

Investigating the Relationship Between Social Intelligence and Time Management Among Prehospital Emergency Technicians in Markazi Province, Iran

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Original Article

Abstract

INTRODUCTION: Prehospital emergency personnel face numerous challenges when time is poorly managed, which can adversely affect both patient outcomes and the overall healthcare system. Identifying factors that contribute to effective time management is essential for enhancing performance in emergency care settings. This study aimed to examine the relationship between social intelligence and time management among prehospital emergency staff in Markazi province, Iran.

METHODS: This cross-sectional study was conducted in 2024 among 200 emergency medical technicians working in urban and road Emergency Medical Service (EMS) bases in Markazi province using convenience sampling. Data were collected using a demographic questionnaire, the Time Management questionnaire (Hashemizadeh, 2006), and the Standardized Social Intelligence questionnaire (Silvera et al., 2001). Data analysis was performed in SPSS-16 using descriptive statistics and Pearson correlation tests, with the level of statistical significance set at $p < 0.05$.

FINDINGS: The results indicated that the participants had a mean age of 33.64 ± 7.39 years, with males comprising 95% of the sample. The majority of participants (89.6%) demonstrated good time management skills. The mean social intelligence score was 93.15 ± 14.45 , indicating a high level of social intelligence. Furthermore, social intelligence and all of its subscales showed positive and statistically significant correlations with all dimensions of time management ($p < 0.001$).

CONCLUSION: Social intelligence, as a critical component of human capital, is positively associated with the time management abilities of prehospital emergency personnel. Interventions aimed at enhancing social intelligence may improve time management skills and overall efficiency in prehospital emergency care.

Keywords: Time management; Prehospital emergency care; Social intelligence; Emergency medical technicians.

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Introduction

Prehospital emergency care represents the first and most critical link in the healthcare chain during emergencies and plays a pivotal role in improving patient outcomes (1). Evidence indicates that the quality of care provided at this stage directly influences mortality rates and the incidence of complications arising

from accidents and other emergency conditions (2). In this fast-paced and unpredictable environment, emergency personnel must make rapid decisions under intense time pressure, manage complex clinical situations, and respond to the needs and expectations of patients and their families (3).

In such high-stress contexts, social intelligence—the ability to perceive, understand, and respond appropriately to social cues—plays a

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critical role (4). Social intelligence encompasses skills such as emotional awareness, empathy, social self-awareness, and effective interpersonal relationship management (3). Personnel with higher social intelligence are more likely to establish effective communication with patients, companions, and other healthcare team members and demonstrate professional behavior under stressful conditions (5,6).

Time management is equally essential for optimal performance in prehospital emergency settings. Given the time-sensitive nature of emergency care, the ability to prioritize tasks, allocate resources efficiently, and perform interventions promptly is crucial for saving lives (7). Inefficient time management can compromise care quality and increase both medical errors and occupational stress among personnel (8).

Despite the recognized importance of social intelligence and time management, few studies have examined the relationship between these two constructs in prehospital emergency care. Previous research by Joseph et al. (2010) reported a positive association between social intelligence dimensions and time management skills, although their analysis was limited to correlations and did not account for potential confounding variables (5). Similarly, Hassan Helaly et al. (2022) explored this relationship among nurses, which may limit the applicability of their findings to the highly dynamic and time-sensitive prehospital emergency environment (6).

Addressing these gaps, the present study aimed to investigate the relationship between social intelligence and time management among prehospital emergency technicians in Markazi province, Iran. The findings of this research may provide valuable evidence for the development of targeted educational and training programs aimed at enhancing the professional competencies of emergency personnel.

Methods

This cross-sectional study was conducted in Emergency Medical Service (EMS) bases affiliated with Arak University of Medical Sciences between October 2024 and March 2025. The study population consisted of emergency medical technicians working in urban and road EMS bases. Inclusion criteria were at least six months of work experience in prehospital emergency services, while questionnaires with more than 30% missing responses were excluded.

