

RESEARCH

# Time management attitudes of healthcare workers employed in the ambulance service in Turkey

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## Abstract

**Introduction:** Healthcare workers employed in the ambulance service should minimise their response time when responding to a medical emergency. Pre-hospital emergency medical services (EMS) operate on a 24-hour basis; hence, time management in both the work and social lives of the staff is more difficult than in other occupational groups. In the case of emergency health services, time management is no doubt the most important aspect in terms of human health. The purpose of this research was to examine the time management skills and influencing factors of healthcare workers employed in the ambulance service.

**Methods:** In this cross-sectional study, a questionnaire containing time management inventory (TMI) and demographics was applied. In the analysis of the data, the number, chi square, percentage and t test were applied using SPSS statistical software.

**Results:** Of those who participated in the survey, 57.8% were male, 86.2% were working at the EMS station (EMSS) and 49.9% were paramedics. The average TMI was 70.49. When occupation was considered, no significant difference was observed in the total time management, time planning, time attitudes and time loss of the participants.

**Conclusion:** A statistically significant difference was observed with regards to education status for the total time management according to gender for the time loss subdimension of the healthcare workers employed in the ambulance service. This research concluded that males working in the ambulance service managed their use of time better than the females, and that high school graduates used their time better than the undergraduates.

## Keywords

ambulance service; healthcare workers; time management

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## INTRODUCTION

Time management refers to the planning of activities in which time, purpose, social life and pleasures are carried out together.(1) In other words, time management is a form of management in which individuals and organisations need to be more effective and efficient in the use of their resources. Moreover, time management should not be perceived as stopping, slowing down or changing.(2) Time is a strategically high-value resource and it is important to focus on how it can be used more efficiently. In this context, time management has been defined as the best management of time by planning and controlling; however, human beings cannot actually manage time. What matters here is not the ability of an individual to manage time, but the self-management ability of the individual.(2–4) Using time efficiently allows an individual the opportunity to read books,

follow technology and development, devote time to social environments, create new ideas, develop projects and better plan their future.(5–7)

The effective application of time management skills has been associated with academic achievement, stress reduction, increased creativity, self-efficiency and student satisfaction.(8,9) Pre-hospital emergency health services in Turkey consist of two units. The first unit is the command and control centre (CCC) where emergency calls are met and ambulances are directed, and the second unit is the emergency health stations that reach the scene upon a call from the CCC and intervene. While emergency medical technicians (EMTs) and consultant physicians work in the CCC, paramedics and EMTs mainly work in EMSS health stations. EMTs are high school graduates, and paramedics are health

workers who have graduated from university with an associate degree.(10)

Emergency medical service (EMS) professionals deliver round-the-clock lifesaving pre-hospital emergency care to individuals involved in both medical and traumatic emergencies. Due to the unpredictable nature of their work, EMS professionals may be exposed to emotionally traumatic events while on duty. These events may include the death of a child, abuse of a child or elderly patient, murders, suicides, and natural or manmade disasters.(11) It was reported by Al Khatib (2014) that a significantly negative relationship was observed between stress and the time management of students at the University of Science and Technology in the United Arab Emirates.(12) As a result of this research, it could be assumed that because EMS professionals are under intense stress, they inadequately manage their time.

In modern healthcare systems, EMS practitioners are often the first healthcare providers to attend to patients with life-threatening injuries and illnesses, including sepsis. EMS practitioners can provide a variety of critical interventions before the patient arrives at the hospital. For many time-sensitive health problems, including acute myocardial infarction, trauma, stroke and cardiac arrest, these critical interventions have been shown to increase the chances of survival and improve outcomes for the patients.(13,14) In the EMS profession, time management is very important because the time that the EMS professionals spend on the patient and the quality of the service provided to patients may be adversely affected.

