

The Psychological Impact on Relatives of Critically Ill Patients: The Influence of Visiting Hours

OBJECTIVES: To identify the psychologic impact of admission to the ICU on the relatives of critically ill patients, the influence of coping, and the factors involved.

DESIGN: We performed a cohort study with repeated measures evaluation using descriptive and comparative bivariate and multivariate analyses.

SETTINGS: An adult ICU of a third-level complexity hospital.

PATIENTS: The family members of patients (maximum of three per patient) staying longer than 3 days.

INTERVENTIONS: Not applicable.

MEASUREMENTS AND MAIN RESULTS: Psychologic impact was assessed using two subgroups of psychologic distress: anxiety (by the State-Trait Anxiety Inventory) and depression (by the Beck Depression Inventory). Satisfaction and coping were assessed by the Critical Care Family Needs Inventory and the Brief Coping Orientations to Problems Experienced Inventory, respectively. We included 104 family members; psychologic distress was high at admission (72% had anxiety, 45% had depression, and 42% had both) but decreased at discharge (34% had anxiety, 23% had depression, and 21% had both). The risk factors related to psychologic impact were severity (anxiety: Acute Physiology and Chronic Health Evaluation score ≥ 18 points; relative risk [RR], 2; 95% CI, 1–4; $p = 0.03$), invasive mechanical ventilation (anxiety: RR, 1.9; 95% CI, 1–3.6; $p = 0.04$), recent psychotropic medication use by relatives (depression: RR, 1.6; 95% CI, 1–2.9; $p = 0.05$), a restrictive visiting policy (anxiety: RR, 5.7; 95% CI, 2–10.4; $p = 0.002$), no emotion-focused coping strategy (anxiety: strategy < 11 points, RR, 6.1; 95% CI, 1.2–52; $p = 0.01$), and functional impairment (depression: Barthel index ≤ 60 points, RR, 7.4; 95% CI, 1.7–26.3; $p = 0.01$).

CONCLUSIONS: The psychologic impact from admission to the ICU on family members is high. Visiting hours is the main modifiable factor to reduce the impact.

KEY WORDS: anxiety; depression; family; intensive care units; psychologic distress; social adjustment

Admission to an ICU usually occurs unexpectedly and is a traumatic experience (1) in an unfamiliar environment dominated by new technological advances (2). In recent years, the impact of this experience on the psychologic morbidity of patients and their families has become evident (3). Some studies have described a higher rates of anxiety or depression in family members than in the patients themselves, perhaps because they have a more realistic memory of the events (4). The persistence of these symptoms is known as post-intensive care family syndrome (1, 5).

The unbalanced situation generated during ICU stay is associated with a risk of maladaptive behaviors (5). Coping is an effort to manage stressful situations, and cognitive, behavioral, and emotional skills to resolve psychologic stress are

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known as coping mechanisms (6). Coping is an individual construct (1), and each person employs different coping mechanisms (7) and performs specific situational actions (8). **Supplemental Digital Content 1** (<http://links.lww.com/CCX/A909>) groups and describes the different coping mechanisms, strategies, and styles. Understanding stress behavior in people facing similar conditions can be useful for developing interventions to improve the experience (8).

Although “patient- and family-centered care” emerged in 2001 (9), the current challenge for psychosomatic medicine in the ICU is to identify and assess the specific psychologic needs of patients and families using appropriate tools (1). We designed this study assuming the hypothesis that it is possible to detect “vulnerable relatives” early to implement tools for primary prevention and targeted treatment. The objective was to identify the psychologic impact of an ICU stay on relatives and the influence of both coping and other individual factors, as well as ICU-specific factors.

MATERIALS AND METHODS

A prospective cohort study was conducted to evaluate the psychologic impact on relatives of critically ill patients using a quantitative methodology. We recruited all relatives from a medical-surgical adult ICU of a third-level complexity hospital in Madrid, Spain, from May 2018 to May 2019. Recruitment was concurrent and prospective in the incident cases.

