*Intensive Care Med (2020) 46:1060–1062*
https://doi.org/10.1007/s00134-020-05997-5

LETTER

# Psychological symptoms in relatives of critically ill patients (ICU families): a prospective multicenter study

M. Hoffmann[1,2,3*], M.-M. Jeitziner[4], R. Riedl[5], P. Eller[1], K. Amrein[1] and ICU-Families Study Group



Dear Editor,

Admission of a relative to an intensive care unit (ICU) is a very stressful event for their families. A large number of family members report stress, depressive feelings, sleep disturbances, anxiety and symptoms of post-traumatic stress disorder (PTSD) [1–3]. Protocolized family support and shared decision-making appear to benefit the patient and the family [4]. We aimed to examine the degree to which relatives of ICU patients are affected by PTSD symptoms shortly after ICU admission (T0) and 30 days later (T30) [5].

Data were collected in 2016 and 2017 by trained investigators in three independent ICUs [interdisciplinary/cardiology (Graz, Austria), gastroenterology/hepatology (Vienna, Austria) and interdisciplinary ICU (Bern, Switzerland)]. Relatives (family members and close friends) of patients admitted to these ICUs were prospectively invited to take part in the study. Baseline assessments were conducted between patient admission to the ICU and up to 48 h later (T0). Follow-up assessments were conducted 30 days (T30) after the initial assessment. The severity of symptoms was assessed with the Impact of Event Scale (IES), which includes some of the components required to diagnose PTSD. Detailed information about the study (methods, results, limitations and discussion) can be found in Supplemental Material.

The mean age was 53 ± 15 years. At T0, the mean IES score was 31.4 ± 13.7 points. Twenty-four of the 42 relatives had a score over 27 points (57%, 95% exact confidence interval, CI: 41–72%), and 19 of the 42 had a score over 35 (45%, 95% CI 30–61%). Fifteen of 42 relatives at T30 still had a score over 27 (36%, 95% CI 22–52%), and seven had a score over 35 (17%, 95% CI 7–31%). The IES score was significantly higher at T0 than at T30 (31.4 ± 13.7 vs. 24.7 ± 10.6, $p < 0.001$). Women had higher scores at T0 than men (33.6 ± 14.4 vs. 25.8 ± 10.2, $p = 0.093$). The scores for men and women were comparable at T30 (25.0 ± 10.3 vs. 24.0 ± 11.6, $p = 0.779$). The IES score was significantly higher at both T0 and T30 among relatives that had been present at the event that led to the patient's ICU admission ($n = 21$, 52.5%) versus those who had not been present ($n = 19$, 47.5%); T0 was 35.1 ± 9.2 versus 26.1 ± 15.6 ($p = 0.037$), and T30 was 28.6 ± 9.8 versus 20.6 ± 10.6 ($p = 0.018$) (Fig. 1). Limitations include the low number of participants and the larger proportion of female participants.

To summarize, more than half of relatives of ICU patients reported clinically relevant symptoms at T0, with IES scores declining, but remaining high until T30. A large percentage of relatives of ICU patients showed severe symptoms over the whole observation period—especially when relatives had been present at the event that led to ICU admission. Our findings require validation in a larger cohort. Further studies should also assess whether support/information services are able to reduce stress and its symptoms among relatives and which ones are most effective.

*Correspondence: magdalena.hoffmann@medunigraz.at
[1] Department of Internal Medicine, Medical University of Graz, Graz, Austria
Full author information is available at the end of the article

