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Awareness of Liver Cancer among Adult Population of Selected Community of Gorkha District: A Cross-Sectional Study

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ABSTRACT

Background

Cancer is an abnormal uncontrolled cells growth with ability to infiltrate and destroy normal tissues. Liver cancer is a major public health concern with increasing incidence and mortality worldwide. Awareness and early recognition of risk factors and symptoms play a crucial role in prevention and timely treatment. In Nepal, limited community-level data exist regarding public knowledge of liver cancer. Understanding current awareness levels can help guide targeted health education and prevention strategies.

Methods

A descriptive cross-sectional research study was conducted at Ahale 8, Gorkha to identify the awareness regarding Liver Cancer among community people from May 18 to 31, 2025.There were 116 samples were included by using non-probability purposive sampling technique. Data was collected by structured interview schedule, analyzed in SPSS version 22 and interpreted by using descriptive and inferential statistics.

Results

The study showed mean age of respondent as 41.28± 10.233, 60.3% of respondent were female, 56.0% were Janajati and majority 92.2% were Hindu. The 40.5% respondents completed secondary level education and 54.3% respondents income was sufficient for below than 3 months. The level of awareness among respondents had 86.3% poor, 10.3% moderate & 2.6% good. There were statically significant with gender, income and family history of liver cancer at p-value <0.005.

Conclusions

This study concludes that there is poor level of awareness among community people which indicate a need for awareness program on liver cancer and measures to be followed for the prevention and screening in general people.

Keywords: Liver; Cancer; Awareness; Adult-population; Community

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INTRODUCTION

Cancer is a large group of diseases that can begin in almost any organ or tissue of the body, characterized by the uncontrolled growth of abnormal cells that may invade surrounding tissues or spread to distant organs. This process, known as metastasis, is a major cause of cancer-related mortality. Cancer is also referred to as neoplasm or malignant tumor, as defined by the World Health Organization (WHO). Globally, cancer is the second leading cause of death, accounting for an estimated 9.6 million deaths, or 1 in 6 deaths in 2018.[1] Liver cancer is a malignant tumor originating in the liver and is often aggressive, commonly occurring in individuals with chronic liver disease and cirrhosis.[2] Globally, liver cancer is the sixth most common cancer, with approximately 866,136 new cases and 758,725 deaths annually, making it a major cause of cancer mortality. In the United States, there were 43,492 new cases and 30,931 deaths, ranking it as the sixth leading cause of cancer-related death. In India, 38,703 new cases and 36,953 deaths were reported, while in Nepal, 558 new cases and 544 deaths were recorded.[3] At B.P. Koirala Memorial Cancer Hospital, the 2023 annual report documented 6,294 new cancer cases, among which 129 were liver cancer.[4] Awareness refers to the perception, understanding, or knowledge of a condition, situation, or health issue based on information or experience.[5] Liver cancer is strongly associated with hepatitis B and C infections, contributing to about 75% of cases. In addition, risk factors include alcoholic cirrhosis, metabolic disorders (e.g., hereditary tyrosinemia, galactosemia, ataxia telangiectasia), and environmental exposures such as aflatoxin, thorotrast, androgenic steroids, and cigarette smoking.[6, 7] A study in Singapore (2021) reported that although 91.2% of participants agreed on the importance of liver health screening, only 65.4% had undergone screening in the past two years. Knowledge gaps were noted regarding hepatitis transmission, vaccination, and diagnostic tests.[8] Similarly, a study in Pune, India (2024) found that 36% of participants had good knowledge of liver cirrhosis, while 33% had poor knowledge.[9] A study conducted at Tribhuvan University Teaching Hospital (2020-2022) highlighted late presentation of liver cancer and underutilization of curative treatment, emphasizing the need for early detection and increased awareness.[10] This study amide to identify the awareness regarding Liver Cancer among community people.

METHODS

Study Design

A descriptive cross-sectional study was conducted to assess the level of awareness regarding liver cancer among the adult population.

Study Area

The study was carried out From May 18 to 31 , 2025, at Ahale -8, Gorkha.

Study Population

The study population comprised adult individuals of Ahale 8 Gorkha during the data collection period.

Sample Size

A total of 116 respondents were included in the study.

Sampling Technique

A non-probability purposive sampling technique was used to select the study participants.