When the literature was examined, no studies could be found regarding the time management efficacy and efficiency of healthcare professionals who are employed in the ambulance service, where it is vitally important, and the research on time management that could be found was quite limited.(6,7,15–18) Healthcare professionals who are employed in the ambulance service must work quickly and minimise the loss of time. At the same time, it is more difficult for them to manage time, both at work and in their social lives, when compared to other occupational groups, as pre-hospital EMS professionals work 24 hours a day. The time management of emergency health services is very important for human health and is a subject of worldwide validity. Therefore, this study aimed to investigate the time management skills and factors affecting healthcare workers in the ambulance service.

## **METHODS**

### **Study design**

This research was designed as a cross-sectional study.

### **Study group**

Ambulance services in Turkey consist of two basic structures. The first is the CCC, which is the centre where the emergency calls are received, and the second is the EMS station (EMSS). The study population of this research included healthcare professionals who were employed in the ambulance service in the Aydın Province of Turkey. The sample selection method was not used for this study and it was aimed to reach all of the personnel. The questionnaires were sent to the registered email addresses of the healthcare personnel of the Aydın Ambulance Service. A total of 417 questionnaires were sent to the employees and 377 questionnaires were returned and analysed (9 employees did not complete the survey, and the surveys of 31 individuals were missing) (response rate of 90.4%).

### **Procedures**

Survey forms containing demographic characteristics and time management inventory (TMI) were sent by email to healthcare workers employed in the EMS between 1 July and 1 August 2019. Volunteers were invited to participate in the study. All participants were informed about the study and verbal consent was obtained by asking whether they would participate in the study.

### **Material**

The survey form included the TMI developed by Britton and Tesser (1991) with sociodemographics.(15) In 2002, the 27-item TMI scale version was translated into Turkish by Alay and Koçak, and validity and reliability studies of the TMI were then initiated (19). In their study, the 27-item TMI scale version was administered to EMS professionals. The TMI deals with time attitudes, time planning and time loss. The 27-item TMI was developed to measure time management practices using a 5-point Likert scale. Responses under each item consisted of always, frequently, sometimes, infrequently and never. With regards to scoring, 5 points were assigned when the answer was always to positive items, and 1 point was assigned when the answer was always to negative items. The lowest score that could be attained from the TMI was 27, while the highest was 135. Higher values on the TMI corresponded to better time management practices. The TMI consisted of three dimensions, comprising time planning, time attitudes and time loss. The first dimension was called time planning because it encompassed a variety of items that required short-term (either within the day or within the week) and long-term (items 1–16 on the scale) planning. The minimum score for this dimension was 16, while the highest was 80. Attaining a low score on this subscale indicated that the individual did not use his or her time effectively. A higher score indicated that the

individual could plan for the short or long term efficiently and had the competence to use his or her time wisely. The second dimension, which was called time attitudes, was more attitudinal in nature (items 17–23 on the scale). The lowest score that could be attained in this dimension was 7, while the highest was 35. It was accepted that participants who scored higher than this subscale managed their time well and planned for long time intervals. The third dimension was called time loss because it comprised items related to poor time use habits and bad use of personal time (items 24–27 on the scale). The lowest score that could be attained in this dimension was 4, while the highest was 20. Low scores from this subscale indicated that the individual used his or her time inefficiently. The TMI Cronbach alpha total values were determined as 0.88 for time planning, 0.66 for time attitudes, 0.47 for time loss and 0.87 for total TMI points.(19)

**Statistical analysis**

Analysis of the data was conducted using IBM SPSS Statistics 23.0 (Armonk, NY, USA) and examined with a 95% confidence interval. To obtain valid results from the data, the quality of the data was first examined. To this end, the effects of lost data and endpoint values were studied to determine data loss. Since there were no lost values, Z scores were calculated over the total points to determine the remaining values. With regards to the Z scores, it was determined that all of the scores were in the range of +3 and -3 (20). To determine the reliability of the scale, the Cronbach alpha internal consistency coefficient was calculated and determined as 0.871. Accordingly, it was determined that the scale was quite reliable (0.80 < 1.00).

