

## Original Research Article

# Prevalence, Associated Factors of Anxiety-Depressive Symptoms in Families of Patients Hospitalized in the Intensive Care Unit of Gabriel Touré University Hospital

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**Abstract: Introduction:** Admission to intensive care is a source of anxiety and psychological stress for loved ones. This led us to initiate this study, which aimed to investigate the prevalence of anxiety, depression, and post-traumatic stress disorder (PTSD) symptoms among relatives of intensive care patients. **Materials and Methods:** Data collection was prospective over 5 months (July to November) 2024. Anxiety and depressive symptoms were measured using the HADS score. The prevalence of PTSD was assessed using the Impact of Events-Revised Scale (IES-R). **Results:** Of 293 admissions, 41 families were included. The mean age was  $46.1 \pm 7.8$  years, and the sex ratio was 4.8. Spouses were the majority (31.7%), followed by fathers and mothers (22%); the mortality rate was 22%. The overall prevalence of anxiety was 61%, and depression was 43.9%. Early anxiety was significantly associated with male sex, transference, and spouses. Late anxiety was significantly associated with male sex, transference, and spouses. Early depression was associated with male sex, sons/daughters, and death. Late depression was associated with male sex, spouses, and death. The prevalence of PTSD was 56.1% among relatives and was significantly associated with male sex, education level, spouses, transference, and the occurrence of death. **Conclusion:** The prevalence of anxiety, depression, and post-traumatic stress was high and associated with male sex, kinship, spouses, transference, and death.

**Keywords:** Stress, Relatives, Resuscitation.

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## 1. INTRODUCTION

Intensive care itself can constitute an additional form of aggression for patients, who must undergo the application of heavy and often invasive life-support techniques. Furthermore, the technical nature of care, together with the imperatives of safety and continuous monitoring, creates extremely difficult living conditions. Families and relatives are also strongly affected, sometimes very abruptly, as they are confronted with the anxiety of the possible loss of a loved one and exposed to a highly technical and unsettling hospital environment in which humanity may appear absent or neglected [1]. In intensive care, the role of relatives becomes essential, as most patients are unable to give consent for their own care and the medical decisions that concern them, particularly those relating to end-of-life issues. In France, the status of the “trusted person” (personne de

confiance) was created on 4 March 2002, enabling a family member or close relative designated in writing to be consulted regarding medical decisions, acting as the patient’s legal representative [2]. As a result, families are exposed to psychological distress both during and after hospitalisation. The psychological consequences of this stress include anxiety, depression, and post-traumatic stress disorder (PTSD). Anxiety–depressive symptoms appear early during the hospital stay and may persist long after discharge. Pochard *et al.*, showed that 69.1% and 35.4% of relatives of intensive care patients presented symptoms of anxiety and depression respectively, particularly among spouses [3]. A study conducted in Mali by Almeimoune *et al.*, reported rates of 61.2% for anxiety and 55.1% for PTSD [4]. In sub-Saharan Africa, and particularly in Mali, there is a scarcity of data concerning the psycho-affective experience and

emotional burden of relatives of critically ill patients admitted to intensive care units. This gap motivated us to undertake the present study, which aimed to describe the prevalence of anxiety, depression, and PTSD symptoms among the families and close relatives of patients admitted to a polyvalent intensive care unit.

## 2. MATERIALS AND METHODS

This was a prospective observational study conducted over a period of five (5) months, from July to November 2024, in the intensive care unit of the Department of Anaesthesia, Intensive Care and Emergency Medicine at Gabriel Touré University Hospital.

### 2.1 Inclusion Criteria

All relatives of patients hospitalised in the intensive care unit for more than 48 hours were eligible. The number of relatives per patient was limited to one accompanying adult.

### 2.2 Non-Inclusion Criteria

Were not included: families of patients who died before 48 hours of hospitalisation and/or refused to participate in the study; patients without a fixed accompanying person; patients who had not received any visits within the first three days of admission; and families who did not have sufficient command of the French language or were unable to complete the HADS scale satisfactorily.

