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RESEARCH ARTICLE

NUTRITIONAL STATUS AND LIFESTYLE OF LIVER CIRRHOTIC PATIENTS IN KASHMIR

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ABSTRACT

Liver cirrhotic patients were investigated for their lifestyle, body mass index, biochemical and clinical signs of disease. The study included 500 liver cirrhotic patients who were visited and hospitalized in SKIMS and SMHS hospital Srinagar. The data was collected by using the self made questionnaire which was pretested on 10 patients. These ten patients were excluded from the study. Demographic data, level of education, biochemical values, clinical signs, weight, height and mid arm circumference was undertaken. Out of the 500 cirrhotic patients, 60% were from rural area and 40% were from urban area, 73.8% were males and 26.2% were females. It was observed that illiterates, laborers, married ones with nuclear type of family system from low economic status were being suffering from the liver cirrhosis. The disease is more seen in the age group of 46-60 years. Low BMI and muscle wasting were present in almost all of the studied patients. Hyperbilirubinemia, low albumin and protein levels were observed in studied patients. Anemia, PEM, ascites, edema, muscle wasting were prevalent in vast majority of the patients.

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INTRODUCTION

In today's life people are not foremost concerned with one's health and well being as they are busy with other priorities. They develop bad eating habits, making poor lifestyle choices and neglecting different aspects of health. In turn, these habits affect their body and overall health of the people. The liver is the second largest organ in human body. It is responsible for performing more functions than any other organ in the body, including metabolizing the food, filtering and detoxifying waste and toxic products, producing immune agents to control infection, and regenerating itself (NIDDK, 2000). It's another important function is to produce prothrombin and fibrinogen (blood-clotting factors) and heparin (that helps prevent blood from clotting within the circulatory system).

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1.The liver also synthesizes proteins, cholesterol and enzymes; produces and secretes bile; and stores essential micronutrients. The word "Cirrhosis" derives from the Greek word Kirrhos which means yellowish orange color of diseased liver of patient. It was Rene Laennec who gave the name "cirrhosis" in the year 1819 (Roguin, 2006; Arey *et al*., 1962; Duffin, 1987). As per WHO in 1978 cirrhosis is a disease which is characterized by fibrosis and the normal liver is converted to structurally abnormal nodules (Anthony *et al*.,1978). When something affects and damages the liver, the cells of the liver gets killed and scar tissue is formed. The formation of scar tissue is called fibrosis and it slowly happens for several years and finally whole liver is involved and liver shrinks and hardens. This is called cirrhosis of the liver. Liver cirrhosis is characterized by poor life expectancy and is a leading cause of mortality and morbidity. Liver cirrhosis is the 12th leading cause of death in USA (http://www.niddk.nih.gov/f und/ divisions Accessed 4 February 2006).

Cirrhosis is the 3rd most common cause of death in people aged between 45 to 65 years behind heart disease and cancer. Hepatitis B virus infection is most common cause of liver cirrhosis in India. It has been estimated that 1 million die annually from HBV related liver disease (Khuroo, 2012). Liver cirrhosis is one of the common health problems in Kashmir. This study has, therefore, investigated the nutritional status and lifestyle of liver cirrhotic patients in Kashmir.

The tool used in the present study was essentially a questionnaire. This was pre-tested on 10 liver cirrhotic respondents in order to ensure the validity and feasibility of questionnaire before administering it on the entire sample. The patients were explained about the purpose of the study, and on obtaining their consent; data were collected from the participating patients.

Table 1. Distribution Of Studied Respondents

Gender	Rural (n=300)		Urban (n=200)		Total (n=500)	
	N	%	N	%	N	%
Male	222	44.4	147	29.4	369	73.8
Female	78	15.6	53	10.6	131	26.2
Total	300	60	200	40	500	100

Table- 2: Socioeconomic status of liver cirrhotic patients (n=500)

