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Family Members' of Coronary, Cardiosurgery and General ICU Patients Resilience, Perceived Stress, Spirituality: a Cross Sectional Analysis

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ABSTRACT

Background: Family members' of coronary, cardiosurgery and general ICU patients are psychologically burdened, shaken, experiencing negative emotions such as fear, anxiety, sadness and despair due to the severity of the disease and possible death. **Objective:** To investigate family members' resilience in correlation with perceived stress and spirituality of coronary, cardiosurgery and general ICU Patients. **Methods:** A cross-sectional study was conducted on a random sample of 104 family members of patients (34 men and 70 women), admitted in the coronary, cardiosurgery and general ICU for greater than 48 hours. The PSS-14 was used to assess perceived stress. Resilience was investigated using CD-RISC-25 and spirituality using DSES. Also APACHE II was used to assesses the severity of the disease and the outcome of patients admitted to the ICU. **Results:** Resilience is significantly correlated with the scales of perceived stress (p <0.001) and daily spirituality (p = 0.019). On the contrary, the more their daily spirituality, the greater their resilience. In the present study no significant association was found between the DSES and the PSS-14. **Conclusion:** The main findings of the present study is the significant association between resilience and spirituality and perceived stress. Therefore, it is necessary to design interventions aiming at enhancing resilience, limiting perceived stress and promoting spirituality.
Keywords: **Intensive Care Unit, family members resilience, perceived stress, spirituality**

1. BACKGROUND

Critical illness and its consequences, the hospitalization in the ICU and the intensive nature of the care provided, lead the family into a multidimensional crisis (1). The admission of a patient in the ICU affects all members of its family (2, 3). The family members during the hospitalization of their relative and after discharge from the ICU feel vulnerable, experience acute stress, Post Traumatic Stress Disorder (PTSD), anxiety, complicated grief and depression (4, 5). Perceived stress is the result of an individual's interaction with the environment. Stress is not triggered by single events but by the way the individual objectively assesses the environment, the events, and by whether they are considered uncontrollable and threatening (6, 7).

Family members of ICU treated patients are often required to educate, inform, support, take care of their relative and make decisions on the part of them (8, 9). However, they also have their own needs. In Greece most of the ICUs implement a restricted visiting policy as far as time and number of visitors are concerned. One family member is allowed in the ICU for thirty minutes one or two times daily, so families are kept away from their relatives (9).

Factors and mechanisms that protect individuals who, even though are exposed to compounding factors they are not affected by their adverse effects are not clear. Resilience refers to the positive adaptation and to the protective factors that modify the risks and limit their negative impact on outcomes (10). Resilience is

described as a person's ability to cope with and overcome stressful and traumatic events, as the ability to adapt in critical situations or to resist risks throughout life and to recover from the challenges (11). It protects from mental disorders, such as depression, anxiety and acute stress (12, 13). However, there is a conflict as to whether it is a dynamic state or an innate trait (14). Studies conducted in different contexts claim that resilience is an acquired characteristic (15, 16).

Spirituality is a multidimensional concept, which has a broader meaning than religion (17). Lately, it has turned out to be an important aspect for patients hospitalized in ICU and their relatives (18). Spirituality refers to aspects of personal life and includes the transcendental, the divine, the sacred and the experiences that are not perceived by the basic senses (19). As for the relatives of ICU treated patients, the correlation with some higher power helps them understand and accept the pain while providing comfort and relief (17, 20).

2. OBJECTIVE

The aim of this study was to investigate family members' of Coronary, Cardiosurgery and General ICU patients resilience, perceived stress and spirituality.

3. MATERIAL AND METHODS

A cross-sectional study was conducted at the 401 General Military Hospital of Athens. Family members of patients admitted in the ICUs between January 2019 and March 2019 for greater than 48 hours were eligible to be enrolled. The hospital included a coronary, cardiosurgery and general ICU. The participants were family members who visited the patient in the ICU, showed interest in the patient's care and had come in contact with healthcare professionals having formed a complete opinion, were over 18 years of age and could read and understand the Greek language. Up to two members were included from each patient's family. The study excluded relatives of patients who were hemodynamically stabilized and discharged from the ICU or had died in less than 48 hours, who were pregnant and under the age of 18 years.

The questioners were given to the participants during ICU visiting time. They were filled in and returned the next day in a box at the entrance of the ICU, used only for this purpose. Participants were informed about the purpose of the study, that their participation was optional, and answers were anonymous. Informed consent was obtained from the patients' family members. The study was approved by the Scientific Committee of 401 General Military Hospital of Athens.

