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USING HEALTH BELIEF MODEL IN COVID-19 TEACHING PROTOCOLS FOR PRE-HOSPITAL EMERGENCY TECHNICIANS: IMPACT ON INFECTION PREVENTIVE BEHAVIORS AND ANXIETY

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ABSTRACT

Introduction: Emergency medical technicians, being the first-line medical team in emergency situations, experience higher levels of anxiety. On one hand, strict regulations regarding the use and management of protective equipment and specialized trainings on COVID-19 patients can reduce anxiety resulting from perceived unfamiliarity and uncontrollable risks. On the other hand, the Health Belief Model is one of the effective models in health education.

Therefore, this study aimed to determine the impact of teaching COVID-19 coping protocols based on the Health Belief Model on infection preventive behaviors and anxiety among pre-hospital emergency technicians.

Methods: In this quasi-experimental study, 40 technicians who expressed their willingness to participate were selected through convenience sampling and assigned to experimental (n=20) and control (n=20) groups using random allocation (via random allocation of bases). The data collection tools included a demographic questionnaire, the COVID-19 anxiety scale, and a self-developed questionnaire on infection preventive behaviors based on the Health Belief Model, which were completed before and one month after the intervention. During the intervention, educational content was delivered through e-mail or WhatsApp in four sessions. SPSS version 25 was used for data analysis.

Results: According to the Bonferroni test, a significant difference was observed in the mean total score of infection preventive behaviors based on the Health Belief Model and all its dimensions. However, according to the independent t-test, there was no significant difference in anxiety scores between the two groups after the intervention.

Conclusion: Based on the findings of this study, the educational intervention based on the Health Belief Model did not have an impact on anxiety among pre-hospital emergency technicians in dealing with COVID-19. However, the study identified the efficacy of all dimensions of this model in observing preventive behaviors against COVID-19 in these technicians. In other words, by applying this model, there is an opportunity to improve awareness and understanding of risk factors and the benefits of behavior change. This, in turn, helps in overcoming barriers, enhancing self-efficacy, and improving preventive behaviors. Therefore, it is recommended to utilize this model in designing preventive programs to increase the likelihood of the intervention success.

Keywords: Anxiety, Covid-19, Pre-hospital emergency technician, Preventive behaviors, Health belief model, Teaching

INTRODUCTION

Pre-Hospital Emergency Medical Services (EMS) plays a vital role in the healthcare system of many countries (1). They aim to provide prompt and timely services to injured patients from the scene of the incident to the hospital, and can significantly reduce distress and mortality by offering pre-hospital care in life-threatening situations (2). Rapid and timely performance by pre-hospital emergency personnel contributes to preventing disability, saving lives, and significantly reducing mortality during out-of-hospital incidents (3). Pre-hospital care from the place of injury of the patient continues until the emergency room of the hospital (4), which is usually delivered by emergency medical technicians. These personnel often experience higher levels of anxiety as they are the first line of the medical team to face the emergency (5). Despite the critical situations they face, they must make quick decisions and take action (3). Pre-hospital emergency care is considered one of the most stressful areas within the healthcare system (6). While anxiety-inducing emergency situations can reduce the optimal performance of healthcare personnel (5), and their decision-making and interventions in critical situations (7), it can also affect their mental and physical well-being. In other words, anxiety and its consequences, in addition to creating stress and work pressure, can lead to significant physical and psychological damage to healthcare workers, especially emergency medical personnel. Therefore, it is essential to address these issues (6).

Emergency Medical Services also play a significant role in providing assistance during epidemics, with the personnel being the first individuals to confront biological crises (8), including the COVID-19 pandemic, which has caused widespread concern and anxiety (9). Pre-hospital emergency personnel are the first individuals at the scene responsible for transferring COVID-19 patients to hospitals (10). They face the risk of infection, high workload, and ethical dilemmas associated with the circumstances. However, these individuals have a vital role in managing epidemics and related crises. These challenges can lead to physical and mental problems, such as stress and anxiety, among the technicians, which might not only impact their decision-making abilities but also potentially prolong these physical and mental issues even after the pandemic ends. Furthermore, it can affect their ability to provide quality care to patients suspected of having COVID-19 (11).