Characteristics	Residence	Gender M (%)	F (%)	X^2	P-Value
Marital Status					
Married	Rural Urban	215 (71.60) 146 (73.00)	76 (25.33) 51 (25.50)	0.03	>0.05
Unmarried	Rural Urban	6 (2.00) 1 (0.50)	1 (0.33) 0	0.163	>0.05
Widow	Rural Urban	1 (0.33) 0	1 (0.33) 2 (3.77)	1.33	>0.05
Educational Status					
Illiterate	Rural Urban	132 (44.00) 84 (42.00)	56 (18.66) 32 (16.00)	0.169	>0.05
Primary	Rural Urban	81 (27.00) 49 (24.50)	20 (6.66) 16 (8.00)	0.540	>0.05
Secondary	Rural Urban	9 (3.00) 14 (7.00)	2 (0.66) 5 (2.50)	0.258	>0.05
Occupation					
Employed	Rural Urban	13 (4.33) 15 (7.50)	0 1 (0.50)	0.842	>0.05
Unemployed	Rural Urban	10 (3.33) 5 (2.50)	0 0	NA*	NA*
Laborer	Rural Urban	199 (66.33) 127 (63.50)	4(1.33) -	2.533	>0.05
Retired	Rural Urban	- -	- -	-	-
House wife	Rural Urban	- -	74 (24.66) 52 (26.00)	-	-
Type of Family					
Nuclear	Rural Urban	202 (67.33) 140 (70.00)	72 (24.00) 51 (25.50)	0.010	>0.05
Joint	Rural Urban	20 (6.66) 7 (3.50)	6 (2.00) 2 (1.00)	0.003	>0.05
Economic status					
< 5000 (lower class)	Rural Urban	219 (73.00) 144 (72.00)	67 (22.33) 45 (22.50)	0.009	>0.05
5000-10000 (Middle class)	Rural Urban	2 (0.66) 3 (1.50)	11 (3.66) 8 (4.00)	0.511	>0.05
>10000 (Upper class)	Rural Urban	1 (0.33) -	- -	-	-

MATERIALS AND METHODS

It was a cross sectional study conducted among 500 liver cirrhotic patients who visited or were admitted in Gastroenterology Department of SKIMS Soura and SMHS hospital Srinagar.

Anthropometric measurements were measured, such as weight, height and mid arm circumference. Weight was measured using a digital weighing scale, height with a wall- mounted stadiometer and mid arm circumference with a non- stretchable tape. The body mass index was calculated using the formula proposed by quetelet (http://www.morris.umn.edu (assessed 14

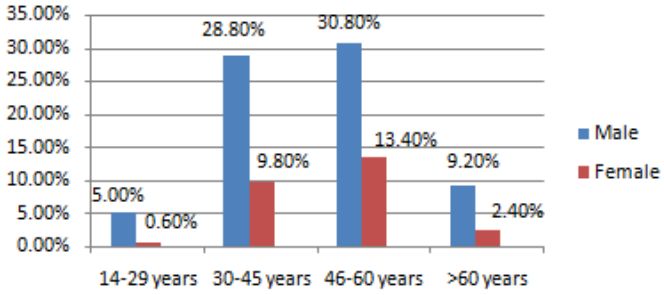

Fig no. 1 Distribution of patients as per age group

Table 3. Nutritional indices (BMI, MAC) of liver cirrhotic patients

Variables	Residence	Gender	Mean ± Sd	Z value	P- value
Weight (kg)	Rural	Male Female	57.662 ± 3.729 20.397 ± 6.362	9.526708	<0.01
	Urban	Male Female	56.942 ± 3.184 50.491 ± 5.553	7.996729	<0.01
Height (m)	Rural	Male Female	1.5192 ± 0.0626 1.545 ± 1.601	-0.14228	>0.05
	Urban	Male Female	1.5235 ± 0.0625 1.5589 ± 0.0150	-6.37673	<0.01
BMI	Rural	Male Female	19.132 ± 2.117 18.586 ± 2.418	1.7701	>0.01
	Urban	Male Female	18.96 ± 2.214 18.733 ± 2.236	0.63528	>0.01
MAC (cm)	Rural	Male Female	19.316 ± 2.839 18.827 ± 2.788	1.326187	>0.01
	Urban	Male Female	18.680 ± 3.056 18.253 ± 3.170	0.848698	>0.05

Table 4. Biochemical values of liver cirrhotic patients

Values	Residence	Gender	Mean ± Sd	Z value	P- value
Hemoglobing/dl	Rural	Male Female	7.0912 ± 1.4507 7.242 ± 1.419	-0.80269	>0.05
	Urban	Male Female	7.099 ± 1.566 7.379 ± 1.839	-0.98692	>0.05
Total Protein g/dl	Rural	Male Female	3.573 ± 1.712 4.271 ± 1.940	-2.81567	<0.01
	Urban	Male Female	3.433 ± 1.705 3.934± 1.719	-1.82297	>0.05
Bilirubin mg/dl	Rural	Male Female	15.037 ± 12.196 18.08 ± 16.24	-1.51184	>0.05
	Urban	Male Female	17.44 ± 13.99 10.72 ± 9.36	3.889894	<0.01
Albumin g/dl	Rural	Male Female	1.5623 ±1.0001 1.609 ± 0.919	-0.37714	>0.05
	Urban	Male Female	1.5036 ±1.1523 1.857 ± 1.056	-2.03788	<0.01
Creatinine mg/dl	Rural	Male Female	7.0912 ± 1.4507 5.32 ± 12.14	1.285315	>0.05
	Urban	Male Female	4.769 ± 8.168 5.46 ± 8.61	-0.50768	>0.05

