Factors Influencing Caregiver Burden among Primary Caregivers of Patients Operated for Intracranial Tumors

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Introduction

Caregiver burden of patients with intracranial tumors has not been adequately studied. Assessment of this can guide in selecting interventions to alleviate caregiver strain, thus improving care-recipients' health. This study was to assess factors influencing burden experienced by caregivers of patients operated for intracranial tumors.

Methods

Using descriptive cross sectional design and purposive sampling, 50 patient-carer pairs were enrolled for the study. Modified Caregiver Strain Index (MCSI) was used to assess caregiver burden. Mini Mental Status Examination (MMSE), Katz index of independence in Activities of Daily Living (ADL), and Neuropsychiatric Inventory Questionnaire (NPI-Q) were used to assess the status of patients. SPSS21 was used for univariate and multivariate analysis.

Results

All the 50 caregivers had experienced some burden, with 34 having mild, 15 moderate, and 1 experiencing severe burden. Number of behavioral changes of patients in NPI-Q had significant correlation with MCSI ($p<0.001$). However MMSE and Katz ADL of patients did not show significant association with caregiver burden. In NPI-Q, irritability ($p<0.001$), agitation ($p=0.004$), anxiety ($p=0.01$), depression ($p=0.006$), and sleep disturbances ($p=0.02$) had significant impact on caregiver burden.

Impact of patient neuropsychiatric symptoms on caregiver burden

Behavioural changes	MCSI score Median (IQR)	Univariate *p* value	Multivariate *p* value
Delusion			
Present	8 (6-11)	0.30	NA
Absent	6 (1-13)		
Hallucination			
Present	7(1-14)	0.83	NA
Absent	6(1.5-12)		
Agitation			
Present	10.5 (7-14)	0.004*	0.30
Absent	2 (1-8)		
Depression			
Present	10.5 (3-14)	0.006*	0.06
Absent	2.5 (1-8.5)		
Anxiety			
Present	9 (3-14)	0.01*	0.91
Absent	2 (1-8)		
Elation			
Present	7.5 (3-11)	0.46	NA
Absent	6 (1-13)		
Apathy			
Present	8 (2-16)	0.37	NA
Absent	6 (1-11)		
Irritability			
Present	9 (6-14)	<0.001*	0.004*
Absent	1 (1-3)		
Motor disturbances			
Present	9.5 (3-16)	0.42	NA
Absent	6 (1-12)		
Night time behaviour			
Present	10.5 (8-14)	0.02*	0.29
Absent	3 (1-9)		
Loss of Appetite			
Present	5 (1-12)	0.46	NA
Absent	6 (2-14)		

Impact of cognitive status, neuropsychiatric symptoms & functional status of patients on caregiver burden

Neuro-functional status	MCSI Correlation Coefficient (ρ)	*p* value
Cognitive status of patients (MMSE)	0.01	0.95
Neuropsychiatric symptoms (NPI-Q)	0.57	<0.001*
Functional status of patients (Katz ADL)	-0.18	0.22

Impact of caregiver factors on caregiver burden

Variables	MCSI score Median (IQR)	Univariate *p* value	Multivariate *p* value
Age (in years)			
18 - 40	3 (1-9.5)	0.47	NA
>40	7.5 (2-14)		
Gender			
Female	9.5 (1-16)	0.18	0.26
Male	4.5 (1.5-10)		
Education			
Illiterate	5.5 (2-14)	0.42	NA
Senior secondary	6.5 (2-13)		
Graduate	3.5 (1-9)		
Marital status			
Married	6.5 (1.5-13)	0.65	NA
Unmarried	2.5 (1-11)		
Relationship with patient			
Spouse	7 (1-11)	0.26	NA
Parent	13 (3-14)		
Sibling	2 (2-7)		
Children	2.5 (1-10)		
In laws	4 (2-6)		
Type of family			
Nuclear	6 (1.5-9.5)	0.62	NA
Joint	5 (1-14)		
Occupation			
Unemployed	11 (7-14)	0.03*	0.83
Employed	3 (1-8)		
Student	2.5 (1.5-10)		
Monthly per capita income (Rs per month)			
<500	14 (9-16)	0.02*	0.42
501 - 1000	2 (1-10)		
1001 - 2000	4 (2.5-8.5)		
2001 – 3500	7 (2-11)		
3501 – 5000	4.5 (1-9)		
>5000	1 (1-4.5)		
Time spent on caring activities (hours per day)			
<8	9.5 (7.5-14)	0. 01*	0.16
>8	2 (1-6)		
Meeting the household needs			
Comfortable	1.5 (1-3)	<0.001*	<0.001*
Enough to make ends meet	9 (7-13)		
Not able to make ends meet	14 (11-16)		
Quitted job			
Yes	12 (8-14)	0.01*	0.13
No	3 (1-9.5)		
Self-health status			
Healthy	3 (1-9)	0.004*	0.36
Unhealthy	13 (9-14)		

Among caregiver factors, unemployment ($p=0.03$), low per capita income ($p=0.01$), time spent on caring ($p=0.01$), inability to meet house hold needs ($p<0.001$), quitting job ($p=0.01$) and own health problems ($p=0.004$) had significant impact on their burden. In separate multivariate analyses, irritability component ($p=0.004$) among behavioral changes of patients and caregivers' perception of inability to meet household needs ($p<0.001$) had significant association with caregiver burden independent of other factors.

Conclusions

Within caregiving dyad, burden is related to characteristics of both caregivers and care-recipients. Among patient related factors, behavioral changes had significant impact on caregiver burden, while cognitive and functional status did not show significant association. Identifying and managing behavioral symptoms in these patients is paramount for decreasing caregiver burden, in addition to community support.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of caregiver burden of patients with intracranial tumors 2) Identify patient and caregiver factors influencing caregiver burden