Data Collection Tools and Technique

Data were collected using a semi-structured interview schedule developed in the Nepali language. The instrument consisted of 34 questions related to awareness of liver cancer. Each correct response was assigned a score of 1, whereas incorrect responses were assigned a score of 0.

The questionnaire was pretested among 10% of the estimated sample in a similar setting to assess its clarity and feasibility. Respondents who participated in the pretest were excluded from the main study.

Variables/Measurements

The primary study variable was the level of awareness regarding liver cancer. Awareness was assessed using a 34-item questionnaire and categorized according to Bloom's cut-off points as follows: good awareness (80-100%), moderate awareness (60-79%), and poor awareness (<60%).[18]

Statistical Analysis Used

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 22.

Descriptive statistics, including frequencies and percentages, were used to summarize the study findings.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Committee of B.P. Koirala Memorial Cancer Hospital (Ref. No.: 89/081/082 before commencement of the study. Written informed consent was obtained from all respondents prior to data collection. Confidentiality and anonymity of the participants were strictly maintained throughout the study.

RESULTS

The study included a total of 116 respondents. Regarding age distribution, the largest proportion of respondents were in the 41-50 years group (30.2%), followed by 31-40 years (25.0%), 51-60 years (24.1%), and 21-30 years (20.7%). In terms of sex, 60.3% were female and 39.7% were male. Regarding ethnicity, more than half of the respondents were Janajati (56.0%), followed by Brahmin/Chhetri (28.4%), Dalit (14.7%), Christian (6.0%), and Muslim (0.9%). In relation to income sufficiency, over half of the respondents (54.3%) reported income sufficient for less than 3 months, followed by 31.9% for 3-6 months, 9.5% for 6–12 months, and only 4.3% for more than 12 months. Most respondents (95.7%) reported no family history of cancer, while only 4.3% had a positive family history. Regarding educational status, the highest proportion had secondary education (40.5%), followed by primary education (32.8%), no formal education (16.4%), higher education (8.6%), and more than higher education (1.7%) (Table 1).

Table 1. Socio-Demographic Characteristics of Respondents (n = 116).

Characteristics	Frequency (%)
Age (years)	
21-30	24 (20.7)
31-40	29 (25)
41-50	35 (30.2)
51-60	28 (24.1)
Sex	
Male	46 (39.7)
Female	70 (60.3)
Ethnicity	
Brahmin/Chhetri	33 (28.4)
Dalit	17 (14.7)
Janajati	65 (56)
Muslim	1 (0.9)
Christian	7 (6)
Income sufficient for	
< 3 months	63 (54.3)
3-6 months	37 (31.9)
6-12 months	11 (9.5)
> 12 months	5 (4.3)
Family history of cancer	
Yes	5 (4.3)
No	111 (95.7)
Education	
No education	19 (16.4)
Primary education	38 (32.8)
Secondary education	47 (40.5)
Higher education	10 (8.6)
More than higher education	2 (1.7)

The study showed that awareness regarding liver cancer varied across different domains. Most respondents correctly identified that liver cancer can be detected early and that prognosis depends on the time of detection (94.8% each). However, only 34.5% correctly identified liver cancer as originating in the liver, while misconceptions were observed regarding its definition. Regarding modifiable risk factors, more than half identified obesity (55.2%) and alcohol consumption (52.6%) as risk factors, while fewer respondents recognized diabetes (44%) and non-alcoholic fatty liver disease (17.2%). Awareness of other key factors such as hepatitis B non-vaccination (6.9%), cirrhosis (5.2%), unsafe injections (3.4%), and unsafe blood transfusion (3.4%) was very low. For non-modifiable risk factors, older age was most commonly identified (44.8%), followed by male gender (37.1%), ethnicity (25%), and family history (16.4%). In terms of signs and symptoms, jaundice (48.3%) was the most recognized sign, followed by weight loss (35.3%), abdominal distension (26.7%), abdominal mass (9.5%), ascites (8.6%), and hematemesis (7.8%). Similarly, common symptoms such as loss of appetite and nausea (47.4% each) were better recognized than malaise (37.9%) and abdominal pain (26.7%).