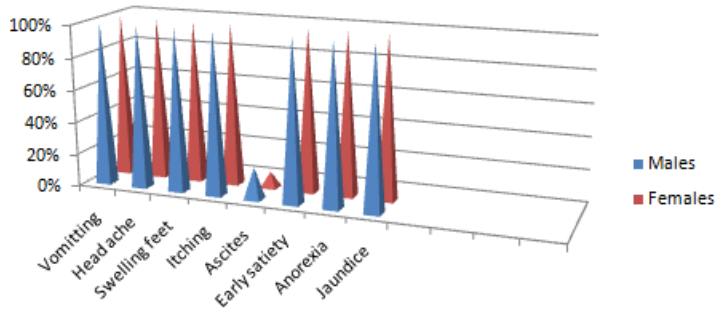

Fig .2. Clinical signs in liver cirrhotic patients

July 2009)) BMI = weight (kg) /height (meter) ^{2}. Biochemical information was obtained from medical records of concerned respondents.

Statistical analysis

All data were statistically analyzed through statistical package for social science (SPSS) software version 20.00, Microsoft excel and Minitab. Metric data was described as mean ± SD. It's inter group comparisons were done by student's t- test and Man Whitney U test. Non parametric data was expressed and described as percentages. The intergroup comparison for such data was done by Chi-square analysis, Man Whitney U test was used for two-group comparisons in nonparametric data. Mean, SD, median and Z-test were used for anthropometric, laboratory and nutritive variables. Significance was evaluated as follows:

P-value: > 0.05 (no-significant).
P-value: < 0.05 (significant).
P-value: < 0.01 (highly significant).

RESULTS

The total studied respondents were 500 out of which 300 were from rural area and 200 were from urban area. It was observed that out of 300 rural respondents 222 (44.4%) were males and 78 (15.6%) were females (Table 1). Further, it was observed that out of 200 urban respondents 147 (29.4%) were males and 53 (10.6%) were females. Socioeconomic status of the liver cirrhotic patients is presented in Table 2. It was observed that 96.93% (71.6% males & 25.33% females) rural patients were married and in urban area 98.5% (73% males & 25.5% females) studied respondents were married. Most of the patients investigated were illiterate 62.66% rural and 58% urban respondents.

Regarding occupation of the studied respondents, in rural area majority of the males were laborers (66.33%), 4.33% males were employed, 3.33% males were unemployed and 24.66% females were housewives. Further, it was observed that in urban area 63.5% males were laborers, 7.5% males were employed, 2.5% males were unemployed and 26% females were housewives. 91.33% rural & 95.5% urban had nuclear type family and only 8.66% rural respondents and 34.5% urban patients had joint type family system. It was observed that majority 95.33% of rural studied respondents (73% males & 22.33% females) and 94.5% urban studied respondents (72% males & 22.5% females) belonged to lower socioeconomic class whose monthly income is Rs <5000. Statistically it was observed that there is a no-significant difference between socio demographic characteristics of studied liver cirrhotic respondents (P >0.05). Fig no.1 shows the age wise distribution of respondents. It was found that the disease is more prevalent in the age group of 46-60 years (30.8% were males and 13.4% were females) followed by the age group of 30-45 years (28.8% were males & 9.8% were females). Table 3 shows the average BMI and MAC values of the liver cirrhotic patients. The mean BMI of the rural male and female patients was (19.132 ± 2.117 & 18.586 ± 2.418) and in urban male and female patients it was (18.96 ± 2.214 & 18.733 ± 2.236). Mid arm circumference value of rural male and female patients was (19.316 ± 2.839 & 18.827 ± 2.788) and in urban male and female patients it was 18.680 ± 3.056 & 18.253 ± 3.170 respectively. Statistically it was observed that there is highly significant difference between weight of male and female respondents of both areas and height of urban male and female respondents (P<0.01).

