

ORIGINAL ARTICLE

The Relationship between Health Locus of Control and Health Behaviors in Emergency Medicine Personnel

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ABSTRACT

Background: Health locus of control defined as individual beliefs based on past experiences in health issues and having external or internal control over them, could affect health. Health locus of control plays a role in health behaviors. We aimed to investigate the relationship between health locus of control and health behavior in emergency medical personnel in Ahvaz during 2016.

Methods: This is a cross-sectional descriptive study, which began in August 2016 for a period of six months on 215 emergency medical personnel in Ahvaz who were selected randomly. The data were collected by a demographic questionnaire, Rotter's locus of control questionnaire, and health behavior questionnaire and analyzed using SPSS software, version 22. The correlation between variables was estimated by Pearson's correlation coefficient and independent t test. The level of significance for all statistical tests was set at 0.05.

Results: We found no significant relationship between health locus of control (external and internal) and health behavior ($P>0.05$). Health behaviors were very good in terms of personal health (86.5%), nutrition (53%), and sleep and rest (48.4%), and poor in terms of physical activity (52.6%) and stress management (79.5%). Furthermore, 79.5% of the emergency personnel, in general, had poor health behaviors.

Conclusion: Leaders and officials in the field of health must necessarily design programs in relation to health locus of control and the factors developing and affecting it as well as the role of health locus of control in doing correct behaviors.

KEYWORDS: Internal-external control, Health behaviors, Emergency medical technicians

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INTRODUCTION

Health is basic human need which is fundamental for the successful operation of individuals and communities.¹ Health depends on numerous factors such as social factors, awareness, and even personality traits. Since individuals' health plays a very important role in the health structure of communities,² it can be expanded through planning and training.³ Unlike in the past when health systems mainly focused on the treatment of diseases, they now concentrate on prevention and public health.⁴ Health is provided through the improvement of lifestyle including nutrition, physical activity, stress management, health responsibility and spiritual growth, as well as the removal of factors that have a negative impact on the level of human health.⁵ Promoting health-related behaviors will lead to the maintenance of individuals' independency and performance and increase of their quality of life and reduction of health care costs.⁶ 53% of causes of morbidity and deaths are linked to unhealthy behaviors and lifestyles.² Humans' health is influenced by various factors such as stress, personal hygiene, nutrition, sleep, rest, and physical activity.⁷ Currently, various health problems have provided the ground for chronic diseases followed by lifestyle transformation, urbanism, alteration of food consumption pattern, intake of excessive calories in daily meal plan and decrease of physical activities.⁸ According to Pender's theory, health promoting behaviors include any action for increased retention of health and self-actualization of any individual or group.⁹ The importance of care for healthy behaviors and individuals' lifestyle depends on its impact on their life quality.¹⁰ Changes in behavior to improve health and healthy lifestyle are among the priorities of the World Health Organization.^{11,12} Health locus of control consists of individual beliefs based on past experiences in health issues and having external or internal control over them in a way that could affect health.^{13,14} Rotter introduces two aspects of internal and external control.¹⁵ In external control, a person believes that life events depend on external factors or others'

power while in internal control, he thinks that life events under his own control and he is responsible for them.¹⁶ Locus of control as a personality trait is not only associated with depression, anxiety, suicidal thoughts and developing related diseases, but also plays an important role in treatment and has been the main point of researchers' interest for many years.¹⁷

The belief that individuals can have a special control over their health (internal control) automatically has a positive psychological and behavioral effect on them. On the contrary, disbelief in this subject (external control) will lead to individual's loneliness and helplessness and unfavorable fight with diseases.¹⁸ Internal locus of control refers to the traits and characteristics the control of which can make individuals have more control over their lives.¹⁹ People with external locus of control have more mental disorders compared with internal ones.²⁰ Therefore, it can be said that locus of control is a diagnostic variable showing an individual's perception of the environment and position, and the role, rate, and influence of a person in successful events and failures in life.²¹

Individuals with internal locus of control compared to those with external locus of control are more likely to actively use coping strategies focused on solving problems.²² Health locus of control plays an important role in health behaviors²³ and beliefs as a mediator or part of the route between individual status, social status, and health forms.²⁴ In order to change behavior, health locus of control has been the hypothesis that the model is based on the close relationship between health locus of control and health behaviors sense of control and self-care are in the process of accepting responsibilities.²⁵

In relation to "maintaining individuals' health" several organizations have been established and each one has fulfilled this important task by taking some responsibility, and with regard to the role that seconds and minutes occasionally play in rescuing humans' lives,²⁶ emergency medical technicians are

often facing highly stressful and challenging situations.²⁷

Therefore, this study was conducted to determine the rate of behavior among emergency medical personnel, the kind of locus of control in emergency medical personnel and the relationship between health locus of control and health behaviors in emergency medical personnel.