Regarding primary prevention, quitting smoking (72.4%) and alcohol (70.7%) were most frequently identified, while awareness was lower for healthy diet (56%), exercise (37.9%), diabetes control (25%), hepatitis B vaccination (19.8%), and partner vaccination (17.2%). For secondary prevention, only 36.2% identified periodic liver health monitoring, while fewer respondents recognized screening for high-risk groups such as those with family history (23.3%) and viral hepatitis (20.7%) (Table 2)

The study showed that the majority of respondents had poor awareness 101 (86.3%), with a 95% CI of 80.97% to 93.17%. A small proportion had moderate awareness 12 (10.3%), with a 95% CI of 4.80% to 15.90%, while only a very few had good awareness 3 (2.6%), with a 95% CI ranging from 0.00% to 5.50% (Table 3).

Table 2. Respondents Awareness on Liver Cancer (n=116).

Awareness on	Frequency (%)
Meaning of Liver Cancer	
Liver cancer is a cancer that originates in the liver	40 (34.5)
Liver cancer is Uncontrollably increase in the abnormal cells in liver	13 (11.3)
Liver cancer can detect early	110 (94.8)
Prognosis depends upon time of detection	110 (94.8)
Modifiable Risk Factors	
Obesity	64 (55.2)
Drinking alcohol	61 (52.6)
Diabetes mellitus	51 (44)
Non-alcoholic fatty liver disease	20 (17.2)
Non Vaccination of hepatitis B virus	8 (6.9)
Cirrhosis of liver	6 (5.2)
Unsafe injection practice	4 (3.4)
Unsafe blood transfusion	4 (3.4)
Non-Modifiable Risk factors	
Older age	52 (44.8)
Sex (Male)	43 (37.1)
Ethnicity/Race	29 (25)
Family history of liver cancer	19 (16.4)
Sign	
Jaundice	56 (48.3)
Weight loss	41 (35.3)
Abdominal distension	31 (26.7)
Abdominal mass	11 (9.5)
Ascites	10 (8.6)
Hematemesis	9 (7.8)
Symptoms	
Loss of appetite	55 (47.4)
Nausea	55 (47.4)
Malaise	44 (37.9)
Abdominal pain	31 (26.7)
Primary Prevention	
Quit smoking	84 (72.4)
Quit alcohol	82 (70.7)
Eating healthy, Fresh meal	65 (56)
Fresh fruits and vegetables	55 (47.4)
Regular exercise and Weight loss	44 (37.9)
Control diabetes and high blood pressure	29 (25)
Don't share razor & toothbrush	25 (21.6)
Hepatitis B virus vaccine	23 (19.8)
Hepatitis B virus vaccine for partner	20 (17.2)
Secondary Prevention	
Periodic liver health monitor	42 (36.2)
Periodic check-up for patient with positive family history	27 (23.3)
Periodic check-up for viral hepatitis	24 (20.7)

Table 3. Level of Awareness of Liver Cancer (n=116).

Level of Awareness	Frequency (%)	95% CI (%)	
		Lower	Upper
Poor	101 (86.3)	80.97	93.17
Moderate	12 (10.3)	4.80	15.90
Good	3 (2.6)	0.00	5.50

The association between socio-demographic variables and level of knowledge shows mixed findings. Most respondents across all age groups had poor knowledge (82.8%-91.7%), and the association between age and knowledge was not statistically significant ($\chi^2 = 6.032$, $p = 0.420$). Similarly, ethnicity ($\chi^2 = 2.142$, $p = 0.906$) and education level ($\chi^2 = 9.111$, $p = 0.333$) showed no significant association with knowledge level. However, a statistically significant association was

observed with sex ($\chi^2 = 7.253$, p = 0.027), income sufficiency for household expenses ($\chi^2 = 12.877$, p = 0.045), and family history of cancer ($\chi^2 = 8.079$, p = 0.018). (Table 4).

Table 4. Association Between Level of Awareness with Selected Sociodemographic Variables (n=116).