Participants were selected using convenience sampling. The sample size was determined based on a 95% confidence level, 80% statistical power, and an assumed minimum correlation coefficient of 0.2 between social intelligence and time management (9,10). Using Fisher's Z transformation, a final sample size of 200 participants was estimated for correlation analysis.

Data were collected using three structured questionnaires:

A) Demographic Information Questionnaire: This instrument assessed demographic and occupational characteristics, including age, gender, educational level, marital status, number of children, employment status, having a second job, type of service base (urban or road), and number of monthly shifts.

B) Time Management Questionnaire by Hashemizadeh (2006): Time management was assessed using a 20-item Likert-type scale across four dimensions: goal setting and prioritization (items 1–5), time management mechanics (items 6–10), perceived control over time (items 11–15), and organization and planning (items 16–20). Each item was rated on a 5-point scale, with total scores ranging from 20 to 100. Scores of 20–40 indicate poor, 41–60 moderate, and above 60 strong time management skills (11).

C) Standardized Social Intelligence Questionnaire by Silvera et al. (2001): This 21-item standardized instrument measures social intelligence across three subscales: social information processing, social skills, and social awareness. Items were rated on a 5-point Likert scale, with several items reverse scored. Higher total scores indicate higher levels of social intelligence (12).

Validity and Reliability of Instruments

Content validity was assessed by a panel of 12 experts, including nine faculty members with doctoral degrees in nursing and three biostatistics specialists. The Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated to evaluate item necessity and relevance. The CVR values were 0.83 for the Time Management Questionnaire and 0.85 for the Social Intelligence Questionnaire, while the CVI values were 0.86 and 0.87, respectively.

Reliability was evaluated using internal consistency in a pilot study involving 20 comparable participants who were excluded from the main analysis. Cronbach's alpha coefficients were 0.88 for the Time Management

Questionnaire and 0.86 for the Social Intelligence Questionnaire, indicating acceptable to high internal consistency.

Data were analyzed using SPSS-16 after confirming the normal distribution of variables. Descriptive statistics (mean, standard deviation, and frequency) were used to summarize demographic and study variables. The Pearson correlation coefficient was used to examine the relationship between social intelligence and time management. A p-value of less than 0.05 was considered statistically significant.

Findings

The mean age of the participants was 33.64 ± 7.35 years; the majority (95%) were male, 42.8% were married, and 61.2% held a bachelor's degree. Among the participants, 48% were formally employed, and 8% had a second job, of whom 53.7% had a second job unrelated to healthcare. The highest proportion of prehospital emergency personnel (62.7%) worked at urban bases, and the mean number of monthly shifts was

24.41. Social intelligence showed a statistically significant relationship with age ($p=0.02$). Time management was significantly associated with employment status ($p=0.04$); accordingly, time management scores were higher among contract-employed personnel compared with others ($p=0.03$). Additionally, time management was significantly associated with having a second job, such that personnel without a second job had higher time management scores than those with a second job ($p=0.01$) (Table 1).

As shown in Table 2, time management was at a good level among most of the participants (89.6%), and none had a weak level of time management. The mean score of social intelligence among the participants was 92.15 ± 14.45 . Additionally, the highest social intelligence score was observed in the social awareness subscale (32.55 ± 5.52), while the lowest score was found in the social skills subscale (29.29 ± 5.37) (Table 3).

Table 1. Relationship of demographic characteristics with social intelligence and time management in pre-hospital emergency personnel

