

## **Descriptive Study on Liver Cancer among Alcohol consumer and Smokers**

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### **Abstract**

*Liver cancer is one of the significant cancer types affecting the human population taking their lives. The study aimed to analyze the situation of liver cancer among alcohol consumers and smokers together, and it was conducted in BPKMCH, Chitwan. The data was collected from the year 2009 to 2013 AD. Randomly selected 160 cancer cases and analyzed the data. The finding suggested that most of the liver cancer patients drank alcohol and smoking cigarettes. The study indicated that there is still a need to investigate further the role of alcohol and smoking in the cancer genesis among them.*

**Key Words:** Alcohol, Liver Cancer, Smoking

## **Introduction**

### **Background**

Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020. According to the Cancer.net editorial board report, it is estimated that 30,230 deaths (20,300 men and 9,930 women) from this disease will occur this year. For men, liver cancer is the fifth most common cause of cancer death. However, it is the seventh most common cause of cancer death among women (Cancer.net, 2021). Cancer arises from transforming normal cells into tumor cells in a multi-stage process that generally progresses from a pre-cancerous lesion to a malignant tumor.

According to the CDC, cancer starting from the liver is liver cancer (Center for Disease Control and Prevention (CDC), 2021). Liver cancer tolls death was 8.3% in both sexes worldwide (International Agency for Research on Cancer, 2020). In addition, recent global disease burden estimation shows that age-adjusted annual mortality rates due to HCC are 2.8 per 100,000 in Nepal (Shrestha, 2018).

There are some risk factors of liver cancer: alcohol, smoke, drugs, medicine, etc. Some other factors are Hepatitis B and C viruses, and some types of HPV increase the risk for liver and cervical cancer, respectively (World Health Organization, 2021).

Although treatment of liver cancer at a late stage is challenging, various modalities are there to treat different stages of liver cancer, which are surgery, liver transplant, or treatment for cancer destruction. The prognosis of the disease is poor if untreated. The median survival for stage A liver cancer is three years. According to Cancer Research UK, if liver cancer is treated early, the survival of patients was five years or more and was between 70 – 90%. Similarly, younger patients' 5-year survival was high compared to the elderly (<https://www.cancerresearchuk.org/about-cancer/liver-cancer/survival>, 2018). The situation in developing countries related to the liver cancer problem is much worse than in the developed world due to poverty, disparity, service availability, etc. At present, general peoples' inadequate knowledge about cancer causes a delay in diagnosis, resulting in difficulties in treatment, leading to poor treatment outcomes. People seem to have less awareness regarding the risk factors of liver cancer, which is causing the increment of cancer. Thus, there is a need to explore liver cancer and personal habits of people using alcohol and smoking.

### **Research Objective**

The main objective of this study is to explore analytically liver cancer cases and their number with different variables age, sex, occupation, ethnicity, religion, caste, and personal habit of alcohol, smoking.

## **Materials and Methods**

The study was descriptive and quantitative in nature. B. P. Koirala Memorial Cancer Hospital at Bharatpur, Nepal, maintained a list of 800 cancer patients. These 800 patients were considered for the study, randomly selecting 160 patients each year, from 2009 to 2013 A.D. A checklist was prepared to collect the data. In the beginning, verbal consent was taken from each patient to inquire about the patient's details. The relevant clinical and some behavioral information of the patients were collected based on the developed checklist. While collecting the data, either the patient or his/her guardians were interviewed directly or through telephone. In this paper, the focus has been to analyze only 61 liver cancer patients' data out of 800 patients. The distribution of liver cancer in association with demographic profiles, personal and other medical history were analyzed to explain the patterns of liver disease.

Descriptive statistical analysis tools such as mean  $\pm$ sd, range, etc., are computed and presented for continuous variables. The percentages were calculated and reported for different categorical variables. The ethical approval was taken from Nepal Health Research Council for the study.

## **Results and Discussion**

### **Description of age and Liver cancer**

The average age (mean  $\pm$  sd) of all 800 cancer patients was  $53.47 \pm 14.93$  years ranging from 3 to 89 years. Among them, 334 (45.2%) were females. Out of total cancer patients, 61 (7.63%) were having liver cancer. The average age (mean  $\pm$  sd) of liver cancer patients was ( $51.11 \pm 15.19$ ) years with a minimum age of 16 years to maximum age of 82 years. The ratio of female to male liver cancer patients was 23:38. To observe the patterns of liver cancer age group-wise, the age of liver cancer patients was grouped into three groups (less than 20 years, 20 – 40, and more than 40 years). The percentage distribution of liver cancer patients in association with gender and age group is presented in Table1. Only two patients were reported to be of having the age below 20 years. Approximately three fourth of the total liver cancer patients were having the age group more than 40 years.