The number, average, percentage and standard deviation (SD) values were used in the descriptive analyses of the sociodemographic characteristics of the participants. To evaluate the normality assumption before comparing the age, gender, marital status, occupation, educational status, number of years worked with the TMI and the three subdimensions of the scale, the data were found to be between +1.5 and -1.5 and were consistent with the normal distribution. The t test was used to examine the gender and marital status, which were TMI and subdimensions consisting of parametric test assumptions. The 1-way ANOVA test was used to determine whether there were differences between the age, occupation, number of years worked and educational status. The Tukey test was applied to conduct a pairwise comparison and identify which groups the resulting differences were in. P < 0.05 was considered statistically significant.

**Ethics**

In order to carry out this study, permission was obtained from the Aydın provincial health directorate. At the same time, the study was explained to the participants and verbal consent was obtained.

**RESULTS**

When Table 1 is examined, it can be seen that a total of 377 individuals participated in this research, of which 57.8% were male and 42.2% were female. Of the respondents, 86.2% worked at the EMSS, 54.4% were married, 48.8% had an associate degree and 49.9% were paramedics.

**Table 1.** Social demographics of the participants

Characteristic	n	%	Characteristic	n	%
<b>Age</b>			<b>Work station</b>		
18–22	59	15.6	EMSS	325	86.2
23–27	152	40.3	CCC	27	7.2
28–32	61	16.2	Hospital	25	6.6
33–37	78	20.7			
38 and on	27	7.1			
Total	377	100.0	Total	377	100.0
<b>Gender</b>			<b>Marital status</b>		
Male	218	57.8	Single	172	45.6
Female	159	42.2	Married	205	54.4
Total	377	100.0	Total	377	100.0
<b>Educational status</b>			<b>Title</b>		
Bachelor's degree	111	29.4	EMT	114	30.2
Master's degree	11	2.9	Doctor	5	1.3
High school	71	18.8	Paramedic	188	49.9
Associate degree	184	48.8	Ambulance driver	70	18.6
Total	377	100.0	Total	377	100.0

EMSS: emergency medical service station; CCC: command and control centre; EMT: emergency medical technicians

As seen in Table 2, for all of the participants, the TMI total score arithmetic average was x = 70.49 (SD = 12.46), time planning lower dimension score arithmetic average was x = 41.77 (SD = 10.25), time attitudes lower dimension score arithmetic average was x = 19.08 (SD = 3.63), and time loss lower dimension score arithmetic average was x = 9.63 (SD = 2.86).

When Table 3 is examined, it can be seen that according to gender, time loss differed significantly (t (375) = 3.25; P < 0.05) in favour of the males, meaning that male participants lost more time and female participants used time more efficiently. However, no significant difference was observed in the total time management (t (375) = 1.29; P > 0.05), time planning (t (375) = 0.78, P > 0.05) and time attitudes (t (375) = -0.35; P > 0.05) according to gender.

**Table 2.** Descriptive statistics for the TMI and subdimensions of the participants

	TMI			
	Time plans	Time attitudes	Time loss	Total time management
N	377	377	377	377
Arithmetic average	41.77	19.08	9.63	70.49
SD	10.25	3.63	2.86	12.46
Minimum	17	7	4	32
Maximum	73	29	20	110

TMI: time management inventory; SD: standard deviation

When Table 4 is examined, it is seen that the total time management ( $f(5.371) = 1.17; P > 0.05$ ), time planning ( $f(5.371) = 0.94; P > 0.05$ ), time attitudes ( $f(5.371) = 2.19; P > 0.05$ ) and time loss ( $f(3.373) = 0.41; P > 0.05$ ) of the participants did not differ significantly according to age. When occupation was considered, no significant difference was observed in the total time management ( $f(3.373) = 1.48, P > 0.05$ ), time planning ( $f(3.373) = 2.08; P > 0.05$ ), time attitudes ( $f(3.373) = 0.26; P > 0.05$ ) and time loss ( $f(3.373) = 1.58, P > 0.05$ ) of the participants.

