Assessment of Quality of Life of Caregivers of Patients With Alcoholic Liver Disease

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ABSTRACT

Alcoholic liver disease (ALD) is a progressive condition resulting from chronic and excessive alcohol consumption, leading to liver cell damage. Although the liver is the primary site for alcohol oxidation, a small amount is also metabolized in the stomach. Ethanol metabolism primarily produces acetaldehyde, a toxic byproduct responsible for symptoms such as facial flushing, headaches, nausea, and increased heart rate, all of which contribute to the development of ALD. The risk of developing ALD varies among individuals, but it generally increases with alcohol intake beyond certain thresholds: more than two standard drinks per day for men and more than one standard drink per day for women. Alcoholic liver disease (ALD) can progress to fibrosis and cirrhosis, potentially leading to liver infection. The prevalence of ALD fluctuates over time and varies by region due to factors such as alcohol consumption patterns, healthcare accessibility, and public health initiatives. ALD poses a significant global health challenge, highlighting the need for increased awareness about the dangers of excessive alcohol consumption and the promotion of responsible drinking practices. Medical guidance and support are essential in educating individuals about the risks of overconsumption. According to the latest surveillance report from the National Institute on Alcohol Abuse and Alcoholism, liver cirrhosis ranked as the 12th leading cause of death in the United States in 2007, with 29,925 deaths, nearly 48% of which were alcohol-related.

KEYWORDS: Alcoholic liver disease (ALD), alcohol oxidation, ethanol metabolism, acetaldehyde, fibrosis, public health initiatives, global health challenge, responsible drinking, National Institute on Alcohol Abuse and Alcoholism, liver cirrhosis

INTRODUCTION

Alcoholic liver disease (ALD) progresses slowly due to long-term excessive alcohol consumption, which harms liver cells. The liver, which mainly processes alcohol, converts it into acetaldehyde, a toxic byproduct that can cause symptoms such as facial flushing, headaches, nausea, and an increased heart rate. This toxicity contributes to ALD, which can range from fatty liver (steatosis) to cirrhosis. Risk factors for developing ALD include drinking more than two standard drinks per day for men and more than one for women. However, not all heavy drinkers will develop ALD, suggesting that additional factors beyond the quantity and frequency of alcohol consumption are involved. ALD's pathogenesis includes a spectrum of liver conditions. Excessive alcohol intake initially damages the liver through oxidative stress and glutathione depletion. This stress, along with malnutrition and endotoxin production, leads to liver inflammation and cell damage. In the early stages, ALD may result in fatty liver, where excess fat builds up in liver cells. Although this stage may be asymptomatic, it can progress to more severe liver damage if not addressed. Prolonged alcohol consumption can exceed the liver's ability to detoxify alcohol, leading to alcoholic hepatitis, which is marked by inflammation and further liver damage. Alcoholic hepatitis, caused by prolonged and excessive alcohol intake, leads to liver inflammation. The immune system's response to liver damage and toxic alcohol byproducts plays a role in this inflammation. Genetic predisposition and poor nutrition can worsen liver damage, increasing susceptibility to alcoholic hepatitis. This condition can advance to liver cirrhosis, a serious and irreversible stage where scar tissue replaces healthy liver tissue, severely impairing liver function. Cirrhosis is a significant global health issue, leading to severe complications like liver failure, portal hypertension, esophageal varices, and a higher risk of liver cancer. Symptoms of cirrhosis include fatigue, weakness, jaundice, easy bruising, abdominal swelling, and confusion. Effective management involves early detection, ongoing medical care, and a tailored treatment plan to slow the disease's progression and improve outcomes. Caregivers of individuals with ALD are essential in managing the disease. They provide various supports, including emotional care, medication management, nutritional assistance, symptom monitoring, and encouragement for alcohol abstinence. They may also assist with daily activities, transportation to medical appointments, and coordination of care with healthcare providers. Caregiving can be emotionally and physically challenging, often leading to significant stress and burnout. Caregivers may experience emotional strain from observing their loved one's suffering and dealing with alcohol addiction. Financial stress is also a concern due to the costs associated with medical care and medications. The demands of caregiving can disrupt a caregiver's personal life, impacting their health, work, and social activities. Social isolation is a common problem for caregivers, as their responsibilities may limit their time for personal and social activities. The physical demands of caregiving can also lead to health issues for the caregiver. A lack of support and resources can worsen these challenges, and caregivers may also face stigma related to the patient’s alcohol use, leading to feelings of guilt and shame. To improve their quality of life, caregivers should seek support and resources. Joining support groups, accessing counseling services, and connecting with organizations that assist caregivers can be beneficial. Caregivers should prioritize their own well-being by taking breaks, managing stress, and maintaining social connections. Effective communication with healthcare professionals and exploring financial assistance options can also help address caregiving challenges. Overall, while caregiving for someone with ALD is demanding, seeking support and using available resources can greatly enhance both the caregiver’s and the patient's quality of life.

