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Original Research Article

Psychological impact on near relatives of patients admitted in intensive care unit

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ABSTRACT

Background: It is recognized that ICU patients are exposed to massive stresses both from their life-threatening illness and the necessary intensive medical procedures they are subjected to. These stresses may lead to psychological problems like depression, anxiety and post-traumatic stress disorder. However, the psychological demands and impact of the ICU on the near relatives of these patients are often not appreciated. We aimed to determine the prevalence of anxiety and depression and the influence of ICU specific interventions on the development of psychological symptoms in relatives of ICU patients.
Methods: This prospective, questionnaire-based observational study was conducted on all consenting near relatives of patients on admission in the intensive care unit during the study period. The Hospital Anxiety and Depression Scale and the General Health Questionnaire were used to determine the presence of psychological disorders during this study.
Results: In this study, GHQ demonstrated a 72.5% prevalence of psychological illness in near relatives of ICU patients. The prevalence of psychological illness using Hospital Anxiety and Depression Scale (HADS) was 56.3% on the anxiety scale and 55% on the depression scale.
Conclusions: Critical care can result in the development of psychological disorders among near relatives of ICU patients. Intensive care physicians need to pay more attention to their care's impact on the psychological health of their patients' near relatives.

Keywords: Critical care, Intensive care, Psychological stress, Anxiety disorder, Depression

INTRODUCTION

The intensive care unit (ICU) is one of the major components of modern health care system. It allows the utilization of more technically oriented tools to monitor and get information instantly about any changes in the patient's physiological parameters to enable the development of new strategies to save life. In this regard, the intensive care unit has offered hope to many critically ill patients and many do survive severe life-threatening conditions as well.

However, the intensive care unit is also a highly tense environment, where patients are likely to be anxious, and relatives may be apprehensive and fearful. It is recognized that ICU patients are exposed to massive stresses both from their life-threatening illness and the necessary intensive medical procedures they are subjected to.[1] These stresses may lead to psychological problems like depression, anxiety and post-traumatic stress disorder.[2,3] A South African study revealed anxiety symptoms in 48%, depressive symptoms in 28% and symptoms of post-traumatic stress disorder (PTSD) in

32% of ICU patients after discharge.[4] These patients are usually dependent on the advanced care provided in the ICU and the care and support from their relatives. On the part of the relatives, having a patient in the intensive care unit (ICU) is probably one of the most stressful events a family carer can go through. In most cases, the individual has had no time to prepare but just find himself/herself in a complex environment full of anxieties and questions. This experience could pose a great emotional, physical, and practical challenge, enough to overwhelm the individual's coping abilities. However, the psychological demands and impact of the ICU on these relatives is often not appreciated.

The diagnostic and statistical manual of mental disorders (DSM) 5 criteria defines a psychological stressor as direct exposure to death or threatened death, or witnessing these in another person and the knowledge that a close relative or friend has been exposed to actual or threatened death.[5] ICU patients are critically ill with life-threatening conditions. Therefore, their relatives, especially those directly involved in their care, are exposed to severe psychological stress and may exhibit high distress levels that persist throughout their relatives' ICU admission.[6] Some of them subsequently develop psychological problems such as post-traumatic stress disorder.

The psychological impact of ICU admission of a patient on relatives may differ among populations with differing sociocultural factors. Studies have shown anxiety symptoms in American hospitals in 10-42% and depressive symptoms in 16-35% of relatives of ICU patients.[7-9] In French hospitals, 73% of relatives of ICU patients had anxiety symptoms, while 35% had symptoms of depression; while an Indian study found anxiety symptoms in 21% and depressive symptoms in 28% of relatives of ICU patients.[10,11]

On the basis of previous evidence, it is expected that having a critically ill relative would pose major psychological stress.[12] A previous study found that mothers with children on admission in the emergency pediatric unit were exposed to stressful factors, which included a poor attitude of nursing staff, non-conducive hospital environment, frequent changes in medications and request for many laboratory tests by doctors.[13] However, the impact of a patient's ICU admission on his/her near relatives has not been adequately studied in any of the previous studies, especially in this part of world. Hence, our objectives are to determine and chronicle the prevalence of anxiety and depression and the influence of ICU specific interventions on the development of psychological symptoms in near relatives who are primarily involved in care of the ICU patients.

