

## Psychiatric morbidity and burden in caregivers of patients admitted in High dependency unit

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### Abstract

**Background:** Caregivers in high dependency unit (HDU) play a key role in the management by anchoring the hospital services but also in areas of key decision making. In this study, the caregivers were studied in a high dependency unit of a medical ward in a hope of providing a cross-sectional view of psychiatric morbidity and caregiving burden. **Aim:** To evaluate the psychiatric morbidity and caregiver burden among caregivers of patients admitted in HDU. **Results:** As hypothesised, patients with poorer clinical outcomes and longer hospital stay contributed to higher burden esp financial burden and psychiatric morbidity.

**Conclusion:** We concluded that psychiatric morbidity and financial burden are high among caregivers of patients admitted in HDU.

**Keywords:** Psychiatric morbidity, Caregiver burden, High dependency unit (HDU)

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### I. Introduction

Caregivers of patients admitted to the high dependency units (HDU) of hospital play a key role in overall management. They not only assist in anchoring the hospital services but also help significantly in areas of key decision making. Caregivers suffer from a significant amount of psychiatric morbidities during their stay in the hospital, which may hamper long-term outcomes of the patients. Studies have found that significant numbers of caregivers suffer from diagnosable psychiatric disorders upon admission and the majority of them suffer from some or other psychiatric symptoms (Choi and Tate, 2018). In view of these findings “Post-intensive care syndrome affecting family members” (PICS-F) was coined to provide a framework for the psychiatric symptoms and study the variable contributing to the same (Rawal, Yadav and Kumar, 2017). The symptoms vary from cognitive symptoms, inability to concentrate, problems in planning and executing complex tasks, inability to recall, insomnia, fatigue to emotional and thinking problems associated with anxiety, depression and PTSD. Although the caregiver burden and psychiatric symptoms have been studied in detail, only few studies are available regarding the same in the Indian context. The Indian healthcare system relies heavily on caregivers. Caregivers are not only responsible for formal caregiving role but are also required for liaising with various specialities during a hospital stay. The demand posed on Indian caregivers are high and it rises further with complications, prolonged stay or transfers to HDU or Intensive Care Unit (ICU). Indian caregivers also suffer from significant out of pocket expenditure during the patients’ hospitalization as compared to other developing nations, which may contribute to the burden of caregiving. Lack of any assisted caregiving, high out of pocket expenses, secondary social stressors and lifestyle impairments contributes heavily to the problem.

In this study, caregivers were studied in a high dependency unit of a medicine ward with the intent of providing a cross-sectional view of psychiatric morbidity and caregiving burden. The study was undertaken with an objective to provide the cross section of admissions in an HDU and various factors contributing to the burden and psychiatric morbidity. We also hypothesised that patients with poorer clinical outcomes and longer hospital stay would contribute to higher burden and psychiatric morbidity.

### II. Materials and methods

#### Participants

Patients were admitted to HDU from the outpatient and emergency departments. Caregivers were identified and consent was taken for the research procedures. The assessment was done at the end of HDU stay. If the patient recovered he was transferred to the ward, if not, (s)he was transferred to ICU. Data was collected over a period of 4 weeks and assessment was done only once. Follow up was not done to identify the final outcome of the patient after their hospital stay. Family members who were more than 18 years old and identified as primary caregivers were selected for assessment. Informed consent was provided by all the caregivers.

**Tools**

**Zarit burden interview:** It is self-report questionnaire with 22 items and scored on a Likert 5 point scale from 0-4. Total scores are divided into levels, 0-20 no burden, 22-40 mild to moderate burden, 41-60 moderate to severe burden, 61-80 severe burden. It has a good internal consistency with Cronbach's alpha of 0.92 and correlated positively with depressive scores (Zarit, Reever & Bach-Peterson, 1980).

