Lifestyle Patterns of Patients with Hepatocellular Carcinoma in National Liver Institute

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Abstract

Hepatocellular Carcinoma(HCC) is currently the sixth most common type of cancer with a high mortality rate and an increasing incidence worldwide. The purpose of the study was to assess lifestyle patterns of patients with hepatocellular carcinoma. **Design**: Descriptive research design was utilized to conduct this study. **Setting**: The study was conducted at Outpatient Clinics in National Liver Institute, Menoufia University. **The sample**: Systematic random sample was used. It included ٢٤٠ patients with hepatocellular carcinoma. Two instruments were used: A structured interview questionnaire was used to assess social characteristics of studied patients with hepatocellular carcinoma, medical history and knowledge about hepatocellular carcinoma. Also lifestyle patterns Likert scale for studied patients with hepatocellular carcinoma. **Results**: Showed that ٥٣.٣٪ of studied patients had poor knowledge about hepatocellular carcinoma, ٨٣.٣٪ had healthy life style patterns score and there was significant relation between effect of hepatocellular carcinoma and studied patients total life style patterns. **Conclusion**: More than half of studied patients had poor knowledge about hepatocellular carcinoma and many patients had unhealthy lifestyle patterns score. **Recommendations**: Health education program should be conducted at Outpatient Clinics to improve Knowledge and lifestyle patterns of patients with hepatocellular carcinoma.

Keywords: Hepatocellular carcinoma, Lifestyle patterns.

Introduction

HepatoCellular Carcinoma (HCC) is a primary malignancy of the liver. It occurs predominantly in patients with chronic liver disease and cirrhosis. Tumors progress with local expansion, intrahepatic spread, and distant metastases. The association of HCC with chronic liver disease, due to viral infection, alcohol consumption, metabolic syndrome is well known and making treatment complex and challenging. The underlying liver parenchyma displays various histological changes, including steatosis, inflammation, and fibrosis to cirrhosis. These histological changes of the underlying parenchyma and the risk of multicentric carcinogenesis from chronically injured liver tissue limit the possibility of curative treatments **(Morise et al., ٢٠١٤).**

Hepatocellular carcinoma incidence has risen to become the ٥th commonest malignancy worldwide and the third leading cause of cancer-related death, after lung and stomach cancer. The estimated incidence of new cases is about ٥٠٠,٠٠٠–١٠٠٠,٠٠٠ per year, causing ٦٠٠,٠٠٠ deaths globally per year. In the Western world, over ٩٠٪ of HCC cases occur in cirrhotic liver, but globally, about ٢٠٪ of HCC is not associated with any form of cirrhosis. In these cases, the etiology remains unknown. Main risk factors for the development of HCC can be classified into viral chronic hepatitis B (HBV) and hepatitis C (HCV), toxic (alcohol, aflatoxin), metabolic (diabetes, hemochromatosis, and nonalcoholic fatty liver disease), and immune-related (autoimmune hepatitis and primary biliary cirrhosis) factors **(Raza& Sood, ٢٠١٤).**

Patients who develop HCC usually have no symptoms other than those related to their chronic liver disease. Suspicion for HCC should be heightened in patients with previously compensated cirrhosis who develop decompensation such as ascites, encephalopathy, jaundice, or variceal bleeding. These complications are often associated with extension of the tumor into the hepatic or portal veins or arteriovenous shunting induced by the tumor. Some patients may have mild to moderate upper abdominal pain, weight loss, early satiety, or a palpable mass in the upper abdomen these symptoms often indicate an advanced lesion **(Schwartz& Carithers, ٢٠١٧).**

Hepatocellular carcinoma often occurs in the background of a cirrhotic liver. The effective treatment for both HCC and underlying cirrhosis is liver transplantation and is considered the best therapeutic option. Unfortunately, most cases of HCC present in an advanced stage and are not suitable candidates for liver transplantation. In recent years surveillance strategies in patients at a higher risk of HCC have led to the diagnosis of the disease at much earlier stages. Patients in early stages have a much higher chance of curative response with different treatment options, which include surgical resection, various locoregional treatments including percutaneous ethanol injection, radiofrequency ablation, trans-arterial chemoembolization and radioembolization **(Marrero, ٢٠١٣).**