Generally, an epidemic can significantly increase concern, anxiety, and even lead to serious psychological disorders in individuals (9). Studies have shown that the COVID-19 pandemic has had a severe impact on the healthcare systems of most countries worldwide (12). Due to the various transmission routes of the coronavirus, the rapid transmission capability of this disease has led to numerous infections among healthcare workers (13). The most important factor in breaking the chain of transmission of COVID virus is preventive behaviors (14). Meanwhile, precise regulations regarding the use and management of protective equipment and specialized training for COVID-19 patients can reduce anxiety stemming from perceived unfamiliarity and the uncontrollable nature of the risks (15). Therefore, many countries have implemented public health protocols to control the spread of the virus, including measures such as social distancing, hand hygiene, and city-wide lockdowns (16). Actions such as education, improving awareness and attitudes, and adopting preventive behaviors against COVID-19 are crucial strategies in preventing the spread of the virus (17). The Health Belief Model (HBM) is an effective model in health education that was compiled on the basis that people's understanding of a health treat causes their behavior to be directed toward health (18). The constructs of the health belief model are: perceived susceptibility, perceived severity, perceived benefits, action guide, perceived barriers and perceived self-efficacy which can help people adopt a healthy life (19, 20). According to this model, for individuals to adopt preventive behaviors against COVID-19, they must first perceive the risk of contracting the virus (perceived susceptibility), understand the severity and consequences of the disease (perceived severity), believe in the feasibility of implementing a COVID-19 prevention program (perceived benefits) based on positive cues from the environment (action guide), and find that the barriers to taking action are outweighed by the benefits (perceived barriers). Furthermore, having a positive belief in one's ability to adopt preventive behaviors against COVID-19 (perceived self-efficacy) is also a driving force that motivates individuals to engage in these behaviors (21). Since the effective management of problems and challenges related to COVID-19 depends on a thorough understanding of them (11), this study aims to investigate the impact of teaching a COVID-19 coping protocol based on the Health Belief Model on the preventive behaviors and anxiety levels of specialized technicians involved in the care of COVID-19 patients. Especially that, the effectiveness of education based on the Health Belief Model has been examined and confirmed in a number of education program (19) such as preventive behaviors against COVID-19 in the general population (21).

METHODOLOGY

This study employed a quasi-experimental research design with a pretest-posttest and a control group, and aimed to determine the impact of teaching the COVID-19 coping protocols based on the Health Belief Model

on the infection preventive behaviors and anxiety of specialized technicians in the care of COVID-19 patients. The statistical population of this research included all technicians working at the Zabol Disaster and Emergency Medical Management Centers. The research was conducted in 20 emergency bases affiliated with Zabol University of Medical Sciences, including 3 urban bases and 17 roadside bases. The criteria for sample selection included being employed in urban and roadside emergency bases, direct participation in missions, voluntary willingness to participate in the study, having at least 1 year of work experience in pre-hospital emergencies, holding a diploma degree in emergency medical services, being present in the field, and maintaining continuous and direct contact with patients. Furthermore, the exclusion criteria encompassed voluntary withdrawal from the study, transfer, concurrent participation in other studies, lack of proper cooperation, incomplete questionnaire completion, and non-participation in at least one training session. Finally, 40 technicians who expressed their willingness to participate in the study were selected using convenience sampling and randomly assigned to the experimental group (20 individuals) and the control group (20 individuals) through random allocation (based on the random allocation of bases). The sample size was determined to be at least 16 individuals in each group based on a study by Keshani et al. (2019) (22), taking into account the variable of perceived benefits, a confidence level of 99%, a test power of 80%, and accounting for a 10% sample dropout rate.

$$\left(\frac{\left(\sqrt{7.99^2}+4.17^2\right)}{94.26-52.87}\right)^2 * 10.5 = 18$$

Data collection tools used in this study included three questionnaires, which were completed by the research participants before the intervention.

The Socio-demographic Information Questionnaire consisted of questions regarding age, marital status, educational level, employment status, place of service, and also inquired about the history of infection and vaccination.

The Corona Virus Anxiety Scale (CDAS) was developed and validated to measure anxiety related to the COVID-19 pandemic in Iran. The final version of this tool comprises 18 items divided into 2 components: items 1 to 9 assess psychological symptoms, while items 10 to 18 evaluate physical symptoms. The scale is scored on a 4-point Likert scale (Never: 0, Sometimes: 1, Often: 2, Always: 3). Thus, the possible scores on this questionnaire range from 0 to 54, with higher scores indicating a higher level of anxiety in individuals. Additionally, the validity and reliability of this tool were confirmed by Ali Pour et al. in 2019 (22).