**Self-rating questionnaire:** SRQ-20 is a self-rating questionnaire developed by WHO for developing countries. It was developed as a screening tool to be used in the community and primary care setting. The advantage of this questionnaire is that it is short, simple and requires very little time making it ideal for use in busy emergency departments and wards. The internal consistency by Cronbach's alpha was 0.80 in various studies. SRQ 7 is taken as a cutoff, which means score of 8 or more is indicative of psychiatric morbidity (van der Westhuizen, Wyatt, Williams, 2016).

**Mini international neuropsychiatric interview version 6.0 (MINI v 6.0):** It is a short diagnostic interview developed for DSM-IV and ICD-10. Administration time is 15- 20 minutes and is used primarily for clinical settings and community research. It has an excellent specificity of 0.72-0.97 for all diagnoses except phobias and also has good reliability with kappa coefficients of 0.88. Due to its brevity and easy to use, MINI was selected for this study.

**Procedure**

66 caregivers were referred by the HDU team for the evaluation. 12 of them were excluded from the study due to fatal outcomes of the patient. 4 caregivers were excluded because assessments could not be completed in time. Hence, 50 caregivers were assessed one time at the end of HDU stay using Zarit Burden Interview and Self-Rating Questionnaire as a part of the routine screening used in clinical care. Caregivers who scored more than 7 on SRQ were interviewed with MINI. Those caregivers found to be suffering from psychiatric disorders were further evaluated and treated.

**Ethical clearance**

Institutional Ethics Committee clearance was obtained for a larger follow-up study of geriatric and adult depression. All the caregivers were screened for depression, those who had depression were included in the above-mentioned follow-up study. All of the caregivers screened were included in this current study. The caregivers screened for depression were given an informed consent based on ethical guidelines of the Declaration of Helsinki.

**Statistical analysis**

Analysis of data was performed by the Statistical package for social sciences version 21 (SPSS 21). The data was recorded in the SPSS and coded as appropriate variables on the master-chart. For the analysis of two categorical variables, Chi-square test and Fisher's exact test was computed. MANOVA was performed to find a significant multivariate effect between more than 2 dependent variables. Where a significant multivariate effect was observed it was followed up with post hoc tests and univariate analysis and independent t-test.

**III. Results**

**Table 1:** Distribution of demographic variables among caregivers (N=50)

Variable		Psychiatric morbidity present (SRQ>7) N1 = 29	Psychiatric morbidity absent (SRQ≤7) N2 =21	χ <sup>2</sup> P value
Gender	Male	16 (32%)	12 (24%)	0.89
	Female	13 (26%)	18 (18%)	
Religion	Hindu	22 (44%)	13 (26%)	0.28
	Muslim	7 (14%)	8 (16%)	
Occupation	Unskilled	5 (10%)	5 (10%)	0.23*
	Semiskilled	15 (30%)	8 (16%)	
	Skilled	9 (18%)	6 (12%)	
	Professional	0	2 (4%)	
Socioeconomic	Middle	8 (16%)	11 (22%)	0.07

status	Lower	21 (42%)	10 (20%)	
Residence	Rural	11 (22%)	7 (14%)	0.738
	Urban	18 (36%)	14 (28%)	

*Chi-square test and likelihood ratio \* p ≤ 0.05*

Most of the caregivers were semiskilled, from a rural background and lower socioeconomic status. The lower socioeconomic status suffered from significantly higher psychiatric morbidity.

**Table 2:** Comparison of patients' recovery variables

Variable	Recovered N=35 Mean±SD	Unrecovered N=15 Mean±SD	P value
Age (in years)	44.23±18.86	54.13±17.30	0.82
Therapeutic interventions	1.09±0.85	1.67±0.72	0.26
Duration of HDU stay	11.40±5.74	14.13±5.09	0.018*

*Independent t-test p ≤ 0.05*

Patients who recovered had a lower number of therapeutic interventions but the difference was not significant, however longer stay in HDU was associated with worse clinical outcomes.

