

Educational Needs for Patients with Hepatocellular Carcinoma

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Abstract

Background: Hepatocellular carcinoma (HCC) is the most common form of liver cancer and one of the leading causes of cancer-related deaths and remains a major burden on healthcare systems worldwide. The incidence of HCC continues to rise globally, despite preventative efforts being made. **Aim of the study:** to assess the educational needs for patients with HCC. **Study Design:** A descriptive exploratory design was utilized for the conduction of this study. **Setting:** This study was conducted at Tanta Cancer Center affiliated to Specialized Medical Centers in Egypt. **Subjects:** A purposive sample of 52 patients with HCC. **Tools:** Patient's interviewing questionnaire. **Result:** The study showed that 73.1% of studied patients had unsatisfactory total level of knowledge regarding hepatocellular carcinoma. **Conclusion:** About three-quarters of the studied patients had an unsatisfactory level of total knowledge about HCC. Additionally, there was statistically significant relation between total level of patients' knowledge and socio-demographic characteristics regarding educational level. **Recommendations:** Developing comprehensive educational programs tailored to the specific needs and literacy levels of patients with HCC.

Keywords: Hepatocellular carcinoma, Educational needs, Patients

Introduction

Hepatocellular carcinoma (HCC) is a primary malignant tumor of the liver consisting of neoplastic hepatocytes. Globally, the prevalence of HCC is rising. According to WHO predictions, HCC will claim the lives of almost 1 million individuals by 2030. The incidence of HCC has sharply grown in the Middle Eastern countries over the last ten years, HCC risk factors include viral infections, cirrhosis, alcohol, non-alcoholic fatty liver disease, aflatoxins, diabetes mellitus and obesity (Samant & Zibari, 2021 and Almohaid & Akhtar, 2024).

Patients with hepatocellular carcinoma may lose weight, have a lack of appetite, or feel full too soon, as well as have a palpable mass in the upper abdomen, right upper quadrant pain, anorexia, or cachexia. Moreover, blockage of the biliary tree, may lead to fever, tumor necrosis can result in jaundice, and metastatic HCC lesions may induce bone pain. Moreover, due to severe energy loss and muscle wasting,

advanced hepatobiliary malignancies can lead to considerable morbidity and death (Sharma et al., 2021).

Treatments are selected based upon tumor stage and liver function, options of treatment are divided into surgical therapies including (resection, and liver transplantation) and nonsurgical therapies, which may be liver directed including (radiofrequency, microwave ablation, transarterial chemoembolization, external beam radiation therapy) or systemic by using immune checkpoint inhibitors (Su, et al., 2022).

Educational needs are the gap between the learner's current level of knowledge, skills, and attitudes and the desired one, in order to adapt to a new situation which can be acquired through education. So, patients education needs can be defined as the process of influencing patient behavior and producing the changes in knowledge, attitudes and skills necessary to maintain or improve health. Patient education starts as soon as the patient is diagnosed or as

early as possible. It helps patients better understand their condition and available options in terms of treatment. Patient education aims to increase patient engagement and involvement to improve the patient's physical and mental health (Koumadoraki, 2022).

The majority of patients with HCC don't receive enough information about HCC and its treatment at the time of their diagnosis. Education for patients with HCC is crucial in providing essential information about cancer and the treatment. Providing knowledge not only empowers the patients but also contributes to understanding and actively managing the disease at various levels and avoiding feelings of uncertainty (Norman, et al., 2022).

The oncology nurse plays a critical role across the HCC care pathways, from proactive roles in health promotion, screening and early detection to provide education, support, and appropriate interventions throughout diagnosis and management. Role of the nurse toward patient with HCC is essential for teaching public about HCC, educates patients and their families about the prevention and sanitation measures and also support and facilitate the patient's decision-making about their treatment options. The nurse should inform patients about life style modification to improve health status (Kelly, et al., 2021 and Hopkinson, 2023).

Significance of the study

HCC is the most prevalent primary cancer of the liver accounting for 75% to 85% of primary liver cancers worldwide, it occurs in males 2 to 3 times higher than in females. In Egypt, HCC represents the fourth common cancer and is the most common cause of mortality and morbidity-related cancer. Egypt ranks the third most populous country in Africa and 15th country in worldwide with HCC (Rashed et al., 2020)

There is an increased rate of patients with HCC who admitted to Tanta Cancer Center in which 450 cases are admitted annually (Statistical Research Office at Tanta Cancer Center, 2021-2022).

All patients with HCC need to understand and be aware about their disease, symptoms, treatment, complication, nutrition status and preventive measurement. Findings of this study

will help in providing based data that can promote nursing practice and research.

Aim of the study

This study aims to assess educational needs for patients with hepatocellular carcinoma.

Research question

What are the educational needs for patients with HCC?

Subjects and Methods

Study design

A descriptive exploratory design was utilized to conduct this study.