The project was approved by the hospital’s research ethics committee (Committee on Drug Research Ethics of La Princesa University Hospital at its meeting of May 24, 2018, minutes 09/18, reference number 3420). A maximum of three relatives per patient (18–85 yr old) with a stay longer than 3 days and provided informed consent were included. Relatives unable to make decisions or complete the questionnaires or with a previous decision to withdraw treatment were excluded.

We collected the initial variables; the primary factor was coping with stressful situations. Follow-up variables were also collected, such as the patient’s clinical data or the visiting protocol, because it was modified during the recruitment period. In October 2018, the visiting protocol changed from a restrictive visit (two visits per day for 1 hr each) to an extended visit (continuous accompaniment by a family member from 11:00

to 21:00, regardless of the sedation level or the techniques to be performed). Extended visit favored the active participation of relatives in some patient care, such as grooming, shaving, and feeding. Family members were also involved in decision-making in cases of withdrawal. Psychologic distress (with two subgroups: anxiety and depression) and satisfaction were assessed to understand the psychologic impact.

Stress coping was assessed using the Brief Coping Orientation to Problems Experienced inventory (10–12). Fourteen coping mechanisms were grouped based on the reports by Cooper et al (13) (three strategies: emotion-focused, problem-focused, or avoidance) and Vargas-Manzanares et al (14) (two styles: active or passive). Patient severity was assessed using the Acute Physiology and Chronic Health Evaluation (APACHE) II scores (15) and the Simplified Acute Physiology Score (SAPS) II (16), and functional conditions were assessed using the Barthel index (17). Anxiety was assessed using the Y version of the State-Trait Anxiety Inventory (18) (anxiety status \geq 75th percentile) and depression using the Beck Depression Inventory-II (19) (depression \geq 14 points); we designated psychologic distress when both conditions were met (anxiety and depression). Satisfaction was assessed using the abbreviated version of the Critical Care Family Needs Inventory (20) (**Supplemental Digital Content 2**, <http://links.lww.com/CCX/A909>).

We used two evaluation periods. The first was at admission to the ICU (day +3), where coping and psychologic distress were measured. The second was over the next days after discharge from the ICU (or death of the patient), where satisfaction and psychologic distress were measured. The subjects self-completed a form composed of inventories and independent variables, provided in article and online formats (**Supplemental Digital Content 3**, <http://links.lww.com/CCX/A909>).

A descriptive analysis of baseline variables, follow-up variables, and missing data was performed using percentages or measures of centralization and dispersion, depending on the type of variable. The comparative analysis was bivariate (admission and discharge) and multivariate (at discharge). The bivariate analysis dependent variables were psychologic distress and satisfaction, using Pearson correlation coefficient, Pearson chi-square test or Fisher exact test, and nonparametric tests (Mann-Whitney *U* and Kruskal-Wallis) based on each case. Although coping was an independent

variable, a bivariate analysis was performed with coping as a dependent variable to observe its relationship with other confounding factors. The backward stepwise and parsimonious method was used for logistic regression, introducing independent variables without collinearity in the bivariate analysis that had a relationship with the dependent variable ($p \leq 0.20$) in addition to the clinically relevant variables. For each dependent variable, two models were used: without and with the evolution variables (**Supplemental Digital Content 4**, <http://links.lww.com/CCX/A909>). The area under the receiver operating characteristic curve was used to create new stratified variables from quantitative variables (age, APACHE II, and SAPS II) and statistical criteria to create dichotomous variables (educational level, functional condition, and coping).

Statistical significance was p value of less than 0.05, and the strength of the association was estimated using the relative risk (RR), the correlation coefficient, or the difference of means or medians. Population estimates were made using a 95% CI.

RESULTS

In total, 104 relatives of 63 patients were included, although the degree of participation decreased as the study progressed (33.6% loss). Most were first-degree relatives and middle-aged women with a high level of education. More than half of the participants had previous experience with an ICU, and 22% reported being a primary caregiver for another person. There were four individuals who experienced both forms of visits, in which only the visit protocol they had experienced for the longest time was considered for analysis. Overall, 58% had an extended visit, 30% were involved in end-of-life decision-making, and 14% lost their loved one in the ICU. The median length of stay was 15 days; most patients received invasive mechanical ventilation (IMV) and were in a dependent situation at ICU discharge (**Table 1**).

