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Factors Affecting Time Management Ability among Medical Sciences Students during the COVID-19 Pandemic

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ABSTRACT

Time management (TM) is a crucial academic ability, especially as schools transition from conventional to virtual instruction delivery during the coronavirus disease 2019 (COVID-19) pandemic. The aim of the study was to identify the variables affecting undergraduates' medical science students in Iran during the COVID-19 epidemic. This web-based cross-sectional study was conducted in 2021. Participants included medical students and students pursuing a bachelor's degree in medical sciences. They were conveniently selected from medical universities across Iran. A demographic questionnaire and the Trueman and Hartley time management questionnaire were used as study instruments. Telegram and WhatsApp were used for data collection and sampling. The SPSS program (version 22.0) and multiple linear regression analysis were used to analyze the data. 1183 students completed the questionnaires in their entirety. The mean of their age was 22.08 ± 3.15 years and the majority of them were female (62.04 %). The mean TM score was 45.19 ± 8.3 (with a range of 14-70), and gender, grade point average (GPA), daily study time, daily internet use time, work status, and kind of university were the significant predictors of TM ability ($P < 0.05$). Iranian students have a moderate level of TM skill, and their work status, GPA, daily study time, daily Internet usage, and type of university are the main predictors of their TM. The shift from traditional to virtual learning during the COVID-19 pandemic highlights the importance of equipping medical students with necessary time management skills.

Keywords: *Time management, Undergraduate students, Virtual education, Social network, COVID-19*

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INTRODUCTION

Appropriate time management (TM) is an essential skill for everyone, particularly college students (1). TM is a process of planning and ensuring informed control over allotted resources in order to enhance effectiveness, efficiency, and productivity. (2). The two primary dimensions of TM are short-term and long-term. Long-term TM relates to planning for activities later in life, whereas short-term TM refers to planning for now and the near future (3).

Students have a wide variety of activities and tasks and need effective TM. They need to set aside enough time for their daily activities, learning activities (4), group, sociocultural, and sport-related activities (5). Several time management techniques have been developed, such as, such as avoiding time waste, figuring out priorities, structuring a list of tasks, completing tough tasks first, and identifying individual-social traits that have an impact on time management (6). Therefore, it is necessary to set priorities, plan short- and long-term activities, and determine the best actions to facilitate the achievement of their goals (7,8), include stopping wasting time, setting a goal, making an activity list, doing difficult tasks first, and identifying individual-social factors affecting time management (8). Recent significant advances in knowledge, expansion in the range of student specialization courses, and recent significant advances in medical technology have increased the importance of effective TM (9). Besides, great attention to teamwork and interdisciplinary practice in recent years has increased the workload of students and increased the importance of effective TM (10). Moreover, medical sciences students need to learn professional competencies, identity, ethics, and law, as well as communication skills (11, 12). It takes sufficient time and effective TM to learn and build these competencies and skills (7).

Effective TM is associated with positive outcomes such as greater academic achievement (13, 14), lower stress (15-17), greater creativity (18), greater self-efficacy (19), and higher satisfaction (20). Contrarily, ineffective time management can cause academic and social challenges for students (1) and reduce their satisfaction with academic and social life (21). Evidence suggests that pupils who intentionally employ TM strategies attain higher academic standards, whereas those with poor TM perform worse (22, 23).

Many different factors can affect TM ability. Previous studies reported that TM ability had a significant relationship with the duration of daily study, academic achievement (23), age, gender, and marital status (24). However, the majority of prior investigations into the variables that influence TM ability were done some time recently, the widespread COVID-19, which had a negative effect on face-to-face instruction and caused a move from conventional to virtual education (25). Virtual education did truant with geological and time-based confinements of traditional instruction, but it limited access to teachers and educational interactions (26). Evidence about the COVID-19 pandemic's effects on students' TM skills as well as the variables that may have an impact on TM skills during this pandemic are few. As a result, the current study was carried out to offer more information in this area. The study's goal was to identify the factor affecting TM ability among medical science students in Iran during the COVID-19 pandemic.

MATERIALS AND METHODS

Design

A web-based cross-sectional study was carried out between January and March 2021 using Google Forms.

Participants and Setting

The study population consisted of all undergraduate medical students and bachelor of medical sciences students from public, private, and military universities of medical sciences in Iran. Social media platforms like Telegram and WhatsApp were used for convenience sampling. The inclusion criterion was the consent to participate in and enroll in bachelor's or doctoral programs in Iranian medical sciences universities. Graduate students in the medical sciences, medical residents, and participants who filled out the survey instruments with insufficient information were all excluded from the study.