Variables	Level of Knowledge			Chi-square	P-value
	Poor n (%)	Moderate n (%)	Good n (%)		
Age					
21-30	22 (91.7)	2 (8.3)	0 (0.0)	6.032	0.42
31-40	24 (82.8)	5 (17.2)	0 (0.0)		
41-50	31 (88.6)	3 (8.6)	1 (2.9)		
51-60	24 (85.7)	2 (7.1)	2 (7.1)		
Sex					
Male	41 (89.1)	2 (4.3)	3 (6.5)	7.253	0.027
Female	60 (85.7)	10 (14.3)	0 (0.0)		
Ethnicity					
Bhrahim/chhetri	29 (87.9)	3 (9.1)	1 (3.0)	2.142	0.906
Dalit	14 (84.4)	3 (17.6)	0 (0.0)		
Janajati	57 (87.7)	6 (9.2)	2 (3.1)		
Muslim	1 (100.0)	0 (0.0)	0 (0.0)		
Christian	6 (85.7)	1 (14.3)	0 (0.0)		
Income Sufficient for					
< 3 months	58 (92.1)	5 (7.9)	0 (0.0)	12.877	0.045
3 to 6 months	33 (89.2)	3 (8.1)	1 (2.7)		
6 to 12 months	7 (63.6)	2 (18.2)	2 (18.2)		
> 12 months	3 (60.0)	2 (40.0)	0 (0.0)		
Family History of Cancer					
Yes	2 (40.0)	3 (60.0)	0 (0.0)	8.079	0.018
No	99 (89.2)	9 (8.1)	3 (2.7)		
Education					
No education	17 (89.5)	1 (5.3)	1 (5.3)	9.111	0.333
Primary education	35 (92.1)	3 (7.9)	0 (0.0)		
Secondary education	38 (80.9)	8 (17.0)	1 (2.1)		
Higher education	9 (90.0)	0 (0.0)	1 (10.0)		
More than higher education	2 (100.0)	0 (0.0)	0 (0.0)		

Significance level 0.05

DISCUSSION

This cross-sectional study was conducted to assess regarding liver cancer awareness among community people. A total of 116 people were selected by using non-probability, purposive sampling technique. The sociodemographic study result revealed that, 30.2% of respondents were in the age group 41-50. This study is supported by a study conducted in Nepal from march 2020 to august 2022 shows that 14.81% of the participants belong to age group of 40 to 49 years. Regarding gender majority 60.3% were female whereas similarly study conducted in Nepal in 2020 to 2022 shows that 14.8% of participants were females.[10] Regarding ethnicity 28.4% of respondents were Brahmin, 56% respondents were Janajati, 14.7% respondents were Dalit. Likewise, in religion 92.2% of respondents were Hindu, 1.7% of respondents were Buddhist, 0.9% respondents were Muslim 6% respondents were followed Christian and this study is supported by previous study conducted in Nepal in 2020 to 2022 shows that 88.5% participants as Hindu, 4.9% respondents

were Buddhist, 4.9% respondents were Muslim. Regarding Personal habit 1. 7% had habit of smoking, 13.8% had habit of alcohol used, 3.4% had habits all of the habits which is supported by a study conducted in BPKMCH chitwan from 2009 to 2013 shows that 44.3% had habit of smoking, 57% had habits of alcohol, 31% had both alcohol and smoking habits.[14] Regarding education,32.8% of respondents had completed primary education, 40.5% of respondents had completed secondary education, 1.7% of respondents had completed more than higher education which is similarly to study conducted in march 2021 shows 0.2% had primary education, 24.8% had secondary education, 15.4% had more than higher education.[7] Regarding economic status, 54.3% of respondents having income for below than 3 months. As regard family history of liver cancer ,4.3% of respondents had family history of liver cancer similarly study conducted in 2020 shows 15.60% had family history of liver cancer. [38]

Regarding awareness of liver cancer, this study reveals that 94.8% were aware about liver cancer. Likewise, 55.2% of respondents knew about obesity was modifiable risk factors of liver cancer. half 52.6% were aware about drinking alcohol, 44% were aware about diabetes mellitus, 17.2% were aware about non-alcoholic fatty liver disease, 5.2% were aware about cirrhosis of liver, 3.4% were aware about unsafe injection practice, 3.4% were aware about unsafe blood transfusion that is supported by a previous study conducted in singapore in 14 march 2021 shows that 44.8% of respondents were aware about non-modifiable risk factor of liver cancer was obesity, 43% were aware about drinking alcohol, 28.8% were aware about diabetes mellitus, 75% were aware about non-alcoholic fatty liver disease, 38.8% were aware about cirrhosis of disease, 73.1% were aware about unsafe injection practice, 66.4% were aware about unsafe blood practice was risk factor of liver cancer.[7]