Mainly emotion-focused and problem-focused coping strategies were used, giving rise to an active coping style (**Table 2**). The active coping style was used more by those younger than 50 years (≤ 50 yr: mean = 30.4 points, SD: 6.6 points; > 50 yr: mean = 25 points, SD: 7 points; mean difference: 5.4 points, 95% CI: 2.7–8 points; $p = 0.001$) and by those with a higher level of education (university: mean = 29.5 points, SD: 6.8 points; nonuniversity: mean = 26.7 points, SD: 7.3 points;

mean difference: 2.8 points, 95% CI: 0.1–5.5 points; $p = 0.02$) (**Supplemental Digital Content 5**, <http://links.lww.com/CCX/A909>). Women employed passive coping more than men (women: mean = 9 points, SD: 4.5 points; men: mean = 7.5 points, SD: 3.6 points; mean difference: 17 points, 95% CI: 0.1–35 points; $p = 0.04$). Family members who previously played the role of caregiver used problem-focused strategies (caregiver: mean = 13.6 points, SD: 4 points; noncaregiver: mean = 12 points, SD: 3 points; mean difference: 1.8 points, 95% CI: 0.2–3.3 points; $p = 0.01$). The emotion-focused strategy was a protective factor for the development of anxiety and psychologic distress at ICU discharge (**Table 3**).

At admission, 72% of relatives had high anxiety scores, 45% had high depression scores, and 42% had both. Over the next days after discharge from the ICU, the psychologic impact decreased (**Table 4**). Measures of anxiety and depression were closely related throughout the stay (at admission: RR, 2.2; 95% CI, 1.6–2.9; $p < 0.0001$ and after discharge: RR, 2.5; 95% CI, 1.6–3.8; $p < 0.0001$). The items with the highest satisfaction ratings were medical care and communication.

In the first few days, there were three factors related to psychologic impact. Patient severity increased the anxiety (APACHE ≥ 18 points: RR, 2; 95% CI, 1–4; $p = 0.03$) and psychologic distress (SAPS II ≥ 40 points: RR, 1.8; 95% CI, 1.1–2.8; $p = 0.02$) of the family member. Anxiety also increased if the patient was intubated (RR, 1.9; 95% CI, 1–3.6; $p = 0.04$) and depression increased with the relative's intake of psychotropic medications during the last year (RR, 1.6; 95% CI, 1–2.9; $p = 0.05$).

Over the next days after discharge from the ICU, the only variable independently related to psychologic distress (in all multivariate models performed) was the visiting policy (**Table 5**). Restrictive visit had a direct negative influence at admission, which increased at discharge, resulting in a five-fold increased risk of developing psychologic distress. Functional deterioration of the patients also greatly influenced on psychologic distress. Prolonged ICU stay showed a significant relationship with psychologic distress after ICU in the bivariate analysis (with psychologic distress: median = 22 d, interquartile range [IQR]: 15–28.5 d; without psychologic distress: median = 13 d, IQR: 8–16 d; $p = 0.007$); however, this variable was not found to be independently related in the multivariate analysis.

TABLE 1.
Results of the Descriptive Analysis of the Main Independent Variables at Admission to the ICU