This design helps the investigator to describe and document aspects of a situation as it naturally occurs. As well, this design helps to establish a database for future research (Grove et al., 2019).

Research settings

This study was carried out at Tanta Cancer Center affiliated to Specialized Medical Centers in Egypt at inpatient wards, each ward consisting of four rooms, each one has four beds for both sex (male and female).

Subjects

A purposive sample of 52 patients with HCC was involved in this study.

Inclusion criteria

- Adult patients from both sexes.
- Confirmed diagnosed patients with HCC and willing to participate in this study.

Exclusion criteria

- Patients with disturbed level of conscious.
- Patients who had severe heart, lung or kidney function insufficiency.

Sample size was calculated based on power analysis of patients admitted to Tanta Cancer Center during (2021-2022) to the number of patients with hepatocellular carcinoma were estimated average (450) cases per year to the sample size and the investigator took 52 patients with hepatocellular carcinoma by using (Daniel, 1999) formula.

$$n = \frac{z^2 p(1-p)}{d^2}$$

n = required sample size

z = confidence level of 95% (standard value 1.96)

p = estimated prevalence 0.035

d = precision. 5% (standard value 0.05)

$$n = \frac{(1.96)^2 \times 0.035 (1-0.035)}{.05^2} = 51.9 \approx 52$$

Tools of data collection

The data was collected using the following tool:

Tool: Patient's interviewing questionnaire:

It was used to assess socio-demographic characteristics, and patients' knowledge regarding HCC disease and educational needs for patients. It was developed by the researcher in an Arabic language based on review of relevant recent related literatures (**Rashed, et al., 2020; Sharma, et al., 2021; Llovet, et al., 2021 and Hassan, et al., 2022**) and it included three parts:

Part I: Sociodemographic characteristics for patients with HCC:

This part was used to assess socio-demographic characteristics for patients such as age, gender, educational level, social status, occupation status, types of work, residence, alcohol consumption, income, type of health service, number of family members, number of rooms in house and housing condition.

Part II: Medical data for patients with hepatocellular carcinoma

It was related to assess the patients' past, present medical health history, surgical history, family history, it included: Past medical history (chronic illness, suffering from another metastatic organ), surgical history (previous surgery and name of the surgery), previous hospital admission, and causes of admission and family history (family history of hepatocellular carcinoma and degree of relation). Current history (signs and symptoms of hepatocellular carcinoma, first appearance of symptoms, severity of pain, causes, investigations, different modalities of treatment and start of treatment).

Part III: Educational needs assessment for patients with hepatocellular carcinoma:

It concerned with assessment of patients' educational needs regarding HCC and educational needs for patients. It included 75 questions MCQ and true false.

Scoring System of knowledge:

The scoring system was 1 for correct answer and zero for incorrect one for each item. Total score was 75 marks.

Knowledge scoring system:

- Satisfactory knowledge was considered $\geq 80\%$ (≥ 60 grads).

- Unsatisfactory knowledge was considered $<80\%$ (< 60 grads).

Preparatory phase

It included reviewing of related literature and theoretical knowledge of various aspects of the study used books, articles, internet periodicals and magazines be acquainted with research problems and to develop study tools.

Validity

Content validity was conducted to determine whether the content of the tool cover the aim of the study. It measured by a jury of seven expertise, four of them professors and three assistant professors at medical surgical nursing, Faculty of Nursing at Ain Shams University.

Reliability

The reliability of the tools was assessed through measuring their internal consistency by Cronbach Alpha Coefficient test. Cronbach's Alpha for Patients' knowledge about HCC was=0.896.

Ethical considerations

The ethical research considerations in this study include the following:

The research approval was obtained from the Scientific Research Committee from Faculty of Nursing-Ain Shams University before starting the study. Patients were notified that they were allowed to participate or not in the study, and they have the right to withdraw from the study any time. The investigator clarified the aim of the study to patients included in the study. The investigator confirmed the personalities, anonymity and confidentiality of the subject data. Confidentiality was maintained on all data collected using codes to identify participants rather than names or other personal identification.

Administrative design

Official permission to conduct the study was obtained from the medical director of the previously mentioned setting. The researcher was met by the director to explain the purpose and methods of the data collection.

Pilot Study

The pilot study was carried out on 10% of the studied at the previously mentioned settings in order to test the clarity and applicability of the study.

Fieldwork

- The investigator explained the aim of the study and the components of the tools to the studied patients.
- The investigator made interview with patients under study to assess their educational needs.
- Data collection done three days / week by the investigator in morning shifts and afternoon shifts.
- The data was collected by the researcher within six months from 12/2023 to 6/2024.
- The verbal / written consent was taken from every participant to share in this study.
- The tools for data collection were filled by the investigator. Patients interviewing questionnaire taken 20 minutes for filling.
- Finally, the investigator assured the information collected would be treated confidentially and that would be used only for purpose of the study.