METHODS

This prospective, descriptive, questionnaire-based study was conducted at the intensive care unit of Alexis multispecialty hospital, Nagpur (a tertiary care multispecialty private hospital) during the study period (October 2019 to July 2021). The study centre has a 32 bedded ICU that cares for patients from various specialties. The inclusion criteria were all consenting near relatives (who were the primary caregivers of patients) of the patients admitted in the ICU of study centre during the study period. Exclusion criteria were relatives aged less than 18 years, pediatrics patients (not in scope of the hospital), patient's death within 48 hours of ICU admission and refusal to consent by patients or relatives. The sample size was calculated using Fisher's formula.[14] A previous similar Indian study by Kulkarni et al reported the incidence of anxiety to be 21% while using Hospital Anxiety and Depression Scale (HADS).[11] This value was considered as the reference in the target population estimated to have the characteristic (anxiety). Further calculations revealed the minimum sample size requirement to be 156. The relative primarily responsible for the patient's care was invited to participate in the study between 48 hours and 72 hours of the patient's ICU admission, who filled up the informed written consent before enrollment. This time frame was chosen because anxiety symptoms have been seen to be established in relatives of ICU patients after 24 hours of ICU admission.[15] The questionnaire consisted of demographic information of both patients and relatives and relevant clinical variables such as the reason for ICU admission/transfer, the modes of management the patient has been exposed to in ICU and complications that developed during ICU admission. There was also an assessment of the adequacy of the information provided to the relatives, their perception of prognosis and their ability to participate in the decision-making process. The interviews were conducted in a room to ensure privacy and the questionnaires were verbally administered in person. The relatives were given the option of not answering any question they were not comfortable with and they were allowed to withdraw from the interview at any time if they so wished.

Psychological scales

The hospital anxiety and depression scale and the general health questionnaire were used to determine the presence of psychological disorders during this study.[16,17] The hospital anxiety and depression scale is a 14-item scale (seven items for anxiety and seven for depression) that is used to evaluate patients for symptoms of anxiety (HADS-A) and depression (HADS-D). It was developed for use in a non-psychiatric population. It differentiates psychological symptoms from those which arise as a result of physical illness. Each item was scored using a four-point scale ranging from 0 (not at all) to 3 (very often indeed); therefore, the scores range from 0 to 21 in each of the two subsets. A HADS-A score of >10 indicates the presence of anxiety symptoms and a similar score in HADS-D suggests the presence of depression. The general health questionnaire (GHQ) was a 12-item self-administered questionnaire designed to assess psychological wellbeing among adults. It assessed minor

psychological disorders in the general population or non-psychiatric clinical setting, i.e. it was used to screen for psychiatric morbidity. It assessed four main domains of psychological health, namely depression, anxiety, social impairment and hypochondriasis. It had been validated for the purpose and a cut–off point of 3 had been recommended.[18] The interviewees who met the criteria for anxiety, depression and symptoms of psychological distress were offered to seek further consultation with the psychologist/psychiatrist. The decision to seek further management and the timing of such management rested solely on the relatives.

Statistical analysis

All data were analyzed using SPSS version 20 (SPSS Inc, Chicago, Illinois, 2011). Necessary frequency tables were generated. Categorical variables were compared using the Chi-square test while the Students t-test was used for continuous variables, $p<0.05$ was taken to be statistically significant.

RESULTS

One hundred and sixty patients and their relatives were enrolled for the study and data analysed. Average age of the patients was 34.2±19.3 years with a range of 5-77 years. There were 88 males and 72 females. The mean age of male patients was 36.48±20.8 years, while that of female patients was 29.83±16.93 years. The mean age for participating relatives was 37.61±11.83 years. There were 60 male relatives and 100 female consenting relatives.

Table 1: Psychological test results.

Test administered	Abnormal/positive	Borderline	Normal/negative
HADS anxiety	90 (56.3)	26 (16.3)	44 (27.5)
HADS depression	88 (55)	44 (27.5)	28 (17.5)
GHQ	116 (72.5)	-	44 (27.5)

One hundred and forty-two relatives were from the patients' nuclear family, while 18 were from the extended family. One hundred and fifty-two (95%) patients reported they were provided with information on the patient's condition; however, only 103 (64.4%) said the information was adequate. Sixty-four (40%) respondents met all the consultants attending to their patients daily, while 102 (63.8%) were reported to be involved in decision making, 92 (57.5%) respondents reported that their participation in decision making was adequate. One hundred and fifty (93.8%) relatives were permitted to visit the patients daily but only 70 (43.8%) said the visits were frequent and meaningful. In this study, GHQ demonstrated a 72.5% prevalence of psychological illness in relatives of ICU patients. The prevalence of psychological illness using HADS was 56.3% on the anxiety scale and 55% on the depression scale (Table 1).