MATERIALS AND METHODS

This is a cross-sectional descriptive study, which began in August 2016 and done in six months. The research population consisted of all the emergency medical personnel in Ahvaz including both operating personnel who are deployed to provide ambulance service and non-operating personnel that have a supportive role. The main community was 650 emergency medical technicians working in 36 urban, road, and staff bases in the center of medical emergencies in Ahvaz. From the list of names in the center of medical emergencies, 215 emergency medical technicians with at least one year of experience were randomly selected using the following formula (2):

$$n = \left[\frac{\left(Z_1 - \frac{\alpha}{2} + Z_1 - \beta \right)}{0.5 * Ln[(1+r)/(1-r)]} \right] + 3$$

The ethics code for the study (IR.AJUMS.REC.1395.494) was obtained from the Ethics Committee of Jundishapur University of Medical Sciences in Ahvaz. We also obtained an introduction letter from the Research Deputy of Jundishapur University of Medical Sciences in Ahvaz for referring to the medical emergency centers in Ahvaz. The research aims and objectives were explained and the cooperation of authorities was gained. After obtaining the participants' written informed consent, the protocol of the study was explained and the participants were reassured that their information would remain confidential. Each participant completed the questionnaire in his or her work place.

Inclusion criteria were having at least

one year of experience in emergency medicine and willingness to participate in the study. We excluded those within complete questionnaires. In order to collect the data, three tools were used: demographic data questionnaire, Rotter's health locus of control questionnaire, and the health behavior questionnaire.

The demographic questionnaire included questions about demographic characteristics such as age, sex, work experience, work place, education degree, and history of attending health and hygiene training classes. Rotter's Health Locus of Control Questionnaire is a scale designed by Rotter and Julianin 1966 with an internal consistency of 0.65-0.79 and a test-retest reliability of 0.49-0.83. Its correlation with the Marlowe-Crowne Social Desirability Scale is between -0.41 and -0.12, including 29 questions with two options as "A" and "B". Six of the 29 items are neutral and their scores do not affect the final assessment and are to cover the questionnaire intention. In some questions "A" score is 1 and "B" score is 0 and vice versa. Points equal to 9 or more indicate external locus of control and points less than 9 indicate internal locus of control.²⁸ The reliability of the questionnaire obtained via Cronbach's alpha was more than 70% from studies in Iran for example Kooranian²⁹ and Naghibi.³⁰ The Health Behavior Questionnaire was designed by the researcher with books and reliable sources and included 48 items in 5 domains of individual health, nutrition, physical activity, sleep and rest, and stress management. The scoring of positive question in questionnaire was obtained using a Likert-type scale as follows: always=3, usually=2, sometimes=2 and never=0. The scoring of negative questions was vice versa. The total scores ranged from 0 to 144. The scores were classified as follows: very poor=0-36, poor=37-73, good=74-110, and (very good= more than 111. The validity of questionnaire was obtained via content validity ratio and content validity index with a panel of 10 members of nursing and health faculty. The reliability of the questionnaire was obtained

via a pilot study with 20 participants with test-retest and Cronbach's alpha of 89%.

After data collection from the participants, the data were analyzed using SPSS software, version 22. Descriptive statistics such as frequency distribution, mean, and standard deviation were used to summarize the data. Correlation between the variables was estimated by Pearson's correlation coefficient, and independent t test. The level of significance for all statistical tests was set at 0.05.

