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Research Article

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Evaluation of Perception of Hospital Signs and its Relationship With Demographic Factors

Majid Yazdani [1], Roohollah Kazemi [1], Amirhossein Davudian Talab [2*]

[1] Faculty of Health Safety and Environment, Islamic Azad University, Ahvaz Branch, Tehran, Iran.
[2] Department of Occupational Health, Behbahan University of Medical Sciences, Behbahan, Iran.

Abstract

Background and Objectives: Safety signs will be useful if they are distinctive and attractive for individuals, and individuals can communicate with them, because they will not be able to identify the risks and actions necessary to avoid the risk if they do not understand properly. Therefore, this study aimed to determine the level of perception of hospital safety signs and related demographic factors.

Methods: This descriptive cross-sectional study was carried out in 2 hospitals in Genaveh in 2017. The number of participants in this study was 120 employees and patients in the hospital. The inclusion criteria for this study were non-presence of dyschromatopsia, ages 15 to 55 years, and sufficient cognitive ability. The tools for this study were the International Organization for Standardization Questionnaire (ISO9186-1.2007) and the demographic information questionnaire. The 7 safety signs were used. The simple random sampling method was used. Data were analyzed using SPSS 16 and chi-square, the Kruskal–Wallis test and one-way analysis of variance (ANOVA).

Findings: The highest level of perception of hospital safety signs was related to forbidden entry with 95% correct answers and the lowest level of perception of the signs was related to the pharmacy with 6.7%. The chi-square test showed that in more than 85% of the cases of safety signs, there was no significant relationship between age, gender and previous education with the safety signs ($P< 0.05$). Furthermore, Kruskal-Wallis test showed that there is no significant difference between the different job shifts in terms of perceptions among men and women ($P< 0.05$). However, the ANOVA showed that there is a significant difference between the different levels of education in terms of perception between the sample.

Conclusions: The level of perception of hospital signs among staff and colleagues is relatively desirable. The results of this study showed that the only factor that can affect the perception of the signs of hospital safety is the level of education and other factors such as gender and work history, work shift, employee or client, and previous education are not factors influencing the perception of safety signs. Therefore, continuous training for staff and public education through public and localized media is suggested to improve the hospital safety culture.

Keywords: Safety sign, Hospital, Perception

Background and Objectives

All humans encounter many signs and symbols during their daily lives. Out of these signs and symbols, we can point out stands and safety signs. In general, the use of safety and warning signs has now become an integral part of life.[1]

Safety signs will be useful if they are distinctive and attractive for individuals, and people can communicate with them because if people do not understand the warning information, they will not be able to identify the risks and the steps needed to avoid the risk.[2]

One of the advantages of the symbols is that they do not need to translate, and people with any language and nationality around the world will be able to understand them.[3] It is important that the visual signs that how visual signs can be detected.[4] The effect of the safety signs depends on 2 important factors: the diagnosis by the user and the perception and persistence of use over time.[5]

It is believed that an image can convey the very concept of a large number of words, as a symbol is much shorter than a written tag.[3] But in many cases, the signs without explanatory text can also be problematic. For example, these signs may not attract attention.[6] Also, sometimes these signs can transmit a different message or a

*Corresponding Author: Amirhossein Davudian Talab, Occupational Health Department, Paramedical College, Behbahan Faculty of Medical Sciences, Behbahan, Iran. Tel: +98 9177441365, Email: davudi.amir@gmail.com

message exactly against their original meaning.[7] For the success of the use of warning signs in controlling unsafe behaviors, attention to design principles of their interaction with the users is essential.[8]

Since the ultimate goal of the safety signs is to promote safe and proper behavior in industries and workplaces,[9] and therapeutic environments are no exception to this, and given that the control of accidents in hospitals is much more complicated in certain respects than in industrial organizations in certain circumstances,[10] creating a safety culture and thinking in different parts of the hospital is a subject that is underpinned by conformity with the principles of safety principles and necessary prevention.[10] One of the ways to prevent the risks of using high-understandable safety signs to reduce insecure actions in work environments, including therapeutic environments. Therefore, the aim of this study was to evaluate the perception of hospital signs and to examine the effect of demographic factors on these signs.

Methods

This cross-sectional study was carried out in 2 hospitals in Gonavood in 2017. The target population in this research is the staff and people referring to two hospitals: Amiralmomenin (AS), and accidents and burns in Genaveh. Since, according to ISO standard 9286-1: 2007, clause 6.3.2, the number of participants in each test for the perception of safety signs must be at least 50 per country, so at the first stage of the research for sampling, 60 employees and 60 patients were randomly selected using simple random sampling method. The questionnaire was safety comprehensibility testing of the *I*nternational Organization for Standardization (ISO9186-1.2007).[11] The validity of this questionnaire was confirmed by Ergonomics and Safety Specialists at Shiraz University.[12] The questionnaire contains 4 sections: (1) instruction sheet, which explains how the questionnaire is completed correctly; (2) demographic information sheet (age, gender, work record, level of education, work experience, training, shift work); (3) an example sheet that contains an example; and (4) test sheet of perception of safety signs, (7 types of 8 × 8 cm adhesive backing colored safety signs are sewn onto seven white A4 sheets. Each A4 sheet contains a type of signs). In this study, seven signs are used, including (one mandatory sign, 3 signs related to the safe condition, 2 warning signs, and one inhibitory sign, and so on).