Statistical Design:

The data was collected, coded and entered into a suitable excel sheet. Data was analyzed using the statistical package for social sciences, version 21.0 (SPSS). The statistical analysis was done using percentage(%), mean, standard deviation; Chi-Square (χ^2) was used in order to compare proportions between two qualitative parameters. The observed differences and association were considered as follows:

Non-significant (NS) $P > 0.05$, Significant (S) $P \leq 0.05$, Highly Significant (HS) $P \leq 0.01$.

Results

Table (1): Shows the mean age of the studied patients was 59.57 ± 6.46 . 53.8% of them had work, 67.9% of them had physical work, 98.1% of the studied patients were living in rural areas and were not drinking alcohol, 76.9% of them did not have sufficient income to cover the costs of treatment and treated at state expenditure.

Table (2): Shows that 82.7% of the studied patients had well ventilated houses, 90.4% of them had sewage system and 100% of them had an available water source. Also, the mean number of studied patients' family members was 2.23 ± 0.899 while the mean number of rooms in their houses was 1.79 ± 0.572 and there was a

negative statistical correlation between both of them $r = 0.15$.

Figure (1): Clarifies that 69.2% of studied patients were males while females represented only 30.8%.

Figure (2) Clarifies that 44.2% of studied patients were read and write, 40.4% had moderate level of education and 15.4% had high level of education.

Figure (3) Clarifies that 100% of studied patients were married.

Table (3): Reveals that 100% of the studied patients had hepatitis C, 13.5% of them were suffering from metastatic cancer, 85.7% of them had metastases in lung and 32.4% of them had previous surgery that was splenectomy in 36.4% of cases. 50% of studied patients had previous admission to the hospital because of pain in upper abdomen in 46.2% of them. Only 23.1 % had relatives with hepatocellular carcinoma and 50% of them were first degree relatives.

Table (4): Reveals that 100% of the studied patients were suffering from pain in upper abdomen and loss of appetite and rapid fullness sensation. 46.2% of them reported first appearance of symptoms from less than 6 months, 86.5% had moderate degree of pain, 44.2% of them started treatment from less than 6 months and 42.3% treated by radiofrequency ablation.

Table (5): Reveals that 94.2%, 90.4%, 88.5%, 71.2% and 55.8% of the studied patients had unsatisfactory level of knowledge regarding medical and surgical management of HCC, complications of HCC, risk factors of this cancer and suitable diet regimen for the disease respectively.

Figure (4): Clarifies that 73.1% of studied patients had unsatisfactory total level of knowledge while 26.9% of them had satisfactory total level of knowledge regarding HCC.

Table (6) Reveals that there was a statistically significant relation between total level of patients' knowledge and socio-demographic characteristics regarding educational level at (p -value = 0.001). While, there were no significant relations between total level of patients' knowledge and age, gender, occupation, residence or adequacy of income for treatment cost at ($P > 0.05$).

Table (1): Number and Percentage Distribution of the Studied Patients According to their Socio-Demographic Characteristics (n=52).

socio-demographic characteristics	No.	%
Age (years)		0%
20<30	0	0%
30<40	0	7.7%
40-<50 years	4	92.3%
≥50years	48	
Mean ± SD	59.57±6.46	
Occupation status		
Work	28	53.8%
Does not work	24	46.2%
Type of work (n=28) *		
Needs mental effort	9	32.1%
Needs muscular effort	19	67.9%
Residence		
Rural area	51	98.1%
Urban area	1	1.9%
Alcohol consumption		
Yes	1	1.9%
No	51	98.1%
Sufficient income for treatment cost		
Enough	12	23.1%
Not enough	40	76.9%
Type of health services		
State expenditure	40	76.9%
Health insurance	12	23.1%
Private hospital	0	0%

* Numbers are not mutually exclusive

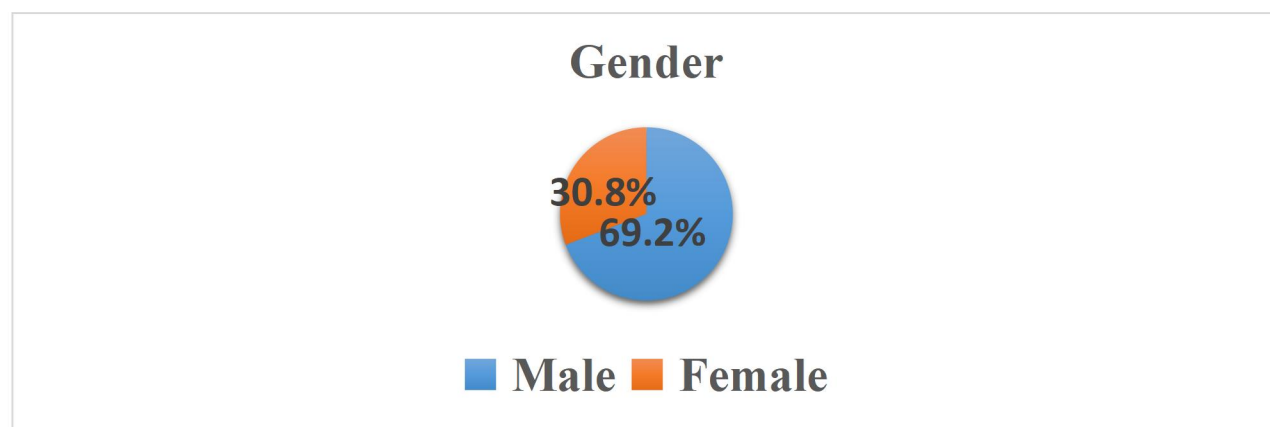
Figure (1): Percentage Distribution of the Studied patients Regarding to Their Gender (n =52).