MATERIALS AND METHODS

STUDY CENTRE:

The study was carried out in the inpatient Department of General Medicine, ESIC PGIMSR. Rajajinagar, Bengaluru.

SAMPLE SIZE:

A total of 85 subjects were interviewed and were selected for the study.

STUDY DURATION:

Study was conducted for a period of 6 months.

INCLUSION CRITERIA:

1. Family care-givers of patients (close relatives who spend significant amount of time taking care of the patient) who are suffering from ALD.
2. Care-givers with age more than 18 years, who willingly gave informed consent, were included in the study
3. Caregivers of patients diagnosed with ALD and are dependent.

EXCLUSION CRITERIA:

1. Care-givers known to be suffering from major chronic medical conditions like bronchial asthma, arthritis, cancer and cardiac disorders were excluded from the study.
2. Care-givers with previously diagnosed psychiatric caregivers will be excluded from the study. STUDY TOOLS: WHO- Quality of Life BREF scales (WHO -QOL-BREF)

STUDY TOOLS:

The following tool was employed to obtain information pertaining to the study: WHO- Quality of Life BREF scales (WHO -QOL-BREF)

ETHICAL APPROVAL: The study was approved by Institutional Ethics Committee of ESIC PGISMR, Rajijinagar,Bengaluru in accordance with the guidelines issued by ICMR. (No.532/L/11/12/Ethics/ESICMC&PGIMSR/Estt.Vol.-IV)

STUDY PROCEDURE:

Subjects for the study were identified by the investigators from the inpatient ward during their visit to the hospital based on the inclusion and exclusion criteria. The participants were explained the purpose of the study and consent was obtained. Relevant data was recorded from the data collection form. The data so obtained was entered into a Microsoft excel sheet and appropriate analysis was performed.

STATISTICAL ANALYSIS:

All collected data were input and analyzed using MS Excel to assess statistical significance. Descriptive statistics were calculated for quantitative variables, while frequencies and percentages were determined for categorical data. Column charts, pie charts, and bar graphs were created to examine the distribution of the data. The Kolmogorov-Smirnov and Shapiro-Wilk tests were applied to the "AverageQOL" variable to identify whether the data deviated from a normal distribution.

RESULTS

The study was conducted in the In-Patient Department of General Medicine, ESIC MC - PGIMSR, Rajajinagar. The study was carried out over a period of 3 months and a total of 85 samples were collected.

DISTRIBUTION ON THE BASIS OF PATIENT’S GENDER :

Out of 85 subjetcs, 67 were males and 18 were females as shown in the table (*Table 1*)