In accordance with clause 4.2.6 standard, the number of signs per test should not exceed 15, as well as the size of the signs according to clause 3.2. 6 of the standard is 8 × 8 cm and colored with adhesive backing to stick to the A4 white sheet.[13]

Determining the size and composition of signs is also based on the number of signs in hospitals that staff and clients are in contact with them daily. In this study, we tried to use common signs between the 2 hospitals to determine the factors associated with the level of perception of the safety signs. The completion of the questionnaire was as follows: after giving the questionnaire to each of the users, they were asked to indicate what they understood the sign after seeing any of the signs. The next question was that what they should do when seeing the sign and after completing the questionnaire, responses are categorized and analyzed into 5 groups according to the standard ISO 9186-1: 2007 method: correct, wrong, wrong and vice versa, I do not know and without a response. The number of people who responded the correct option was known as the level of perception of that sign. Similarly, in assessing the level of perception by using this method, the minimum average of the correct responses to the safety signs, according to the ISO9186-1: 2007 standard, was 67%. And in assessing the level of perception of the safety signs, in accordance with the standard ANSI Z5353 (American Institute for Standardization), the minimum average of the correct answers for safety signs is 85% (that is, if 85% of the participants in the test, give the correct answer about the sense of that sign, that sign is considered as an appropriate sign with high perceptual capability.[13,14]

Similarly, according to clause 6.3.2 of ISO 9186-1: 2007, the number of participants in the test is at least 50 people per country. The inclusion criteria in this study, according to the standard, was the age range of 15 to 55 years (due to preventing entry into the aging stage and reducing cognitive ability), lack of color blindness. To test the color blindness, the Ishihara test was used. Data analysis was performed using SPSS version 16 and Excel.

Results

Out of 120 participants in the test in equal proportions (50%) of staff and participants in each hospital were selected for this study. In terms of gender, 51.7% of men and 48.3% of women participated in assessing the level of perceived symptoms of HSE (Health, Safety, and Environment). In terms of age, 26.7%, 55%, and 18.3% of the subjects were in the age groups of 15-30, 31-50 and 50 years and older, respectively.

Based on the findings of this study, 25%, 33.3%, and 41.7% of the subjects had a degree less than the diploma, a high school diploma degree, and university education, respectively. In terms of health status, 3.3% of people were with disabilities in physical movement and 96.7% were healthy people. The results of the demographic questionnaire showed that 21.7% of the subjects had

previous education in the field of HSE symptoms, 78.3% had no previous education, 54% were in the morning shift, 22% were in the evening shift and 24% in the night shift. The highest level of perception of the hospital safety signs is related to "the prohibited entry with 95% correct answer and the least amount of pain is related to" the symptoms of the pharmacy" (Table 1). Table 2 shows the factors associated with the perception of the safety symptoms, which the chi-square test showed that there was no significant relationship between age, gender and previous education with the perception of safety signs in more than 85% of the cases of safety signs ($P<0.05$). Moreover, Kruskal-Wallis comparative analysis showed that there is no significant difference between men and women in terms of different job shifts ($P=0.05$). However, the analysis of variance (ANOVA) showed that there is a statistically significant difference between different levels of education among the samples.

Discussion

The results of the study showed that the overall average of the correct perception of the hospital safety signs in the 2 hospitals was 63.4% with a standard deviation of 34.6%. In this study, the average perception in a study conducted by Davoudian-Talab et al among staff in the industrial sector was 69.22% with a standard deviation of 20.32.[15] In a study conducted by Annie et al, 67.54% of the students gave correct responses to the tested signs.[16] Chan et al obtained an average perception of 63.08% with a standard deviation of 41.48 in American subjects,[17] the study results are remarkably consistent with other studies.

The relatively high standard deviation of the correct response to the symptom's perception in the hospital symptoms (34.6%) in this study indicates that the level of perception rate of these symptoms is significantly different in comparison and almost every sign has its own pattern of perception. Similarly, the results of the study show that 57.1 hospitalized symptoms have reached the minimum allowed level of perception according to the ISO3864 standard, which is 22.38% in the evaluation of the correct perception of graphic symptoms in the study conducted by Piamonte.[18] In the study of Moradi et al, 44% of safety boards achieved an acceptable standard of ISO3864.[19] In the study conducted by Chan et al, in American subjects, 50% of these symptoms reached the ISO3864 standard, and in the Hong Kong and Korean societies it is only 8.33%.[17] In the overall assessment of the results of this study, there was a greater correlation between the level of perception of the safety signs with the standards of the ISO and the ANSI in comparison with other studies. This