Figure (2) : Percentage Distribution of the Studied Patients Regarding to their Educational Level (n=52).

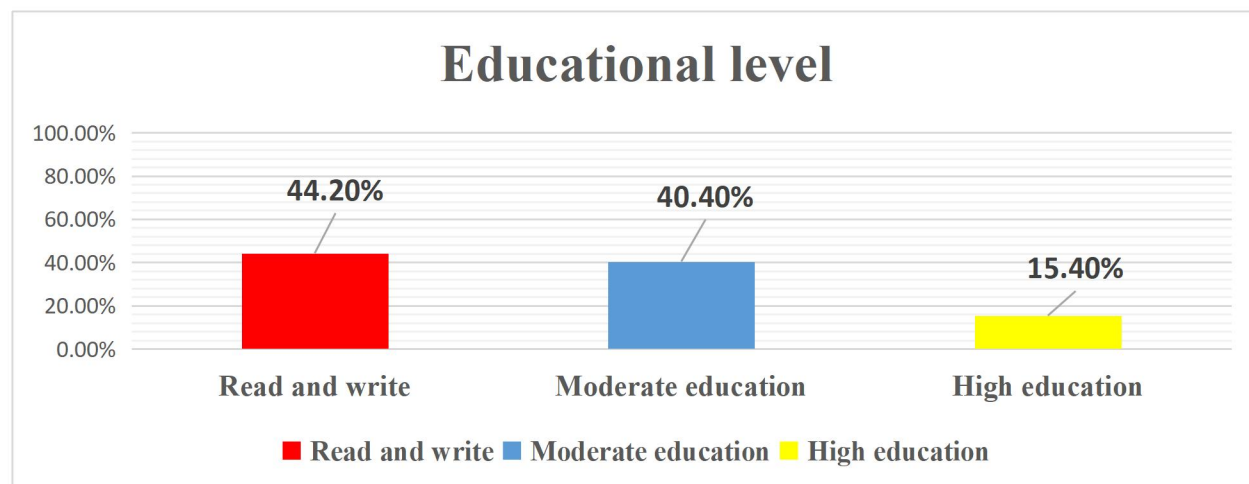


Figure (3) : Percentage Distribution of the Studied Patients Regarding to their Marital Status (n=52).

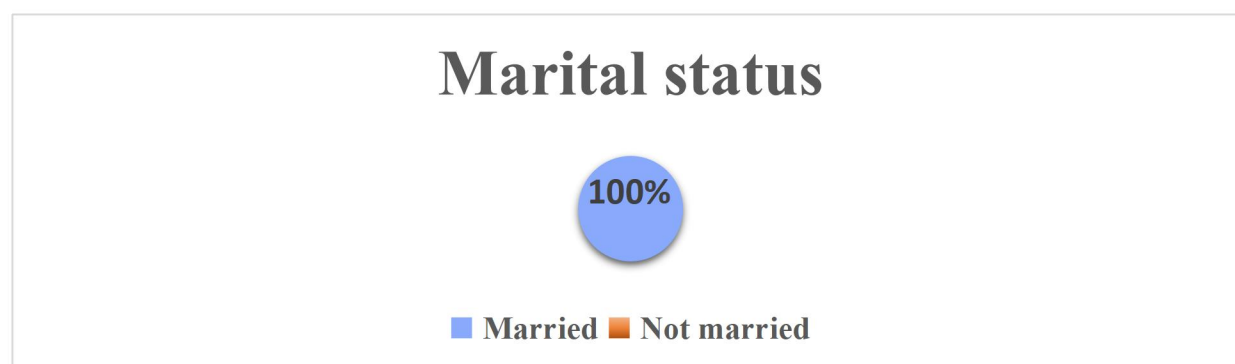


Table (2): Number and percentage Distribution of the Studied patients According to their Family and Home Condition (n= 52).