### **Age and Gender distribution of Liver cancer patients**

Age and gender also showed variation among the liver cancer patients. The analysis is as in the following table.

**Table 1. Age and Gender-wise distribution of Liver Cancer Patients**

Characteristics	Number	Percentage
<b>Gender:</b>		
Female	23	45.2
Male	38	54.8
<b>Age in years:</b>		
Less than 20	2	3.3
20 – 40	14	23.0
More than 40	45	73.8
Total	61	100

Source: Computed from Survey data

None of the female patients were having less than 20 years of age. Among 45 patients aged more than 40 years, the majority (66.7%) were males. Nonetheless, among 14 liver cancer patients aged 20 to 40 years, the majority (57.1%) were females, as shown in Table2. The table also shows that 73.8% of the patients were older than 40, as shown in table 1. It showed that age is also a risk of liver cancer. The findings from ‘Liver cancer incidence statistics’ of Cancer Research Organization UK also showed similar results in liver cancer cases raised with age (Cancer Research UK, 2020).

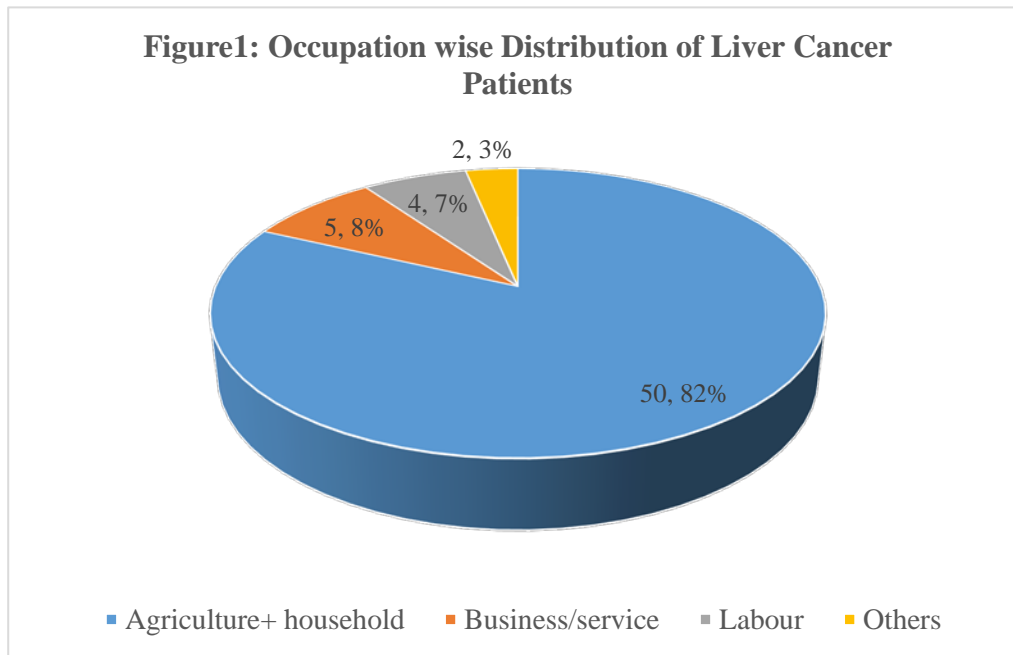
**Table 2. Age Sex cross –tabulation of Liver Cancer patients**

Age in years	Gender		Total
	Female (%)	Male (%)	
Less than 20	0(0.0)	2(100.0)	2
20 - 40	8(57.1)	6(42.9)	14
More than 40	15(33.3)	30(66.7)	45
Total	23(37.7)	38(62.3)	61

Source: Computed from Survey data

### Distribution of Liver Cancer based on Occupation

Occupation also could be a risk for causing cancers. The following chart describes the distribution of liver cancer with respect to patients’ occupations.



Among the total liver cancer patients, more than four-fifth (82%) were belonging to agriculture and household occupation, followed by business and services (8%), and is followed by the occupation of labor (7%) which is depicted in Figure1. Venerando Rapisarda et al. wrote that occupational exposure to chemicals poses a risk for Hepatocellular Carcinoma (HCC) (Venerando Rapisarda, 2016). Yan Liu and Felicia Wu also described liver cancer prevalence is much higher in the developing world. Their study showed fungi *Aspergillus flavus* and *Aspergillus parasiticus*, which produce Aflatoxin in maize and nuts, known human liver carcinogen (Yan Liu, 2010).

#### **Distribution of Liver Cancer Patients based on caste and religion**

Nepalese population is composed of different caste and religion. The following table describes the distribution of liver cancer patients based on their caste and religion.