RESULTS

Demographic information of the studied samples are shown in Table 1. Also, in evaluating health locus of control according to the research findings, 108 (50.2%) participants had external locus of control and 107 (49.8%) had internal locus of control. The results indicate that emergency medical personnel in Ahvaz are nearly equal in terms of internal and external locus of control. With respect to health behaviors the scores of most participants was very good in terms of personal health (86.5%), good in terms of nutrition (53%) and sleep and rest (48.4%), and poor in terms of physical activity (52.6%) and stress management (79.5%). Furthermore, 79.5% of the emergency personnel, had poor health behaviors in general (Table 2). T test results indicated that there was no significant relationship between health locus of control (external and internal) and health behaviors ($P>0.05$) (Table 3). Regarding the relationship between health locus of control (external and internal) and demographic variables in emergency medical personnel, the results of the study based on chi-square test show that there was no positive and significant relationship between the locus of control (internal and external) and age ($P=0.13$), job experience ($P=0.95$), education ($P=0.58$), type of service ($P=0.10$), and ethnicity ($P=0.63$). However, there was a positive and significant relationship between the locus of control (internal and external) and sex ($P=0.03$), marital status ($P=0.04$), and training classes ($P=0.02$). With

Table 1: Frequency distribution of the demographic characteristics of the population

Variable	Categories	N (%)
Age	24-35	24 (11.20)
	35-45	140 (65.10)
	46-56	51 (23.70)
Sex	Male	187 (87)
	Female	28 (13)
Marital status	Single	24 (11.20)
	Married	190 (88.40)
	Others	1 (0.50)
Education	Diploma	67 (31.20)
	Associate	57 (26.50)
	Baccalaureate	84 (39.10)
	Master & PhD	7 (3.20)
Training class	Yes	183 (85.1)
	No	32 (14.90)
Type of service	Operating	154 (71.60)
	Staff	61 (28.40)
Job experience	1-5	20 (9.30)
	5-10	76 (35.3)
	10-15	85 (39.50)
	Up to 15	34 (15.80)
Ethnicity	Lor	105 (48.80)
	Kord	7 (3.30)
	Fars	37 (17.20)
	Arab	44 (20.50)
	Tork	13 (6.00)
	Other	9 (4.20)

respect to sex, men often enjoyed internal locus of control and women enjoyed external locus of control and in relation to marital status singles had external locus of control and married ones had internal locus of control.

Considering training classes, those who had attended health training classes enjoyed internal locus of control and those who had not attended the training classes enjoyed external locus of control. There was no significant relationship between age, education, type of service, job experience and ethnicity and health locus of control (Table 4). It should be noted that the staff that had diploma enjoyed external locus of control, but the rest of the personnel enjoyed internal locus of control. In relation to job, operating personnel had external locus of control, but staff personnel had internal locus of control. And considering ethnicity, Lor, Kurd, and Turk people had internal locus of control,

Table 2: Determining the rate of health behavior in emergency medical personnel

Aspects points	Individual health	Nutrition	Activity	Sleep and rest	Stress management	Total result
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Very poor	0 (0)	0 (0)	96 (44.70)	1 (0.50)	9 (4.20)	9 (4.20)
Poor	0 (0)	9 (4.20)	113 (52.60)	10 (4.70)	171 (79.50)	171 (79.50)
Good	29 (13.50)	114 (53)	4 (1.90)	104 (48.40)	35 (16.30)	35 (16.30)
Very good	186 (86.50)	92 (42.80)	2 (0.90)	100 (46.50)	0 (0)	0 (0)

Table 3: The relationship between health locus of control (internal and external) and health behaviors in emergency medical personnel

Health locus of control	Variable	External locus of control	Internal locus of control	*P value
		Mean±SD	Mean±SD	
Individual health		31.14±6.85	30.2±4.20	0.79
Nutrition		26.18±5.97	26.21±5.72	0.97
Activity		9.40±3.99	9.42±4.21	0.90
Sleep and rest		22.00±4.26	21.51±4.38	0.41
Stress management		11.75±2.70	11.58±3.12	0.66

*T-test

Table 4: The relationship between health locus of control (internal and external) and demographic variables in emergency medical personnel