The self-developed questionnaire based on the Health Belief Model measures preventive behaviors against COVID-19 in emergency medical technicians. It comprises two sections: an Awareness section with 10 questions utilizing a dichotomous scoring system (correct answer: 1 point, incorrect answer: 0 points), and a section assessing 27 health behaviors related to perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy. The perceived susceptibility dimension includes 5 questions, the perceived severity dimension includes 3 questions, while the perceived benefits and perceived barriers dimensions each include 5 questions. The perceived self-efficacy dimension consists of 4 questions. The scoring for these questions utilizes a 5-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree) ranging from 1 to 5. Additionally, the Action Guide section includes 5 questions with two response options (Yes, No), assigned a score of 1 and 0, respectively. Moreover, the perceived self-efficacy dimension encompasses 4 questions, and the preventive behaviors dimension comprises 8 questions, which are scored on a 5-point Likert scale ranging from 1 to 5 (Never, Rarely, Sometimes, Often, Always).

For content validity, both qualitative and quantitative methods were employed. In the qualitative content validity assessment, 8 experts in the field reviewed the questions to provide corrective feedback on language, sentence structure, and appropriate placement of phrases. For quantitative content validity assessment, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated with input from 8 experts. With the input of the 8 experts and considering the minimum criterion of 0.75 in Lawshe's table, the content validity ratio was confirmed. To confirm the content validity index, a criterion of higher than 0.79 was applied. The overall reliability of the tool was calculated using Cronbach's alpha, resulting in a value of 0.88. Cronbach’s alpha values for the subscales were as follows: perceived susceptibility (0.86), perceived severity (0.76), perceived benefits (0.87), perceived barriers (0.88), action guide (0.92), self-efficacy (0.72), and performance (0.78). Test-retest and Cronbach's alpha were employed to assess the reliability of the test.

The intervention involved delivering educational content (via email or WhatsApp) in four sessions (as outlined in Table 1), which included explanatory text, PowerPoint slides, and audio files to provide

participants with different materials to utilize. The sessions were scheduled with a 5-day interval, providing participants with a 5-day window to access the educational content for each session. However, the delivery of each session's content was dependent on confirming that the technician had engaged with the educational content from the previous session. Before sending the new content, a text message was sent to the research participants to inquire if they had reviewed the content of the previous session. The phone number used for sending the message was provided to the research participants in advance so that they would recognize that the message was from the researcher. The receipt of a message, whether written or blank, from the research participants indicated their engagement with the educational content for that session. If no message was received, a reminder message was sent three days later. This process continued until the completion of all sessions. Additionally, at the beginning of the intervention, the researchers provided their contact number to the research units so that they could contact the researcher in case of any questions. It was emphasized that the intended educational content should not be shared with anyone else until the end of the research. The educational content of each session is provided in **Table 1**. It is worth noting that the training program was developed based on literature reviews, internet searches, and under the supervision of experts and specialists in the field of emergency and urgencies. After incorporating their feedback, the program was deemed a valid intervention.

Table 1. Structure and educational content of the training sessions

Session	Training Content
First Session	Introducing and acquainting individuals with the subject matter, defining corona virus, its causes, symptoms, and complications, and explaining the concept of suspected cases and close contacts.
Second Session	Different scenarios emergency services may encounter when dealing with patients suspected of having COVID-19, and the process of patient handover at the hospital, and the flowchart for pre-hospital management of COVID-19 contamination
Third Session	Important considerations for the 115 emergency base and medical emergency team, necessary actions, and essential precautions that the 115 Emergency Base and medical emergency teams need to take following mission receipt, deployment to the scene, and patient transfer to the hospital
Fourth Session	Standard precautions, guidelines on the proper use of personal protective equipment (PPE), principles of droplet precautions, airborne precautions, contact and droplet precautions, and instructions for vehicle decontamination

One month after the intervention program ended, the technicians were asked to complete the COVID-19 anxiety questionnaire and the self-developed questionnaire based on the Health Belief Model once again. It is important to note that, despite not receiving any training, the control group also completed all the aforementioned questionnaires. At the end, the research participants in each group were thanked for their participation and informed that they would be able to access the results upon study completion. Furthermore, this study adhered to ethical considerations by providing clear explanations about the study's objectives and methods, ensuring confidentiality of information, and allowing the research participants the freedom to withdraw from the study at any stage. Written consent was obtained from all participants.