Table 1: Gender distribution in ALD patients

Sl. No.	Gender	Number of Patients	Percentage
1	Male	67	78.82
2	Female	18	21.18

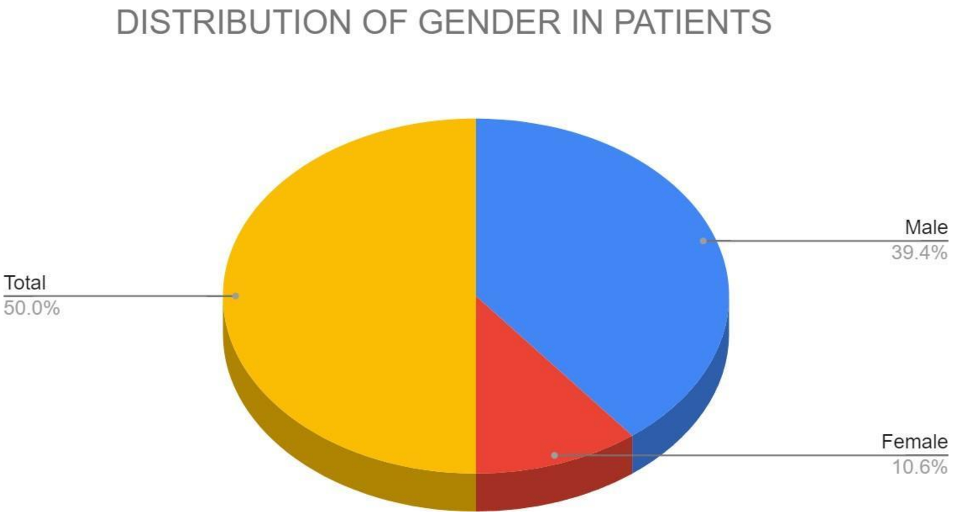


Figure: Gender distribution in ALD patients.

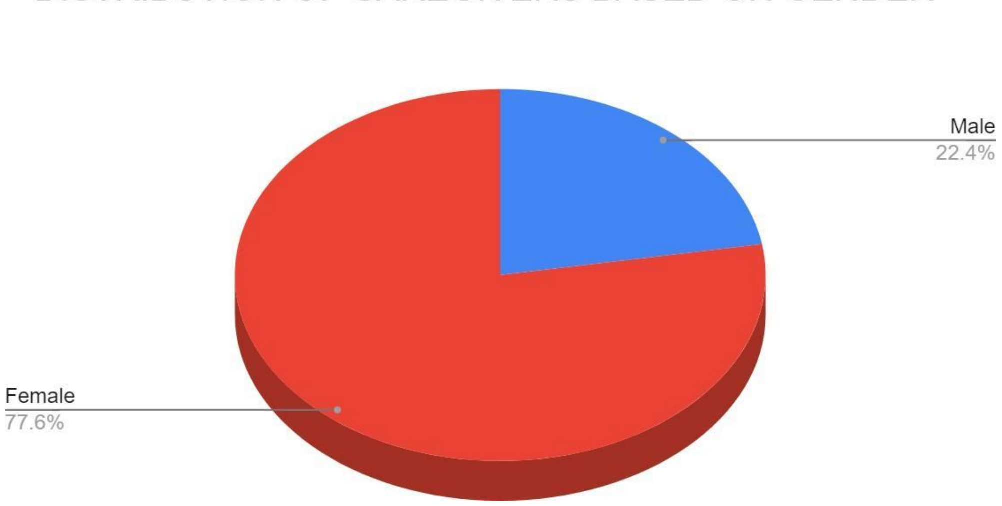
DISTRIBUTION ON THE BASIS OF CAREGIVER'S GENDER :

Out of 85 subjects, 19 had male caregivers and 66 were females as shown in the table.(Table 2)

Table 2: Gender distribution in ALD patient's caregivers.

Sl. No.	Gender	Number of Patients	Percentage
1	Male	19	22.36
2	Female	66	77.64

Figure: Gender distribution in ALD patient's caregivers



DISTRIBUTION ON THE BASIS OF PATIENT’S AGE

Out of 85 Subjects, 25 fall into the category of (30-45) years of age, 42 in the (45-60) range, 18 in (60-75) range as shown in the table.(Table 3)

Table 3 : Age distribution in caregivers of ALD patients.