When the patients admitted to the ICU were female, the relatives of these patients had significantly higher HADS-A scores than when the ICU patients were males. Also, when patients were admitted to the ICU postoperatively, their relatives had significantly higher HADS-A than patients admitted to ICU after conservative, non-surgical management. Those relatives who frequently visited their patients in ICU had significantly lower HADS-A scores than those who did not frequently visit. When information about the extent of the illness was provided to the relatives, it led to significantly higher HADS-A scores in those relatives that received the information (Table 2). While there were elevated HADS-D scores, they could not be related in a statistically significant manner to the gender of the patients, their relatives' gender, postoperative reasons for admission, level of participation of relatives with patients care and the extent of information provided to the relatives (Table 3). When the patients admitted to the ICU were female, the relatives of these patients had statistically higher HADS-A scores than when the ICU patients were males ($p=0.0172$). Also, when patients were admitted to the ICU postoperatively, their relatives had statistically higher HADS-A than patients admitted to ICU after conservative, non-surgical management ($p=0.0249$). Those relatives who frequently visited their patients in ICU had statistically lower HADS-A scores than those who could not frequently visit ($p=0.00197$). When information about the extent of the illness was provided to the relatives, it led to statistically higher HADS-A scores in those relatives that received the information ($p=0.00515$). Relatives of mechanically ventilated patients in the ICU and relatives who considered their level of participation in the care of the patients in the ICU adequate had statistically higher scores ($p=0.001438$ and 0.01516 respectively) (Table 4).

DISCUSSION

This study demonstrated a high prevalence of psychological disorders in relatives of ICU patients (GHQ 72.5%, HADS Anxiety 56.3% and HADS Depression 55%). These relatives had no history of psychological disorders before they had to care for someone on ICU admission. This study demonstrates that ICU admission is a significant cause of psychological disorders among patients' relatives. Therefore, more attention should be paid to their psychological health.

Table 2: Hospital anxiety and depression scale-anxiety (HADS-A).

Parameters	Normal	Borderline	Abnormal	χ^2	P value
Patients gender					
Male	13	14	42	8.13	0.02
Female	12	12	48		
Relatives' gender					
Male	14	10	36	0.86	0.65
Female	30	16	54		
Relationship to patient					
Nuclear	32	24	86	1.2	0.16
Extended	8	2	8		
Mechanical ventilation					
Yes	78	18	32	5.84	0.054
No	12	8	12		
Post-operative patient					
Yes	38	18	26	7.38	0.025
No	52	8	18		
Level of participation					
Adequate	22	18	52	2.89	0.24
Inadequate	4	0	6		
Frequency of visits					
Frequent	28	8	34	12.45	0.002
Infrequent	16	18	66		
Information on illness extent					
Yes	28	14	74	10.54	0.005
No	16	12	16		
Satisfaction with information					
Very/Moderately	34	12	74	14.16	0.0008
Mildly/Not satisfied	10	14	16		

The figures in our study are higher than those in a similar study in South Africa, where anxiety symptoms were found in 48%, depressive symptoms in 28% of relatives of ICU patients.[4] Anxiety symptoms were found in 21%, while depressive symptoms in 28% of relatives of ICU patients in an Indian study.[11] Anxiety symptoms in the USA were found in 10-42%, while depressive symptoms were in 16-35%.[7-9]

Relatives are often relied upon to make crucial decisions concerning the care of ICU patients. Relatives are expected to understand complex medical conditions, accept prognostic uncertainties and weigh various complex treatment options, while dealing with their anxiety and depression.

The competence of relatives to take these decisions on behalf of others has been challenged.[19] A study found that relatives who prefer a passive decision-making role are more likely to have anxiety or depression.[20] The high rate of psychological disorders in our study suggests that care must be taken when we ask relatives to make crucial decisions concerning patient care. The American college of critical care medicine has recommended that a shared decision-making model be adopted between the ICU staff and patients' relatives rather than placing the burden of decision making on patients and their surrogates alone.[21] While 150 (93.8%) relatives were permitted to see the patients, only 70 (43.8%) said the visitations were frequent enough. Current study showed that anxiety symptoms were less frequent in relatives who were allowed frequent visitation than those with restricted visitation.

Depressive symptoms were not statistically increased in relatives with restricted visitation, neither were the GHQ scores elevated. While an open visitation policy that allows relatives access to patients whenever they choose presents challenges to the nursing staff caring for the patients, it has been shown to affect 88% of the families positively. It reduces anxiety in 65% of them.[22]

Sincere communication with healthcare practitioners is one of the relevant needs of relatives of ICU patients.[23] The American college of critical care medicine recommends that family members receive regular updates in a language they understand.

Table 3: Hospital anxiety and depression scale-depression (HADS-D).