Table 1. Amount of Safety Sign Perception in Hospitals

Sign	Sign Concept	Correct		Wrong		Wrong and Opposite		Don't Know		No Response	
		No.	%	No.	%	No.	%	No.	%	No.	%
	Radiation hazard	58	48.3	21	17.5	29	24.2	10	8.3	2	1.7
	Electrical hazard	112	93.3	2	1.7	4	3.3	2	1.7	0	0
	Emergency exit	103	85.8	3	2.5	10	8.3	3	1.3	1	0.8
	Biological hazard	39	32.5	13	10.8	46	28.3	21	17.5	1	0.8
	No entry	114	95	1	0.8	2	1.7	3	2.5	0	0
	Pharmacy	8	6.7	8	6.7	82	68.3	19	15.8	3	2.5
	Laboratory	98	81.7	4	3.3	11	9.2	7	5.8	0	0
Mean		76	63.4	7.4	6.1	26.2	21.9	9.2	7.5	1	0.8
SD		41.3	34.6	7.2	6	29.1	24.2	7.8	6.7	1.1	0.9

Table 2. Survey Relationship Between Hospital Safety Sign and Demographic Factors

	Experience	*P*	Education	*P*	Morning	*P*		*P*	Training	*P*	Sample	*P*
	15-30	0.03	Below diploma	0.01	Afternoon	0.7	Male	0.01	Yes	0.5	Personnel	0.1
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Male		No		Patient	
	15-30	0.6	Below diploma	0.6	Afternoon	0.1	Male	0.1	Yes	0.6	Personnel	0.7
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Female		No		Patient	
	15-30	0.7	Below diploma	0.00	Afternoon	0.5	Male	0.8	Yes	0.2	Personnel	0.09
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Female		No		Patient	
	15-30	0.3	Below diploma	0.03	Afternoon	0.3	Male	0.09	Yes	0.3	Personnel	0.6
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Female		No		Patient	
	15-30	0.5	Below diploma	0.7	Afternoon	0.5	Male	0.2	Yes	0.03	Personnel	0.4
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Female		No		Patient	
	15-30	0.2	Below diploma	0.02	Afternoon	0.05	Male	0.1	Yes	0.3	Personnel	0.6
	31-50		Diploma		Night							
	>50		Collegiate		Morning		Female		No		Patient	
	15-30	0.2	Below diploma	0.00	Morning	0.9	Male	0.7	Yes	0.9	Personnel	0.2
	31-50		Diploma		Afternoon							
	>50		Collegiate		Night		Female		No		Patient	

can be attributed to the thinking of various communities, the difference in the cultural context,[20] and the pattern of a different perception of safety signs,[21] which causes such a change in the level of perception of the safety signs in different countries.

This study also showed that there is a significant relationship between the level of perception and the level of education, which is consistent with the study conducted by Al-Madani & Al-Janahi[22] and Davoudian-Talab et al[15] The increased level of education has increased the positive fields, including the safety culture that this It will be that this can be due to raising the awareness and attitudes of individuals[23]; on the other hand, it can be noted that education changes the attitude of the individual.[1] The results of this study showed that there is no significant relationship between age and work experience with the level of perception. In this regard, there are different theories. Some articles state that age is an individual factor that can change the physical and cognitive skills of workers as well as affect decreasing their ability to perform job tasks. As a result, with the increase of age, sensory and cognitive abilities decrease, which also the level of perception decreases following reducing cognitive skills.[1,24] However, another theory states that one of the factors influencing the perception of safety signs at work and living environments is the level of familiarity with safety signs[25] and familiarity means the number of times an individual is exposed to a safety sign. This multiplicity of exposure creates the opportunity to learn better the signs of safety and return information to the individual's memory.[26,27] Since along with increases in the age and the work experience, the level of familiarity increases, increasing the work experience increases the familiarity and perception of the safety signs.[15,28] However, since that none of these theories are proven based on the results of this study, further studies with the larger statistical population are required. In similar to other studies in this regard, there was no significant relationship between gender[15] and working shift[1] with the level of perception of safety signs. Moreover, the results of the study showed that those who completed training courses on safety signs, compared to other people, did not make a difference in perception of the safety signs, which can be due to the low sample size for those attending the courses, the lack of appropriate quality courses and the lack of repetition of these courses for recalling information of users in the mind.

Conclusions

The overall results of the study indicate that the level of

perception of hospital symptoms among the staff and colleagues was relatively desirable, and the results of this study showed that the only factor that can affect the perception of the hospital safety signs is the level of education, and other individual factors, including age, gender, and work experience are not factors that affect the perception of safety signs.

In order to better perception of hospital signs and increase in the hospital safety culture, it is suggested that periodically regular and specialized training for all hospital staff, with emphasis on the need to familiarize with the dangers and health and safety implications of signs. Furthermore, because in the hospital and therapeutic environments, in addition to hospital staff as recipients of services, the general public also uses hospital signs, public education is recommended through public and local media. In addition, short-term training programs for patient fellows can be tracked by the education department and the occupational health department of the hospital.

Competing Interests

The authors declare no competing interests.

Authors' Contributions

The authors made equal contributions to this sturdy.

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