Sl. No.	Age (in Years)	Number of Patients	Percentage
1	30-45	25	29.40
2	45-60	42	49.40
3	60-75	18	21

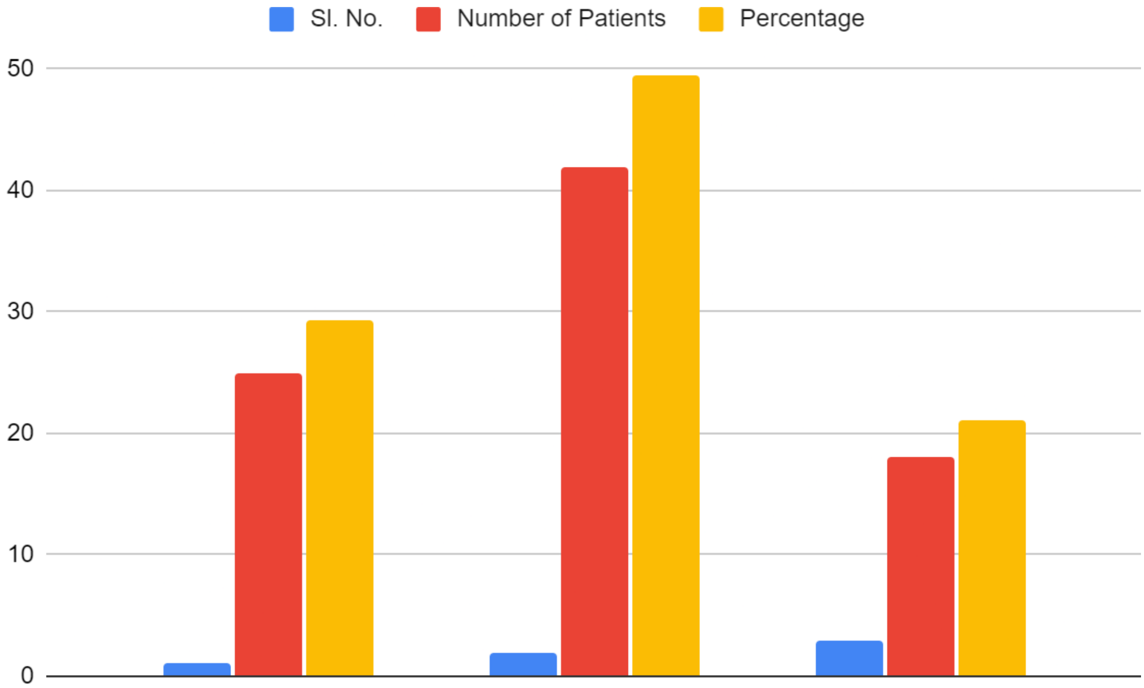


Figure: Age distribution in caregivers of ALD patients.

DISTRIBUTION OF CAREGIVERS ON THE BASIS OF AGE

Out of the 85 subjects, there were 44 caregivers in the age category of (18-37), 36 in the range of (37-56) and 5 in the range of (56-75) as shown in the table. (Table 4)

Table 4: Age distribution in ALD patient’s caregivers

Sl. No.	Age (in Years)	Number of Patients	Percentage
1	18-37	44	52
2	37-56	36	42
3	56-75	5	6