### 2.3 Study Procedure

Each family was informed about the ongoing study and informed that they could participate by completing a questionnaire. Hospital Anxiety and Depression Scale (HADS): The HADS questionnaire is a 14-item self-administered scale developed by Zigmond and Snaith [5], to detect symptoms of anxiety and depression. It is quick to complete, easy to understand, and simple to score. Seven items assess anxiety and seven assess depression. Each item is rated on a 4-point scale (0 to 3), producing scores ranging from 0 to 21 for each of the two symptom dimensions. The HADS questionnaire has been validated in French [5], including among patients hospitalised in intensive care. Between the 3rd and 4th day of hospitalisation, relatives completed the Hospital Anxiety and Depression Scale (HADS). A score above 10 indicates clinically significant anxiety or depressive symptoms [5]. Impact of Event Scale Revised (IES-R): This questionnaire consists of 22 items assessing symptoms of hypervigilance, cognitive intrusion, and avoidance. Each item is scored from 0 ("not at all") to 4 ("extremely"), based on the respondent's experiences during the previous seven days. Total scores range from 0 (no symptoms) to 88 (severe symptoms). The IES-R has been validated in French [6]. We selected a threshold score of 30, a value that has been correlated in numerous studies with post-traumatic stress reactions associated with a risk of PTSD. Reported correlation coefficients

range from 0.81 to 0.93 [7]. One week after discharge from intensive care, relatives completed the IES-R questionnaire. The threshold score of 30 was used to identify clinically relevant post-traumatic stress responses [6].

### 2.4 Collected Variables

Patients: age, sex, reason for admission, need for emergency surgery, and history of chronic illness

### 2.5 Relatives

Age, sex, relationship to the patient, level of education, assessment of the quality of information received, HADS scores on day 3, and IES-R scores seven days after the patient's ICU stay.

### 2.6 Analysis Plan

Data collected from the survey forms, HADS and IES-R scales were coded, digitised, and anonymised in WORD and Excel files, then entered and analysed using SPSS version 20. Quantitative variables were expressed as mean  $\pm$  standard deviation, and qualitative variables as counts and percentages. Fisher's exact test was used to compare qualitative variables. All statistical tests were two-tailed, and the level of significance was set at 5%.

### 2.7 Ethical Considerations

Members of each family were informed that a study concerning them was underway and that they would be contacted by telephone on two occasions after the patient's hospitalisation. An information leaflet was provided to them. Throughout the study, usual practices regarding family support were not modified. We ensured the confidentiality of all participant data.

## 3. RESULTS

### 3.1 Patient Characteristics

A total of 41 patients were included over a five-month period. With 293 admissions during the study period, this represents a prevalence of 13.99% of all ICU admissions. The mean age of the patients was  $35.3 \pm 16.7$  years, and the sex ratio was 1.41. Housewives were the most represented socio-professional group (31.7%). The main diagnoses were pre-eclampsia and its complications, accounting for 31.7% ( $n = 13$ ), followed by postoperative management of peritonitis at 24.4% ( $n = 10$ ), septic shock at 12.2% ( $n = 5$ ), and stroke at 14.7% (haemorrhagic stroke  $n = 4$  and ischaemic stroke  $n = 2$ ). Overall, 24.1% ( $n = 14$ ) of patients were intubated and mechanically ventilated. The mean length of stay was  $6.8 \pm 4.5$  days, and the mortality rate was 22% ( $n = 9$ ) (Table I).

### 3.2 Characteristics of Relatives

In our study, the overall prevalence of anxiety-depressive syndrome was 61%, (chart 1) with 43.9% (chart 2). presenting depressive symptoms, and the prevalence of PTSD was 56.1% (chart 3). The mean age of accompanying relatives was  $46.1 \pm 7.8$  years, with a

sex ratio of 4.8. Regarding the degree of kinship, spouses were the most represented group at 31.7% (n = 13), followed by parents (mother or father) at 22% (n = 9). Concerning educational level, secondary education was the most common at 34.1% (n = 14), while those with no schooling represented 19.5% (n = 8) (Table II).