Life style is referred to the characteristics of inhabitants of a region in special time and place. It includes day to day behaviors and functions of individuals in job, activities, fun and diet.According to World Health Organization (WHO), ٦٠٪ of related factors to individual health and quality of life are correlated to lifestyle. Millions of people follow an unhealthy life style suffer from illness, disability and even death. Today, wide changes have occurred in life of all people. Malnutrition, unhealthy diet, smoking, alcohol consuming, drug abuse, stress and so on, are the presentations of unhealthy life style **(Farhud, ٢٠١٥).**

Hepatocellular carcinoma is a cancer linked tightly to life style malnutrition, exposure to aflatoxins, excessive alcohol intake, smoking and pre-existing diabetes are well-defined risk factors for HCC. Healthy life style patterns, control of obesity and related liver disease, treatment of non alcoholic fatty liver, tobacco smoking awareness, prevention of sex steroids related liver tumors and increase interest of physical exercises for high risk individuals and already have disease can reduce the risk of chronic liver diseases and HCC **(Abd El Ati, ٢٠١٥).**

Role of Community Health Nurse (CHN) is essential in teaching public what is hepatocellular carcinoma, 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. CHN should inform people especially high risk groups about life style modification to improve health status. CHN also introduce instructions

for patients families specific to home care at terminal stages and provision of emotional support **(Kao, ٢٠١٥).**

Purpose of the study:

The purpose of the study was to identify life style patterns of patients with hepatocellular carcinoma.

Research Questions:

-What is patient's knowledge about hepatic carcinoma?

- Is there relationship between effect of hepatocellular carcinoma and patients life style patterns?

-Is there relationship between patients health life style and socio demographic data?

Subjects and methods

Research Design: A descriptive research design was used in the study

Setting:

The study was conducted at Liver Tumors Out-Patient Clinics, affliated to the National Liver Institute in Menoufia Governorate.

Sampling:

A systematic random sample was used in this study. The total number of hepatocellular carcinoma patients attending at Liver Tumors Out-Patient Clinic in ٢٠١٦ was about ١٢٠٠ cases then, a purposive sample of ٢٤٠ patients (٢٠٪) of total population attending the Out-Patient Clinics was selected.

Exclusion criteria:

Patients at end stage were excluded due to its influence on patients life style.

Instruments:

Two instruments were used to collect data:

Instrument one: A structured interviewing questionnaire: it was developed by investigator and revised by supervisor staff, based on reviewing related literatures, and written in Arabic language, consisted of three parts to assess the following:

First part: Social characteristics of the studied sample. It included ٩ items closed ended questions about age, sex, marital status, level of education, residence, occupation, monthly income, live with whom, and source of information.

Second part: Medical history of patients with hepatocellular carcinoma. This part included ١١ closed ended questions about previous diseases, previous surgery, other chronic diseases, family history of hepatocellular carcinoma, relationship degree, past history of smoking, discovering disease, duration of disease, time of follow up, lab analysis for liver and diagnostic radiology.

Third part: Knowledge of patients about hepatocellular carcinoma. This part included ١٧ close ended questions about anatomy of liver, hepatocellular carcinoma meaning, prevalence, causes, risk factors, symptoms appearance, symptoms, treatment depending on, treatment choices, resection conditions, ethanol injection, optimal treatment, chemotherapy and prevention.

