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ORIGINAL: Investigating the Level of Knowledge and Attitude towards Basic Life Supports and Related Factors in Surgical Technologists and Nurses of Anesthesia at Imam Khomeini Hospital at Tehran during COVID-19 Pandemic

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ABSTRACT

Introduction: Cardiorespiratory arrest is one of the most dangerous conditions that requires immediate action. Therefore, it is important for healthcare staff to have the necessary knowledge and skills. The purpose of this study was to determine the level of knowledge and attitude of basic life supports (BLS) in the surgical technologists and nurses of anesthesia of Imam Khomeini Hospital in Tehran during the COVID-19 pandemic in 2022.

Material and Methods: In this descriptive-analytical cross-sectional study, all surgical technologists and nurses of anesthesia working at Imam Khomeini Hospital in Tehran participated during the COVID-19 pandemic. The data was collected using a questionnaire designed by the authors. Parametric and non-parametric statistical tests were used for data analysis via SPSS 24 software (α=0.05).

Results: The results of the study in 195 participants showed that the average knowledge score of anesthesia nurses was significantly higher than surgical technologists (4.99 ± 1.20 vs. 4.12 ± 1.39, P=0.001). The average score of the attitude of anesthesia nurses and surgical technologists were 12.62 ± 1.92 and 12.43 ± 2.34, respectively, which were not significantly different from each other (P=0.624).

Conclusion: The level of knowledge of the majority of surgical technologists and anesthesia nurses about basic resuscitation was not appropriate, and considering the importance of BLS and the above disciplines, it is necessary to make arrangements for its training by educational policy makers.

Introduction

Cardiorespiratory arrest is one of the most dangerous situations that requires immediate action to preserve life and prevent irreparable damage to the body's vital systems. Since these actions are based on a special protocol, it is necessary the resuscitator acquires knowledge and skills about it. When the activity of the heart muscle

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stops, the blood supply to different parts of the body, including the brain, suffers and if 4-6 minutes have passed since cardiac arrest and there is no resuscitation, there is a possibility of brain damage and death (1). Eastwick-Field in 1996 stated comprehensive cardiopulmonary resuscitation training for medical personnel as one of the individual skills and as a mandatory goal (2, 3). In many studies, sudden cardiac arrest has been reported as the most important cause of death, about 65% of these victims die outside the hospital due to ventricular fibrillation (4, 5).

Cardiopulmonary resuscitation is the most important skill of medical personnel and it is necessary to be aware of its latest changes. Currently, in the curriculum of nurses of anesthesia and surgical technologists, first aid courses and the principles of special care, as well as the advanced principles of care in the recovery room, are presented to students, but it seems that these topics will need to be reminded over time. Since the cardio-pulmonary resuscitation guidelines are updated and also due to the crisis of the COVID-19 pandemic since December 2019 and the identification of its transmission routes, the high concern of the medical personnel in facing these patients. In this study, it is determined what is the attitude and knowledge of surgical technologists and nurses of anesthesia regarding basic life support (BLS) (6, 7). A similar study reported that the level of knowledge of nurses about the latest guidelines for cardio-pulmonary resuscitation was 20.2% excellent, 65.4% good, 14% average and 3% poor respectively (6). Another study conducted on medical interns showed that they did not have good knowledge about BLS and 82% of them had poor knowledge (8). Another study conducted on nurses working in CCU departments regarding cardio-pulmonary resuscitation showed that 96.56% of nurses had good knowledge (9).