Independent Variables of Family Members (n = 104)	n (%)	95% CI
Relatives per patient, X (SD)	1.7	0.8
Sociodemographics		
Age (yr) ^a	48	40–55
Sex		
Man	32 (31)	23–40
Woman	92 (69)	60–77
Educational level		
Primary	12 (11.5)	7–19
Secondary	32 (31)	23–40
University	60 (58)	48–67
Kinship		
First grade	74 (71)	62–79
Second grade	22 (21)	14–30
Major degree	8 (7.7)	4–14
Taking psychotropic medications		
At admission to the ICU	22 (21)	14–30
Discharged from the ICU	16 (23.2)	15–34
Previous ICU admissions		
Personal	7 (6.7)	3–13
From a family member	53 (51)	41–60
Be the usual caregiver of a sick family member	23 (22)	15–31
Main pathology		
Medical	79 (76)	67–83
Surgical	25 (24)	17–33
Diagnostic group		
Neurologic	44 (42.3)	33–52
Cardiological	23 (22)	15–31
Respiratory	23 (22)	15–31
Income severity		
Acute Physiology and Chronic Health Evaluation II (points) ^a	18	14–24
Simplified Acute Physiology Score II (points) ^a	40	29–55
Invasive mechanical ventilation		
During ICU stay	82 (78.8)	70–86
Total time (d) ^a	10	2–15.25
Tracheostomy		
During ICU stay	32 (30.8)	23–40
Total time (d) ^a	17	9–24.5

(Continued)

TABLE 1. (Continued).**Results of the Descriptive Analysis of the Main Independent Variables at Admission to the ICU**

Independent Variables of Family Members (<i>n</i> = 104)	<i>n</i> (%)	95% CI
Extrarenal depuration techniques		
During ICU stay	14 (13.5)	8–21
Total time (d) ^a	9	6–10
External cardiac assistance		
During ICU stay	6 (5.8)	3–12
Total time (d) ^a	2	1–5
Functional status at ICU discharge (Barthel index)		
Independent (100 points)	6 (5.8)	3–12
Mild dependence (91–99 points)	3 (2.9)	1–8
Moderate dependence (61–90 points)	23 (22)	15–31
Severe dependence (21–60 points)	31 (29.8)	22–39
Total dependence (0–20 points)	26 (25)	18–34
Death in the ICU	15 (14.4)	9–22
Withdrawal decisions	31 (29.8)	22–39
Extended visit	60 (57.7)	48–67
ICU stay (d) ^a	15	9.3–24

^aQuantitative variables are shown with median and interquartile range.

Most variables are qualitative, so they are shown with total number (*n*), proportion (%), and 95% CI.

The variable “relatives per patient” is the only quantitative variable shown with the mean (*X*) and *sd*.

Psychotropic medications include the five main types: antidepressants, anti-anxiety, stimulants, antipsychotics, and mood stabilizers.

External cardiac support includes intra-aortic balloon pump, Impella device, extracorporeal membrane oxygenation, and external ventricular support.

Those who participated in withdrawal decisions and those who lost their family member had better satisfaction regarding personal care (decision: median = 3 points, IQR: 3–5 points; nondecision: median = 5.5 points, IQR: 4–7 points; *p* = 0.001; alive: median = 3 points, IQR: 3–4.8 points; death: median = 5 points, IQR: 3–7 points; *p* = 0.04).

We performed a loss analysis, and 35 of 104 family members did not participate at discharge (33.6% loss), which differed in pathology (surgical admission: RR, 1.8; 95% CI, 1.1–3; *p* = 0.03), treatment with cardiac assistance (RR, 2.7; 95% CI, 1.7–4.2; *p* = 0.02), and visiting policy (extended visit: RR, 1.8; 95% CI, 1–3.5; *p* = 0.04).

DISCUSSION

The ICU stay highly impacted the psychologic health of family members in this study. The visiting policy was identified as a modifiable measure with great impact.

There is neither a standard definition nor a validated tool in the literature for screening for psychologic distress in patients and/or relatives during an adult ICU stay. Some groups have designed specific tools for the screening of psychologic distress for family members of pediatric patients (21). The expression of psychologic distress varies over time and is derived from multiple factors (22). Relatives describe it as suffering related to “loss of meaning, purpose and connection with oneself” that creates a tension in their value system grappling with preexisting beliefs about illness, life, death, and spirituality (22). According to the fifth edition of Diagnostic and Statistical Manual of Mental Disorders, the psychologic distress associated with admission to the ICU is included in the mixed subtype of adaptive disorders, consisting of a combination of depression and anxiety (23). Therefore, this study, as well as other similar studies, have defined psychologic distress as both the presence of anxiety and depression (4).