No significant difference was observed in the total time management ( $f(2.374) = 0.40; P > 0.05$ ), time planning ( $f(2.374) = 0.25; P > 0.05$ ), time attitudes ( $f(3.373) = 1.49, P > 0.05$ ) or time loss ( $f(2.374) = 0.04; P > 0.05$ ) of the participants according to the number of years worked. The total time management of the participants was significantly different according to educational status ( $f(3.373) = 2.73; P < 0.05$ ). The Tukey post hoc

test was applied to conduct a pairwise comparison and identify which groups the resulting differences were in. According to the results, the total time management average ( $x = 73.50$ ) of participants with a high school degree was significantly higher than those with a Bachelor's degree ( $x = 68.64$ ). No significant difference was observed in the time planning ( $f(3.373) = 2.57; P > 0.05$ ), time attitudes ( $f(3.373) = 1.16; P > 0.05$ ) and time loss ( $f(3.373) = 0.97; P > 0.05$ ) of the participants according to educational status.

## DISCUSSION

Time management is defined as the process of implementing functions such as planning, organising and controlling to achieve goals effectively and efficiently in both work and private life.(17) EMS professionals work day and night shifts or 24-hour shifts, and due to these long and irregular working hours, this group experiences high stress levels; hence, the concept of time management is especially important.(21,22)

Studies have shown that time management behaviour will be effective in reducing stress and anxiety.(21) When the TMI of ambulance service employees, a professional group that should perform their job quickly, was examined, the average TMI scores were determined as  $x = 70.49 \pm 12.46$ . Given that the maximum value to be taken from the scale is 130 points, the time management skills of the participants can be considered as moderate.

**Table 3.** TMI of the differentiation states of the lower dimension scores of the participants according to gender and marital status

	Gender	n	$\bar{x}$	S	SE	t	SD	P-value																																																																																																		
Time planning	Male	218	42.13	9.85	0.67	0.78	375	0.433																																																																																																		
	Female	159	41.29	10.79	0.86				Time attitudes	Male	218	19.03	3.31	0.22	-0.33	375	0.741	Female	159	19.16	4.03	0.32	Time loss	Male	218	10.03	3.06	0.21	3.25	375	0.001	Female	159	9.08	2.47	0.2	Total time management	Male	218	71.19	11.62	0.79	1.29	375	0.199	Female	159	69.52	13.51	1.07		Marital status	n	$\bar{x}$	S	SE	t	SD	P-value	Time planning	Married	205	42.15	10.23	0.71	0.78	375	0.437	Single	172	41.33	10.29	0.78	Time attitudes	Married	205	18.84	3.78	0.26	-1.44	375	0.151	Single	172	19.38	3.42	0.26	Time loss	Married	205	9.43	2.82	0.22	-1.44	375	0.162	Single	172	9.86	2.9	0.22	Total time management	Married	205	70.42	12.34
Time attitudes	Male	218	19.03	3.31	0.22	-0.33	375	0.741																																																																																																		
	Female	159	19.16	4.03	0.32				Time loss	Male	218	10.03	3.06	0.21	3.25	375	0.001	Female	159	9.08	2.47	0.2	Total time management	Male	218	71.19	11.62	0.79	1.29	375	0.199	Female	159	69.52	13.51	1.07		Marital status	n	$\bar{x}$	S	SE	t	SD	P-value	Time planning	Married	205	42.15	10.23	0.71	0.78	375	0.437	Single	172	41.33	10.29	0.78	Time attitudes	Married	205	18.84	3.78	0.26	-1.44	375	0.151	Single	172	19.38	3.42	0.26	Time loss	Married	205	9.43	2.82	0.22	-1.44	375	0.162	Single	172	9.86	2.9	0.22	Total time management	Married	205	70.42	12.34	0.86	-0.11	375	0.914										
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TMI: time management inventory; SE: standard error; SD: standard deviation