FINDINGS

The study included 40 technicians working at the Zabol Disaster and Emergency Medical Management Centers as participants. The research findings indicated that the majority of participants (100%) were male. The average age of technicians in the experimental group was 28.05 years (SD=4.67), while in the control group, it was 34.60 years (SD=4.69). An independent t-test revealed a statistically significant difference in the mean age between the two groups ($p<0.001$). Prior to the intervention, the two groups were comparable in terms of gender, marital status, education level, employment status, vaccination history, and COVID-19 infection (Table 2).

Table 2. Demographic characteristics of the research participants in the experimental and control groups

Variable	**Number (Percentage)**	**T**	**Significance**

		Experimental Group	Control Group	score or z score	Level
Gender	Male Female	20 (100)	20 (100)	-	1
Marital Status	Single Married	9 (45) 11 (55)	1 (5) 19 (95)	8.53	0.003
Education Level	Diploma Bachelor's degree	11 (55) 6 (30)	9 (45) 9 (45)	0.96	0.327
Employment Status	Civil servant Contractual employee Subject to the plan Messenger	5 (25) 12 (60) 1 (5) 2 (10)	9 (45) 11 (55) 0 0	3.72	0.242
Vaccination History	Vaccinated Not vaccinated	20 (100) 0	20 (100) 0	0	0
COVID-19 Infection History	Infected Not infected	11 (55) 9 (45)	5 (25) 15 (75)	3.75	0.053
Age	Mean (Standard Deviation)	28.05 (SD = 4.67)	34.60 (SD = 4.69)	4.22	<0.001
Number of Children	Mean (Quartile Deviation)	0 (QD = 1)	2 (QD = 2)	-2.30	-0.028

The results of the Shapiro-Wilk test indicated that the scores of infection preventive behaviors and anxiety in both the experimental and control groups before and after the intervention followed a normal distribution (P>0.05).

The independent t-test revealed no significant difference in the total scores of infection preventive behaviors between the two groups before and after the intervention (Table 3).

Table 3. Mean and standard deviation of the dimensions of preventive behaviors before and after the intervention in the experimental and control groups

Variable		Mean (Standard Deviation)		95% Confidence Interval	T score	Significance Level
		Experimental Group	Control Group			
Awareness	Before	15.20 (1.98)	16 (2.44)	-0.62 and 2.22	1.13	0.264
	After	17.15 (1.63)	15.75 (2.09)	-2.60 and -0.19	-2.35	0.024
Perceived Susceptibility	Before	15.25 (1.58)	17.75 (2.09)	1.30 and 3.69	4.25	<0.001
	After	17.95 (2.08)	17.10 (2.29)	-2.25 and 0.55	-1.22	0.228
Perceived Severity	Before	9.15 (1.26)	10.15 (1.95)	-0.05 and 2.05	1.92	0.062

	After	10.80 (1.23)	9.60 (2.18)	-2.33 and -0.06	-2.13	0.39
Perceived Benefits	Before	16.95 (1.66)	19.80 (2.62)	-2.28 and 1.18	-0.64	0.525
	After	19.40 (2.34)	18.85 (3.03)	1.44 and 4.25	4.09	<0.001
Perceived Barriers	Before	11.85 (1.30)	13.10 (2.70)	0.13 and 2.36	2.27	0.028
	After	14.10 (1.25)	12.85 (1.78)	-2.367 and -0.26	-2.56	0.014
Self-efficacy	Before	9.90 (2.51)	10.10 (2.59)	-1.43 and 1.83	0.248	0.806
	After	11.70 (2.59	10 (2.79)	-3.42 and 0.02	-1.99	0.053
Action Guide	Before	3.60 (1.35)	4 (1.25)	-0.43 and 1.23	0.96	0.339
	After	4 (3.75)	1.02 (1.29)	-0.99 and 0.49	-0.67	0.502
Performance	Before	22.85 (3.68)	24.40 (4.67)	-1.14 and 4.24	1.16	0.252
	After	27.75 (3.71)	23.90 (4.91)	-6.39 and -1.06	-2.79	0.008
Total Model	Before	3.60 (1.35)	4 (1.25)	-0.43 and 1.23	0.96	0.339
	After	4 (3.75)	1.02 (1.29)	-0.99 and 0.49	-0.67	0.502

However, the ANCOVA test, along with the post hoc Bonferroni test, revealed a statistically significant difference in the mean scores of the Health Belief Model and its subgroups (Awareness p=0.002, Perceived Sensitivity p=0.005, Perceived Severity p=0.001, Perceived Benefits p>0.001, Perceived Barriers p>0.001, Self-Efficacy p=0.005, Action Guide p=0.041, and Performance p=0.001) between the experimental and control groups (Table 3).