Family members' demographics included age, sex, level of education, place of residence and religion. Categorizing information included relationship with the patient, previous experience in ICU and APACHE II score. The degree to which the participants interpret situations in their lives as stressful was assessed by the Perceived Stress Scale (PSS-14). PSS-14 includes 14 questions related to the frequency of expression of feelings and thoughts during the last month. The total score ranges from 0 to 56. The higher the score, the higher the level of perceived stress (7, 21). The Connor-

Davidson Resilience Scales (CD-RISC-25) was used to assess resilience. Five factors were measured, personal ability and sufficiency, control, trust in personal instinct and tolerance of negative events, positive attitude towards change and secure relationships and spiritual influence. Participants score 25 statements depending on the extent to which each statement reflects their emotional status over the past month. The score ranges from 0 to 100. Higher scores, indicate higher level of mental resistance (22, 23). The Daily Spiritual Experience Scale (DSES) is related to the person's perception of engagement and interaction with the divine in everyday life. It was used to determine the spirituality of the participants by measuring the frequency in which they consider that they are connected to the divine according to their religion or the spiritual group they belong to. It includes 16 statements that are rated by the participants. The overall score ranges from 16 to 94. The higher the score, the higher the level of daily spiritual experience (19).

All questioners demonstrate validity and reliability. They have been translated and validated in Greek.

The Acute Physiological and Chronic Health Evaluation Scale (APACHE II), assesses the severity of the disease. It is used to determine the outcome of ICU treated patients in relation to the use of the therapies, to help medical personnel make clinical decisions, to predict hospital mortality and it is used as a communication code for the patients' health condition. The score is calculated from worst values of 12 routine physiological parameters: temperature, mean blood pressure, arterial Ph, heart rate, respiratory rate, serum sodium, serum potassium, serum creatinine, white blood cells, Glasgow Coma Scale, oxygenation values and the previous health condition of the patient. The higher the value the greater the severity of the disease (24). The APACHE II score even though it is a patient focused parameter was used in order to investigate any correlation with family members' satisfaction, perceived stress, resilience and spirituality.

Mean values, standard deviations, median, and interquartile ranges were used to describe quantitative variables. Absolute (N) and relative (%) frequencies were used to describe the qualitative variables. For the comparison of quantitative variables between two groups, the non-parametric Mann-Whitney criterion was used. For the comparison of quantitative variables between the two groups, the non-parametric Kruskal-Wallis criterion was used. To control the Type I error, due to the multiple comparisons, the Bonferroni correction was used, according to which the significance level is $0.05/K$ (K = number of comparisons). The correlation coefficient of Pearson or Spearman (r) was used to control the relationship of two quantitative variables. The correlation is considered low when the correlation coefficient (r) ranges from 0.1 to 0.3, moderate when it ranges from 0.31 to 0.5 and high when it is greater than 0.5. Linear regression analysis was used to find independent factors associated with the different scales from which dependency coefficients (b) and their standard errors (SE) occurred. Linear regression analysis was performed for satisfaction using logarithmic transformations. The significance levels were two-sided, and the statistical significance was set to 0.05. The statistical

program Statistical Package for Social Sciences, SPSS 22.0, was used for the analysis.

4. RESULTS

The characteristics of the participants are presented in Table 1. The sample consisted of 104 family members of patients admitted in the coronary, the cardiosurgery and the general ICU of 401 Military Hospital of Athens with an average age of 50.7 years (SD = 13.4 years). 67.3% of the participants were women and 46.2% were patients' sons and daughters. 42.3% had participated in the past as

		N	%
Gender	Men	34	32,7
	Women	70	67,3
Age, (SD)	50,7 (13,4)		
Relationship with patient	Spouse	25	24,0
	Parent	8	7,7
	Brother/Sister	8	7,7
	Son/Daughter	48	46,2
	Other	15	14,4
If other, what	Nephew	5	4,8
	Son/Daughter in law	6	5,8
	Grandchild	3	2,9
	Cousin	1	1,0
Previous ICU experience	No	60	57,7
	Yes	44	42,3
Do you live with the patient at the moment	No	49	47,1
	Yes	55	52,9
If not, then how often do you see the patient	More than once a week	22	44,9
	Once a week	8	16,3
	Once a month	15	30,6
	Once a year	3	6,1
	Less than once a year	1	2,0
Where do you live	In the city that the hospital is located	81	77,9
	In a different city	23	22,1
Education level	Elementary school	6	5,8
	Secondary school/ Institute of Vocational Training	5	4,8
	High school	49	47,1
	University	31	29,8
	Master's/PhD	13	12,5
Religion	Christian orthodox	99	95,2
	Atheist	4	3,8
	Other	1	1,0
How often do you go to the church or in other worship places	Every week	25	24,0
	Once a month	35	33,7
	On special days (Christmas/Easter)	36	34,6
	Almost never	8	7,7