Instrument two: Lifestyle patterns for patients with hepatocellular carcinoma. It was adopted from **Fagerstrom, (٢٠٠٨)** and modified by the investigator. It included assessment of patients' lifestyle patterns such as diet, exercises, medication compliance, smoking and sleeping. It was translated into Arabic by the investigator. It contained ٥ subparts:

Subpart one: nutritional habits (١٠ items): It was developed to assess having previous diet program, number of daily meals, having snacks, eating outdoor, eating fatty meals, having fruits and vegetables, having foods added flavor and fragrance, food rich in protein, water and liquids, un safe stored foods. **Subpart two: Physical exercises (٦ items):** It was used to assess daily exercises, light exercises as walking and running down, climbing the ladder or using elevator, tiredness during exercise, having exercise program, health status hinder exercises. **Subpart three: Medication adherence (٦ items):** It was used to assess taking drugs regularly, amount of daily taken drugs, drugs side effects

affect taking it, stop medication make difference, taking anabolic steroids or oral contraceptive pills. **Subpart four: smoking (٣ items):** It was developed to assess avoiding smoking now, patients knowledge about smoking , risk factors for hepatocellular carcinoma, trying to quit smoking. **Subpart five: Sleeping habits (٥ items):** It was used to assess sleeping hours, suffering trouble during sleeping, sleeping during the day, drinking stimulants, health status that hinder going to sleep.

Scoring system:

Hepatocellular carcinoma patients lifestyle patterns were calculated as follows: ٢= Always, ١= Sometime and ٠= Never

The total lifestyle patterns score was considered healthy if the score >٨٠٪ (>٤٨ score), while considered unhealthy if it equals ≤ ٨٠٪ (≤ ٤٨ score).

Content validity:

The tools validity were assessed by ٥ members of Faculties Staff Nursing Experts from the Community Health Nursing Specialists who reviewed the tool for clarity, relevance, comprehensiveness, applicability, and easiness for implementation and according to their opinion minor modification were carried out.

Procedure:

An official permission to carry out the study was obtained from the directors of selected settings after submitting an official letter from the Dean of the Faculty of Nursing at Benha University. The actual field work was carried out over a period of ٣ months from the beginning of April ٢٠١٦ to the end of June ٢٠١٦. The investigator conducted the study at the liver tumors Outpatient Clinic at National Liver Institute from ٩ am to ١.٠٠ pm, four days / week (Saturday, Sunday, Tuesday, Wednesday). Each patient needed about ٤٠ minutes to fill each data collection instrument. Data was collected from ٥ patients daily at the Outpatient Clinic depending on the understanding and response of the interviewers.

Pilot study:

The pilot study was carried out on ١٠٪ of the total sample (٢٤) of hepatocellular carcinoma patients. The pilot study was made to assess the tools clarity, applicability and time needed to fill each data collection instrument as well as to identify any possible obstacles that may hinder the data collection. No modification was done so the sample were included in the study.

Ethical consideration:

All ethical issues were assured; oral consent has been obtained from hepatocellular carcinoma patients before conducting the interview and after providing a brief orientation to the purpose of the study. They were also reassured that all information gathered would be treated confidentially and used only for the purpose of the study. Patients had the right to withdraw from the study at any time without giving any reason.

Statistical design:

All data collected were organized, tabulated and analyzed using appropriate statistical test. The data were analyzed by using the Statistical Package for Social Science (SPSS) version ٢٠, which was applied to calculate frequencies and percentages as well as test statistical significance and associations by using chi-square test and pearson correlation test to detect the relation between the variables for (*p* value).

- No statistical significant difference P value > ٠.٠٥
- Statistical significant difference P value < ٠.٠٥
- P value < ٠.٠٠١ means that there was a highly statistical significant difference

Results

Table (١): Shows distribution of studied patients according to their social characteristics , ٤٧.٩٪ of studied patients were more than ٦٠ years old and ٤٤.٦٪ ranged from ٤٠ to<٥٠ their mean age was ٦١.٤٢±٨.٩٦, ٧٨.٣٪ were married, ٤٣.٨٪

didn't read and write. Also, ٦٠.٨٪ didn't work, and ٣٩.٢٪ had not enough income. Meanwhile, ٩٧.٥% of studied patients lived with their families.