Individual & Occupational Characteristics		Frequency	Percent	Social Intelligence	Time Management
Gender	Male	191	95	Independent t-test $t=1.019$ $df=163$ $P=0.342$	Independent t-test $t=1.016$ $df=199$ $P=0.311$
	Female	10	10		
Marital status	Single	72	35.8	Independent t-test $t=1.143$ $df=199$ $P=2.54$	Independent t-test $t=1.143$ $df=199$ $P=0.254$
	Married	129	64.2		
Highest education level	Associate degree	65	32.3	ANOVA $F=0.530$ $P=0.03$	ANOVA $F=0.530$ $P=0.589$
	Bachelore degree	123	61.2		
	Master's degree and above	13	6.5		
Number of children	0	33	25.6	ANOVA $F=1.970$ $P=0.232$	ANOVA $F=1.780$ $P=0.154$
	1	38	29.5		
	2	41	31.8		
	3 and above	17	13.2		
Employment status	Official recruitment	90	44.8	ANOVA $F=2.754$ $P=0.49$	ANOVA $F=2.771$ $P=0.43$
	Corporate	59	29.4		
	Contract employment	27	13.4		
	Compulsory service program	25	12.4		
Second job	Yes	82	40.8	Independent t-test $t=1.601$ $df=176$ $P=0.32$	Independent t-test $t=2.402$ $df=199$ $P=0.017$
	No	119	59.2		
Base type	Urban	126	62.7	Independent t-test $t=1.217$ $df=156$ $P=0.312$	Independent t-test $t=1.137$ $df=199$ $P=0.257$
	Road	75	37.3		
Age (yaer) (mean $\pm$ SD)		33.64 ± 7.39		Pearson correlation $r=0.075$ $P=0.02$	Pearson correlation $r=0.050$ $P=0.482$
Number of shifts(mean $\pm$ SD)		66.11 ± 2.49		Pearson correlation $r=-0.075$ $P=0.154$	Pearson correlation $r=-0.095$ $P=0.182$

Table 2. Frequency distribution, mean, and standard deviation of time management in prehospital emergency staff

Time Management	Percent	Frequency
Weak (40-20)	0	0
Medium(60-40)	10.4	21
Strong(above 60)	89.6	180
Total	100	201
Mean $\pm$ Standard deviation	59.91 ± 75.9	
Maximum-Minimum	49-100	

Table 3. Descriptive statistics of social intelligence and its subscales among prehospital emergency personnel

Social intelligence subscales	Mean	Maximum	Minimum	Standard deviation
Social Information Processing (7-49)	31.31	46	11	5.69
Social Awareness (7-49)	32.55	47	14	5.52
Social Skills (7-49)	29.29	46	13	5.37
Social Intelligence (21-147)	93.15	130	38	14.45

Table 4. Correlation between time management and social intelligence among prehospital emergency personnel

Social intelligence subscales	Time management dimensions				
	Setting goals & prioritizing	Time management mechanics	Control over time	Establishing order & organization	Time management
Social information processing	$r=0.357$ $P<0.001$	$r=0.286$ $P<0.001$	$r=0.238$ $P<0.001$	$r=0.32$ $P<0.001$	$r=0.377$ $P<0.001$
Social awareness	$r=0.520$ $P<0.001$	$r=0.523$ $P<0.001$	$r=0.462$ $P<0.001$	$r=0.503$ $P<0.001$	$r=0.628$ $P<0.001$
Social skills	$r=0.311$ $P<0.001$	$r=0.255$ $P<0.001$	$r=0.322$ $P<0.001$	$r=0.353$ $P<0.001$	$r=0.388$ $P<0.001$
Social intelligence	$r=0.455$ $P<0.001$	$r=0.407$ $P<0.001$	$r=0.390$ $P<0.001$	$r=0.455$ $P<0.001$	$r=0.533$ $P<0.001$

Data analysis showed that time management and all its dimensions had a statistically significant positive correlation with social intelligence and its subscales ($p<0.001$). In other words, higher levels of social intelligence and its subscales were associated with better time management (Table 4).

Discussion and Conclusion

The present study aimed to investigate the relationship between social intelligence and time management among prehospital emergency technicians in Markazi province, Iran. The results demonstrated a positive and statistically significant association between social intelligence and time management, indicating that personnel with higher levels of social intelligence tend to exhibit more effective time management skills. This finding underscores the importance of interpersonal and social competencies in high-pressure prehospital emergency settings.