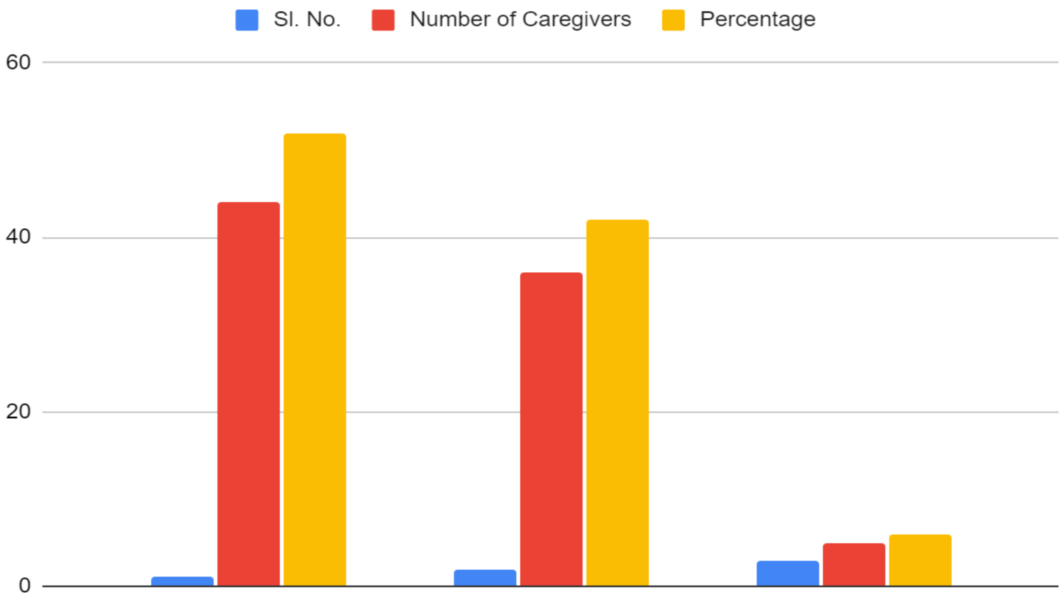


Figure: Age distribution in ALD patient’s caregivers

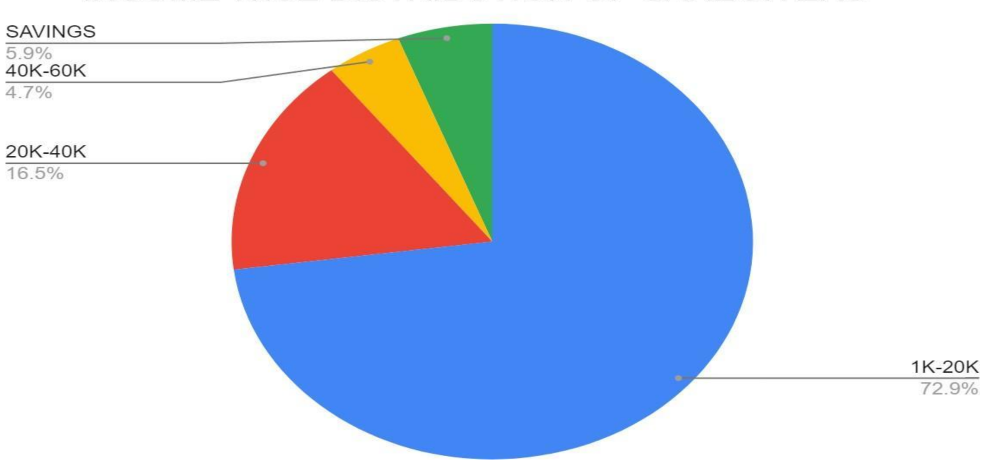
DISTRIBUTION OF CAREGIVERS ON THE BASIS OF THEIR INCOME

Out of 85 subjects, 62 caregivers had their income in the range of (1K-20K), 14 in the (20k-40K) range, 4 in the (40K-60K) range, 5 in the SAVINGS category as shown in the table. (Table 5)

Sl. No.	Income	Number of Patients	Percentage
1	1K-20K	62	72.90
2	20K-40K	14	16.47
3	40K-60K	4	4.70
4	SAVINGS	5	6

Table 5: Income wise distribution of Caregivers

Figure: Income wise distribution of Caregivers.



CORRELATION BETWEEN PATIENT'S AGE AND QUALITY OF LIFE IN CAREGIVERS

The correlation between age of the patient and quality of life in caregivers is done by Kruskal-Walli's test, n = 85.

Parameter	**Value**
p-value	0.195
Kruskal-Wallis H	3.265

Table : Correlation between patient's age and quality of life in caregivers.

Results of the Kruskal-Walli's test indicated that there is no significant moderate positive relationship between a patient's age and quality of life in caregivers.

The result of p-value is 0.195 which is more than Common Significant Value (< 0.05) which shows that it is statistically insignificant.