### 3.3 Anxiety and Associated Factors

The prevalence of early anxiety was significantly associated with several factors, including being male (n = 21; 51.2%) (p = 0.001), transfer to another hospital ward (n = 17; 41.5%) (p = 0.03), and being the patient's spouse (n = 10; 24.4%) (p = 0.001). Late anxiety was associated with similar factors: being male (n = 27; 65.8%), transfer (n = 10; 26.8%) (p = 0.0001), and being the spouse (n = 6; 26.8%) (p = 0.03) (Table III).

### 3.4 Depression and Associated Factors

The prevalence of early depression was significantly associated with being male (n = 15; 36.6%) (p = 0.001), being a son or daughter (n = 6; 14.6%) (p = 0.001), and the occurrence of death (n = 9; 21.9%) (p = 0.0001). Late depression was also significantly associated with male sex (n = 18; 43.9%) (p = 0.0001), being a spouse (n = 4; 9.7%) (p = 0.017), and the occurrence of death (n = 9; 21.9%) (p = 0.0001) (Table IV).

### 3.5 Post-Traumatic Stress Disorder (PTSD)

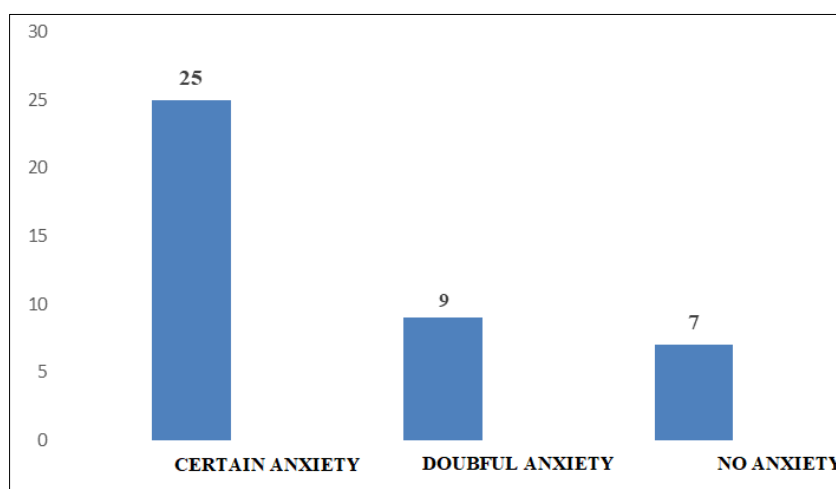
The prevalence of post-traumatic stress disorder among relatives was 56.1% (chart 3). PTSD was significantly associated with male sex (n = 17; 41.5%) (p = 0.001), educational level (n = 7; 17.1%) (p = 0.003), being the spouse (n = 7; 17.1%) (p = 0.026), transfer to another ward (n = 14; 34.1%) (p = 0.0001), and the occurrence of death (n = 8; 19.5%) (p = 0.0001) (Table V).

**Table I: Distribution of Patients According to Their Characteristics**

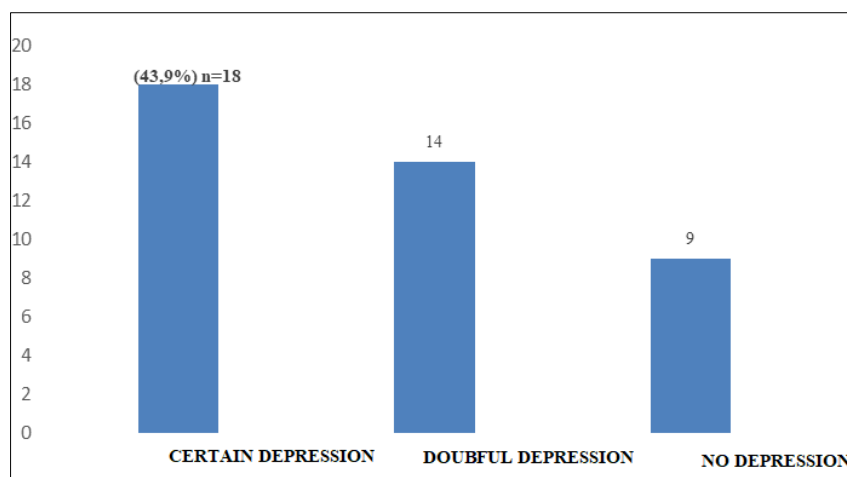
| Patient Characteristics                 | Frequency (n)  | Percentage (%) |
|-----------------------------------------|----------------|----------------|
| Male                                    | 24             | 58.5           |
| Mean age                                | 35.3 ± 16.7    | —              |
| Pre-eclampsia and its complications     | 13             | 31.7           |
| Postoperative management of peritonitis | 10             | 24.4           |
| Septic shock                            | 5              | 12.2           |
| Haemorrhagic stroke (HS)                | 4              | 9.8            |
| Ischaemic stroke (IS)                   | 2              | 4.9            |
| Mean length of stay                     | 6.8 ± 4.5 days | —              |
| Mortality                               | 9              | 22             |