**Table 4.** TMI of the participants and the differentiation status of their lower dimension scores according to age, occupation, educational status and number of years worked

<b>Age</b>		<b>Sum of squares</b>	<b>SD</b>	<b>Mean squares</b>	<b>F</b>	<b>p-value</b>	<b>Significant difference</b>
Time planning	Between groups	492.64	5	98.53	0.94	0.457	
	Within groups	39,039.2	371	105.23			
	Total	39,531.84	376				
Time attitudes	Between groups	141.49	5	28.3	2.19	0.055	
	Within Groups	4801.8	371	12.94			
	Total	4943.28	376				
Time loss	Between groups	17.09	5	3.42	0.41	0.839	
	Within groups	3062.92	371	8.26			
	Total	3080.01	376				
Total time management	Between groups	905.65	5	181.13	1.17	0.324	
	Within groups	57,472.55	371	154.91			
	Total	58378.2	376				
<b>Occupation</b>		<b>Sum of squares</b>	<b>SD</b>	<b>Mean squares</b>	<b>F</b>	<b>p-value</b>	<b>Significant difference</b>
Time planning	Between groups	650.14	3	216.71	2.08	0.103	
	Within groups	38,881.69	373	104.24			
	Total	39,531.84	376				
Time attitudes	Between groups	10.32	3	3.44	0.26	0.854	
	Within groups	4932.96	373	13.23			
	Total	4943.28	376				
Time loss	Between groups	38.63	3	12.88	1.58	0.194	
	Within groups	3041.38	373	8.15			
	Total	3080.01	376				
Total time management	Between groups	685.73	3	228.58	1.48	0.223	
	Within groups	57,692.47	373	154.67			
	Total	58,378.2	376				
<b>Number of years worked</b>		<b>Sum of squares</b>	<b>SD</b>	<b>Mean squares</b>	<b>F</b>	<b>p-value</b>	<b>Significant difference</b>
Time planning	Between groups	52.51	2	26.25	0.249	0.781	
	Within groups	39,479.33	374	105.56			
	Total	39,531.84	376				
Time attitudes	Between groups	39.09	2	19.55	1.491	0.227	
	Within groups	4904.19	374	13.11			
	Total	4943.28	376				
Time loss	Between groups	0.63	2	0.32	0.038	0.962	
	Within groups	3079.38	374	8.23			
	Total	3080.01	376				
Total time management	Between groups	125.41	2	62.7	0.403	0.669	
	Within groups	58,252.79	374	155.76			
	Total	58,378.2	376				
<b>Educational status</b>		<b>Sum of squares</b>	<b>SD</b>	<b>Mean squares</b>	<b>F</b>	<b>p-value</b>	<b>Significant difference</b>
Time planning	Between groups	800.26	3	266.75	2.57	0.054	
	Within groups	38,731.57	373	103.84			
	Total	39,531.84	376				
Time attitudes	Between groups	45.88	3	15.29	1.16	0.323	
	Within groups	4897.4	373	13.13			
	Total	4943.28	376				
Time loss	Between groups	23.82	3	7.94	0.97	0.407	
	Within groups	3056.19	373	8.19			
	Total	3080.01	376				
Total time management	Between groups	1252.59	3	417.53	2.73	0.044	1 > 3*
	Within groups	57,125.60	373	153.15			
	Total	58,378.20	376				

\*1 = associate degree, 3 = Bachelor's degree.

TMI: time management inventory; SD: standard deviation

This results were in agreement with those of Kebriaei et al. (2014) in a study of students at the Zahedan University of Medical Sciences in their study of nursing students (22).