Parameters	Normal	Borderline	Abnormal	χ^2	P value
Patients' gender					
Male	18	28	42	4.18	0.12
Female	10	16	46		
Relatives' gender					
Male	14	20	26	5.43	0.07
Female	14	24	62		
Relationship to patient					
Nuclear	22	38	82	4.89	0.087
Extended	6	6	6		
Mechanical ventilation					
Yes	76	32	20	4.97	0.083
No	12	12	8		
Post-operative patient					
Yes	44	24	14	0.26	0.88
No	44	20	14		
Level of participation					
Adequate	14	24	54	1.32	0.52
Inadequate	2	4	4		
Frequency of visits					
Frequent	16	18	36	2.48	0.29
Infrequent	12	26	52		
Information on illness extent					
Yes	18	32	66	1.23	0.54
No	10	12	22		
Satisfaction with information					
Very/moderately	22	32	66	0.31	0.86
Mildly/not satisfied	6	12	22		

These meetings with the professional team should begin within 24-48 hours after ICU admission and should be repeated as dictated by the condition of the patient.[18] In our study, one hundred and fifty-two (95%) patients reported they were provided with information on the patient's condition, with 103 (64.4%) patients reporting that the information was adequate. However, the relatives that reported they received adequate information also had more anxiety symptoms than those that reported inadequate information. This suggests that the provision of copious amounts of information is not sufficient; how this information is delivered will determine the outcome of the information provided. Information that is not efficiently passed across may not give the desired result. Therefore, it is recommended that ICU caregivers receive training in communication, conflict management and meeting facilitation skills.[19] In a review article McAdam et al found a prevalence rate for anxiety in family members of ICU patients to be 35-73%. Risk factors associated with anxiety were being a patient's spouse and being a female family member.[24] These factors did not lead to an increase in HADS scores in our study. However, female gender in the patient, surgery, limited visitation rights and provision of adequate information on the extent of the patient's illness led to significantly higher HADS scores.

Female relatives were more likely to experience psychological disorders, as evidenced by statistically significant GHQ scores increase. Paparrigopoulos et al found that anxiety and depressive symptoms were more frequent when the family members were women.[6] In our study, HADS for anxiety and depression were not significantly elevated. Critical care physicians & staff need to pay more attention to their care's impact on the psychological health of their patients' relatives. When this is not done, the ICU designed to impact patients' health positively may create additional problems in their relatives.

To minimize the impact of ICU care on relatives, ICU staff must be aware of the negative impact of ICU admission on the relatives of their patients. The American college of critical care medicine task force recommends that family members be provided with ample information in various formats on emotional needs in the ICU and methods appropriate to comfort and assist in care. It is also recommended that ICU staff receive training on assessing family needs and family members' stress and anxiety levels.[21] It was also discovered that allowing relatives to participate in some nursing care procedures under supervision, such as passive exercises, has a long-term benefit in minimizing the negative psychological effects.[25] This type of participation gives the relatives a

feeling of being needed. Curtis et al. suggested that clinician-family communication can be improved by employing the VALUE approach (V-value family statements, A-acknowledge family emotions, L-listen to the family, U-understand the patient as a person, E-elicit family questions).[26]

Table 4: General health questionnaire (GHQ)-answers.

Parameters	Negative	Positive	χ^2	P value
Patients' gender				
Male	32	56	7.71	0.006
Female	12	60		
Relatives' gender				
Male	22	38	4.01	0.044
Female	22	78		
Relationship to patient				
Nuclear	34	108	8.007	0.005
Extended	10	8		
Mechanical ventilation				
Yes	28	100	10.16	0.001
No	16	16		
Post-operative patient				
Yes	26	56	1.49	0.22
No	18	60		
Level of participation				
Adequate	22	70	5.9	0.015
Inadequate	6	4		
Frequency of visits				
Frequent	22	48	0.96	0.33
Infrequent	22	68		
Information on illness extent				
Yes	34	82	0.69	0.41
No	10	34		
Satisfaction with information				
Very/moderately	32	88	0.18	0.68
Mildly/not satisfied	12	28		

ICU care can also be improved by encouraging a warm, empathetic attitude towards patient relatives and enhanced & better collaboration between psychiatrists, psychologists and intensive care physicians.

Limitations

The present study has some limitations, it being a single centre study being one of them. The other is the fact that the findings may not be generalizable to other places with different socio-demographic milieu.

CONCLUSION

When patients are admitted into the ICU, their relatives often experience significant psychological ill-health. Our attempts at managing critical illness should not result in worsening levels of anxiety and depression. This unintended consequence of critical care should be further studied to determine changes in practice that may mitigate it.

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