**Table II: Distribution of Relatives According to Their Characteristics**

| Characteristics of Relatives |                 | Frequency (n) | Percentage (%) |
|------------------------------|-----------------|---------------|----------------|
| Male                         |                 | 34            | 83             |
| Mean age                     |                 | 46.1 ± 7.8    | —              |
| Relationship: Spouses        |                 | 13            | 31.7           |
| Level of Education           | Secondary       | 14            | 34.1           |
|                              | Master's degree | 13            | 31.7           |



**Chart 1: Distribution of Anxiety According to HADS Scores**



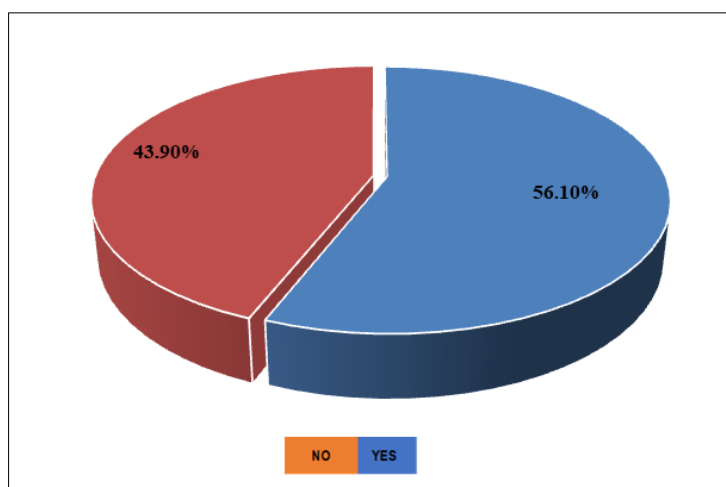
**Chart 2: Distribution of Depression According to HADS Scores**

**Table III: Distribution of Relatives According to Anxiety**

|          | Early Anxiety |            | p <sub>v</sub> |
|----------|---------------|------------|----------------|
|          | Yes (%)       | No (%)     |                |
| Male sex | 21 (51.2%)    | 13 (31.7%) | 0.001          |
| Spouse   | 10 (24.4%)    | 3 (7.3%)   | 0.033          |
| Transfer | 17 (41.5%)    | 14 (34.1%) | 0.0001         |
|          | Late Anxiety  |            | p              |
|          | Yes (%)       | No (%)     |                |
| Male sex | 27 (65.8%)    | 9 (22.0%)  | 0.0001         |
| Spouse   | 6 (26.8%)     | 7 (17.1%)  | 0.033          |
| Transfer | 10 (26.8%)    | 21 (51.2%) | 0.0001         |

**Table IV: Distribution of Relatives According to Depression and Associated Factors**

|              | Early Depression |            | p <sub>v</sub> |
|--------------|------------------|------------|----------------|
|              | Yes (%)          | No (%)     |                |
| Male sex     | 15 (36.6%)       | 19 (46.3%) | 0.001          |
| Son/Daughter | 6 (14.6%)        | 1 (2.4%)   | 0.001          |
| Death        | 9 (21.9%)        | 0 (0.0%)   | 0.0001         |
|              | Late Depression  |            | p              |
|              | Yes (%)          | No (%)     |                |
| Male sex     | 18 (43.9%)       | 16 (39.0%) | 0.0001         |
| Spouse       | 4 (9.7%)         | 9 (21.9%)  | 0.017          |
| Death        | 9 (21.9%)        | 0 (0.0%)   | 0.0001         |