TABLE 2.
Results of the Descriptive Analysis
of Coping at Admission to the ICU

Brief Coping Orientation to Problems Experienced (<i>n</i> = 104)	Median (IQR)
Coping mechanism	
Acceptance (0–6 points)	5 (4–6)
Denial (0–6 points)	0.5 (0–2)
Active coping (0–6 points)	5 (4–6)
Planning (0–6 points)	4 (3–5)
Positive reframing (0–6 points)	3 (2–5)
Humor (0–6 points)	0 (0–2.8)
Social support (0–6 points)	3 (2.3–4)
Emotional support (0–6 points)	4 (3–5.8)
Venting (0–6 points)	2 (1–3)
Religion (0–6 points)	2 (1–4.8)
Substances (0–6 points)	0 (0–0)
Behavioral disengagement (0–6 points)	0 (0–1)
Self-distraction (0–6 points)	3 (2–4)
Self-blame (0–6 points)	1 (0–2)
Coping strategy, mean (sd)	
Emotion-focused (0–30 points)	16.1 (4.8)
Problem-focused (0–18 points)	12.2 (3.3)
Avoidance (0–36 points)	8.7 (4.3)
Coping style, mean (sd)	
Active (0–48 points)	28.3 (7.1)
Passive (0–36 points)	8.7 (4.3)

IQR = interquartile range.

The factors related to psychologic impact at admission were not the same as those after discharge. On the first days, the main risk factors identified were severity, IMV and recent intake of psychotropic medications. After discharge, other risk and protective factors were observed, as shown in **Supplemental Digital Content 6** (<http://links.lww.com/CCX/A909>). Most of these factors are not modifiable but provide valuable information for the early recognition of vulnerable individuals. According to our results, the “vulnerable relative” profile would be a middle-aged woman without university education who recently took psychotropic medications, does not use an emotion-focused coping strategy and whose loved one is admitted for severe neurologic pathology, requires IMV, and is highly dependent upon discharge from the ICU.

The influence of coping in this study was similar to other studies; the most frequently used mechanisms were active coping, acceptance, planning, and positive reframing, and they were related to a lower psychologic impact (8, 24). Fumis et al (25) described more psychologic distress in women. In this study, we did not find this relationship, but women used the avoidance strategy significantly more, which increased the psychologic impact. Coping was more adequate in men than in women and was highest in the 40–50 age group but worsened with increasing age, like other studies (8). As described by Pererira Frota et al (26), subjects with a higher level of education employed an active coping style. They also had a lower risk of psychologic distress at discharge, which was a protective factor, as was the emotion-focused strategy. However, Rückholdt et al (8) related the use of the latter strategy with more psychologic distress in relatives of neurocritical patients, a result that we did not find. We observed a higher incidence of anxiety among these relatives, as described by other authors (6, 12). No relationship was found between kinship and mortality, as indicated by other studies (27–29).

The functional status in the days following ICU discharge and the visiting policy were the two factors with the greatest influence on the development of psychologic distress. The relatives of patients with high disability after ICU discharge were at greater risk, while those who had previous experience with the ICU or the role of caregiver used more effective coping resources, supporting previous results (12, 30). Thus, offering family members opportunities to participate in caregiving is transcendental in understanding the disease, collaborating in decision-making, and helping them to define their new role as caregivers after ICU stay (25).

According to our findings, extended visit is beneficial for family members as they enhance the use of positive reframing (a protective factor of psychologic impact; **Supplemental Digital Content 7**, <http://links.lww.com/CCX/A909>) and significantly decrease the development of psychopathology (up to five times less). The benefit observed is congruent with that described in works from other countries (31); no Spanish study has been found that analyzes this effect to contrast it.

