for less than five years and reported having a high level of professionalism [35].

The study found no significant correlation between PAIP and ARKL. In another study involving midwives and nurses, no significant difference was found between the average PAIP scores and participation in in-service training courses [9,23]. Furthermore, no statistically significant difference was found between taking the ALS course and correctly answering questions about arrest rhythms, which supports the findings of the present study [19]. In conclusion, consistent with previous studies, this study found that sociodemographic characteristics and participation in in-service training did not significantly affect the professional attitudes of paramedics and EMT's. However, it was observed that those who reported following current guidelines demonstrated higher levels of professionalism.

Professional attitudes are shaped not only by technical competence but also by ethical values, responsibility, and professional identity. Sustaining professionalism therefore requires educational processes structured around professional standards and the development of a positive professional self-image [47,48]. Future studies should examine additional factors influencing professional attitudes using larger and more diverse samples. The main limitations of the present study are that data were collected from a single province and relied on self-reported online responses, and the sample size was limited to 64 EMTs and 88 paramedics. Consequently, the findings cannot be generalized to all paramedics and EMTs. The authors declare no conflicts of interest.

Limitations

This study has several limitations. First, the data were collected from a single province, which may limit the generalizability of the findings. Second, the sample size was relatively limited and consisted of paramedics and emergency medical technicians only. Third, the data were obtained through self-reported responses collected via an online questionnaire, which may be subject to response bias.

CONCLUSIONS AND RECOMMENDATIONS

This study found no statistically significant relationship between PAIP scores and sociodemographic characteristics, participation in in-service training, age, work experience, arrest rhythm knowledge, or professional title. However, paramedics and EMTs who reported adherence to current clinical guidelines demonstrated significantly higher PAIP scores. Based on these findings, supporting continuous access to up-to-date clinical information and promoting guideline adherence may contribute to strengthening professional attitudes in prehospital emergency care. Integrating digital educational resources aligned with current ERC and AHA guidelines into emergency health service systems may facilitate ongoing professional development. While broader educational and policy-related recommendations are discussed in the literature, further research is needed to examine these issues in relation to empirical data obtained from diverse and larger samples.

Ethics

Acknowledgements

This study was derived from the master's thesis titled "*The Effect of Professional Attitudes of Paramedics and Emergency Medical Technicians Working in Pre-Hospital Emergency Health Services on the Level of Knowledge of Arrest Rhythms*" published in 2021.

Ethics Committee Approval: Ethical approval for this study was obtained from the University Ethics Committee on January 27, 2021 (Protocol No: 2388). Institutional permission was granted by the Provincial Health Directorate on February 5, 2021 (Protocol No: E-17720518-799).

Informed Consent: Informed consent was obtained from participants, and no personal or identifying information was collected to ensure confidentiality.

Peer-review

Enternally and internally peer-reviewed.

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Study design, literature review, data collection, data analysis, writing and editing, and translation were performed by SC, YO, and EID

Conflict of Interest

The authors declare no conflict of interest.

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REFERENCES

1. World Health Organization. Cardiovascular Diseases (Cvds). Fact Sheet. Published 2021. Accessed At: Https://Www.Who.İnt/News-Room/Fact-Sheets/Detail/Cardiovascular-Diseases-(Cvds)
2. World Health Organization. The Top 10 Causes Of Death. Fact Sheet. Published 2021. Accessed At: Https://Www.Who.İnt/News-Room/Fact-Sheets/Detail/The-Top-10-Causes-Of-Death
3. Kleinman ME, Brennan EE, Goldberger ZD, Et Al. Part 5: Adult Basic Life Support And Cardiopulmonary Resuscitation Quality: 2015 AHA Guidelines Update For Cardiopulmonary Resuscitation And Emergency Cardiovascular Care. *Circulation*. 2015;132(18 Suppl 2):S414-S435. Doi:10.1161/CIR.0000000000000259