M. Hoffmann and M.-M. Jeitziner contributed equally to this work.

Springer

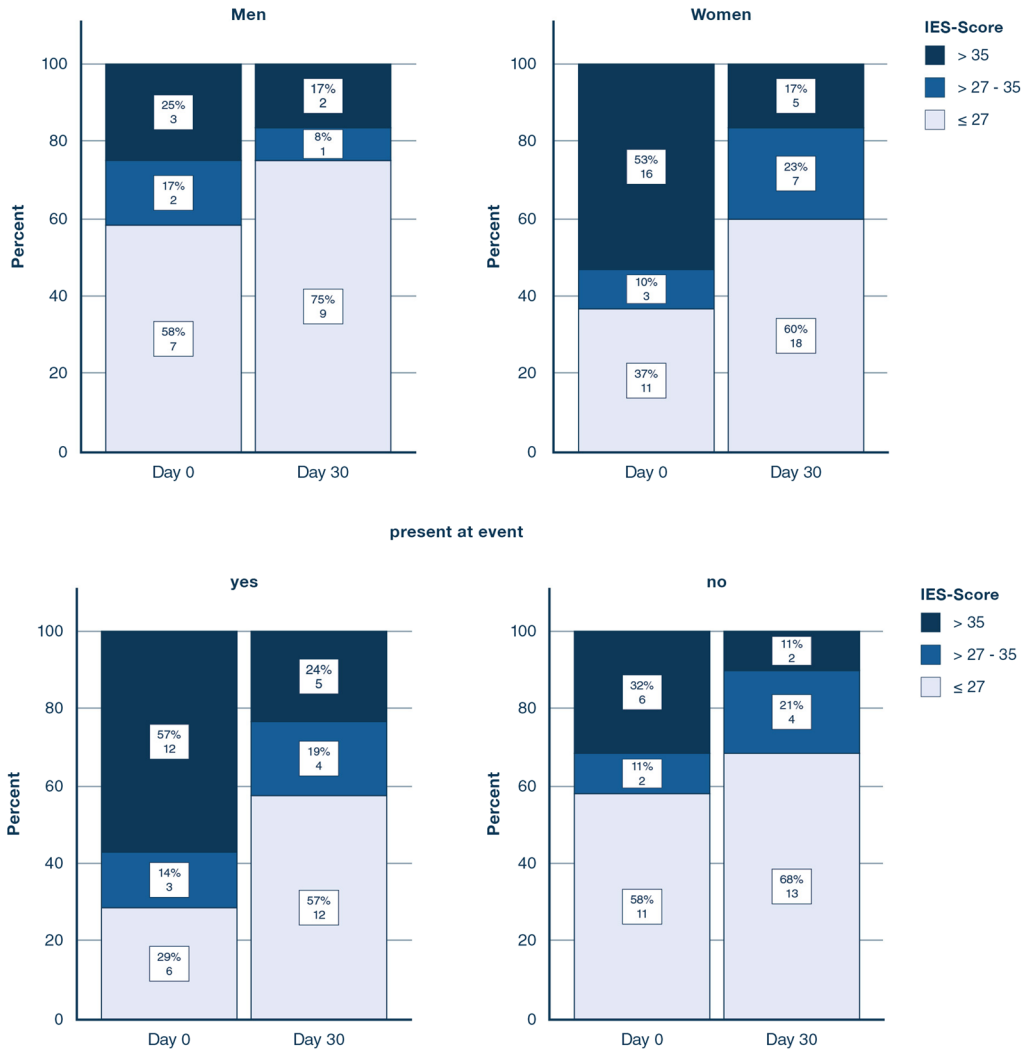


**Fig. 1** Impact of Event Scale (IES) score categories at T0 and T30 (bar chart including % and *n*)

**Electronic supplementary material**
The online version of this article (https://doi.org/10.1007/s00134-020-05997-5) contains supplementary material, which is available to authorized users.