Items	No.	%
Housing status		
<i>Well ventilated</i>		
Yes	43	82.7%
No	9	17.3%
<i>Presence of sewage system</i>		
Yes	47	90.4%
No	5	9.6%
<i>Availability of water source</i>		
Yes	52	100%
No	0	0%
Number of family members		
≤ 3 persons	12	23.1%
4 persons	20	38.5%
5persons	16	30.7%
>5 persons	4	7.7%
Mean ± SD	2.23±0.899	
Number of rooms in the house		
< 3 rooms	15	28.8%
3-5 rooms	33	63.5%
> 5 rooms	4	7.7%
Mean ± SD	1.79±0.572	

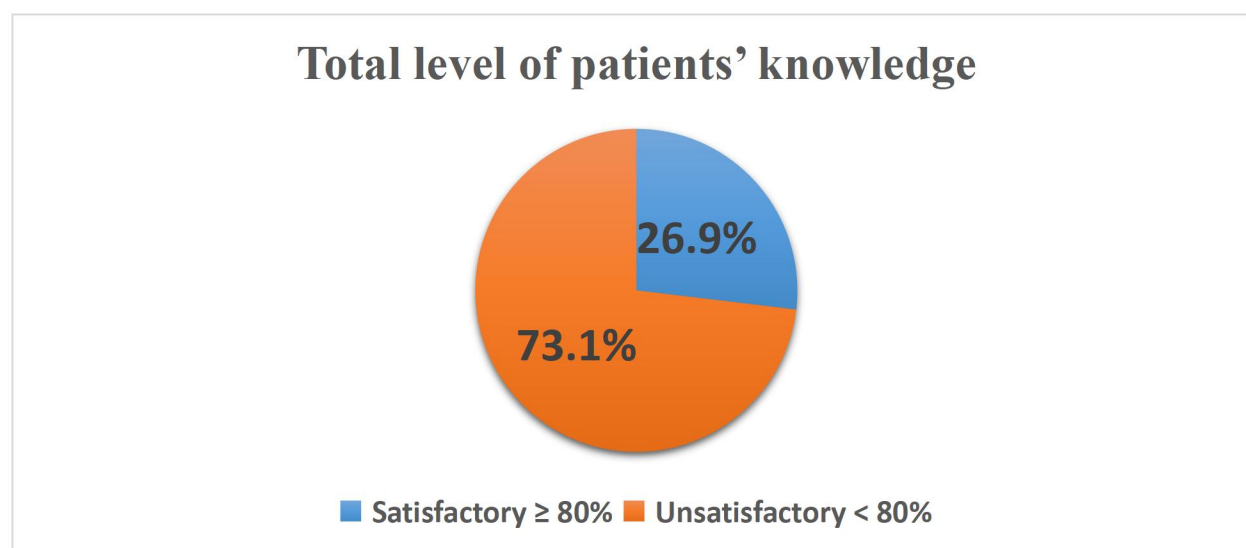
Figure (4): Percentage Distribution of the Studied Patients According to Their Total Level of knowledge about HCC (n=52).

Table (3): Frequency and Percentage Distribution of theS patients According to Their Past Medical and Family History (n=52).

Past medical history	No.	%
Types of comorbidities *		
Hypertension	15	28.8%
Diabetes mellitus	37	71.2%
Hepatitis C	52	100%
Hepatitis B	0	0%
Suffering from other cancers		
Yes	7	13.5%
No	45	86.5%
Name of other organs with cancer metastases *		
Lung	6	85.7%
Bone	1	14.3%
Brain	0	0%
Previous surgeries		
Yes	22	42.3%
No	30	57.7%
Name of the previous surgery *		
Appendectomy	3	13.6%
Splenectomy	8	36.4%
Cesarean section	6	27.3%
Cholecystectomy	4	18.2%
Tonsillectomy	1	4.5%
History of admission to the hospital		
Yes	26	50%
No	26	50%
Causes of hospital admission *		
Dyspnea	6	23.1%
Pain at upper abdomen	12	46.2%
Nausea and vomiting	3	11.5%
Jaundice	6	23.1%
Dark urine	4	15.4%
Others	6	23.1%
Family history of hepatocellular carcinoma		
Yes	12	23.1%
No	40	76.9%
Degree of kindship *		
First degree	6	50%
Second degree	4	33.3%
Third degree	2	16.7%

* Numbers are not mutually exclusive

Table (4): Frequency and Percentage Distribution of the Studied Patients According to their Present Medical History of Hepatocellular Carcinoma. (n=52).

present medical history of studied patients:	No.	%
Symptoms suffered by patients *		
Pain in upper abdomen	52	100%
Loss of appetite and rapid fullness sensation	52	100%
Mal digestion and flatulence	49	94.2%
Nausea and vomiting	45	86.5%
General weakness and exhaustion	51	98.1%
Jaundice	35	67.3%
Attention difficulty	25	48.1%
First appearance of symptoms		
< 6 months	24	46.2%
6 months : < 1 year	16	30.7%
≥ 1 year	12	23.1%
Severity of pain suffered by patients		
Mild	7	13.5%
Moderate	45	86.5%
Severe	0	0%
Start of treatment		
< 6 months	23	44.2%
6 months < 1 year	18	34.6%
≥ 1 year	11	21.2%
Different modalities of treatment		
Chemotherapy	12	23.1%
Radiotherapy	2	3.8%
Radiofrequency	22	42.3%
Intra-arterial injection	16	30.7%

* Numbers are not mutually exclusive

Table (5): Number and Percentage Distribution of the Studied Patients According to their Level of Knowledge Regarding Different Aspects of Hepatocellular Carcinoma (HCC) (n=52).