Restrictive visit had a direct negative influence from the first moments of the ICU stay. The needs for information, protection and support are maximal immediately after injury, and the desire for accompaniment

TABLE 3.
Clustering of the 14 Coping Mechanisms and Their Significant Relationships With Psychologic Impact at Different Times of ICU Stay

Coping (Brief Coping Orientations to Problems Experienced)	Anxiety		Depression		Psychologic Distress	
	On ICU Admission	At ICU Discharge	On ICU Admission	At ICU Discharge	On ICU Admission	At ICU Discharge
Mechanism						
1. Acceptance	↓ ($p = 0.03$)	↓ ($p = 0.04$)			↓ ($p = 0.03$)	
2. Denial				↑ ($p = 0.03$)		
3. Active coping				↓ ($p = 0.03$)		↓ ($p = 0.03$)
4. Planning						↓ ($p = 0.05$)
5. Positive reframing		↓ ($p = 0.002$)		↓ ($p = 0.03$)		↓ ($p = 0.01$)
6. Humor						
7. Social support	↑ ($p = 0.03$)					
8. Emotional support	↑ ($p < 0.0001$)				↑ ($p = 0.02$)	
9. Venting						
10. Religion						
11. Substances		↑ ($p = 0.04$)	↑ ($p = 0.04$)	↑ ($p = 0.02$)		↑ ($p = 0.01$)
12. Behavioral disengagement						
13. Self-distraction						
14. Self-blame						
Strategy						
A. Emotion-focused ₁₊₅₊₆₊₈₊₁₀		↓ ($p = 0.01$)				↓ ($p = 0.05$)
B. Problem-focused ₃₊₄₊₇						
C. Avoidance ₂₊₉₊₁₁₊₁₂₊₁₃₊₁₄						
Style						
Active _{A+B}		↓ ($p = 0.01$)				↓ ($p = 0.03$)
Passive _C						

↑ = having such a coping mechanism, strategy, or style of coping means an increase in psychologic impact, ↓ = having such a coping mechanism, strategy, or style of coping means a decrease in psychologic impact, $p = p$ for statistical significance.

Only statistically significant findings are shown.

goes hand in hand with these needs (30). The accompaniment of family members in the ICU is one of the main points for improvement (25) but remains an “unfinished business” throughout the world, where a culture of restricted visits to the ICU predominates. The percentages of open-door policies are highly variable, for example, 70% in Sweden and 2% in Italy (25, 32–35). In Spain, in 2015, 90% of ICUs maintained restrictive visit (33), which is currently magnified due to the COVID-19 pandemic (36).

The interpretation of “open doors” does not have a consensus definition in the literature, challenging the adoption of this practice (32). Alonso-Rodriguez et al (34)

found that intensive care Spanish nurses are reluctant to make more flexible protocols; 80% believe that the family feels obliged to stay with the patient, and 70% do not believe that it reduces family’s anxiety. However, Giannini et al (35) found that, although partial liberalization of visitation policies was associated with some increase in burnout levels among intensive care Italian nurses, they eventually recognized its potential benefits not only for patients and their families but also for the nursing staff. Allowing family involvement in the care of critically ill patients is infrequent because of the belief of possible adverse events (33, 37). These are aspects not supported by

TABLE 4.
Results of the Descriptive Analysis of Psychologic Impact (Psychologic Distress and Satisfaction) of the ICU Stay

Psychologic Impact	On ICU Admission (<i>n</i> = 104)		At ICU Discharge (<i>n</i> = 69)	
	<i>n</i> (%)	95% CI	<i>n</i> (%)	95% CI
Anxiety (State-Trait Anxiety Inventory)				
Score (points) ^a	11	9–14	29	18–37
Anxiety case (\geq P75)	75 (72.1)	63–80	34 (49.3)	38–61
P75	17 (16.3)	10–25	11 (15.9)	9–26
P85	40 (38.5)	30–48	22 (31.9)	22–44
P99	18 (17.3)	11–26	0	
Depression (Beck Depression Inventory-II)				
Score (points) ^a	13	8–18	10	4–16
Depression case (\geq 14)	47 (45.2)	36–55	23 (33.3)	23–45
Mild (14–19 points)	28 (27)	19–36	14 (20.3)	12–31
Moderate (20–28 points)	14 (13.5)	8–21	8 (11.6)	6–21
Severe (\geq 29 points)	5 (4.8)	2–11	1 (1.5)	0.3–8
Psychologic distress				
Anxiety case and depression case	44 (42.3)	33–52	21 (30.4)	21–42
Satisfaction (Critical Care Family Needs Inventory)				
1. Medical care (3–12 points) ^a			3	3–3
2. Communication (3–12 points) ^a			3	3–4
3. Personal care (3–12 points) ^a			5	3–7
4. Possible improvements (2–8 points) ^a			6	5–8
Overall ₁₊₂₊₃ (9–36 points) ^a			11	9–14

^aQuantitative variables are shown with median and interquartile range.