Instruments

A self-reported demographic profile and the Time Management Questionnaire served as study tools. The demographic questions included inquiries about the respondent's gender, marital status, level of education, place of birth, place of residence, employment status, semester in which they were enrolled, GPA, daily study and internet usage patterns, as well as the number of hours they worked each month.

The University version of the Time Management Questionnaire was created by Britton and Tesser in 1991 and revised by Trueman and Hartley in 1996. The fourteen items on this questionnaire are divided into two categories: short-term planning (items 1–5) and long-term planning (items 6–14). The questionnaire's total score, its short-term planning dimension, and its long-term planning dimension are 14–70, 5–25, and 9–45, respectively, on a five-point Likert scale with 1 being "Never" and 5 being "Always." Higher scores indicate better TM. Three rating levels have been considered for this questionnaire, short-term planning levels (more than 20, 14–20, and less than 14), long-term planning levels (more than 37, 24–37, and less than 24) and total time management levels (more than 52, 52–34, less than 34) that interpreted as good, moderate, and poor TM (Table 1) (27). Trueman and Hartley reported that the Cronbach's alpha of this questionnaire and its short and long-term dimensions were 0.77, 0.81, and 0.48, respectively (28). A study in Iran reported that Cronbach's alpha of the Persian version of this questionnaire was 0.72 (27).

Table 1: Interpretation of time management questionnaire designed by Trueman and Hartley in 1996

TM (Items)	Interpretation	
	Level	Range
Short Term (1-5)	Good	20<
	Moderate	14-24
	Poor	14>
Long Term (6-14)	Good	37<
	Moderate	24-37
	Poor	24>
Total (1-14)	Good	52<
	Moderate	34-52
	Poor	34>

Data Collection

Three rating categories—short-term planning (more than 20, 14-20, and less than 14), long-term planning (more than 37, 24-37, and less than 24), and total time management (more than 52, 52 -34, less than 34)—were taken into consideration for this questionnaire. These categories correspond to good, moderate, and poor time management, respectively.

Iranian medical sciences universities provided the identities of the administrators of their official WhatsApp and Telegram groups, and the administrators were then requested to disseminate the study tool to the group members. The objectives of the study and the confidentiality of the information were described in the language used to deliver the questionnaire link and its instructions. Although there was no set amount of time for completing the instruments, participants could do so in ten minutes. All of the items prompted a response from the participants. To complete the survey, each participant only needed to access the link once. The need to update the survey link on social media was emphasized to the administrator.

Data Analysis

Descriptive statistics, i.e., frequency, mean, and standard deviation were used for data description. Moreover, as the distribution of TM scores was normal, parametric ANOVA and Pearson correlation tests were utilized for the primary analysis. After validating the multiple linear regression (MLR) analysis presumptions and receiving confirmation, Students' socio-demographic factors as independent variables, and their time management score as a dependent variable were used in enter model of MLR. Data were analyzed via the SPSS software (v. 22.0). The level of significance was set at less than 0.05.

Ethical Considerations

This study has the approval of the Ethics Committee of Zanjan University of Medical Sciences, Zanjan, Iran (code: IR.ZUMS.REC.1399.310). Data collection for this study was anonymous, and participation was completely voluntary.

RESULTS

A total of 1208 students participated in the study. The final analysis included the data collected from 1183 students and excluded 25 students who gave the study instruments inadvertently incomplete answers. The mean of age of participants was 22.08 ± 3.15 years and most of them were female (62.04%), single (83.5%), unemployed (66.8%), and studied in public universities (77.4%). Other specifications are shown in Table 2.

The mean scores of TM ability and its short- and long-term dimensions were 45.19 ± 8.3 (in the 14–70 range), 15.75 ± 4.56 , and 29.43 ± 4.27 , respectively. The total mean score of TM ability had a significant relationship with residential status ($P = 0.04$), nativity to the place of study ($P = 0.03$), total GPA ($r = 0.16$; $P = 0.001$), duration of daily study ($r = 0.28$; $P = 0.001$), academic semester ($r = -0.1$; $P = 0.001$), and duration of daily internet use ($r = -0.15$; $P = 0.001$) (Tables 2 and 4).

The multiple linear regression analysis (Enter model) revealed that gender, total grade point average, duration of daily study, duration of daily internet use, employment status, and university type significantly predicted 11% of the variance of TM ability ($R^2 = 0.11$; $P < 0.001$). Female students, the employed ones, those who studied in private universities, and those with greater GPA, longer duration of study per day, and shorter duration of daily internet use had better TM (Table 5). Each one-point increase in the duration of daily study, and GPA significantly increased the score of TM ability by 0.245, and 0.92, respectively.