**Table 3:** Multivariate effects of caregivers' scores on Zarit Burden Interview (ZBI) and Self-Rated Questionnaire(SQR)

*Multivariate Tests*

Effect	Value	F	Hypothesis	df	Error	df	Sig.
Diagnosis	.628	1.30916		80.000			.213
Recovery	.952	1.1862.000		47.000			.314
Financial burden	.732	8.617		2.000		47.000	.001

*Computed using alpha level = .05*

Multivariate analysis was performed after the basic assumptions were checked by Pearson's correlations of all dependent variables. This was performed to protect against inflating the type 1 errors from the subsequent univariate analysis. The homogeneity of variance assumption was considered satisfied by Levine's test. A significant multivariate effect was observed on Wilk's lambda with financial burden alone. Other dependent variables didn't show any significant effect.

**Table 4:** Univariate effects of caregivers' scores on Zarit Burden Interview (ZBI) and Self-Rated Questionnaire(SQR)

*Tests of Between-Subjects Effects*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Diagnosis	ZBI	3666.969	8	458.371	1.125	.367
	SRQ	213.706	8	26.713	1.110	.377
Recovery	ZBI	950.477	1	950.477	2.349	.132
	SRQ	52.595	1	52.595	2.199	.145

Financial burden	ZBI	1982.401	1	1982.401	5.174	.027
	SRQ	260.681	1	260.681	13.314	.001

*Computed using alpha = .05*

Univariate effects show a significant difference between the independent variable financial burden as was reported in table 3. Presence of financial burden was associated with higher zarit burden scores and higher SRQ score.

**Table 5:** Comparison of financial burden and patients' variables

	Financial burden	N	Mean	Std. Deviation	Std. Error Mean	P value
Interventions	absent	18	.89	.758	.179	.01
	present	32	1.47	.842	.149	
Duration of stay	absent	18	11.44	5.554	1.309	.47
	present	32	12.66	5.740	1.015	

*Independent t test p ≤ 0.05*

The financial burden was studied with patients variables and was found to correlate significantly with the number of interventions than the duration of stay.

Figure 1: Graph below presents the relation of mean SRQ scores with patient's diagnosis for the domain of financial burden as per ZBI

#### IV. Discussion

In this study, the psychiatric morbidity in caregivers of patients admitted in a high dependency unit of a tertiary care of hospital was evaluated. Although the data about psychiatric morbidities is available for the patients there is scant literature about the caregivers in the Indian subcontinent and the factors responsible for them. The patients were admitted to the HDU from an outpatient clinic and also from the emergency department. The patients were managed by HDU and transferred to ward or intensive care units depending upon the outcomes. The average duration of stay was 12.22 days in the HDU. The patients admitted in the HDU had a mean age of 47.20 years. The primary diagnosis was considered for which patient was admitted for ease of data evaluation. Among them, suicidal poisoning was most common at 18% (Shetty, Pawar and Inamadar, 2008) followed up by Acute respiratory distress syndrome (ARDS) and Multiorgan dysfunction syndrome (MODS) at 14% of cases, acute renal failure (ARF) at 12%. 70% of patients recovered and were transferred to the wards 30% patients deteriorated and were transferred to the intensive care unit. Various therapeutic interventions, for example, intubation and ventilatory support, vasopressor support, transfusion, dialysis, endoscopy and radiological guided biopsy used in relevant clinical situations with an average of 1.26 therapeutic interventions per patient. The average duration of stay in HDU was 12.22 days (Pandian, Babu and Srinivasan, 2011). 64% of caregivers had a financial burden, which was indirectly measured by subjective reports of perceived financial burden or borrowing money or using the savings. Most of the caregivers held a semi skilled profession (46%), resided in urban areas (64%) and belonged to lower socioeconomic status (62%) as defined by modified kuppuswami scale (Gaur, 2013).