Most variables are qualitative, so they are shown with total number (*n*), proportion (%), and 95% CI.

Interpretation of the results of the Critical Care Family Needs Inventory: the highest satisfaction corresponds to the lowest score in the dimensions of medical care, communication, and personal care and to the highest score in the dimension of possible improvements.

scientific evidence, even going against it (25, 31, 38). Therefore, it should not be subject to debate or be a matter of custom.

Extending visits by offering relatives active participation in patient care is one of the primary measures to reduce the psychologic impact and could facilitate the detection of “vulnerable relatives” to develop psychologic interventions aimed at improving coping and preventing psychopathology. Some studies advocate the concept of “flexible visitation” (a patient- and family-centered practice tailored to the needs of each individual case) rather than “open visitation” (an unclear concept that can be interpreted as removing all restrictions or releasing limits based on time of day, length of visit, or number of visitors) so that it can be easily accepted by all (32).

Some studies have related flexible visiting with increased satisfaction (38, 39), but our study failed to demonstrate this relationship. Communication with professionals was the highest-rated item, which is consistent with the literature. Communication is one of the main needs of family members (40, 41), and satisfaction decreases when there is a shortage of information (25) or when it is not understandable (42). People need the information to reduce their uncertainty, which reduces psychologic distress (8).

End-of-life care is one of the most difficult moments to manage in the ICU. Satisfaction with personal care increased in family members who participated in withdrawal decisions and lost their loved ones. When health professionals know that the patient is going to die, may more easily identify the relative’s need for support and

TABLE 5.
Results of Bivariate and Multivariate Comparative Analysis of Psychologic Impact at Discharge From the ICU

Psychologic Impact on Discharge From the ICU		Bivariate Analysis		Multivariate Analysis	
(n = 69)	n (%)	RR (95% CI)	p	RR (95% CI)	p
Anxiety	34 (49.3)				
Variables at ICU admission					
Acute Physiology and Chronic Health Evaluation II \geq 18 points	20 (58.8)	1.7 (1.1–2.7)	0.04	1.4 (1.2–1.4)	0.004
Neurocritical group	20 (58.8)	2.3 (1.2–4.3)	0.002	1.4 (1.2–1.4)	0.002
Emotion-focused coping strategy < 11 points	9 (26.5)	6.2 (1.2–31)	0.02	6.1 (1.3–52)	0.01
Restrictive visit	22 (64.7)	1.9 (1.1–3.1)	0.01	1.6 (1.1–4)	0.05
Evolution variables in the ICU					
Barthel index \leq 60 points at discharge	22 (64.7)	2.4 (1.1–5)	0.01	5.6 (1.9–10.5)	0.004
Restrictive visit	22 (64.7)	1.9 (1.1–3.2)	0.01	5.7 (2–10.4)	0.002
Depression	23 (33.3)				
Variables at ICU admission					
Nonuniversity education level	13 (56.5)	(0.9–3.7)	0.06	3 (1.1–9.3)	0.02
Restrictive visit	14 (60.9)	(0.8–3.2)	0.17	2.6 (1.1–8)	0.04
Evolution variables in the ICU					
Barthel index \leq 60 points at discharge	17 (73.9)	3.7 (1.2–11)	0.01	7.4 (1.7–26.3)	0.01
Restrictive visit	14 (60.9)	(0.8–3.2)	0.17	4 (1.1–13.5)	0.03
Psychologic distress	21 (30.4)				
Variables at ICU admission					
Emotion-focused coping strategy < 11 points	6 (28.6)	3.7 (1–14)	0.05	Not significant	
Nonuniversity education level	12 (57.1)	(0.9–4)	0.06	2 (1.1–5.4)	0.03
Restrictive visit	14 (66.6)	(0.9–4.5)	0.06	2.4 (1.1–6.9)	0.01
Evolution variables in the ICU					
Barthel index \leq 60 points at discharge	15 (71.4)	3.3 (1.1–10)	0.02	5.6 (1.5–14.3)	0.01
Restrictive visit	14 (66.6)	(0.9–4.5)	0.06	5 (1.5–12.5)	0.01

