

# Assessment of Time Management in Iranian Critical Care Nurses: Predictive Factors

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Received 2017 March 11; Revised 2017 May 24; Accepted 2017 May 26.

## Abstract

**Background:** Time management is significantly important in nursing, because wasting time and inappropriate management have negative effects on patients' health.

**Objectives:** The present study aimed at determining the rate of time management in Iranian critical care nurses and its related factors.

**Methods:** This descriptive-analytical study was conducted on critical care nurses of hospitals affiliated to Mazandaran University of Medical Sciences in 2016. Of 500 nurses from all the selected hospitals, 410 ones accepted to participate in the study, with response rate of 91.1%. The instruments for data collection were demographic characteristics and time management questionnaires. Data were analyzed by descriptive and inferential statistic tests (Pearson correlation, one-way ANOVA, independent sample t test, and General Linear Model).

**Results:** In this study, 100 male (24.39%) and 310 female nurses (75.6%) took part, with the average age of  $37.58 \pm 7.37$  (CI95: 36.82 - 38.33). The rate of time management in the nurses under the study was  $107.68 \pm 18.011$  (CI95: 105.83 - 109.54). Moreover, 35 (8.5%), 275 (67.07%), and 100 nurses (24.39%) had low, medium and good levels of time management, respectively. A significant relationship was observed between time management and age ( $r = 0.506$ ,  $P < 0.001$ ), educational level ( $t = 2.06$ ,  $P = 0.003$ ), and gender ( $t = 1.583$ ,  $P = 0.03$ ).

**Conclusions:** Time management is necessary for medical workers, especially nurses. Also, it would be interesting to conduct comparative cultural studies to better evaluate time management.

**Keywords:** Time Management, Iran, Nurses, Critical

## 1. Background

Time is the most valuable source to human beings (1). Health professionals and managers work under time pressure that necessitates effective skills of leadership and management (1, 2). One of most important skills to control work pressure is time management. Time management is the best way of using time to achieve personal or professional goals, and it directly causes to perform daily activities satisfactorily and progress at work (3, 4). Using time effectively and efficiently is highly important (2). Using time management technics causes professional performance promotion and saves more time to do activities with higher priorities, speeding up activities and professional promotion (5-7). Experts divide time management into 2 main groups: personal and organizational skills. The personal skills of time management include some general behavioral patterns that individuals often use in their

personal and family lives in using and managing time (8, 9). The personal skills of time management include 6 aspects: goal setting, prioritizing goals and activities, time planning, delegation of authority, communication management, and meeting management. Human and material sources will be wasted without time management and leadership (3, 9-11).

Time management is significantly important in nursing, because wasting time and inappropriate management have negative effects on patient's health (11, 12). In addition, dynamics of healthcare systems and necessity of permanent interaction with outside environments present the significance of time management skills for the nurses of critical care units (13). Unfortunately, not enough attention has been paid to time management despite its importance, and no effort has been made to extend the time available to meet patients' need and prevent the stress caused by time pressure (14-16). The results of the study of Hendrickson, et

al. (1990) showed that in an 8-hour shift, the nurses spent just 30% of their time with the patients, 45% of their time on indirect healthcare, and the rest on nonclinical and personal activities (17).

## 2. Objectives

Considering the importance of time management on promoting the quality of healthcare and considering the lack of similar studies on critical care nurses in Iran (based on available databases), the present study aimed at determining the rate of time management in Iranian critical care nurses and its related factors.

## 3. Methods

This descriptive-analytical study was conducted on critical care nurses of hospitals affiliated to the Mazandaran University of Medical Sciences (Sari, Iran) in 2016. Inclusion criteria were as follow: (i) at least 1 year of working experience, (ii) consent to participate in the study, and (iii) the lack of any mental health disorders (determined by self-reporting). To determine the sample size, a prestudy with all the standards of original study was done on 30 nurses. Finally, it was found that 30% of the nurses had good levels of time management. Thus, the adequacy of the sample size was assessed to be 410 according to Formula 1. Multi-stage sampling was done among 4 educational-therapeutic hospitals (branches of Mazandaran University of Medical Sciences) during 2 months (from Jan 20th to March 22nd). Of the 500 nurses in all the selected hospitals, 450 ones met the inclusion criteria. Then, 410 nurses accepted to participate in the study, with a response rate of 91.1%.

Equation 1. Adequacy of the Sample Size of the Nurses

$$n = \frac{N \times z_{1-\frac{\alpha}{2}}^2 P (1 - P)}{(N - 1) d^2 + z_{1-\frac{\alpha}{2}}^2 P (1 - P)} \quad (1)$$

$$= 410$$

$P = 0.2$ ;  $N = 550$ ;  $d = 0.05$

In this study, with the permission of the authorities of the wards and consent of the participants, the questionnaires were given to the selected nurses to fill in. In case of any ambiguity, the researcher disregarded the questionnaire.