Table 4. Mean and confidence intervals of preventive behavior dimensions before and after the intervention in the experimental and control groups

Variable	**Mean (Confidence Interval)**		**95% Confidence Level**	**F Score**	**Significance Level**
	Experimental Group	**Control Group**			
Awareness	17.32 (16.57 and 18.07)	15.57 (14.83 and 16.32)	-2.81 and -0.67	10.96	0.002
Perceived Susceptibility	18.65 (17.66 and 19.63)	16.39 (15.41 and 17.38)	-3.77 and -0.73	8.99	0.005

Perceived Severity	11.10 (10.41 and 11.79)	9.29 (8.60 and 9.98)	-2.80 and -0.81	13.50	0.001
Perceived Benefits	20.61 (19.62 and 21.60)	17.63 (16.64 and 18.63)	-4.50 and -1.45	15.60	<0.001
Perceived Barriers	14.40 (13.79 and 15.01)	12.54 (11.93 and 13.19)	-2.75 and -0.96	17.74	<0.001
Self-efficacy	11.77 (10.89 and 12.65)	9.92 (9.04 and 10.80)	-3.09 and -0.59	8.99	0.005
Action Guide	14.13 (3.88 and 4.48)	3.61 (3.26 and 3.96)	-1.02 and -0.02	4.49	0.041
Performance	28.30 (26.85 and 29.76)	23.34 (21.89 and 24.79)	-7.03 and -2.89	23.56	<0.001
Total Model	108.49 (103.75 and 113.23)	126.15 (121.41 and 130.89)	-10.70 and -24.62	26.43	<0.001

According to the independent t-test, there was a significant difference in anxiety scores between the two groups before the intervention (P≤0.05). However, after controlling the pre-test effect, no significant difference was observed in the mean anxiety scores between the two groups after the intervention (P>0.05) (Table 4).

Table 5: Mean and standard deviation of anxiety before and after intervention in the experimental and control groups

Anxiety	Mean (Standard Deviation)		95% Confidence Interval	T Score	Significance Level
	Experimental Group	Control Group			
Before	14.60 (2.79)	11.45 (4.70)	-5.62 and -0.67	-2.57	0.014
After	11.95 (4.52)	9.35 (5.46)	-5.81 and 0.61	-1.64	0.109

DISCUSSION

According to the results of this study, education based on the Health Belief Model was effective in promoting preventive behaviors against COVID-19 in pre-hospital emergency technicians. However, it did not have a significant impact on their anxiety levels. From the researcher's perspective, the observed effect on preventive behaviors may be attributed to the fact that the education based on the Health Belief Model not only enhanced knowledge but also increased participants' perception of risks and threatening conditions. Thus, it has led to a corresponding change in attitude that significantly influenced their adoption of preventive behaviors. In support of this possibility, Nasirzadeh and Aligol (2020) emphasized the role of preventive behaviors in reducing the prevalence and severity of COVID-19. They found a significant direct relationship between preventive behaviors, knowledge, and attitude, with attitude being the strongest predictor of behavior (23). Several studies have examined the effectiveness of education based on the

Health Belief Model on preventive behaviors in non-healthcare workers, affirming its impact. As an example, Javaheri-Tehrani and Nikpour (2013) claimed that this model could be an effective solution for preventing urinary tract infections in women (24). Additionally, Davari et al. (2010) concluded that this model is effective in modifying the dietary regimen of menopausal women and suggested its implementation in all healthcare centers (19). Karimi et al. (2016) suggested that this model can be used as an appropriate model for predicting preventive behaviors in HIV-positive patients (20). Moreover, Rahnavard et al. (2011) evaluated the impact of education based on the Health Belief Model on preventive behaviors of smoking in adolescent girls and reported positive results (25). Finally, Panahi et al. (2018) reported a positive impact of the combined Health Belief Model and health literacy pattern on adopting preventive behaviors against smoking (26). All of these studies are consistent with the findings of the present study. However, it should be noted that these studies did not involve healthcare system employees as the research population and had different educational backgrounds. As the intervention based on all dimensions of the Health Belief Model had a significant impact on promoting health behaviors in the present study, it can be concluded that training based on this model provides a platform for increasing awareness and understanding of risk factors and the benefits of behavior change. Consequently, this facilitates the removal of barriers, enhances self-efficacy, and improves employees' performance in adopting preventive behaviors.