Due to the contradictions of the results and changes in the principles of basic life support, it seems that surgical technologists and nurses of anesthesia need to be retrained. Also, due to the new conditions that occurred due to the outbreak of the COVID-19 virus in the world, and because this virus is transmitted by respiratory droplets and aerosols, and the high concern of medical personnel in dealing with these patients or the conditions of resuscitation this need is felt more in them. In this situation, the way to perform cardio-pulmonary resuscitation is controversial, and changes in how to perform it have been recommended (10, 11). COVID-19 was identified for the first time in 2019 in Wuhan, China, and it was declared a global pandemic by the World Health Organization in March 2020. Efforts to produce a vaccine against the human corona virus have started and are expanding, but due to the successive mutations of the virus, the success rate of the vaccines is limited (12, 13). In the studies, drug treatment and vaccination prevent severe complications of the disease, and vaccinated people have a lower chance of transmitting the virus, but it is still vital to maintain preventive measures (14, 15). Following this pandemic, on February 29, 2018, the first case of infection with the COVID-19 virus was announced in Iran. This disease multiplies in the upper respiratory system and causes cold-like symptoms and other different symptoms (16, 17).

In the current situation, the challenge is that patients with or without COVID-19 who have suffered cardiac arrest have the best possible chance to survive without jeopardizing the safety of rescuers (18). The purpose of our study is to determine the attitude and knowledge towards BLS and related factors among surgical technologists and nurses of anesthesia working at Imam Khomeini Hospital in Tehran during COVID-19 pandemic in 2022.

Methods

This was a descriptive-analytical cross-sectional study conducted at Imam Khomeini Hospital in Tehran in 2022. At first, the total number of surgical technologists and nurses of anesthesia working at Imam Khomeini Hospital in Tehran was estimated to be about 400. The inclusion criteria for this study

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included surgical technologists and nurses of anesthesia aged 21-65, with at least one year of experience in the operating room, with an associate or bachelor degree in surgical technologists and nurses of anesthesia, and with rotating or fixed shifts, who were willing to cooperate. The exclusion criteria for this study were participants who went on vacation during research and participants who didn't want to cooperate. In this research, ethical considerations were fully observed and an informed consent form was obtained from the participants.

To determine the sample size with a confidence limit of 95% and an alpha error of 5%, taking into account the level of knowledge in previous studies about CPR (about P = 50% and the margin of error of approximately 5%), the sample size was calculated as 195 participants. The sampling method was simple random and the data collection method was face-to-face and self-administered.

The data was collected using a questionnaire designed by the researchers which had 7 questions for the knowledge section and 8 questions for the attitude section. The questionnaire was prepared by studying databases, articles and authoritative books. The questions had 3 Likert levels (yes, no, don't know). The content validity of this tool was confirmed by using 12 anesthesiologists and special care specialists in terms of qualitative content. In order to determine quantitative content validity, CVR-CVI was calculated and subsequently Cronbach's alpha coefficient was used to determine the reliability of these questionnaires (the questions were given to 30 surgical technologists and nurses of anesthesia) and the Cronbach's alpha coefficient was 73%, which was acceptable. To measure the knowledge section, scores between 0 to 3 were considered as poor, 4 to 5 as average, and 6 to 7 as good. In the attitude section, scores between 0 to 6 were considered as poor, 7 to 11 as average, and 12 to 16 as good. SPSS Version 24 software was used for data analysis. Chi-Square test was used to analyze qualitative variables. T-tests were used to analyze quantitative data and if there was no normal data distribution, Kolmogorov-Smirnov, Shipro-Wilk, and Mann-Whitney tests were used. Significance level was considered at 0.05.

Results

A total of 195 people participated in this study, of which 53.8% were surgical technologists and 46.1% were nurses of anesthesia. The demographic information of the participants is shown in ***Table 1***.

Table 1. Participants' demographic characteristics

Variable		Surgical technologist N (%)	Nurse of anesthesia N (%)
Sex	Male	36 (34.3)	48 (53.3)
	Female	69 (65.7)	12 (46.7)
Age	<30	49 (46.7)	41 (45.6)
	30-40	42 (40)	40 (44.4)
	>40	14 (13.3)	9 (10)
Work hours	<50 h	55 (52.4)	46 (51.1)
	50-100 h	30 (28.6)	32 (35.6)
	>100 h	20 (19)	12 (13.3)

The results Mann-Whitney test in ***Table 2*** shows that nurses of anesthesia had a significantly higher knowledge than surgical technologists (P<0.001, z=-4.331). Also, only 20% of surgical technologists and 37.8% of nurses of anesthesia had good knowledge about BLS. Moreover, the results show that nurses of anesthesia showed a slightly higher attitude than surgical technologists, which was not significant (P>0.05, z=-0.491). Totally, 68.6% of surgical technologists and 77.8% of nurses of anesthesia had a good attitude towards BLS.