### 3.1. Questionnaire

The instruments for data collection were demographic characteristics (age, marital, sex, income status, educational status, working session, and history of working per year) and Time Management questionnaires.

The rate of time management in nurses was assessed by the standard scale of time management. The questionnaire included 40 questions including goal setting (5 items), prioritizing the goal and activities (7 items), operation planning (9 items), authority delegation (6 items), communication management (9 items), and meeting management (4 items). Scoring was based on Likert method from 1 to 5, and the scores ranged from 40 to 200. The lower scores indicated the nurses' ability to manage time. To ensure qualitative content validity assessment, the questionnaire was provided to 10 experts at Mazandaran University of Medical Science (6 nursing doctorates, 2 psychiatrists, and 2 clinical psychologists), and they were asked to assess and comment on the wording, item allocation, and scaling of the items (18), then, the questionnaire was revised according to their comments. The reliability of this scale was proved in other studies that were conducted on managers (6, 9). Also, in the present study, the reliability of the questionnaire was calculated by Cronbach's alpha, respectively, as follows: goal setting ( $\alpha = 0.88$ ), prioritizing the goal and activities ( $\alpha = 0.82$ ), operation planning ( $\alpha = 0.85$ ), authority delegation ( $\alpha = 0.79$ ), communication management ( $\alpha = 0.83$ ), and meeting management ( $\alpha = 0.81$ ).

### 3.2. Ethical Consideration

The study was approved by the ethics committee of the University (IR.MAZUMS.REC.95.S-312). Ethical research requirements for conducting research on human subjects were fulfilled in the study. The anonymity and confidentiality of the responses were protected. The participants were informed in the research participation letter that their involvement was completely voluntary and that they could withdraw from the study at any point in time without penalty. The investigators further provided their contact information to the participants in case of an emergency or questions. To ensure that a broad cross-section of nurses participate in our study, a trained research assistant, who was part of the study team, provided support as needed. All personal data were anonymized using codes when referring to participants.

### 3.3. Data Analysis

Descriptive statistics employed include frequency, mean, and standard deviation of sociodemographic variables of the participants, which were analyzed using the statistical package for social sciences Version 23.0 (SPSS Inc., Chicago, IL, USA). At first, data normality was assessed with Kolmogorov-Smirnov test ( $P = 0.271$ ). Then, Pearson correlation test was conducted to examine the probable relationship between age and time management. The

mixed between-within subjects ANOVA compared the mean differences between economic status and work in the ward with time management. To improve our understanding of the relationship between sex, marital status, and educational level with time management, independent sample t test was conducted. Finally, the predictors associated with time management were determined using Generalized Linear models (GLM), with Bonferroni correction for pairwise comparisons to improve the quality of tests. The significance level in all the tests was set at  $P < 0.05$ .

#### 4. Results

In this study, 100 male (24.39%) and 310 female nurses (75.6%) took part with the mean age of  $37.58 \pm 7.37$  (CI95: 36.82 - 38.33). The rate of time management in the nurses under the study was  $107.68 \pm 18.011$  (CI95: 105.83 - 109.54); of the nurses, 35 (8.5%), 275 (67.07%), and 100 (24.39%) had the low, medium and good levels of time management, respectively. Also, the mean of the instrument's variables was calculated as follows: goal setting ( $10.94 \pm 6.073$ ; CI95: 10.31 - 11.56), prioritizing the goal and activities ( $19.09 \pm 7.031$ ; CI95: 18.37 - 19.81), operation planning ( $24.49 \pm 9.087$ ; CI95: 23.56 - 25.56), authority delegation ( $16.84 \pm 6.37$ ; CI95: 16.19 - 17.50), communication management ( $26.02 \pm 10.003$ ; CI95: 24.99 - 27.50), and meeting management ( $10.30 \pm 4.132$ ; CI95: 9.87 - 10.72).

Using Pearson correlation, we found a significant relationship between age and time management ( $r = 0.506$ ,  $P < 0.001$ ). Also, according to the results obtained from [Table 1](#), gender and education level had a significant relationship with the rate of time management in the nurses. The GLM was run to prove the above results with a better quality (see [Table 2](#)).