4. Freidson E. Professionalism: The Third Logic. University Of Chicago Press; 2001.
5. American Board Of Medical Specialties. ABMS Definition Of Medical Professionalism. Published 2012. Accessed At: Https://Www.Abms.Org/İnitiatives/Professionalism/
6. Erbil N, Bakır A. Meslekte Profesyonel Tutum Envanterinin Geliştirilmesi. *İnsan Bilimleri Dergisi.* 2009;6:290-302.
7. Karadaş A, Kaynak S, Duran S, Ergün S. Hemşirelerin Profesyonellik Düzeylerinin Değerlendirilmesi: Balıkesir Örneği. *Balıkesir Sağlık Bilimleri Dergisi.* 2018;7:74-80.
8. Kaya P. İstanbul'un Bir İlçesinde Kamu Ve Özel Sektörde Çalışan Hemşirelerin Mesleki Profesyonelliklerinin Belirlenmesi. Yüksek Lisans Tezi. Haliç Üniversitesi; 2011.
9. Sökmen Y, Taşpınar A. Ebelerin Mesleki Profesyonel Tutumları Ve Etkileyen Faktörler. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*. 2021;24(2):156-166.
10. Dikmen YD, Yönder M, Yorgun S, Usta YY, Umur S, Aytekin A. Hemşirelerin Profesyonel Tutumları İle Bunu Etkileyen Faktörlerin İncelenmesi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*. 2014;17:158-164.
11. Dawson DE, Brown WE, Harwell TS. U.S. National EMT Certification Education Evaluation: The LEADS Project. *Prehosp Emerg Care.* 2003;7(1):114-119.
12. Poranen A, Kouvonen A, Nordquist H. Perceived Human Factors From The Perspective Of Paramedics: A Qualitative İnterview Study. *BMC Emerg Med.* 2022;22(178). Doi:10.1186/S12873-022-00738-X. Accessed At: Https://Bmcemergmed.Biomedcentral.Com/Articles/10.1186/S12873-022-00738-X
13. Bowen LM, Williams B, Stanke L. Paramedic Students İn Professionalism: Achieving The Measure Or Missing The Mark? *Adv Med Educ Pract.* 2017;8:711-719. Doi:10.2147/AMEP.S138358
14. American Heart Association. 2020 AHA Guidelines For CPR And ECC. Published 2020. Accessed At: Https://Cpr.Heart.Org/En/Resuscitation-Science/Cpr-And-Ecc-Guidelines
15. European Resuscitation Council. ERC 2021 Resuscitation Guidelines. Published 2021. Accessed At: Https://Cprguidelines.Eu/Guidelines-2021
16. Çolak T, Çelik K, Tekten B. 112 Sağlık Çalışanlarının Hastane Dışı Kardiyak Arrestlerde CPR Bilgi Düzeyinin Değerlendirilmesi. *Kırıkkale Üniversitesi Tıp Fakültesi Dergisi.* 2020;22(2):208-215. Doi:10.24938/Kutfd.743169
17. Neşe A, Tetik A. Hastane Öncesi Acil Sağlık Personelinin CPR Bilgi Durumunun Belirlenmesi: Gaziantep İli Örneği. *Hastane Öncesi Dergisi.* 2020;5:129-134.
18. Özışık O, Salt İ, Sayhan MB. 112 Acil Sağlık Personelinin EKG Hakkındaki Bilgi, Tutum Ve Davranışlarının Saptanması. *Hemşirelik Akademik Araştırma Dergisi.* 2016;6:8-13
19. İnal F. Erişkin Hasta/Yaralıda Arrest Ritimlerini Tanıma Ve Uygun Tedavi Yöntemlerini Belirleme Konusunda Bilgi Düzeyinin İncelenmesi. Yüksek Lisans Tezi. Selçuk Üniversitesi; 2019.
20. Sezgin M. Hastane Öncesi Acil Sağlık Hizmetlerinde Görev Yapan Paramediklerin, Simülasyon Mankeninde Arrest Ritimleri Tanıması Ve Kurtarıcıların Bilgi, Deneyim Ve Yaklaşım Düzeylerinin Algoritmik Olarak Değerlendirilmesi. Yüksek Lisans Tezi. Selçuk Üniversitesi Sağlık Bilimleri Enstitüsü; 2019. Konya, Türkiye.
21. Hakyemez F. Paramediklerin Defibrilasyon, Kardiyoversiyon, Karar Alma Ve Uygulama Bilgi-Beceri Düzeyleri. Yüksek Lisans Tezi. Selçuk Üniversitesi; 2018.
22. Toker S. Sivas İl Merkezinde Çalışan Ebelerin Meslekte Profesyonel Tutumlarının Belirlenmesi. Yüksek Lisans Tezi. Cumhuriyet Üniversitesi; 2016.
23. Gönel A. Hemşirelerin Mesleki Profesyonellik Tutumları İle Kurumlarında Yaşanan Değişimlere Karşı Tutumları Arasındaki İlişki. Yüksek Lisans Tezi. Okan Üniversitesi; 2017.
24. Wacht O, Dopelt K, Schwartz D, Et Al. Recognition Of Paramedics As Autonomous Healthcare Professionals İmproves İnterprofessional Collaboration And Professional Role Clarity. *Int Paramed Pract.* 2013;3(4):92-97.
25. Çalışkan C, Koçak Ç, Yavuz H. 2012 Yılında Bir İlin 112 Personeline Verilen Temel Modül Eğitiminin Değerlendirilmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi.* 2012;5:50-63.
26. Ok O, Vatansever K, Şener Araz E, Ergün V. Hastane Öncesi Kardiyopulmoner Resüsitasyon Uygulamasında Göğüs Kompresyonu Kalitesinin Geliştirilmesi. *Turkiye Klinikleri J Anest Reanim.* 2016;14(3):69-77. Doi:10.5336/Anesthe.2016-50533
27. Johnston T, Acker J. Using A Sociological Approach To Answering Questions About Paramedic Professionalism And İdentity. *Australas J Paramed.* 2016;13(1):1-7. Doi:10.33151/Ajp.13.1.301
28. Batt AM, Ward G, Acker JJ. Paramedic Patient Advocacy: A Review And Discussion. *Internet J Allied Health Sci Pract.* 2017;15(4):Article 8.
29. Shohani M, Zamanzadeh V. Nurses' Attitude Towards Professionalization And Factors İnfluencing İt. *J Caring Sci.* 2017;6(4):345-357. Doi:10.15171/Jcs.2017.033
30. Glerean N, Hupli M, Talman K, Haavisto E. Young Peoples' Perceptions Of The Nursing Profession: An İntegrative Review. *Nurse Educ Today.* 2017;57:95-102. Doi:10.1016/J.Nedt.2017.07.008
31. Brown WE, Margolis G, Levine R. Peer Evaluation Of The Professional Behaviours Of Emergency Medical Technicians. *Prehosp Disaster Med.* 2005;20:107-114.
32. Tarhan G, Kılıç Dİ, Yıldız E. Hemşirelerin Mesleğe Yönelik Tutumları İle Mesleki Profesyonellikleri Arasındaki İlişkinin İncelenmesi. *Gülhane Tıp Dergisi.*