CORRELATION BETWEEN CAREGIVER'S AGE AND QUALITY OF LIFE IN CAREGIVERS

The correlation between age of the caregiver and quality of life in caregivers is done by Kruskal-Walli's test, n = 85.

Parameter	**Value**
p-value	0.001
Kruskal-Wallis H	16.452

Table: Correlation between caregiver's age and quality of life in caregivers.

Results of the Kruskal-Walli's test indicated that there is a significant moderate positive relationship between a caregiver's age and quality of life in caregivers.

The result of p-value is 0.001 which is less than Common Significant Value (< 0.05) which shows that it is statistically significant.

CORRELATION BETWEEN QUALITY OF LIFE IN CAREGIVERS AND GENDER OF THE PATIENT.

The correlation between quality of life in caregivers and gender of the patient is done by Mann-Whitney Test, n = 85.

Parameter	**Value**
p-value	0.087
Mann-Whitney U	328.000

Table: Correlation between gender of the patient and quality of life in caregivers.

Results of the Mann-Whitney test indicated that there is no significant moderate positive relationship between quality of life in caregivers and gender of the patient.

The result of p-value is 0.087 which is more than Common Significant Value (< 0.05) which shows that it is statistically insignificant.

CORRELATION BETWEEN QUALITY OF LIFE IN CAREGIVERS AND GENDER OF THE CAREGIVER.

The correlation between quality of life in caregivers and gender of the patient is done by Mann-Whitney Test, n = 85.

Parameter	**Value**
p-value	0.010
Mann-Whitney U	378.500

Table: Correlation between gender of the caregiver and quality of life in caregivers.

Results of the Mann-Whitney test indicated that there is a significant moderate positive relationship between quality of life in caregivers and gender of the caregiver.

The result of p-value is 0.010 which is less than Common Significant Value (< 0.05) which shows that it is statistically significant.

CORRELATION BETWEEN QUALITY OF LIFE IN CAREGIVERS AND THE INCOME OF THE CAREGIVERS

The correlation between quality of life in caregivers and gender of the patient is done by Kruskal-Walli's test, n = 85.

Parameter	**Value**
p-value	0.001
Kruskal-Wallis H	24..681

Table: Correlation between income of the caregiver and quality of life in caregivers.

Results of the Kruskal-Walli's test indicated that there is a significant moderate positive relationship between quality of life in caregivers and the income of the Caregivers.

The result of p-value is 0.001 which is less than Common Significant Value (< 0.05) which shows that it is statistically significant.

Pairwise Comparisons of Income of the caregiver (graded)

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.a
1.00-4.00	-1.487	14.543	-.102	.919	1.000
1.00-2.00	-31.077	7.482	-4.153	<.001	.000
1.00-3.00	-39.279	12.687	-3.096	.002	.012
4.00-2.00	29.590	15.774	1.876	.061	.364
4.00-3.00	37.792	18.810	2.009	.045	.267

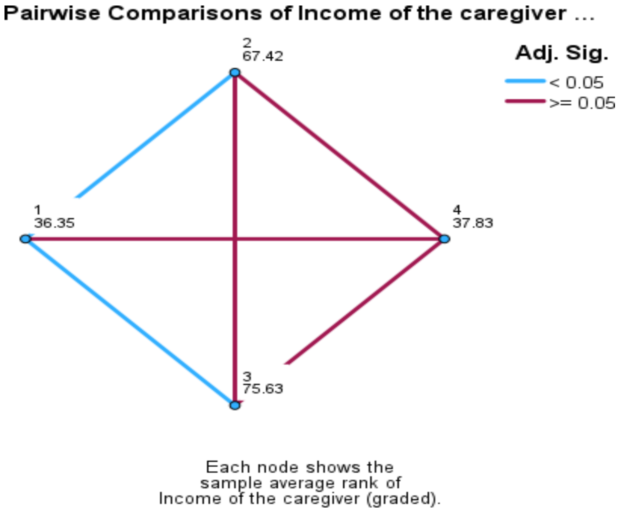
2.00-3.00	-8.202	14.081	-.582	.560	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significance (2-sided tests) are displayed. The significance level is 0.050.
Significant values have been adjusted by the Bonferroni correction for multiple tests.