Knowledge	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Definition of HCC	42	80.8%	10	19.2%
Risk factors of HCC	15	28.8%	37	71.2%
Signs and symptoms of HCC	29	55.8%	23	44.2%
Complications of HCC	6	11.5%	46	88.5%
Medical management of HCC	3	5.8%	49	94.2%
Surgical management of HCC	5	9.6%	47	90.4%
Diet regimen for HCC	23	44.2%	29	55.8%
Preventive measures for HCC	39	75%	13	25%

Table (6): Relation between the Studied Patients' Total Level of Knowledge and their Socio-Demographic Characteristics (n=52).

Socio-demographic characteristics	Level of knowledge				Chi-square test	
	Satisfactory (n=14)		Unsatisfactory (n=38)			
	No.	%	No.	%	X ²	P-value
Age (years)						
40-<50 years	2	14.2%	2	5.3%	1.173	0.564
≥50 years	12	85.8%	36	94.7%		
Gender						
Male	9	64.3%	26	70.3%	0.169	0.742
Female	5	35.7%	12	29.7%		
Educational level:						
Read and write	2	14.2%	21	55.3%	13.311	0.001*
Moderate education	6	42.9%	15	39.5%		
High education	6	42.9%	2	5.3%		
Occupation						
Works	7	50%	21	55.3%	0.114	0.764
Does not work	7	50%	17	44.7%		
Residence:						
Rural area	13	92.9%	38	100%	2.768	0.269
Urban araa	1	7.1%	0	0%		
Sufficient income for treatment cost						
Enough	5	35.7%	7	18.4%	1.724	0.267
Not enough	9	64.3%	31	81.6%		

*Statistically significant (P value ≤ 0.05).

Discussion

Hepatocellular carcinoma (HCC) is a major health concern, ranking as the sixth most common cancer globally and fourth in Egypt, which is the third most populous country in Africa and 15th. worldwide. HCC is associated with a poor prognosis (Rashed et al., 2020).

Education about HCC is essential for at-risk populations, including regular screenings and awareness of symptoms like jaundice, abdominal pain, and unexplained weight loss. Public health initiatives should focus on preventive measures, such as vaccination against hepatitis B, reducing alcohol consumption, and managing

metabolic conditions like diabetes and obesity that contribute to liver disease (Yehia et al., 2020).

Regarding socio-demographic characteristics of the studied patients, the current study results revealed that most of the studied patients were aged fifty years and more with a mean age of 59.57±6.46. This might be due to the higher prevalence of liver disease in middle-aged and elderly individuals compared to younger age groups as reported by Llovet et al., (2024).

This finding was consistent with Goda et al., (2020) in the study entitled “Learning Needs Assessment for Hepatocellular Carcinoma Patients Undergoing Thermal Ablation”, which proved that two-thirds of their studied patients were aged 51 - 60 years.

This finding disagreed with **Yehia et al., (2020)** who studied the “Effect of health education intervention on hepatocellular carcinoma risk factor prevention” who reported that about half of their studied patients were from 18 to 35 years with a mean age (38.74 ± 11.746).

In addition, the current study revealed that more than half of the studied patients had work, and more than two-thirds of them had work need muscular effort. From the investigator's point of view, these might be due to those patients continuing to work despite health conditions due to financial necessity for treatment cost and their income not enough.

In the same line, **Mahmoud, et al., (2020)** who conducted a study about “Assessment of acute hepatitis C patients ‘performance regarding self-care management for complication prevention”, revealed that half of the studied patients work in governmental sectors. These findings contradicted with **Goda et al., (2020)** who stated that about two-thirds of their studied patients were unemployed.

The current study revealed that almost all of the studied patients were living in rural areas. From the investigator's point of view, this might be due to the higher prevalence of agricultural work and potential exposure to risk factors of liver cancer as aflatoxins, which can contribute to liver cancer. Rural areas might also have less access to healthcare resources and education about disease prevention.

These results were congruent with **Abd-El salam et al., (2018)** in their study about “Epidemiology of liver Cancer in Nile Delta over a Decade”, who found that the majority of their patients were lived in rural areas. This contradicted with **Elkenawy et al., (2022)** who studied in Egypt about “Characteristics of Hepatocellular Carcinoma in Egyptian Patients”, and found that more than half of the studied patients were live in urban area.