Table 2: The relationship between participants' socio-demographic factors and their TM scores

Characteristics		N (%)	TM, Mean (SD)	P-value	f-value
Gender	Male	449 (38)	44.69(8.12)	*P = 0.98	F = 2.73
	Female	734 (62)	45.49 (7.96)		
Marital status	Single	988 (83.50)	45.11 (8.30)	*P = 0.49	F = 48
	Married	195 (16.50)	45.55 (6.49)		
Educational level	Bachelor	885 (74.80)	45.05 (7.97)	*P = 0.33	F = 0.93
	Doctoral	298 (25.20)	45.57 (8.21)		
Nativity to the place of study	Yes	605 (51.10)	45.68 (7.89)	*P = 0.03	F = 4.72
	No	578 (48.90)	44.67 (8.15)		
Residential status	Private house	569 (48.10)	45.75 (7.99)	*P = 0.04	F = 3.20
	University dormitory	446 (37.70)	44.47 (8.53)		
	Non-university	168 (14.20)	45.16 (6.54)		

	dormitory				
Work status	No	790 (66.80)	44.90 (8.43)	*P = 0.078	F = 3.10
	Yes	393 (33.20)	45.77 (7.13)		
University type	Public	916 (77.40)	45.03 (8.49)	*P = 0.22	F = 1.52
	Private	267 (22.60)	45.72 (6.16)		

Note: *ANOVA, a significance level, 0.05 is considered

Table 3: Total TM and its dimensions levels

Time Management M(SD)	Level	N	(%)
Short-term planning 45.19(8.3)	Good (20<)	154	13.0
	Moderate (14–20)	686	58.0
	Poor (14>)	343	29.0
Long-term planning 29.43(4.27)	Good (37<)	58	4.9
	Moderate (24–37)	1024	86.6
	Poor (24>)	101	8.5
Total TM Score 15.75(4.56)	Good (52<)	198	16.7
	Moderate (34–52)	907	76.7
	Poor (34>)	78	6.6

Table 4: The association between participants' TM scores and their quantitative socio-demographic characteristics

Characteristics Mean (SD)		Total TM		Short-term planning		Long-term planning	
		r	*P	r	*P	r	*P
Age	22.08(3.15)	-0.010	0.69	0.040	0.130	0.060	0.031
Educational semester	4.36 (2.40)	-0.100	0.001	-0.030	0.230	-0.140	< 0.001
GPA	17.09 (1.42)	0.160	< 0.001	0.174	< 0.001	0.110	< 0.001
Daily study (Hours)	4.29 (2.49)	0.280	< 0.001	0.260	< 0.001	0.230	< 0.001
Daily internet use (Hours)	3.93 (2.51)	-0.150	< 0.001	-0.130	< 0.001	-0.140	< 0.001
Duration of monthly work (Hours)	29.48 (61.34)	-0.003	0.920	0.020	0.490	-0.020	0.400

Note: * Pearson Correlation, a significance level of 0.05 is considered

Table 5: Variables influencing participants' TM based on multiple linear regression (enter model)

Independent variables	B	S.E.	Beta	t	P value	95.0% CI	
						Lower	Upper
Age	0.043	0.089	0.017	0.486	0.627	-0.131	0.217
Gender	-1.045	0.497	-0.064	-2.102	0.036	-2.020	-0.070
Marital status	0.135	0.707	0.006	0.191	0.849	-1.252	1.522
Educational level	0.540	0.583	0.029	0.925	0.355	-0.605	1.684
Nativity	-0.661	0.547	-0.042	-1.207	0.228	-1.735	0.414
Place of residence	-0.283	0.380	-0.026	-0.744	0.457	-1.027	0.462
Educational semester	-0.178	0.112	-0.051	-1.584	0.114	-0.398	0.042
GPA	0.512	0.173	0.092	2.959	0.003	0.173	0.852
Daily study time (Hours)	0.789	0.106	0.245	70.444	0.000	0.581	0.998
Daily internet use (Hours)	-0.325	0.107	-0.092	-3.034	0.002	-0.536	-0.115
Work status	1.300	0.508	0.078	2.560	0.011	0.304	2.297
University type	-1.794	0.662	-0.096	-2.709	0.007	-3.093	-0.494