The pairwise comparisons of income for caregivers indicate significant differences between:

1. Sample 1 and Sample 2
2. Sample 1 and Sample 3

All other comparisons did not show statistically significant differences after adjusting for multiple comparisons using the Bonferroni correction.



DISCUSSION

An observational study was conducted in the Inpatient Department of General Medicine at ESIC MC - PGIMSR, Rajajinagar over six months, involving 85 participants. The majority of participants were male (78.82%), with females accounting for 21.18%. This gender distribution aligns with findings by Vanessa L. Beesley et al. (2000), which reported 85% males and 15% females. The age distribution showed most patients were between 45-60 years (49.40%), followed by 30-45 years (29.40%), and the least were 60-75 years (21%). This distribution is similar to Geriatr J. An et al. (2019), which found the majority in the 40-60 years age group. Disease distribution indicated that 49.41% had Chronic Liver Disease (CLD), 30.58% had Alcoholic Liver Disease (ALD), 16.47% had Decompensated Chronic Liver Disease (DCLD), and 3.52% had Alcoholic Hepatitis. These findings are consistent with Budamakuntla L et al. (2020), which also found CLD to be the most common condition. Among caregivers, the majority were female (77.64%), similar to Madeleine St. Peter et al. (2022) who found 66.9% female caregivers. Age-wise, most caregivers were 18-37 years (52%), followed by 37-56 years (42%), with the least being 56-75 years (6%). The income distribution revealed that 72.90% of caregivers had an income of 1K-20K, followed by 20K-40K (16.47%), 40K-60K (4.70%), and the least from savings (6%). This is comparable to findings by Michael Franz and Karl Mann et al. (2013), which linked low income to poorer caregiver quality of life. The study also showed no significant correlation between caregiver income and quality of life. However, caregiver age showed significant statistical relevance (p-value = 0.001), unlike patient age (p-value = 3.265), aligning with Madeleine St. Peter et al. (2022) and Geriatr J. An et al. (2019). The gender of the patient showed no significant impact on caregiver quality of life (p-value = 0.087), while caregiver age was significant (p-value = 0.010), consistent with Vanessa L. Beesley et al. (2000). Overall, this study finds that caregiver quality of life is influenced by financial burden, caregiver age, and caregiver gender, echoing findings by Jay Horrow et al. (2014) and Sofia Ziomkowski et al. on the impact of these factors.

LIMITATIONS OF THE STUDY

- The study had a small sample size.
- It was conducted over a short duration.
- Some participants had limited information available.
- Data was collected from only one center, which may not reflect city-wide patterns.

CONCLUSION

The research was an extensive observational study conducted over three months in the Inpatient Department of General Medicine at ESIC MC-PG IMSR & Model Hospital, a major multispecialty teaching hospital in Bengaluru. Involving 85 inpatients, the study was conducted from February 2023 to April 2023, providing a detailed examination of diverse cases. The participant selection followed rigorous inclusion and exclusion criteria, ensuring the integrity and relevance of the data. This thorough approach highlights the study's commitment to delivering meaningful insights into hepatic health within the healthcare setting. For improving the well-being of caregivers of individuals with ALD, seeking assistance is crucial. Caregivers can benefit from connecting with support groups, counseling services, and organizations providing resources for chronic illness management. Prioritizing self-care, including regular breaks, stress management, and maintaining social interactions, is essential. Open communication with healthcare providers helps in understanding the patient’s condition and available support. Planning for respite care can prevent burnout, and caregivers should explore financial aid options and seek advice from financial professionals. Transparent communication with patients and accessing counseling can also help manage emotional challenges. Given the demanding nature of caregiving, seeking support is vital for both the caregiver’s well-being and the quality of care provided to loved ones with ALD.

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