Likewise, 44.8% of respondents were aware about increasing age as non-modifiable risk factor which is supported by a study conducted in Nepal in 2009 to 2013 shows that increasing age is risk factor. Likewise, 37.1% respondents were aware male is higher risk than female, 25% respondents were aware that janajati had higher risk than other caste, 16.4% were aware that family history of liver cancer also a risk factor of liver cancer which is supported by a study in Nepal 14 march 2021 shows that the male is higher risk than female, Janajati had higher risk than other caste.[14] Likewise,35.3% respondents were aware about weight loss, 26.7% were aware about abdominal distention,8.6% were aware about ascites, 47.4% were aware about loss of appetite, 26.7% were aware about abdominal pain sign and symptoms of liver cancer which is revealed by a study in Nepal in march 2020 to august 2022 shows that 64.81% respondents identified weight loss,61.11% of respondents identified abdominal distension, 59.26% respondents identified ascites,61.11 of respondents identified loss of appetite, 50% of respondents identified abdominal pain as a sign and symptoms of LC.[10]

Likewise, 72.4% of respondents had knowledge about liver cancer primary prevention measure was quit smoking,70.7% of respondents were aware about quit alcohol, 56% respondents were aware eating healthy and fresh meal,47.4% of respondents were aware fresh fruits and vegetables, 37.9% of respondents were aware about regular exercise and weight loss, 25% of respondents were aware about control diabetes and high blood pressure, 21.6% of respondents were aware about don't share razor and toothbrush,19.8% of respondents were aware about hepatitis B virus vaccine, 17.2% of respondents were aware about hepatitis b virus vaccine for healthy partner which is supported by previous study conducted in australia in 1988 which shows that 51% were aware about cessation of alcohol can primary preventive measure of liver cancer.[24] Similarly 36.2% of respondents were aware about Periodic liver health monitor, 23.3% of respondents were aware about periodic check-up for patient with positive family history, 20.7% periodic check-up for viral hepatitis this supported by previous study conducted in saudi arabia in 2020 which shows that 56% were aware about periodic check-up for patient with positive family history, 64% were aware about

periodic check- up for viral hepatitis was secondary preventive measure of liver cancer.[38]

Only 15.51% of respondents were aware about awareness on mode of transmission of hepatitis B,72% of respondents were aware about sharing needles, 22% of respondents were aware about sexual contact, 22% of respondents were aware about receiving tattoos, 22% of respondents were aware about pregnant person to new born, 16% of respondents were aware about sharing shavers, 16% of respondents were aware about needle sticks, 5% of respondents were aware about sharing toothbrush this supported by study conducted in singapore 14 march in 2021 shows that 60.5% of respondents were aware about transmission risk from mother to child,65.2% of respondents were aware about blood contact,68.9% were aware about needle sticks mode of transmission of hepatitis B.[7]

Likewise, 83% of respondents had heard liver cancer from internet,13% of respondents heard liver cancer from health person,4% of respondents had heard liver cancer from family this supported by study conducted in Singapore 14 march in 2021 shows that one fifth heard liver cancer from Internet, health person.[7]

Regarding level of Awareness study shows 86.3% of respondents had poor level of awareness,10.3% had moderate level of awareness and only 2.6% had good level of awareness. Findings are similar with the study conducted in Saudi arabia in 2020 reported that 64.9% had poor level of awareness,35.1% had good level of awareness regarding liver cancer.[38] About liver cancer awareness is statistically significant with the sex, income sufficient for, family history of cancer liver cancer.

Limitations

The limitations of the study should be clearly stated and discussed in relation to the study design, sample size, data sources, and generalizability of the findings.

Conclusions

Based on the findings of the study, more than half of the respondents were female and majority of population belongs to janajati ethnicity. Majority of respondents had poor level of awareness, only twelve respondents had moderate level and only three respondents had good level of awareness regarding risk factor, signs and symptoms and preventive measures of liver cancer. Similarly, less than half respondents identified increasing age is non- modifiable risk factor of liver cancer and less than half of respondents identified jaundice as sign of liver cancer and less than half of respondents identified loss of appetite as symptoms of liver cancer and more than half were known about preventive measures where as sex, income sufficient for, family history of liver cancer was statistically significant with level of awareness. This shows there is a need for awareness in the general people about liver cancer and measures to be followed for the prevention.

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Ethical and Publication Integrity: Ethical approval was obtained from the Institutional Review Committee of B.P. Koirala Memorial Cancer Hospital (Ref. No.: 89/081/082 before commencement of the study.

Availability of data and materials: The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' Contributions

Conceptualization: Sabita Panthee, Sapana Rana
Data curation: Sabita Panthee, Sapana Rana
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Investigation: Sabita Panthee, Sapana Rana
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