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Factors Affecting Anxiety after Cardiopulmonary Resuscitation

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Abstract

The aim of this study was to examine the factors affecting anxiety after cardiopulmonary resuscitation among medical persons and medical students. To determine the influences of state anxiety and trait anxiety on stress and resilience, a multiple regression was used. The explanatory power of stress and resilience on state anxiety was shown to be 34.0%, and the explanatory power of stress and resilience trait anxiety was shown to be 51.6%. Among these factors, stress (B = .244) and resilience (B = -.316) were shown to exert a significant influence on state anxiety, and stress (B = .280) and resilience (B = -.340) were shown to exert a significant influence on trait anxiety. Resilience turned out to be the factor with the most influence on anxiety after cardiopulmonary resuscitation in this research. Nursing and medical managers wishing to reduce anxiety should focus their analysis on the issue of resilience and look for ways to decrease anxiety after cardiopulmonary resuscitation.

Keywords: Cardiopulmonary Resuscitation, Resilience, Turnover Intention

1. Introduction

Cardiac arrest may occur anywhere in a hospital, and it can be discovered by any healthcare professional[1]. Although difficult to prove, it is not unlikely that the attitude towards Cardiopulmonary Resuscitation (CPR) among health care professionals is important for the chance of survival after cardiac arrest. Some of these professionals may be concerned about of the potential risks to themselves of starting CPR[2]. Though it is not possible to predict cardiac arrest, if 4 to 6 minutes pass by after cardiac arrest, irreversible brain damage occurs. Therefore, it is important that the first witness of cardiac arrest perform CPR within 4-6 minutes in order to save the patient's life. Health professionals, including nurses, are required to learn CPR correctly through systematic training to save patients' lives. However, when faced with an opportunity to perform CPR in cases of cardiac arrest in the hospital or outpatient ward, they cannot perform CPR easily and immediately due to the lack of adequate knowledge, skills, or lack of experience. Thus, they feel anxiety[3–5]. This study's findings have the potential: 1) to inform mental health organizations to promote resilience in clinicians; 2) to reduce the risk of burnout and hence staff attrition; and 3) to promote staff retention and occupational mental health[6]. Situations that require CPR are "crisis situations"

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and are therefore likely to induce anxiety in healthcare professionals and medical students. To help individuals adapt well to stressful situations (resilience outcomes), researchers have explored the process by which resilience develops. An emerging perspective about the development of resilience is that individuals' ability to bounce back from stressful situations is developed in the process of coping with day-to-day developmentally appropriate stressful situations[7]. Lee reported that resilience was an effective predictor of active coping in high, general, and low stress situations[8]. In the literature relating to resilience, studies show that resilient individuals tend to use active coping strategies, such as changing environments or planning activities, to manage stressful situations[9–10]. Therefore, stress, anxiety, and resilience are very important elements of clinical emergency situations. So it is necessary to reduce anxiety and stress and to increase resilience to improve the CPR performance that hospital professionals and medical students can achieve in clinical CPR situations. The present study conducted a survey to examine the factors affecting anxiety after cardiopulmonary resuscitation among medical personnel and medical students.

2. Methodology

2.1 Study Subjects and Ethical Considerations

This research is a descriptive correlation study designed to examine the factors affecting anxiety after cardiopulmonary resuscitation among university hospital professionals and medical students. The data was collected via structural questionnaires completed by 292 health professionals and medical students working at university hospitals who agreed to participate in this study. The data used were collected according to the approved guidelines and screening procedures of the medical department of "C" university hospital located in Seoul, "E" university hospital located in Seoul, and "E" Hospital located in Seoul. This research (IRB No: C2013140) was conducted after their deliberations on the goals and methods.

2.2 Research Variables

This current study is a survey of professionals and medical students working at a university hospital located in Seoul who agreed to participate in this study. This research is a descriptive correlation study designed to examine the factors affecting anxiety after cardiopulmonary resuscitation.

2.2.1 Global Assessment of Recent Stress Scale (GARS)

The Global assessment of recent stress scale was developed by Koh and Park[11]. For the GARS questionnaire, there were 8 items with a 9-point scale. The possible scores ranged from a maximum of 72 points to a minimum of 0 points, in which higher scores indicate high stress. Cronbach's α was .86 in the original scale and .88 in the present study.

2.2.2 Emotional Burnout

The emotional burnout scale was developed by Maslach and Jackson[16] and translated into Korean by Choi[17]. For the emotional burnout questionnaire, there were 22 items with a 7-point scale. The possible scores ranged from a maximum of 132 points to a minimum of 0 points, in which higher scores indicate higher burnout. Cronbach's α was .76 in the original scale and .86 in the present study.