Also, the current study found that almost all of the studied patients were not drinking alcohol. From the investigator's point of view, this might

be due to alcohol consumption is generally discouraged and affected by cultural and religious factors in Egypt.

This finding comes in accordance with **Mokbel, et al., (2020)** who found that almost of their studied patients were not drinking alcohol. While, **Hammermüller et al., (2021)** who incongruently mentioned that one-quarter of their studied patients were drinking alcohol.

In relation to the monthly income, the current study revealed that more than three-quarters of the studied patients did not have sufficient income to cover the costs of treatment, and received their health services at state expenditure. This might be due to the high cost of HCC treatment, including medical procedures, medications, and hospital stays, which can be a significant financial burden for patients.

This finding is consistent with **Mokbel, et al., (2020)** in the study entitled “Biopsychosocial needs of patient after Liver transplantation”, clarified that the majority of patients did not have enough monthly income to cover their needs in addition to the costs of medications which added a burden on the patients.

As regards, the current study reported that the majority of the studied patients had well-ventilated houses, most of them had sewage systems and all of them had an available water source.

These results were contradicted by **Nephew et al., (2023)** who proved that single-parent households, rented housing and overcrowding indicated poorer housing conditions. Also, proved that patients with HCC living in neighborhoods with higher socioeconomic disadvantage had a 14% higher risk of death compared to other patients.

Regarding to the gender distribution, the current study finding revealed that, more than two-thirds of the studied patients were males while females patients represented only about one-third of them. This might be due to testosterone, a male sex hormone, has been linked to increased liver fibrosis and inflammation, which can create risk factor for

HCC development as mentioned by **Kasarinaite, et al., (2023)**.

This result is in accordance with **Abdullah et al., (2021)** who studied “Quality of Life among Elderly Patients with Chronic Liver Diseases” in Egypt, and mentioned that approximately two-thirds of them were males. While, this result was contradicted by **Yehia et al., (2020)** who reported that the majority of their study patients were female.

The present study revealed that less than half of the studied patients were read and write, and moderate education while 15.4% of them had high education. This might be due to almost all of the studied patients living in rural areas.

This finding is in agreement with **Sheta & El-Fadl, (2023)** who conduct study about “Effect of Self-Care Strategies on Health Outcomes of Patients with Hepatocellular Carcinoma” and found that less than half of the studied patients were read and write. While, **Goda et al., (2020)** incongruently found that about two-thirds of their studied patients were illiteracy.

Regarding to this study results, all of the studied patients were married. This might be due to most of the studied patients were aged 50 years and more. Also, the high marriage rates are likely driven by cultural norms and expectations. This finding was in the same line with **Abdullah et al. (2021)** who found that most of their studied patients were married.

Concerning patients’ medical history, the current study revealed that all of the studied patients had hepatitis C. The high prevalence of hepatitis C is a strong indicator of its significant role in the development of HCC (**Nevola et al., 2023**). This result accepted with **Elkenawy et al., (2022)** who showed that about three quarters of their studied patient were had hepatitis C infection.

Also, in this study more than two thirds of studied patient were had diabetes. Diabetes is a major risk factor for HCC due to its association with non-alcoholic fatty liver disease (NAFLD), These conditions can contribute to liver

inflammation and damage, increasing the risk of liver cancer (**Doychevaet et al., 2020**). This result agreed with **Mokbel, et al., (2020)** who clarified that two-thirds of the studied subjects were had diabetes mellitus and hypertension. Incongruently, **Goda et al., (2020)** showed that one-third only of their studied sample suffered from diabetes.

Regarding to item minority of the studied patient were suffering from other metastatic cancer and the majority of them had metastases in lung. This result accepted by **Targe et al., (2021)** who revealed that the extrahepatic metastasis occurs in one third of patients with HCC and is associated with a poor prognosis. Also, the most common sites of metastasis are lung, regional lymph nodes and bone.

Also, about one third of the studied patients had history of previous surgery and splenectomy was in one third of them. Also, about half of the studied patients had previous history of hospital admission. This finding agreed with **Mokbel, et al., (2020)** who showed in his study that about one third of their studied patient had a previous surgical operation. As well as, previous admitted to hospital.

Regarding to family history, the findings of the current study revealed that about one quarter of the studied patients had family history of HCC and the degree of kindship was first degree in half of them. This finding is agreed with **Salah et al., (2022)** whose study entitled “Quality of life for patients with Hepatocellular Carcinoma undergoing Radiofrequency Ablation”, In Egypt, who found that about one third of the studied patients had family history of liver disease.

As regards, the findings of the current study, showed that all of the studied patients suffered from pain in the upper abdomen, loss of appetite, and rapid fullness sensation. As well as, the majority of the studied patient had a moderate degree of pain.

This might be due to these symptoms being common as the tumor grows and presses on surrounding organs. Also, abdominal pain is a common symptom of HCC.