% = proportion of each subgroup, n = total number, p = p for statistical significance, RR = relative risk.

carry out actions favoring bereavement, which have been described as better valued by family members (4, 42, 43). Although some healthcare personnel may recognize such psychologic needs, this should not be left to the individual staff initiative, and strategies could be developed to reinforce these aspects.

Although key points of possible interventions have been identified, there are some limitations. Participants were recruited in a single-center without randomization, and there are losses to follow-up, making it potentially difficult to generalize some of the results. Most of the admissions (63%) had a stay of less than 3 days and 6% met exclusion criteria

(although this group could also suffer; it was essential to ensure that this suffering was a consequence of the stay in the ICU and to be able to measure it with validated tools). In terms of initial participation, the severity of participants' processing (one of the main factors related to psychologic impact in the first days of admission) did not differ from families who, although recruitable, did not participate in the study. Even if loss of one third of the cohort is similar to that of other studies (44, 45), it raises concerns for selection bias. Analysis of loss to follow-up noted that family members who had received extended visit had a higher risk of dropping out of the study. Although

there was no difference in visiting hours between the two groups (at admission and discharge), the difference in dropout provided relevant information because could further increase the beneficial effect of extended visit (**Supplemental Digital Content 8**, <http://links.lww.com/CCX/A909>). Although it might seem that the two groups being compared (according to visit) are from different historical moments, the change of visit happened during the recruitment period, the inclusion was concurrent and prospective and did not stop, nor did any characteristic of the ICU or its professionals change.

While we observed predominantly female sex among the participants (which is a risk factor for the development of anxiety and depression), this fits the standard primary caregiver profile since most patients were men, which supports adequate recruitment. No specific scale (such as Sequential Organ Failure Assessment score) was used to check whether changes in severity had an influence. However, neither aggressive measures nor their duration (an indirect measure of severity during the stay) was related to psychologic impact at ICU discharge. Even if the inclusion of several family relatives per patient could maximize the overall findings, there were no statistically significant differences between the number of relatives per patient and the psychologic impact related to disability or visitation. The analysis of the psychologic impact at the two time points (admission and discharge) did not measure the same variables, but some did recur. Although the likelihood of multiple comparisons is low, this could lead to spurious associations.

As in most studies (3, 4, 6, 24, 25, 27, 29, 37, 44, 45), the measurement tools used are not diagnostic, rather screening tools, so we cannot identify disease but instead detect “vulnerable relatives.” The “vulnerable relative” profile was designed according to the findings. However, given the possibility of having limited statistical power, there could be additional risk factors that this study has not identified. Multicenter studies with larger sample sizes are required.

In addition, the degree of satisfaction obtained is very high; there may be a design bias since studying psychologic needs could influence satisfaction and explain the lack of improvement in satisfaction with the visitation regime. To reduce the effect of this type of bias, all measurements were made by filling in a form without the presence of a professional.

Although the study design was not specific to the analysis of an intervention, the modification of the visit during recruitment independently of the study allowed us to analyze its influence on the psychologic impact. While we did not randomized subjects, it was possible a prospective and concurrent evaluation of an intervention (modification of visit). A randomized clinical trial would likely have been difficult from an ethical point of view.

CONCLUSIONS

Our study shows a high degree of psychologic distress in the relatives of critically ill patients, identifies factors involved in the development of distress, and the influence of the coping strategies used. Extended visit was a high-impact protective factor.

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