2.2.3 State Anxiety (STAI-X-1)

The STAI-X-1 scale was developed by Spielberger (1970) and modified into Korean by Kim[12]. For the STAI-X-1 questionnaire, there were 20 items. The possible scores ranged from a maximum of 80 points to a minimum of 20 points, in which higher scores indicate high anxiety. Cronbach's α was .92 in the original scale and .92 in the present study.

2.2.4 Turnover Intention

The Turnover intention scale was developed by Lawler[20] and modified by Park[21]. The scale consists of 4 items, each of which is rated on a 5-point scale (0 = "not true at all" to 4 = "true nearly all of the time"). The possible scores ranged from a maximum of 16 points to a minimum of 0 points, in which higher scores indicate higher turnover intention. Cronbach's α was .85 in the original scale and .83 in the present study.

2.2.5 Korean version of the Connor-Davidson Resilience Scale (K-CD-RISC)

The CD-RISC scale was developed by Connor and Davidson (2003) and modified into Korean by Baek[13]. The scale consists of 25 items, each of which is rated on a 5-point scale (0 = "not true at all" to 4 = "true nearly all of the time") and are rated by respondents according to the extent to which they agree with each item as it has applied to them over the past month. The total score is achieved by summing all of the responses of each individual. The total score ranges from 0 to 100, with higher scores reflecting greater resilience. Cronbach's α was .93 in the original scale and .94 in the present study.

2.3 Method of Data Analysis

The collected data were analyzed using SPSS 20.0 (SPSS Inc., Chicago, IL, USA). The general characteristics of the patients were analyzed using descriptive statistics, including the means, standard deviations, frequencies, and percentages; differences in homogeneity were accounted for by t-test. Patterns in the differences among study participants according to general characteristics (Global Assessment of Recent Stress Scale [GARS], state anxiety, trait anxiety, and Korea version of Connor-Davidson Resilience Scale [K-CD-RISC]) were analyzed using t-test, ANOVA, and multiple regressions. In order to perform a regression analysis, autocorrelation of the independent variable and multicollinearity of the dependent variable were examined. Autocorrelation of the dependent variable was examined using the Durbin-Watson index. The respective Durbin-Watson index values of 2.056 and 2.043 (du = 1.816 <d) were used to show independence. Multicollinearity between the independent variables was examined using the VIF (Variance Inflation Factor) index. The VIF index between the independent variables was 1.056. Since it was less than 10, it indicated that there was no multicollinearity. Therefore, this data is suitable for carrying out a regression analysis.

3. Finding

Descriptive analysis the general characteristics of participants are shown in Table 1. The study participants included 91 males (31.2%) and 201 females (68.8%). The mean age was 27.8±3.33 years. Fifty-nine participants (11.6%) had under 1 year of career experience; 19.6% had 1-3 years; 21% had 3-5 years; and 14.4% had 5-10 years. There were 207 people who worked in the emergency room (70.9%); 8.2% worked in the ward; and 61 worked in the intensive care unit (20.9%). One hundred fifty-five of the participants were nurses (53.1%); 54 were residents and interns (18.5%); and 83 were medical students (28.4%). Degrees of Global Assessment of Recent Stress Scale (GARS), state anxiety, trait anxiety, and the Korean version of the Connor-Davidson Resilience Scale (K-CD-RISC) for hospital professionals and medical students are shown in Table 2. On a nine-point scale measuring GARS, the average overall score was 34.76±12.53; for nurses, 35.55±12.68; for doctors, 33.20±13.16; and for medical students, 33±11.85. On a four-point scale measuring state anxiety, the average overall mean score was 45.40±9.90; for nurses, 46.03±10.24; for doctors, 43.70±10.95; and for medical students, 45.31±8.42. For trait anxiety among hospital professionals and medical students, the average mean score was 42.10±8.82; for nurses, 42.34±9.20; for doctors, 40.56±8.95; and for medical students, 42.67±8.09. For K-CD-RISC among hospital professionals and medical students, the average overall mean score was 63.87±13.53; for nurses, 62.18±14.05; for doctors, 65.98±12.97, and medical students, 65.61±12.62. Differences in GARS, state anxiety, trait anxiety, and K-CD-RISC among hospital professionals and medical students according to general characteristics are shown in Table 1. The research participants' attitudes on GARS showed statistically significant differences according to the working unit ($F=19.567$, $p<.001$). State anxiety showed a statistically significant difference according to the certification ($t=2.990$, $p=.003$). Trait anxiety showed a statistically significant difference according to the certification ($t=3.342$, $p=.001$). K-CD-RISC in hospital professionals and medical students, according to general characteristics, showed statistically significant differences according to career ($F=3.286$, $p=.012$) and certification ($F=-3.704$, $p<.001$). Significant correlations were found between stress and state anxiety, trait anxiety, and resilience ($p=0.01$); and between state anxiety and trait anxiety and resilience ($p=0.01$). Additionally, significant correlations