Table 1. Participants' demographic characteristics

	N	%
ICU	General	14	13,5
	Coronary	63	60,6
	Cardiosurgery	27	26,0
APACHE II mean score (SD)	17,6 (11,0)	

Table 2. Patients' clinical characteristics

		DSES	CD-RISC-25
PSS-14	r	-0,15	-0,37
	P	0,124	<0,001
DSES	r		0,23
	P		0,019

Table 3. Pearson's correlation coefficients between PSS-14, DSES, CD-RISC-25

a family member of an ICU treated patient. More than half of them (52.9%) lived at the moment with the patient and 77.9% lived in Athens. Most of the participants (47,1%) were secondary school / Institute of Vocational Training graduates and 29.8% were university graduates. Almost all participants (95.2%) were Christian Orthodox. 34.6% of the participants went to the church only on special days and 33.7% once a month.

Patients' clinical characteristics

60.6% of the patients were hospitalized in the coronary, 26.0% in the cardiosurgery and 13.5% in the general ICU. Patients' APACHE II mean score was 17.6 units (SD = 11.0 units) (Table 2). The PSS-14 score ranged from 7 to 41 units with an average value of 23.4 units (SD = 7.7 units).

The DSES score ranged from 19 to 87 points with an average value of 52.3 units (SD = 16.3 units).

The CD-RISC-25 score ranged from 31 to 100 units with an average value of 70,0 units (SD=12,9 units).

Pearson's correlation coefficients between the PSS-14, the DSES and the CD-RISC-25 are presented in Table 3.

The CD-RISC-25 is negatively and significantly correlated with the PSS-14 (p <0.001), and positively and significantly correlated with the DSES (p = 0.019).

5. DISCUSSION

The aim of the current study was to investigate family members' resilience, perceived stress and spirituality. Results revealed that family members scale of mental resilience is significantly correlated with the scales of perceived stress and daily spirituality. In particular, as the perceived stress increases, so does their resilience. On the contrary, the more their daily spirituality, the greater their resilience.

According to Min et al (2013) and Davidson et al (2005), resilience protects against mental disorders such as depression, anxiety and acute stress (12, 13). The present study provided evidence that CD-RISC-25 is positively associated with DSES (p=0.019). In agreement, Rahmati et al (2017) demonstrated that the application of spiritual interventions increases resilience (25). Even though the Greek literature concerning spirituality of family members of ICU treated patients is limited, Plakas et al (2011), found that spirituality is the basic source of power and courage for relatives of ICU treated patients and it helps them relieve of negative emotions (26). Literature has also reported that spirituality,

and faith in a higher power are used by individuals of any religion in order to manage stressful situations related to health problems (27).

In the present study no significant association was found between the DSES and the PSS-14. However, according to Casarini et al (2009), spirituality was classified as the second most common way to manage stressful situations by relatives of ICU treated patients (20). In addition, according to Schleder et al (2013), spirituality prevents and reduces negative emotions (17). Finally, according to Chan & Twinn, (2007), the shift to religion is one of the basic strategies used by relatives of ICU treated patients when they experience stressful situations (28).

This study has some limitations. Family members who were not located because they avoided entering in the ICU and those who did not wish to participate might have an importantly lower resilience score that would affect the results. Some relatives were very old and could not answer the questionnaire due to visual and cognitive difficulties. Questionnaire responses may be affected by participants' emotional burden. Finally, this is a cross-sectional study so there is no temporal association between variables.

6. CONCLUSION

The main findings of the present study is the significant association between resilience and spirituality and perceived stress. Therefore, it is necessary to design interventions aiming at enhancing resilience, limiting perceived stress and promoting spirituality.

Future studies should consider enrolling more ICUs of different medical centers and bigger study population in order to exclude more generalizable results. Finally, the same parameters should be reassessed after patients' discharge from the ICU, in order to investigate Post-intensive Care Syndrome–Family (PICS-F).