The results also showed that certain demographic variables, including age, employment status, and educational level, were significantly associated with social intelligence and time management. This finding is consistent with the study by Venter et al. (2006), which reported that sociodemographic characteristics influence individuals' perceptions of time and time management behaviors (13). Similarly, Kang et al. (2012) found that greater work experience is associated with improved time management skills, likely due to increased familiarity with task prioritization and workload management in clinical environments (14). In contrast, Uhm et al. (2019) reported no significant association between age and time management among emergency medical technicians in South Korea (15). These inconsistencies may be attributed to differences in organizational structures, educational systems,

and professional development opportunities across countries.

In the present study, the mean social intelligence score among prehospital emergency technicians was relatively high. This finding is consistent with the results of Özdemir et al. (2021), who reported high levels of social intelligence among healthcare professionals in Turkey (16). Similarly, Johnston et al. (2025) found elevated social intelligence levels among emergency and fire management leaders in the United States (17). However, Bai et al. (2024) reported lower levels of social intelligence among nursing students in China (18). These variations may reflect cultural differences, communication training approaches, and the emphasis placed on interpersonal skills within educational systems.

Regarding time management, the findings indicated that most participants demonstrated good time management skills. This result aligns with studies conducted in Australia and Canada, which reported satisfactory levels of time management among emergency and healthcare personnel (19,20). In contrast, Aliyu et al. (2015) reported lower levels of time management efficiency among emergency responders in South Africa, potentially due to higher workloads, limited resources, and organizational constraints (21).

Similarly, the observed positive relationship between social intelligence and time management is consistent with previous research. Masoud et al. (2015) reported a significant association between emotional intelligence, time management, and job-related outcomes among organizational employees (22). Lievens and Chan (2017) also emphasized the importance of social intelligence in supporting key professional competencies, including effective time management (23). Furthermore, Zautra et al. (2015) demonstrated

that training programs aimed at enhancing social intelligence can improve soft skills such as communication and self-regulation (24). These findings suggest that social intelligence facilitates better understanding of social situations, more effective communication, and improved conflict management, which collectively contribute to more efficient time management.

Overall, these findings indicate that social intelligence and time management are closely associated and represent important determinants of performance among prehospital emergency personnel. Given this relationship, strengthening social intelligence may contribute to improved time management and enhanced quality of prehospital emergency services.

Turning to the study limitations, there were several constraints in this research. First, the cross-sectional design limits the ability to infer causal relationships between variables. In addition, the restriction of the sample to prehospital emergency technicians in Markazi province reduces the generalizability of the findings. Therefore, future longitudinal and interventional studies are recommended to further examine causal pathways and evaluate the effectiveness of targeted educational interventions.

Despite these limitations, this study is among the few conducted in Iran that has specifically examined the relationship between social intelligence and time management among prehospital emergency technicians. The use of validated instruments and the simultaneous assessment of demographic and occupational variables strengthen the credibility of the study findings.

Based on these results, it is recommended that health system managers and policymakers design and implement integrated training programs aimed at improving both social intelligence and time management skills. Incorporating simulation-based training, revising educational curricula, establishing mentorship programs, and promoting supportive work environments may enhance professional competencies. In addition, the use of digital training tools and time management monitoring systems could support continuous professional development. Systematic implementation of these strategies may ultimately improve the performance of prehospital emergency personnel and the quality of emergency care services.

Compliance with Ethical Guidelines

The present study was derived from a Master's thesis in Emergency Nursing and was approved by the Ethics Committee of Tehran University of Medical Sciences (Ethical Approval Code: IR.TUMS.FNM.REC.1403.065). Written informed consent was obtained from all participants. Data collection was conducted within 1–3 days at each EMS base.

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Author's Contributions

Ali Eisaabadi contributed to the study design and data analysis; Maryam Esmaili was involved in the study design and data collection; Shima Haghani contributed to data analysis and final approval of the manuscript; and Mahboubeh Shali contributed to the study design, drafting of the original manuscript, and final approval of the manuscript, and served as the corresponding author.

Conflict of Interests

The authors declare no conflict of interest.

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