were found between trait anxiety and resilience (p=0.01). To determine the influence of stress and resilience on state anxiety and trait anxiety, a multiple regression model was used. The explanatory power was a statistically significant 34.0% (Adj R2=.340). Among these factors, stress (p<.001) and resilience (p<.001) were shown to exert a significant influence on state anxiety (B=.515), increasing stress (β=.244) and decreasing resilience (β=-.316); it was shown to have the greatest influence on state anxiety. The total explanatory power of these factors on state anxiety was shown to be 34.0%. Additionally, stress (p<.001) and resilience (p<.001) were shown to exert a significant influence on trait anxiety, increasing stress (β=.280) and decreasing resilience (β=-.340); it was shown to have the greatest influence on trait anxiety. The explanatory power was a statistically significant 51.6% (Adj. R2 = .516)

4. Discussion

This study is an attempt to examine the factors affecting anxiety after cardiopulmonary resuscitation among medical professionals and medical students. This analysis revealed several statistically significant differences in the Global Assessment of Recent Stress Scale (GARS), state anxiety, trait anxiety, and the Korean version of the Connor-Davidson Resilience Scale (K-CD-RSIC) based on general characteristics. This study found that hospital professionals and medical students experience varying levels of stress according to their working units. Intensive Care Units (ICUs) are known as stressful environments. This means that hospital professionals and medical students working in intensive care units are under more stress than normal working populations. This was supported by several studies[14,15]. For participants who had certifications (BLS or ACLS) in this study, the state and trait anxiety scores were significantly lower than the scores of the participants who had no certifications. However, there were no significant differences between those who had certification and those who did not have certification in GARS. This means that hospital professionals and medical students get equally stressed in critical situations such as CPR. But this is not true for anxiety. Vukmir reported that survival improved with decreased time to BLS (5.52 min versus 6.81 min, p = 0.047) and ACLS (7.29 min versus 9.49 min, p = 0.002) interventions, as well as differences in time to Return of Spontaneous Circulation (ROSC)[16]. In other words, if BLS or ACLS interventions were more rapidly applied to patients, patient survival rates would improve. These interventions are available to those who know BLS or ACLS. Knowledge reduces anxiety. Meanwhile, K-CD-RISC among hospital professionals and medical students varied according to general characteristics and showed statistically significant differences according to the career and certification. In this study, the K-CD-RISC scores of participants who had worked for more than 10 years revealed statistically significant differences. In the literature on resilience, studies show that resilient individuals tend to use active coping strategies, such as changing environments or planning activities, to manage stressful situations[9–10]. Experienced nurses cope better with critical situations because they have more experience. So this result can be assumed. With respect to certification, K-CD-RISC shows significant differences. Higher resilience means that more active coping strategies are used to manage stressful CPR situations. Additionally, having a certification means that nurses can more rapidly provide interventions such as cardiac massage. Kimberly et al reported that ACLS and BLS skills retention needs to be improved to reduce the potential risks of death and secondary disabilities due to delays in resuscitation[17]. This study was supported indirectly. In this study, among these factors, stress and resilience were shown to exert a significant influence on state and trait anxiety. The more stress increased, the more resilience decreased. The total explanatory power of these factors on state anxiety was shown to be 34.0%. Additionally, stress (p<.001) and resilience (p<.001) were shown to exert a significant influence on trait anxiety; the more stress increased (β=.280), the more resilience decreased (β=-.340), and they were shown to have the greatest influence on trait anxiety. The explanatory power was a statistically significant 51.6% (Adj R2=.516). This result supports previous findings, such as Amit Sood et al. They reported that, through a stress management and resiliency training program, physicians can decrease stress and anxiety[18].

Table 1. Relationship between the general characteristics of medical professionals and students and the Global Assessment of Recent Stress Scale (GARS), state anxiety, trait anxiety, and the Korean version of the Connor-Davidson Resilience Scale (K-CD-RISC) (N=292)