REFERENCES

1. Andresen M, Guic E, Orellana A, Diaz M Castro R. Posttraumatic stress disorder symptoms in close relatives of intensive care unit patients: Prevalence data resemble that of earthquake survivors in Chile. J Crit Care. 2015; 30(5): 1152 e7-11.
2. Buhse M. Assessment of caregiver burden in families of persons with multiple sclerosis. J Neurosci Nurs. 2008; 40(1): 25-31.
3. McKeown LP, Porter-Armstrong AP, Baxter GD. The needs and experiences of caregivers of individuals with multiple sclerosis: a systematic review. Clin Rehabil. 2003; 17(3): 234-248.
4. Turner-Cobb JM, Smith PC, Ramchandani P, Begen FM, Padkin A. The acute psychobiological impact of the intensive care experience on relatives. Psychol Health Med. 2016; 21(1): 20-26.
5. Davidson JE, Jones C, Bienvenu OJ. Family response to critical illness: postintensive care syndrome-family. Crit Care Med. 2012; 40(2): 618-624.
6. DeLongis A, Folkman S, Lazarus RS. The impact of daily stress on health and mood: psychological and social resources as mediators. J Pers Soc Psychol. 1988; 54(3): 486-495.
7. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983; 24(4): 385-396.
8. Anderson WG, Arnold RM, Angus DC, Bryce CL. Passive decision-making preference is associated with anxiety and depression in relatives of patients in the intensive care unit. J Crit Care. 2009; 24(2): 249-254.
9. Plakas S, Cant B, Taket A. The experiences of families of critically ill patients in Greece: a social constructionist grounded theory study. Intensive & critical care nursing. 2009; 25(1): 10-20.
10. Friedli LWHO. Mental health, resilience and inequalities.2009 Accesed 08 Feb 2019.]. Available from: https://apps.who.int/iris/handle/10665/107925.
11. Windle G, Bennett KM, Noyes J. A methodological review of resilience measurement scales. Health Qual Life Outcomes. 2011; 9: 8.
12. Min JA, Yu JJ, Lee CU, Chae JH. Cognitive emotion regulation strategies contributing to resilience in patients with depression and/or anxiety disorders. Compr Psychiatry. 2013; 54(8): 1190-1197.
13. Davidson JR, Payne VM, Connor KM, Foa EB, Rothbaum BO, Hertzberg MA, et al. Trauma, resilience and saliostasis: effects of treatment in post-traumatic stress disorder. Int Clin Psychopharmacol. 2005; 20(1): 43-48.
14. Luthar SS, Cicchetti D, Becker B. The construct of resilience: a critical evaluation and guidelines for future work. Child Dev. 2000; 71(3): 543-562.
15. Mealer M, Conrad D, Evans J, Jooste K, Solyntjes J, Rothbaum B, et al. Feasibility and acceptability of a resilience training program for intensive care unit nurses. Am J Crit Care. 2014; 23(6): e97-105.
16. Foureur M, Besley K, Burton G, Yu N, Crisp J. Enhancing the resilience of nurses and midwives: pilot of a mindfulness-based program for increased health, sense of coherence and decreased depression, anxiety and stress. Contemp Nurse. 2013; 45(1): 114-125.
17. Schleder LP, Parejo LS, Puggina AC, Silva MJPd. Espiritualidade dos familiares de pacientes internados em unidade de terapia intensiva %J Acta Paulista de Enfermagem. 2013; 26: 71-78.
18. Reinert KG, Koenig HG. Re-examining definitions of spirituality in nursing research. J Adv Nurs. 2013; 69(12): 2622-2634.
19. Underwood LG. The Daily Spiritual Experience Scale: Overview and Results. Religions. 2011; 2(1): 29-50.
20. Casarini KA, Gorayeb R, Basile Filho A. Coping by relatives of critical care patients. Heart Lung. 2009; 38(3): 217-227.
21. Andreou E, Alexopoulos EC, Lionis C, Varvogli L, Gnardellis C, Chrousos GP, et al. Perceived Stress Scale: reliability and validity study in Greece. Int J Environ Res Public Health. 2011; 8(8): 3287-3298.
22. Tsigkaropoulou E, Douzenis A, Tsitas N, Ferentinos P, Liappas I, Michopoulos I. Greek Version of the Connor-Davidson Resilience Scale: Psychometric Properties in a Sample of 546 Subjects. In Vivo. 2018; 32(6): 1629-1634.
23. Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). Depress Anxiety. 2003; 18(2): 76-82.
24. Knaus WA, Draper EA, Wagner DP, Zimmerman JE. APACHE II: a severity of disease classification system. Crit Care Med. 1985; 13(10): 818-829.
25. Rahmati M, Khaledi B, Salari N, Bazrafshan M-R, Haydarian A. The Effects of Religious and Spiritual Interventions on the Resilience of Family Members of Patients in the ICU. Shiraz E-Medical Journal. 2017; 18(11).
26. Plakas S, Boudioni M, Fouka G, Taket A. The role of religiosity as a coping resource for relatives of critically ill patients in Greece. Contemp Nurse. 2011; 39(1): 95-105.
27. Baldacchino D, Draper P. Spiritual coping strategies: a review of the nursing research literature. J Adv Nurs. 2001; 34(6): 833-841.
28. Chan KS, Twinn S. An analysis of the stressors and coping strategies of Chinese adults with a partner admitted to an intensive care unit in Hong Kong: an exploratory study. J Clin Nurs. 2007; 16(1): 185-193.