Therefore, in the researcher's perspective, it is important to pay attention to and emphasize all dimensions of the model. In support of this conclusion, in the study by Karimi et al. (2016), all components of the Health Belief Model were found to significantly predict preventive behaviors (20), which is similar to the findings of the present study. However, certain studies have indicated that only specific dimensions of the model were effective in behavior change interventions. For example, Khazaei Pool et al. (2020) found that self-efficacy was the strongest predictor of preventive behaviors against COVID-19 (18), and Panahi et al. (2018) suggested an emphasis on perceived susceptibility and self-efficacy in adopting preventive behaviors against smoking based on this model (26). According to the researcher's perspective, the differences in the study population, research environment, and the content and context of the interventions may have contributed to the obtained varied results.

According to the results of the present study, examining the impact of education based on the Health Belief Model on the anxiety of pre-hospital emergency technicians related to COVID-19 showed a reduction in anxiety. However, this change was not statistically significant. From the researcher's perspective, it is possible that pre-hospital emergency technicians, already familiar with control measures and experiencing the initial shock of the disease, may not have had a high level of anxiety related to COVID-19 prior to the intervention. This might have limited the intervention's ability to create a statistically significant change in their anxiety levels. This could have prevented the intervention from creating a significant change in their anxiety levels. Moreover, the implementation of measures by managers to establish safer working conditions for pre-hospital emergency technicians during the COVID-19 pandemic can also be considered effective. Supporting this possibility, Firoozbakht et al. (2020) identified and prioritized occupational hazards of pre-hospital emergency personnel, highlighting the unavoidable stress factors in their work. They emphasized the importance of reducing factors that contribute to psychological harm, such as working hour reduction, modification of evening and night shifts, organization of team-based welfare programs, and implementation of precautionary measures to reduce physical injuries. They also emphasized the need for restructuring the employment system and enacting supportive laws to mitigate the occurrence of injuries (27). In the researcher's perspective, paying attention to these factors appears essential to reduce the anxiety of technicians, particularly considering their potential impact on the professional performance of this critical workforce. Saberinia et al. (2019) also suggested that reducing the anxiety of pre-hospital emergency personnel can lead to increased work efficiency, job satisfaction, and resilience in emergency situations (6). In their study, Heyderi et al. (2022) concluded that the stress and anxiety caused by the COVID-19 pandemic can have negative effects on the professional competence of personnel (3). Additionally, from the researcher's perspective, the negative effects of anxiety on the personal health of the staff should not be overlooked either. Heyderi et al. (2022) emphasized the negative effects of stress and anxiety related to the COVID-19 epidemic on the mental health of pre-hospital emergency personnel (3). Hadian et al. (2022) also highlighted that these employees suffer from significant psychological problems due to heavy workloads (9). Therefore, it is necessary to implement macro-level measures in the field of pre-hospital emergency services to provide improved working conditions that ensure both quality services and the well-being of the staff. Furthermore, Parvaneh Masoud et al. (2021) examined the challenges faced by medical technicians in providing services during COVID-19. They emphasized the development of appropriate strategies and policies to manage these challenges and promote the quality of care provided during the pandemic (12). Furthermore, Mohammadi et al. (2022) concluded that pre-hospital emergency personnel, being the first-line responders to COVID-19, encounter diverse challenges in personal, professional, equipment, and cultural aspects during the pandemic, emphasizing the need for special attention from the healthcare system (11).

One limitation faced by the researchers in this study was the possibility of participants obtaining information through sources other than the researchers, which was beyond their control.

CONCLUSION

Based on the findings of this study, although the educational intervention based on the Health Belief Model did not impact the anxiety levels of pre-hospital emergency technicians in dealing with COVID-19, it was evident that all dimensions of the Health Belief Model were effective in promoting adherence to preventive behaviors against COVID-19 in these technicians. In other words, by implementing this model, there is potential to enhance awareness, understanding of risk factors, and the benefits of behavior change, which can lead to the removal of barriers, improvement in self-efficacy, and enhancement of performance. Therefore, it is recommended to incorporate this model in the design of prevention programs to increase the likelihood of successful interventions.

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