2016;58(4):411-416.

33. Hampton DL, Hampton GM. The Professionalism Of The Nurse-Midwife Practitioner: An Exploratory Study. *J Am Acad Nurse Pract.* 2000;12(6):218-225. Doi:10.1111/J.1745-7599.2000.Tb00185.X
34. Hickey MT. Baccalaureate Nursing Graduates' Perceptions Of Their Clinical İnstructional Experiences And Preparation For Practice. *J Prof Nurs*. 2010;26(1):35-41. Doi:10.1016/J.Profnurs.2009.03.001
35. Adams D, Miller BK. Professionalism İn Nursing Behaviors Of Nurse Practitioners. *J Prof Nurs.* 2001;17(4):203-210. Doi:10.1053/Jpnu.2001.25913
36. Esen B. Yenidoğan Yoğun Bakım Ebe Ve Hemşirelerinin Etik İkilemleri Ve Mesleki Profesyonellik Düzeyleri İle İlişkisi. Yüksek Lisans Tezi. Marmara Üniversitesi; 2013.
37. Erol F. Hemşirelerin Bakım Davranışları Ve Mesleki Profesyonel Tutumları. Yüksek Lisans Tezi. Adnan Menderes Üniversitesi; 2016.
38. Townsend RM. What Australian And Irish Paramedic Registrants Can Learn From The UK: Lessons İn Developing Professionalism. *Irish J Paramed.* 2017;2(2).
39. Şenol F, Uğurlu Z. Farklı Kuşaklardaki Hemşirelerin Mesleki Profesyonel Tutumlarının Belirlenmesi. *Sağlık ve Toplum.* 2019;29:44-53.
40. Givati A, Markham C, Street K. The Bargaining Of Professionalism İn Emergency Care Practice. *Adv Health Sci Educ Theory Pract*. 2018;23(2):353-369. Doi:10.1007/S10459-017-9802-1
41. Kozan Ö, Cander B. 2010 AHA Kılavuzu: Kardiyopulmoner Resüsitasyon Ve Acil Kardiyovasküler Bakım Bilimi. In: Hazinski MF, Field JM, Eds. İstanbul: Logos Yayıncılık; 2012:4.
42. Haytaç E. Paramediklerin Sık Kullanılan İlaçlar Ve İşlemler Hakkındaki Bilgi Düzeyinin Belirlenmesi. Doktora Tezi. Yıldırım Beyazıt Üniversitesi; 2017.
43. Hendekçi A. Cerrahi Ve Dahiliye Servislerinde Çalışan Hemşirelerin Mesleki Profesyonellik Tutumları Ve Bakım Rollerine Oryantasyonlarının Belirlenmesi. Yüksek Lisans Tezi. Ordu Üniversitesi; 2020.
44. Bayraktar D, Yılmaz H, Khorshtd L. Bir Üniversite Hastanesinde Çalışan Hemşirelerin Profesyonel Tutumlarının İncelenmesi. *Ege Üniversitesi Hemşirelik Fakültesi Dergisi.* 2016;32(3):65-74.
45. [45]. Kırlankıç S. Hemşirelerin Mesleki Profesyonel Tutumlarının İncelenmesi. Yüksek Lisans Tezi. Yakın Doğu Üniversitesi; 2019.
46. Włoszczak-Szubzda A, Jarosz MJ, Goniewicz M. Professional Communication Competences Of Paramedics. *Ann Agric Environ Med.* 2013;20(2):366-372.
47. Ravanipour M, Vanak Z, Afshar L, Azemian A. Hemşirelikte Profesyonellik Standartları: Hemşirelik Eğitmenlerinin Deneyimleri. *Kanıta Dayalı Bakım Dergisi.* 2014;4(10):27-40.
48. Stadnicka SK, Zarzycka D. Perception Of The Professional Self-İmage By Nurses And Midwives. *BMC Nurs.* 2023;22(1):412. Doi:10.1186/S12912-023-01564-7