**Chart 3: Distribution of Relatives According to PTSD**

**Table V: Distribution of Relatives According to Factors Associated with PTSD**

| Characteristics of Relatives |                     | Associated Factors (n, %) | p <sub>v</sub> |
|------------------------------|---------------------|---------------------------|----------------|
| Male sex                     |                     | 17 (41.5%)                | 0.001          |
| Age 20–40 years              |                     | 11 (26.8%)                | 0.262          |
| Educational level            | Master's degree     | 7 (17.1%)                 | 0.003          |
|                              | Secondary education | 6 (14.6%)                 | 0.003          |
| Degree of kinship (Spouses)  |                     | 7 (17.1%)                 | 0.026          |
| Transfer                     |                     | 14 (34.1%)                | 0.0001         |
| Death                        |                     | 8 (19.5%)                 | 0.0001         |

#### 4. DISCUSSION

The mean age of relatives was  $46.1 \pm 7.8$  years, with the 40–60 age group being the most represented (53.7%), and a predominance of men, with a sex ratio of 4.8. This result is similar to that reported by Almeimoune *et al.*, [4], who found that the 15–30 age group was the most represented (71.4%), also with a predominance of men (sex ratio 0.7). However, it differs from the findings of Brunet *et al.*, [6], who reported that 78.6% of relatives were women. Our result may be explained by sociocultural factors, particularly the severe economic insecurity and the cost of care, which is frequently borne by men, who often act as the designated “trusted person” and assume responsibility for the patient’s family decisions. ICU hospitalisation was associated with a high prevalence of anxiety–depressive symptoms among relatives, with rates of 61% and 43.9%, respectively. These findings are consistent with those reported by Almeimoune *et al.*, [4], in Mali, and by Pochard *et al.*, [3], in France in 2001, who found prevalences of 61.2% and 51.3%, and 69.1% and 35.4%, respectively. Conversely, they remain lower than those reported by Macadam’s team in Canada in 2010, who observed anxiety in 80% and depression in 70% of relatives [8]. These findings highlight the undeniable reality of such symptoms—often taboo in our socio-cultural context—and underscore the need for psychological support, which remains insufficient in our healthcare setting. According to the revised Impact of Event Scale (IES-R), 56.1% of relatives presented symptoms consistent with post-traumatic stress disorder (PTSD). This is comparable to the rates reported by Almeimoune *et al.*, [5], Pielmaier *et al.*, [9], and Chaussard *et al.*, [5], who found prevalences of 55%, 52%, and 31.9%, respectively. Such prevalence reinforces the understanding that the admission of a loved one to the ICU is an extremely stressful event, generating significant emotional distress, as widely documented in the literature [9, 10], although often underestimated within our socio-cultural environment. The factors associated with early and late anxiety in our study were male sex, being a spouse, and transfer to another hospital unit. Pochard *et al.*, [3], identified associations with being a spouse and female sex, whereas Almeimoune *et al.*, [4], reported associations with male sex and low educational level. Regarding depressive symptoms, the factors associated with early and late depression in our study included male sex, parent–child relationship (son or daughter), being a spouse, and the occurrence of death. Pochard *et al.*, [3], and Almeimoune *et al.*, [4], also

found associations involving educational level, male sex, and the event of death. In our context, these findings may be explained by the emotional and social bonds linking spouses, whose psychological, financial, and physical burdens become substantial when one partner becomes critically ill. The transfer of a patient to another unit may also be perceived by families as a sign of reduced medical support, generating heightened anxiety. Factors associated with PTSD in our study included male sex, transfer to another unit, being a spouse, and the occurrence of death. Several of these factors, such as male sex and death, are also reported in the literature [11].

#### 5. CONCLUSION

The prevalence of anxiety–depressive symptoms and post-traumatic stress disorder was high in our study. Factors frequently associated with anxiety–depressive syndromes included early and late anxiety, both of which were significantly linked to male sex, transfer to another hospital unit, and being the patient’s spouse. Early depression was significantly associated with male sex, a parent–child relationship (son or daughter), and the occurrence of death; late depression was significantly associated with male sex, being the spouse, and the occurrence of death.

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