**Collaborators**
M Hoffmann, D. von Lewinski, N. Verheyen, T.R. Pieber, P. Eller, K. Amrein: Department of Internal Medicine, Medical University of Graz, Graz, Austria. M. Hoffmann, G. Sendlhofer: Executive Department for Quality and Risk Management, University Hospital Graz, Graz, Austria. M. Hoffmann, G. Sendlhofer: Research Unit for Safety in Health, Medical University of Graz, Graz, Austria. M.-M. Jeitziner, J.C. Schefold: Department of Intensive Care Medicine, University Hospital Bern, Bern, Switzerland. P. Heindl, A. Bachlechner: Department of Intensive Care, Vienna General Hospital, Vienna, Austria. R. Riedl: Institute for Medical Informatics, Statistics and Documentation, Medical University of Graz, Graz, Austria. A.K. Holl: Department of Psychiatry and Psychotherapeutic Medicine, University Hospital Graz, Graz, Austria.

**Author details**
[1] Department of Internal Medicine, Medical University of Graz, Graz, Austria. [2] Executive Department for Quality and Risk Management, University Hospital Graz, Graz, Austria. [3] Research Unit for Safety in Health, Division of Plastic, Aesthetic and Reconstructive Surgery, Department of Surgery, Medical University of Graz, Graz, Austria. [4] Department of Intensive Care Medicine, University Hospital Bern, Inselspital, University of Bern, Bern, Switzerland. [5] Institute for Medical Informatics, Statistics and Documentation, Medical University of Graz, Graz, Austria.

**Authors' contribution**
MH and KA designed the study. M-MJ, JCS, DL, NV, PH, AB and PE recruited participants. RR analyzed data. MH, JCS, DL, NV, PH, AB, PE, RR, AKH, GS and TRP supported data interpretation. TRP, GS and KA supervised the project. MH and M-MJ wrote letter and manuscript.

**Funding**
Austrian Society of Internal Medicine and General Intensive Care Medicine and Emergency Medicine (ÖGIAIN).

**Compliance with ethical standard**

**Conflict of interest**
M–M. Jeitziner reports grants (full departmental disclosure) from Orion Pharma, Abbott Nutrition International, B. Braun Medical AG, CSEM AG, Edwards Lifesciences Services GmbH, Kenta Biotech Ltd, Maquet Critical Care AB, Omnicare Clinical Research AG, Nestle, Pierre Fabre Pharma AG, Pfizer, Bard Medica S.A., Abbott AG, Anandic Medical Systems, Pan Gas AG Healthcare, Bracco, Hamilton Medical AG, Fresenius Kabi, Getinge Group Maquet AG, Dräger AG, Teleflex Medical GmbH, Glaxo Smith Kline, Merck Sharp and Dohme AG, Eli Lilly and Company, Baxter, Astellas, Astra Zeneca, CSL Behring, Novartis, Covidien, Philips Medical, Phagenesis Ltd, Prolong Pharmaceuticals and Nycomed outside the submitted work. The money went into departmental funds. No personal financial gain applied. All other authors declare that they have no competing interests.



## Publisher's Note



Accepted: 3 March 2020
Published online: 18 March 2020

**References**

1. Schmidt M, Azoulay E (2013) Sleepless nights in the ICU: the awaken family. Crit Care 17(5):1–2. https://doi.org/10.1186/cc12781
2. Netzer G, Sullivan DR (2014) Recognizing, naming, and measuring a family intensive care unit syndrome. Ann Am Thorac Soc 11(3):435–441. https://doi.org/10.1513/AnnalsATS.201309-308OT
3. Fumis RR, Ranzani OT, Martins PS, Schettino G (2015) Emotional disorders in pairs of patients and their family members during and after ICU stay. PLoS ONE 10(1):e0115332. https://doi.org/10.1371/journal.one.0115332.eCollection2015
4. Lee HW, Park Y, Jang EJ, Lee YJ (2019) Intensive care unit length of stay is reduced by protocolized family support intervention: a systematic review and meta-analysis. Intensive Care Med 45(8):1072–1081. https://doi.org/10.1007/s00134-019-05681-
5. Hoffmann M (2018) Psychological symptoms in relatives of ICU-patients: a multi-centre study ; ESICM lives 2018. In: Intensive care medicine experimental, p 40