Based on the results of a study conducted on university students by Başak, Uzun and Arslan (2008), the average total time management score was consistent with that of the current study.(6) However, in a study of family physicians by Tosun, Uçakkuş and Yıldırım (2017), it was determined that the average total time management score was  $87.16 \pm 10.99$ .(16) It is our belief that this high score was due to the difference in their sample group. Rather than responding to emergency situations and preventive health services in Turkey, family doctors serve people that have stable diseases/conditions. This is an important factor for reducing work stress. In addition, EMS professionals work 24 hours a day, while family physicians work 8 hours a day. The increase in the level of fatigue in EMS professionals may have negatively affected their time management.

This study found that male participants had more time-consuming attitudes than female participants. It is known that many time-consuming factors, such as a lack of planning and excessive use of technological tools affect the full and effective use of time.(22) In this context, the male participants were thought to have more unplanned time than the female participants. The results of Uysal et al. (2017) in their study of nursing students were in agreement with this.(21) Other studies supporting this finding can be found in the literature. (23–25)

In their study, Öncel, Büyüköztürk and Özçelikay (2005) reported that male pharmacists used their time more effectively than their female counterparts.(25) Likewise, in the study by Uysal et al. mentioned earlier, the time subscale was significantly higher for male students than for female students.(21) This revealed that the responsibilities and roles expected from females were higher than those of males. As a result, it has been concluded that females behave in a more disciplined manner. In this study, there was no significant difference in the total time management according to gender. The research of Uysal et al. supported the current research. However, the studies of Khatib in the United Arab Emirates, and Misra and McKean of university students determined that the total time management scores were significantly higher in females than in males.(12,26) It is our belief that the different study populations used were the reason for this difference.

The average total time management, time planning, time attitudes and time loss did not differ significantly according to the age of the participant. The study by

Trueman and Hartley found that time management skills increased with the progression of age.(23) However, the results of the current study were supported by those of Yavaş et al., and there was no statistically significant difference between age and the TMI score averages.(1)

The total time management, time planning, time attitudes and time loss average of the participants did not differ significantly according to occupation. The most important reason for this was the differences in the duties and authority responsibilities of the individual; however, the working conditions and stresses were similar.

The average total time management, time planning, time attitudes and time loss of the participants did not differ significantly according to the number of years worked. Similar results were found in the study of Tosun et al. conducted on family physicians.(16) In the study of Kidak on hospital managers, there was no significant difference between the time management attitudes and number of years worked.(24)

In the current research, the average total time management score of participants who were high school graduates was significantly higher than that of the undergraduates. In the study of Uyaniker, the total time management score of executive nurses with a graduate degree was found to be significantly higher when compared to those with an associate degree/health vocational high school.(27) In many studies, it was observed that the total time management score increased (significantly or not) with an increase in educational status.(1,3,8,12,21) It is our belief that this conclusion, which was incompatible with the literature, should be examined in depth with more comprehensive studies.

This study had some limitations. First, this work was limited to only EMS personnel serving at the Aydın 112 ambulance service. Next, the TMI was previously mostly applied to college students and nurses, while this was the first time that it was applied to EMS personnel. Future studies should involve larger samples of EMS workers and research should be expanded to include other countries. It would also be interesting to see how fatigue and stress in EMS professionals affect their time management skills.

## CONCLUSION

As a result of this study, the TMI scores of the paramedics working in EMS were found to be slightly above the average value. Whether there were differences between the sociodemographic characteristics of the

participants and the time management subdimensions was analysed. A statistically significant difference was observed with regards to education status for the total time management according to gender for the time loss subdimension of the healthcare workers employed in the ambulance service. This research concluded that males working in the ambulance service managed their use of time better than the females, and that high school graduates used their time better than the undergraduates. However, the average scores of the male and female participants were found to be close together. EMS employees are highly susceptible to error, and time is considered a source of serious stress with regards to time loss and emergency medical interventions; hence, time management is vital to all personnel involved in this area.

As part of in-service training, time management education could be provided to healthcare workers employed in the ambulance service to help them improve themselves. It is proposed that training programs should be created and experimental work should be conducted, to address different variables and develop time management-related skills in the training curriculum.

## COMPETING INTERESTS

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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