Most of them suffered from burden with a mean value of 35.34 on Zarit Burden Interview. The measurement was carried out at the end of HDU stay where patients were either transferred to ICU or back to wards. When compared between these two groups of caregivers, the burden score was although more for the unrecovered group but the difference was not statistically significant. The burden score however correlated with the financial burden, with significantly higher burden in caregivers with respect to the finances. When both these variables were combined in a two-way factorial ANOVA design, the burden score was highest in the group for caregivers for the financial burden and with patients not showing recovery. However, the difference was not significant between the groups. These results though surprising but it can be explained by lack of

adequate and meaningful communication between caregivers and healthcare providers. Another factor which had a positive correlation with burden was the duration of stay in HDU, with higher burden with a longer stay. The longer duration stay was also associated with higher financial burden. The longer stay was undoubtedly associated with a worse clinical course and a higher number of therapeutic interventions both of which contributed to caregiver burden.

Psychiatric morbidity was measured by Self-reporting questionnaire (SRQ) with 20 questions and a score of more than 7 was taken as a cutoff. Most of the caregivers suffered from some psychiatric morbidity indicated by a mean SRQ score of 9.10. SRQ was found to correlate significantly with burden score and similarly had significantly higher scores in caregivers with the financial burden. The psychiatric morbidity, however, was not significantly higher in caregivers of patients not showing recovery as compared to those who showed recovery. When both SRQ and Zarit burden scores were compared with patient's primary diagnosis and recovery status by a multivariate design, the results between the groups were not statistically significant. However, when both the scores were compared with the financial burden, the difference was significant, with more burden and psychiatric morbidity in caregivers suffering from financial burden. This strongly indicates financial burden as the sole most important source caregiver burden and psychiatric morbidity.

The mean SRQ score was highest for caregivers of patients who suffered from MODS, closely followed by chronic liver disease presenting with portal hypertension, with lowest SRQ scores in caregivers of patients with acute exacerbations of COPD. These Patients with MODS also had a higher number of therapeutic interventions (2.29) and had a longer duration of stay in HDU (15.14 days). The caregivers who scored more than 7 on SRQ were interviewed with the mini international neuropsychiatric interview (MINI). 58.6% of caregivers met diagnostic criteria for psychiatric disorder. Out of this 41.4% caregivers were found to be suffering from depression, 13.8% with adjustment disorder.

Burden and psychiatric morbidity were studied by Choi and Tate (2018) in following of 52 caregivers at the time of discharge and followed after 2 months. The results show the similar trajectory of higher burden at the time of discharge and higher depressive scores at during admission (56%-44. Jill I. Cameron et al in 2016 followed 280 caregivers of patients discharged from ICU up to 1 year with regular assessments, found 67% of depressive symptoms at the time of discharge which progressively decreased to 43% after 1 year. There was no baseline data available for the psychiatric symptoms among the caregivers. The 58.6% prevalence of psychiatric diagnosis was in line with the available literature. These mostly were dependent upon the financial burden than the diagnosis and outcome of HDU stay. Healthcare services in India incur a significant out of pocket expenditure and have a poor public/ private insurance coverage. Most of the patients admitted were from a lower socioeconomic status with a limited financial reserve which during the hospital admission was the source of immediate concern and distress to the caregivers. The psychiatric morbidity increased in the caregivers of patients with worse clinical outcome but was not significantly higher, this can be explained by lack of adequate communications between treating teams and caregivers and also by the fact that decision to shift the patient out of HDU was done after a sudden deterioration of symptoms in most of the patients. This sudden change in clinical condition could have been handled by individual coping mechanism and available family support. Although no follow-up was done but based on the available literature, it can be assumed that psychiatric morbidity in caregivers would have increased gradually after patients were shifted to ICU.

Declarations of interest: None

Contributors: SS is the principal author, contributed in conception and design of study, acquisition of data, drafting the article. MB has contributed in acquisition of data. AS contributed in analysis, interpretation of data, and revision of the draft of article critically. BS has contributed with final approval of article version.

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