Table 2. Participants' knowledge and attitude towards BLS

Variable		Surgical technologist N (%)	Nurse of anesthesia N (%)
Knowledge	Poor	35 (33.3)	10 (11.1)
	Average	49 (46.7)	46 (51.1)
	Good	21 (20)	34 (37.8)
Attitude	Poor	1 (1)	0
	Average	32 (30.5)	20 (22.2)
	Good	72 (68.8)	70 (77.8)

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Discussion

The purpose of this study was to determine the level of knowledge and attitude towards BLS and related factors among surgical technologists and nurses of anesthesia working at Imam Khomeini Hospital in Tehran during COVID-19 in 2022. In our study, 20% of surgical technologists and 37.8% of nurses of anesthesia had good knowledge, 46.7% of surgical technologists and 51.1% of nurses of anesthesia had average knowledge, and 33.3% of surgical technologists and 11.1% of nurses of anesthesia had poor knowledge. However, the level of good attitude of surgical technologists and nurses of anesthesia towards basic life supports was estimated at 68.6% and 77.8%, respectively, which is an acceptable level.

In a similar study, Pourmirza Kalhori et al. reported that nurses had different knowledge of the latest guidelines for cardiopulmonary resuscitation, 17% of them had a poor or moderate level of knowledge, and the rests were good and excellent. Although the results of this study have similarities with our study, they are slightly different in terms of the percentage of knowledge levels (6). The results of this study are almost similar to our study regarding the level of good knowledge in surgical technologists, considering that in the two studies the studied groups were different in terms of academic fields and also the Likert levels of the two studies were different, the results obtained are almost similar.

In another study, Adib Hajbagheri et al. reported that the knowledge and skills of medical trainees in the field of cardio-pulmonary resuscitation were not suitable and none of the participants had good knowledge in the field of cardiopulmonary resuscitation and 82% of them had poor knowledge (8). The results of this study are inconsistent with our study because in our study a percentage had good knowledge. The reason for this difference can be the different communities studied and the year of conducting the studies. In another study conducted by Hosseininejad et al., it was reported that the level of knowledge of medical students about CPR was weak (4). In comparison, we find that the result of this study is similar to the good Likert level of our study, but these two studies were different in terms of academic fields. In another study conducted by Avazbakhsh and his colleagues, it was reported that the level of knowledge of the final year students of nurse of anesthesia and surgical technologist about cardiopulmonary resuscitation was good (19). In terms of the statistical population, this study was very similar to our study, but we see contradictory results, which is probably because the Likert levels of the two studies were different and the research was conducted on students. It seems that the content and knowledge will need to be recalled over time. Considering the importance of medical personnel's knowledge of BLS, extensive planning is needed to increase the level of their knowledge on this issue.

Conclusion

The level of awareness of the majority of surgical technologists and nurses of anesthesia about basic life supports was not appropriate, and considering the importance of basic life supports and the above fields, it is necessary to make arrangements for its training by educational policy makers. It seems that the surgical technologists need more training in the field of cardiopulmonary resuscitation, although considering that the nurses of anesthesia directly play a role in the field of cardiopulmonary resuscitation of patients, this need for training and retraining is more felt for this treatment group.

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Ethical standards statement

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The protocol of the current study was reviewed and approved by the Research Ethics Committee of the Mazandaran University of Medical Sciences (code: IR.MAZUMS.REC.1401.135).

Conflicts of interest

The authors declare no conflict of interest.

Authors' contributions

Each author has made an important scientific contribution to the study and has assisted with the drafting or revising of the manuscript.

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