Locus of control	Variable	Categories	Internal locus of control	External locus of control	*P value
			N (%)	N (%)	
Age		24-35	49 (50)	49 (50)	0.13
		35-45	53 (54)	44 (45)	
		46-56	6 (30)	14 (70)	
Sex		Male	89 (47.6)	98 (52.4)	0.03
		Female	19 (67.9)	9 (32.1)	
Marital status		Single	17 (68)	8 (32)	0.04
		Married	91 (47.9)	99 (52.1)	
Education		Diploma	29 (43.3)	38 (56.7)	0.58
		Associate	30 (52.6)	27 (47.4)	
		Baccalaureate	45 (53.6)	39 (46.4)	
		Others	4 (71.5)	3 (42.9)	
Training class		Yes	86 (47)	97 (53)	0.02
		No	22 (67.8)	10 (31.3)	
Type of service		Operating	72 (46.8)	82 (53.2)	0.10
		Staff	36 (59)	25 (41)	
Job experience		1-5	9 (45)	11 (55)	0.95
		5-10	38 (50)	38 (50)	
		10-15	43 (6.5)	42 (49.4)	
		Up to 15	18 (9.52)	16 (47.4)	
Ethnicity		Lor	52 (5.49)	53 (50.5)	0.63
		Kord	2 (28.6)	5 (71.4)	
		Fars	22 (59.5)	15 (40)	
		Arab	22 (50)	22 (50)	
		Tork	5 (38.5)	8 (61.5)	
		Other	5 (55.6)	4 (44.4)	

*Chi-square test

while Fars people had mainly external locus of control and Arab people enjoyed both internal and external locus of control equally. T test and Anova test indicated that there was no positive and significant relationship between health behaviors and demographic variables including age, sex, marital status, education, job experience, type of service, and training class ($P>0.05$), but there was a significant relationship between health behaviors and ethnicity ($P=0.04$, Table 5).

DISCUSSION

The results of the present study in relation to determining the type of health locus of control in emergency medical personnel show that most personnel had external locus of control but there is not much difference between internal and external locus of control statistically. This is in line with the findings of many studies

in which the mean scores of the internal and external locus of control for participants in the study were roughly equal.³¹⁻³⁴ Since in different studies with different populations, the highest score belonged to the belief in internal health locus of control, in this study we found a very little difference between the belief in internal and external health locus of control. Therefore, it can be said that participants in the study had the same belief in internal and external locus of control which is compatible with a previous study.³⁵ However, the results are not compatible with the findings of another study.⁷

Regarding the relationship between quantitative demographic variables and health locus of control, we found no positive and significant relationship between the locus of control (internal and external) and age and job experience which is not consistent with the findings of other studies showing a positive and significant relationship between health

Table 5: The relationship between demographic variables and health behaviors in emergency medical personnel

Demographic variable	Categories	Health behaviors	
		Mean±SD	P value
Age	24-35	100.55±17.24	*0.99
	35-45	100.75±15.16	
	46-56	100.05±15.84	
Sex	Male	100.65±15.66	**0.93
	Female	100.92±19.36	
Marital status	Single	99.70±14.26	**0.70
	Married	100.84±16.43	
Education	Diploma	99.43±17.34	*0.58
	Associate	100.45±14.99	
	Baccalaureate	100.28±16.36	
	Others	95.57±9.99	
Training class	Yes	100.90±16.56	**0.65
	No	99.50±13.63	
Type of service	Operating	100.06±15.67	**0.59
	Staff	99.75±17.36	
Job experience	1-5	102.55±13.53	*0.91
	5-10	99.92±16.91	
	10-15	100.61±15.20	
	Up to 15	101.52±18.49	
Ethnicity	Lor	97.47±13.34	*0.04
	Kord	102.28±15.45	
	Fars	104.29±16.46	
	Arab	106.09±20.19	
	Tork	97.61±15.37	
	Other	100.29±18.35	

*Anova; **T-test

locus of control and age.^{32,36} The inconsistency might be due to equality of internal and external health locus of control in emergency personnel which of course can be investigated because it is expected that as the age and work experience increase, health locus of control in people become more internal.

Considering the relationship between qualitative demographic variables and health locus of control, the results showed that there was a positive and significant relationship between the health locus of control (internal and external) and sex, marital status, and training classes. Men often enjoyed internal locus of control and women enjoyed external locus of control. Findings of a study showed that there was a relationship between health locus of control and sex, so that internal locus of control in men and external locus of control in women were observed.³⁶ However, it is not consistent with the findings of other studies^{21,31} showing that women have internal locus of control more than men.³⁷ Furthermore, the results of this study are not consistent with the findings of study, showing that sex had no effect on locus of control.⁴ Perhaps this difference results from the fact that due to more control over their surroundings, men believe that the quality of their lives and health is in their own hand. In relation to marital status, the singles had external locus of control and the married ones had internal locus of control. This is probably due to the efforts of married people to provide a health life and to promote life quality. Considering training classes, those who had attended health training classes enjoyed internal locus of control and those who had not attended the training classes enjoyed external locus of control. In this case, as well, the personnel participating in health training classes were more likely to follow different aspects of health care such as weight, preventive tests, and regular visit to the doctor, and much of this behavior results from the knowledge and information of individuals with internal locus of control because their efforts to seek information enable them to have more control over their environment. On the other hand, there was