**Table 3. Caste and Religion wise Distribution of Liver Cancer Patients**

Characteristics	Number	Percentage
<b>Caste</b>		
Brahmin	12	19.7
Chhetri	15	24.6
Janajati	15	24.6
Dalit	7	11.5
Madhesi	9	14.8
Other	3	4.9
<b>Total</b>	<b>61</b>	<b>100.0</b>
<b>Religion</b>		
Hindu	54	88.5
Buddhist	3	4.9
Christian	1	1.6
Muslim	3	4.9
<b>Total</b>	<b>61</b>	<b>100.0</b>

Source: Computed from Survey data

Caste and religion-wise distribution patterns of liver cancer patients are presented in Table 3. Majority of the patients belonging to both Chhetri and Janajati each (24.6%), followed by Brahmins (19.7%) and is followed by Madhesi (14.8%). According to religion, the patterns of the liver cancer patients show that the majority belongs to Hindu (88.5%), followed by Buddhist and Muslim (4.9%). Only one patient belonging to the Christian religion. Ethnicity also may cause risk of liver cancer which is evident from the description of Mindie H Nguyen et al. that “in the United States, hepatocellular carcinoma (HCC) is more common among Asians and African Americans than Caucasians” (NGUYEN, et al., 2004).

**Distribution of Liver Cancer by Patient’s Personal Habit of smoking and drinking alcohol**

**Table 4. Distribution of Liver Cancer by Patient’s Personal Habit**

Habit of smoking:	Number	Percentage
Yes	27	44.3
No	34	55.7
<b>Total</b>	<b>61</b>	<b>100.0</b>
<b>Habit of alcohol use:</b>		
Yes	33	56.9
No	25	43.1
<b>Total*</b>	<b>58</b>	<b>100.0</b>
<b>Habit of using both alcohol and smoking:</b>		
No	40	69.0
Yes	18	31.0
<b>Total</b>	<b>58</b>	<b>100.0</b>

Source: Computed from Survey data

Among the liver cancer patients, 44.3% were reported to be the habit of smoking (Table 4). However, approximately 57% of them were having the habit of using alcohol. Sixty-nine percent of the liver patients were reported to have the personal habit of smoking and using alcohol. Among them, the status of three patients with the habit of using alcohol was not known. Similar results were mentioned in other researches that smoking and alcohol drinking increased the risk of liver cancer. The study by Shrestha (2020) showed that liver and other cancers are also rising cancers in Nepal. They also mentioned dietary patterns, alcohol consumption, fatty junk food, spicy food, low fiber diet, etc., as some of the significant risk factors for these cancers in Nepal (Shrestha, et al., 2020). Another study by Turati et al. described the increased risk of alcohol consumption and liver cancer (Turati, et al., 2014). CDC mentioned alcohol, smoking, etc., as some of the risks for liver cancer (Center for Disease Control and Prevention, 2021). On the other hand, Cancer Research UK described that 7% of liver cancer in the UK is caused by drinking alcohol (Cancer Research UK, 2019). Smoking as a risk of Liver cancer was described in the study by Jessica, where it is mentioned that cessation of smoking and minimal drinking can reduce the risk of and Hepatocellular Cancer (HCC) (Jessica L Petrick et al., 2018). Research showed that Heavy alcohol consumption increases the risk of liver cancer. Moreover, alcohol drinking and smoking together increases the risk furthermore (Cancer Research UK, 2019)

## **Conclusion and Recommendation**

Analysis of tables and figures showed that out of 800 studied cancer patients, 61 (7.63%) had liver cancer. The average age (mean  $\pm$  sd) of liver cancer patients was (51.11  $\pm$  15.19) years ranging from 16 years to 82 years of age. The ratio of males is to females was found much higher in the case of liver cancer. The number of liver cancer patients increased with advancing age. Approximately 51% of the patients' occupation was agriculture and household. Other occupations were Service/business 5.8%, Labor 4.7 among liver cancer patients.

The analysis based on caste and ethnic group of liver cancer patients showed both Chhetri and janajati were each (24.6%) followed by Brahmins (19.7%) and is followed by Madhesi (14.8%). Religion-based analysis showed the majority of the patients were Hindu (88.5%) followed by Buddhist and Muslim each (4.9%) with a single patient from Christian. It indicates that Chhetri and Janjati had a slightly higher prevalence than other castes.

From the findings, it was evident that liver cancer was high among the patients who drink alcohol, followed by the smokers. Still, the number of the patient was high among those who use both drinking alcohol and smoking. Furthermore, various other researches also support the findings of this research that the persons drinking alcohol and smoking have a higher prevalence of Liver cancer. Therefore, the study findings showed a need for further research on liver cancer and its relation to drinking alcohol and smoking.

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