Notes: R = 0.33; R² = 0.11; Adjusted R² = 0.10; F = 10.88; P value < 0.001

DISCUSSION

In Iran during the COVID-19 pandemic, the study set out to identify the variables influencing students' TM abilities. The results showed that medical science students had a moderate level of TM ability, and they also showed that gender, GPA, daily study time, daily internet use time, employment status, and university type were predictors of TM ability. Our findings indicated moderate TM ability among medical sciences students in Iran. This is in agreement with the findings of Yousefi et al. (2017) and Sohrabi et al. (2016) in Iran (29, 30). Also, Padayachee et al. (2018), Ocak et al. (2016), Cyril et al. (2015), and Chanie et al. (2021) reported TM ability is moderate among medical students (31-34). Only the Chanie et al. (2021) study dealt with the COVID-19 pandemic; all other studies dealt with periods before the pandemic. However, there was a difference between our study and those conducted before the pandemic in terms of short-term management. The present study's mean score on the TM's short-term planning dimension, however, was lower than that of earlier studies, most likely as a result of the transition from traditional to virtual teaching during the pandemic. In comparison to traditional education, virtual education requires immediate preparation and management and may be linked to unforeseen issues soon (31). Therefore, students require enough time to handle the difficulties of a new situation. Consequently, strategies are required to help students' short-term (TM) abilities (26).

Study findings revealed gender as a significant predictor of TM ability so female students obtained significantly higher TM scores. Previous studies reported the same finding (29, 35-38). The right hemisphere of the brain, which has a significant role in TM, is more active in women compared with men (39), and hence, women can better manage their time (40, 41). Moreover, better social relationships among women can positively affect their TM ability (42). The role of women to manage their house and do house chore perhaps makes them more organized and manage their time better. Also, the girls socialize and talk to each other about their duties all the time. Time management skills may be institutionalized in them as an organized culture. Group discussions among students about time management can help improve time management skills in the form of an organized culture. Of course, well-developed interventions can improve TM ability in both genders. Future research is advised to examine gender disparities in TM and how they affect it (38).

In the current study, daily internet usage time was a strong predictor of students' TM ability, and each point increase in this time was related to a 0.092-point decrease in the students' TM ability score. The COVID-19 pandemic has been associated with the educational shift from traditional to virtual methods (25). Consequently, governments attempted to facilitate and improve virtual education by improving its infrastructures and providing students with charge-free internet services (43). Internet use, however, can become a factor that wastes students' time due to their inadequate TM skills (44). Self-regulation is an important skill that helps students better manage their time in virtual environments. Self-regulation or self-control roots in the Self Determination Theory and refers to the ability to control behaviors, emotions, and thoughts to prevent unhealthy behaviors, promote healthy behaviors, and attain goals. Improvement of self-regulation and self-care abilities can improve TM ability and prevent waste of time (45).

In the current study, a student's GPA was a significant predictor of their TM ability. Students who perform better academically organize their learning more successfully, have better TM, and devote more time to study (1). On the other hand, students with better TM achieve greater academic success (46). The goal of TM is to improve activities that need a shorter amount of time. Students need to set goals for self-learning and academic achievement (47). They also need to pursue their educational courses, get ready for their examinations, and use their time for doing their different activities. An appropriate approach to TM enables them to make appropriate choices, appropriately prioritize their activities, and balance their life and education (48). Nonetheless, the inability to effectively use and manage time is a main problem for students in the learning process (47).

In the current study, work status was one of the important determinants of TM ability. Students who are employed appear to spend their time more wisely and have improved TM abilities. They typically keep a routine and don't waste their free time (49). However, although employment during studentship can improve students' TM ability, a heavy workload can cause them physical and mental fatigue and negatively affect their TM ability. Therefore, education in life skills and the use of effective organizational plans are needed to help students achieve an acceptable balance between work and education (50-52).

The university type was another important predictor of TM abilities, with students from private universities showing good TM. The cost of tuition could have an impact on TM ability in a positive way (52). Students in private universities may create their reward systems through external control and work to achieve their objectives and rewards (53, 54). These students might have to work to pay for their education-related expenses, therefore they might make an effort to manage their time well to balance work and school (6).

Limitations

The students' openness in their responses may be one of the study's limitations because of the web-based data collection method used. Of course, it was tried to gain their trust by providing the necessary justifications in the questionnaire's instructions regarding the study's objective, and in this way, the basis for their honesty in their responses was established.

CONCLUSION

Medical sciences students in Iran have moderate TM ability. The significant predictors of their TM ability are gender, GPA, daily study time, daily internet use (hours), work status, and university type. The COVID-19 pandemic and educational shift from traditional to virtual methods can also have significant effects on their TM ability. The findings of this study highlight the importance of teaching medical science students effective time management skills, particularly during times of pandemic.

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