no significant relationship between education, type of service, and ethnicity and health locus of control which was not consistent with the findings of a study that showed a positive and significant relationship between health locus of control and education.³² It should be noted that the staff that had diploma had internal locus of control, but the rest of the personnel had external locus of control. Of course, the difference was not significant statistically, because the percentage of individuals with different educational degrees in groups of internal and external health locus of control were very close to each other. In relation to job, operating personnel had internal locus of control, but staff personnel had external locus of control. And considering ethnicity, Lor, Kurd, and Turk people had mainly internal locus of control, but Fars people had mainly external locus of control and Arab people enjoyed both internal and external locus of control equally. Of course, the difference was not significant statistically, because the percentage of individuals with different occupations and ethnicity in groups of internal and external health locus of control were very close to each other.

Fulfilling health behaviors by the majority of subjects in the study was very good in terms of personal health, good in terms of nutrition, sleep and rest and poor in terms of physical activity and stress management. Furthermore, most of the emergency personnel, in general, had poor health behaviors. In other words, emergency medical personnel do not have any physical activity or exercise except their work and do not have suitable management and control over stress in working conditions. The results of the study were consistent with the findings of other studies.^{4,5,38} However, they were inconsistent with the findings of a study that showed there was a significant relationship between health locus of control and stress and that individuals with internal locus of control experienced less stress.⁷

In summary, it can be said that the findings of the study indicate that doing hygienic and health behaviors by emergency medical

personnel is not in an acceptable level. With regard to low level of physical activity, it seems essential to start health training programs with an emphasis on physical activity among the personnel even as a monthly training program. Furthermore, considering poor stress management it is recommended to develop mental health counseling centers for emergency personnel. There was no significant relationship between health locus of control (internal and external) and doing health behaviors by emergency medical personnel. One study examined the relationship between locus of control and self-esteem among students and showed that students with internal control had higher self-esteem which is consistent with the findings of this study.³⁹ Findings of a study showed that there is no significant relationship between internal locus of control and creativity and perseverance which is consistent with the findings of the present study.²¹ However, the findings are not consistent with the results of the studies showing a significant relationship between internal locus of control and doing health behaviors, so that individuals with internal locus of control have better health behaviors.^{4,26,39} The results of this study are also inconsistent with the findings of study that showed there is a negative and significant relationship between external health locus of control and job stress.¹⁶ However, the results of this study are consistent with the findings of study that showed there is no significant relationship between health locus of control and health behaviors.⁴ Furthermore, the results of a study showed, that individuals with internal locus of control are more willing to do sport activities and exercises which is inconsistent with the findings of the present study.⁴⁰ Moreover, in connection with the relationship between internal locus of control and public health it can be said that individuals with internal locus of control are more likely to observe health care aspects such as caring for weight, smoking, sports and exercises, and taking preventive tests such as regular visit to doctors which are not consistent with the findings of this study. The difference is

probably due to similar health locus of control amongst emergency personnel.

One of the limitations of the study is the respondents' perception of the questions in the questionnaire which is different in different people and out of the control of the researcher. The accuracy of the information contained in the questionnaire was outside the scope of the researcher and the generalization of the results can only be extended to Ahvaz emergency personnel.

CONCLUSION

There is no doubt that positive health behaviors of health service providers are one of the major objectives of universities of medical sciences; therefore, careful planning in order to improve the quality of emergency medical personnel services is very important and valuable. Leaders and officials in the field of health must design programs about factors developing and affecting it as well as the role of health locus of control in doing correct behaviors. The results of this study will be of interest to those involved in reducing losses resulting from job stress and increasing labor productivity. It is also recommended that some comprehensive studies be designed and conducted in relation to internal health locus of control in emergency personnel.

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