Variables	Categories	N(%) or M±SD	GARS		State anxiety		Trait anxiety		K-CD-RISC	
			M±SD	p	M±SD	p	M±SD	p	M±SD	p
			t/F		t/F		t/F		t/F	
Gender	Male	91(31.2)	33.1±12.15	.122	43.8±9.34	.055	42.0±8.69	.901	64.3±12.90	.732
	Female	201(68.8)	35.3±12.66		46.14±10.08		42.1±8.91		63.7±13.86	
			-1.552		-1.925		-.125		.343	
Age		27.8±3.33								
Career	>1	59(11.6)	33.3±13.03		46.0±12.35		40.6±9.25		66.1±12.04ab	
	≤1, >3	42(19.6)	33.6±11.52		47.8±9.85		44.1±9.39		59.7±13.85a	
	≤3, >5	54(21.1)	35.7±13.55		44.2±9.61		40.6±8,16		62.9±13.78a	
	≤5, >10	42(14.4)	38.5±12.65	.148	45.6±9.13	.122	43.5±9.33	.144	60.2±15.84a	.012
	≤10	12(4.1)	37.4±11.95		39.3±8.41		39.3±10.38		72.6±9.63b	a<b
			1.717		1.843		1.733		3.286	
Working Unit	ER	207(70.9)	32.3±11.21a		45.1±10.12		41.2-3±8.89		64.7±13.83	
	Wad	24(8.2)	35.7±9.87a		46.5±9.53		43.4±7.36		61.8±12.32	
	ICU	61(20.9)	43.0±14.21b	<.001	45.9±9.39	.757	43.9±8.96	.102	62.1±12.97	.319
			19.567	a<b	.278		2.297		1.148	
Jobs	Nurse	155(53.1)	35.6±12.68		46.0±10.24		42.2±9.21		62.2±14.08	
	Doctor	54(18.5)	33.2±13.16		43.7±10.95		40.6±8.95		66.0±12.94	
	Medical	83(28.4)	34.33±11.85		45.3±8.42		42.7±8.83		65.6±12.62	
	student			.465		.330		.366		.084
			.767		1.113		1.009		2.502	
Certification BLS Or ACLS	Yes	184(63.0)	34.5±11.66	.703	44.1±9.03	.003	40.7±7.65	.001	66.0±14.02	<.001
	No	107(36.6)	35.2±13.95		47.6±10.93		44.4±10.17		60.2±11.88	
			.382		2.990		3.342		-3.704	

Table 2. Correlation of GARS, State anxiety, Trait anxiety, and K-CD-RISC

Variable	GARS	State anxiety	Trait anxiety	K-CD-RISC
GARS	1			
State anxiety	.405**	1		
Trait anxiety	.517**	.697**	1	
K-CD-RISC	-.230**	-.501**	-.601**	1

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Table 3. Association of Global Assessment of Recent Stress Scale (GARS), state anxiety, trait anxiety, and the Korean version of Connor-Davidson Resilience Scale (K-CD-RISC) in multiple regression (N=292)

	Step 1		Step2		Step3	
	B	β	B	β	B	β
Constant	3.003		3.003		3.006	
Ego Resilience (X_1)	-.015	-.027	-.018	-.033	-.009	-.017
Emotional burn out (X_2)	.132	.244***	.122	.226***	.122	.226
Emotional labor (X_3)	.173	.321***	.172	.318***	.164	.303
Peer support (M)			.041	.076	.043	.080
X_1 x M					-.078	-.165**
X_2 x M					-.027	-.056
X_3 x M					.051	.116*
R^2	.226		.232		.274	
ΔR^2			.006		042***	

* p<.05, ** p< .01, *** p< .001

For the participants who had certification (BLS or ACLS) in this study, the state and trait anxiety scores were significantly lower than those of the participants who had no certifications. However, there were no significant differences between those who had certification and those who did not have certification in GARS. This means that hospital professionals and medical students experience equal amounts of stress in critical situations such as CPR. But this is not true for anxiety. Vukmir reported that survival improved with decreased time to BLS (5.52 min versus 6.81 min, p = 0.047) and ACLS (7.29 min versus 9.49 min, p = 0.002) interventions, as well as differences in time to return of spontaneous circulation (ROSC)[16]. In other words, if BLS or ACLS interventions were more rapidly applied to patients, patient survival rates would improve. These interventions are available to those who know BLS or ACLS. Knowledge reduces anxiety.

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In this study, among these factors, stress and resilience were shown to exert a significant influence on state and trait anxiety. The more stress increased, the more resilience decreased. The total explanatory power of these factors on state anxiety was shown to be 34.0%. Additionally, stress (p<.001) and resilience (p<.001) were shown to exert a significant influence on trait anxiety; the more stress increased (β=.280), the more resilience decreased (β=-.340), and they were shown to have the greatest influence on trait anxiety. The explanatory power was a statistically significant 51.6%

(Adj R^2=.516). This result supports previous findings, such as Amit Sood et al. They reported that, through a stress management and resiliency training program, physicians can decrease stress and anxiety[18]. Resilience turned out to be the factor with the most influence on anxiety, after cardiopulmonary resuscitation, in this research. Nursing and medical managers wishing to reduce anxiety should focus their analysis on the issue of resilience and look for ways to decrease anxiety after cardiopulmonary resuscitation. However, since this research only looked at a small sample of health professionals, it will be difficult to extend the results of this study to other analyses, so follow-up studies must be carried out.

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