Biochemical analysis showed that mean hemoglobin value of rural male and female respondents is (7.0912 ± 1.4507 & 7.242 ± 1.419) and in case of urban male and female respondents (7.099 ± 1.566 & 7.379 ± 1.839) (Table 4) indicating they were anemic. Mean protein values of rural and urban patients were (3.573 ± 1.712 & 4.271 ± 1.940) and (3.433 ±1.705 & 3.934 ± 1.719) respectively. Mean ± SD of bilirubin in rural patients is (15.037 ± 12.196 & 18.08 ± 16.24) and in urban patients is (17.44 ± 13.99 & 10.72 ± 9.36). Mean ± SD of albumin in rural patients is (1.5623 ± 1.0001& 1.609 ± 0.919) and in urban patients (1.5036 ± 1.152 & 1.857 ± 1.056) and Mean ± SD of Creatinine in rural patients is (7.0912 ± 1.4507 & 5.32 ± 12.14 and in urban patients is (4.769 ± 8.168 & 5.46 ± 8.61) respectively. Careful perusal of the Fig 2 shows that all the studied respondents, both male and female had presence of all signs and symptoms of liver cirrhosis except ascites which was present only in 20% male respondents and 10% female respondents.

DISCUSSION

Liver cirrhosis is one of the common health problems in Kashmir. Infections and nutritional deficiency diseases are the "diseases of poverty." Poverty predisposes to malnutrition, the major public health problem in Kashmir valley. Likely malnutrition is frequent and common in liver cirrhosis. In the present study, most of the cirrhotic patients (73.8%) males were more affected than females (26.2%) with liver cirrhosis in both areas. It was observed that the 44.2% of the study respondents belonged to the age group of 46- 60 years, 38.6% of the study respondents belonged to 30-45 years, 11.60% to >60 years and 5.60 % of the study respondents belonged to the age group of 14-29 years. The results of the present study were similar to the studies conducted by Singh *et al*., 2013, Teiusanu *et al*. (2012), Ullah (2012), Chalasani N (2003), Arguedas (2001) and Nevens (1995). In the present study most of the patients were married, illiterate, laborers with nuclear type of family system and had low socio economic group are more vulnerable to this disease. These results were somewhat consistent with the reports of Idris *et al* (2013), Khan *et al* (2012), Corrao (2004) and Ahsan (2007). The present study observed that 47.8 % males and 26.2% females had BMI <18.5 Kg/m^2 and 22.6 % males and 9.8 % females had normal BMI value 18.5-22.9 Kg/m^2. In a study conducted by Tail MS *et al* (2010) on 36 Malaysia cirrhotic patients which revealed that anthropometric values in males was (BMI 18.1 ± 1.6 vs 26.3 ± 3.5 Kg/m^2) and females (BMI 19.4 ± 2.7 vs 28.9 ± 4.3 Kg/m^2). Roongpisuthipong *et al*. (2010) observed the same observation in their study that out of 60 studied patients 17.8% had body mass index below 18.5 Kg/m^2. The present study also observed that muscle wasting was present in studied respondents. A study conducted by Teiusanu *et al*. (2012) on 176 patients revealing that mid arm circumference was

decreased according to the child score and significant correlation was found between MAC and severity of the disease (Teiusanu *et al*., 2012). The present study identified a high prevalence of anemia, hyperbilirubinemia, low albumin levels, low serum protein levels, and high creatinine levels. These values are deviated from the normal values especially in the age group of 46-60 years (Nishiguchi *et al*., 2013; Ahsan *et al*., 2007; Salma *et al*., 1999). These signs interfere with the intake of dietary intake which leads to malnutrition in these patients. A study conducted by Carvalho *et al* (2006) on 300 liver cirrhotic patients revealed that 55% of the studied respondents had insufficient food intake due to presence of discomforts like nausea, fatigue, vomiting and swelling (Campillo, 2003). Our results also related with the findings of Ahsan (2007) revealed that majority of the studied respondents were suffering from ascites, edema, nausea, vomiting and muscle wasting (Ahsan *et al*., 2007).

Conclusion

This disease is more seen in males from rural areas having nuclear type of family system and belonged to low socioeconomic group. Malnutrition is highly prevalent among Kashmir individuals with liver cirrhosis. Patients with cirrhosis had relatively low BMI, mid arm circumference, hemoglobin, protein and albumin levels. There is significant correlation between these parameters and severity of the disease.

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Conflicts Of Interest: - All authors declare that we have no conflicts of interest.

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Abbreviations

SKIMS- Sheri Kashmir Institute of Medical Science
SMHS- Sheri Maharaja Hari Singh Hospital Srinagar
BMI- Body mass index
MAC-Mid arm circumference
PEM-Protein energy malnutrition
WHO-World health organization

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