#### 5. Discussion

The increasing need of the health system to high quality services with low prices and change in health care policies calls for employing professional nurses who could do various tasks (19, 20). Time management is very crucial to the nurses and helps them to plan for their available time and use it to manage their tasks (21). According to the present results, most of the nurses had the intermediate levels of time management. Hashemizadeh (2006), in a study on the head nurses of surgical units of training hospitals affiliated to Shahid Beheshti University of medical sciences, stated that most research units had good levels of time management (22). However, the present study was conducted on critical care nurses, which can be the

**Table 1.** Predictive Factors of Time Management in Critical Nurses (N = 365)

Characteristics	Mean (SD)	t/F	P Value
<b>Gender</b>		t = 1.583	0.02
Male (n = 100)	96.09 (17.78)		
Female (n = 310)	109.10 (18.186)		
<b>Economic status</b>		F = 1.42	0.236
Low (n = 104)	107.54 (19.02)		
Middle (n = 95)	104.36 (17.33)		
High (n = 109)	109.52 (18.65)		
Excellent (n = 102)	108.89 (16.69)		
<b>Education</b>		t = 2.06	0.003
BS (n = 388)	94.88 (18.098)		
MCs and above (n = 22)	109.46 (15.12)		
<b>Working ward</b>		F = 1.270	0.282
ICU (n = 190)	105.83 (17.64)		
CCU (n = 176)	109.42 (17.59)		
Dialysis (n = 44)	107.05 (18.75)		
<b>Marital status</b>		t = 0.408	0.899
Single (n = 105)	108.45 (18.366)		
Married (n = 305)	107.49 (17.94)		

probable reason for this difference. Targeting and managing goals are the most important duties of the managers and can save individuals from bewilderment (23). Furthermore, when prioritizing the goals is considered, important tasks will be specified and no time will be wasted. The present results confirm these claims.

National association of safety professionals in the United States of America (USA) introduced the nursing profession as one the most stressful jobs in the world and indicated that nursing has the highest level of stress compared to other medical jobs (24). Furthermore, nurses working in the critical wards of the hospitals suffer from stress and work pressure due to special work situations that reduces quality of care and health of patients (25). Thus, offering a method to control stress will increase the quality of the health care system significantly. Ghorbanshiroudi et al. (2011) in a study on the effectiveness of time management training on the amount of nurse's occupational stress declared that stress of the nurses could be decreased by time management skills (26). However, unfortunately, time management has not been considered in critical care nurses in Iran yet despite the urgent need. According to results of other studies, sex and educational level were good predictors to assess time management in nurses. In the study of Waterworth (2003), it was found that female

**Table 2.** The Relationship Among time Management and Its Covariates in Critical Nurses (N = 365)

Variable	B	SE	95% CI		P Value
<b>Gender</b>	8.32	1.451	6.11	10.244	0.000 <sup>a</sup>
<b>Education</b>	9.074	2.745	6.414	11.733	0.000 <sup>a</sup>
<b>Marital status</b>	3.073	0.78	1.337	4.809	0.64
<b>Economic Status</b>					
Low	1.657	0.251	0.55	6.12	0.361
Middle	2.003	0.325	1.02	5.34	0.54
High	1.657	0.27	0.160	3.155	0.211
Excellent	0 <sup>b</sup>				
<b>Working ward</b>					
ICU	3.896	0.856	1.452	7.340	0.451
CCU	2.1	0.437	1.02	5.13	0.712
Dialysis	0 <sup>b</sup>				

<sup>a</sup>Statistically significant at  $P \leq 0.05$

<sup>b</sup>Set to zero because this parameter is redundant.

nurses had higher levels of time management skills compared to males (23).

### 5.1. Limitations

The important limitations of the present study were as follow: (i) Lack of access to similar studies, so wider comparison and discussion was not possible, (ii) lack of access to a larger statistical society of nurses working in critical wards, and (iii) nurses probable inaccuracy in answering questions due to their heavy workload. Thus, it is highly recommended to conduct similar studies with more frequency and larger sample size in the future.

### 5.2. Conclusions

This paper identified and evaluated time management in critical care nurses. Based on the results, most of the nurses had an intermediate level of time management. Also, sex and educational level were the predictors of time management in critical care nurses. Moreover, it was found that time management is necessary for medical workers, especially nurses. Thus, it would be interesting to conduct comparative cultural studies to better evaluate time management.

### Acknowledgments

The authors are very grateful to the participants for their co-operation in this study, and thank the Mazandaran University of medical sciences for their support.

### Footnote

**Authors' Contribution:** Amir Hossein Goudarzian, study conception and design, data collection, and drafting of the manuscript; Mansour Ranjbar, critical revision for important intellectual content, drafting of the manuscript, and supervision; Mahdi Babaei Hatkehlouei, data collection, and drafting of the manuscript; Alimorad Heidari Gorji, analysis, critical revision for important intellectual content, drafting of the manuscript, and supervision. All of the authors accepted the final version of the manuscript.

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