This finding comes in accordance with **Zhang et al., (2022)** who conducted a study about “First and Second-Line Treatments for Patients with Advanced Hepatocellular Carcinoma” and found that all of their studied patients experienced upper abdominal pain.

In addition, **Salah et al., (2022)** mentioned that more than one-half of their studied patients were admitted to the hospital due to abdominal pain, and jaundice, and abdominal swelling.

Also, about half of the studied patients reported the time of first appearance of symptoms were less than 6 months, and about half of the studied patient started treatment in less than 6 months, and were treated by radiofrequency ablation.

From the investigator's point of view, the short duration of symptoms for some patients (less than 6 months) may indicate that the disease progressed rapidly in these individuals. This could be due to factors such as aggressive tumor growth or the presence of other underlying health conditions.

Also, early diagnosis and prompt treatment within 6 months improve outcomes. The frequent use of radiofrequency ablation is due to that the radiofrequency ablation is a common treatment for HCC, particularly in early-stage disease as mentioned by **Ferrante et al., (2020)**.

In the same line **Goda et al., (2020)** in the study entitled “Learning Needs Assessment for Hepatocellular Carcinoma Patients Undergoing Thermal Ablation”, proved that half of their studied sample reported the first appearance of symptoms in less than 6 months. In addition, **Salah et al., (2022)** mentioned that less than one-half of their studied patients discovered their disease from month to less than one year. This might be due to the selection of the investigator to newly diagnosed HCC patients.

Concerning the patients' knowledge about hepatocellular carcinoma, the current study found that most of the studied patients had unsatisfactory levels of educational needs regarding medical and surgical management of hepatocellular carcinoma. In addition, the majority of them about three-quarters had

unsatisfactory levels about complications of hepatocellular carcinoma, and more than half of them had unsatisfactory levels about risk factors and suitable diet regimens for hepatocellular carcinoma.

From the investigator's point of view, could be due to factors such as low educational level, lack of internet access, or reliance on outdated information sources.

These findings disagreed with **Stokes et al., (2024)** in a prospective needs assessment, a survey study of hepatobiliary patients performed (2016–2019), in patients with hepatobiliary malignancies, found that one-third of their studied patients were not educated about risk factors, while one-fifth of them were educated about risk factors.

Regarding to the total level of knowledge or educational needs, the current study showed that about three-quarters of the studied patients had an unsatisfactory total level of educational needs regarding hepatocellular carcinoma.

From the investigator's point of view, this might be due to those patients having limited access to reliable and up-to-date information about HCC. Also, less than half of the studied patients were read and write leads to significant challenges in managing their condition and understanding their treatment plan.

This result was in the same line with (**Al Jiffry et al., 2022**) who conduct study about “Public knowledge and Awareness of Hepatocellular Carcinoma among The Saudi Arabian Population” and revealed that more than three-quarters of their studied patients had a low and inadequate level of knowledge about hepatocellular carcinoma.

In relation to the studied patients' total level of knowledge and their socio- demographic characteristics, the current study revealed that there was a statistically significant relation between the patients' total level of knowledge regarding HCC and their educational level. While, there were no significant relations between the total level of patients' knowledge

and their age, gender, occupation, residence or adequacy of income for treatment cost.

From the investigator's point of view, the patients with higher educational levels are likely to have better access to information and healthcare resources, enabling them to have a better understanding of their condition and treatment.

These findings agreed with **Abdel Samad et al., (2022)** in their study "Physical and Psychosocial Needs for Patients with Hepatocellular Carcinoma" in Egypt, who showed that there was significant relation between total mean knowledge and educational level of the studied patients.

Also, these results disagreed with **Aniaku et al., (2019)** who conducted a study entitled "Assessment of Knowledge, attitude and vaccination status of Hepatitis B", and confirmed that there was a significant statistically relation between total mean knowledge scores and the studied group's age. While, there were no significant relations between the total level of patients' knowledge and their occupation, residence or adequacy of income for treatment cost.

Conclusion

Based on the research questions, and the findings of the current study; it can be concluded that:

Most of the studied patients were aged fifty years and more. Additionally, more than two thirds of them were male, more than half of them had work, and almost of them were living in rural areas and were not drinking alcohol. While all of them were married.

About three-quarters of studied patients had unsatisfactory total level of knowledge. Additionally, there was statistically significant relation between total level of patients' knowledge and socio-demographic characteristics regarding educational level.

Recommendation

Based on the current study finding, we can recommend that::

- Developing comprehensive educational programs tailored to the specific needs and literacy levels of HCC patients.
- Provide comprehensive education and practical training to family caregivers to equip them with the knowledge and skills necessary to effectively care for patient with hepatocellular carcinoma.
- Conduct community outreach programs to raise awareness about HCC, early detection, and prevention strategies.
- Conduct self-learning module for patients with HCC about unhealthy lifestyle behaviors.

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