Table (٢):-Shows distribution of studied patients according to medical history, ٨٦.٧٪ of the studied patients had history of hepatitis "C" virus, while ٤١.٣٪ hadn't any previous surgery and ٥٣.٨٪ of studied patients had no history of chronic disease.

Table (٣): Shows distribution of studied patients according to their knowledge about hepatocellular carcinoma, ٧٢.٩٪ had correct answer regarding meaning of hepatocellular carcinoma, ٨١.٧٪ had correct& incomplete answer regarding etiology and ٥٢.٩٪ had correct& incomplete answer regarding advanced signs and symptoms, ٥٥.٠٪ of studied patients had correct& incomplete answer regarding treatment options for not spread tumor, while ٣٧.٥٪ of them had correct answer about ethanol injection and ٦٤.٦٪ of them had in correct answer regarding optimal treatment.

Table (٤):- Shows distribution of studied patients life style patterns according to nutritional habits, ٧٩.٢٪ of studied patients never follow a healthy diet before having hepatocellular carcinoma , ٦٢.٥٪ always had three meals daily, ٦٣.٣٪ always avoid eating fatty foods, ٨٢.٩٪ always had enough fruits and vegetables, ٥١.٧٪ always avoid eating foods rich in protein and ٧٥.٨٪ always avoid consumption of un safe stored foods.

Table (٥):- Shows distribution of studied patients life style patterns according to physical exercises, ٤٥.٠٪ of studied patients sometimes exercised regularly daily, ٣٧.٥٪ sometimes preferred light exercises, ٥٠.٨٪ always suffered from tiredness during exercises and ٤٥.٠٪ always their health status hinder exercises.

Table (٦):-Shows distribution of studied patients life style patterns according to medication adherence, ٨٧.٥٪ of studied patients always took medication as doctor order, ٤٨.٨٪ stop medication always made difference with their health status, ٥٩.٣٪ of studied males always avoid taking anabolic steroids while, ٦٨,٣٪ of studied females always avoid taking oral contraceptive pills.

Table (٧):- Illustrates distribution of studied patients life style patterns according to sleeping, ٤٠.٨٪ of studied patients always slept enough hours at night, ٤٠.٨٪ never

had trouble sleeping at night, while ٣٩.٦٪ sometimes slept during the day. ٦٣.٧٪ always avoid drinking stimulants and ٤٠.٤٪ of studied patients never their health status hinder go sleeping.

Table (٨): Shows life style patterns of patients having different duration of the disease, there was significant relation between effect of hepatocellular carcinoma and studied patients total lifestyle patterns $X^{٢}$ =١٣.٣٦,P- value =٠.٠٥

Table (٩):- Shows correlation between total knowledge score and total life style patterns score, there was positive correlation with highly statistically significant relation between total knowledge score and their total lifestyle patterns score p-value= ٠.٠٠٠.

Figure (١): Illustrates distribution of studied patients regarding source of information , source of knowledge for ٨٩.٢٪ of studied patients was medical team, while ٥٦.٣٪ received information from friends & relatives and ٣٧.١٪ from social media.

Figure (٢):- Distribution of studied patients according to their history of smoking**,** ٥٥.٨٪ of studied patients were smokers before discovering disease, while ٤٤.٢٪ of studied patients were not smoking.

Figure (٣):- Distribution of studied patients regarding total lifestyle patterns score, ٨٣.٣٪ of studied patients had healthy lifestyle patterns score, while ١٦.٧٪ of studied patients had unhealthy lifestyle patterns score.

Table (١) Distribution of studied patients according to their social characteristics (n=٢٤٠).

Items	No.	%
Age		
٣٠-	٢	.٨
٤٠ -	١٦	٦.٧
٥٠ -	١٠٧	٤٤.٦
٦٠ +	١١٥	٤٧.٩
	Mean¯±SD٦١.٤٢±٨.٩٦	
Marital status		
Married	١٨٨	٧٨.٣

Widow	٤٩	٢٠.٤
Divorced	٣	١.٣
Educational level		
Don't read and write	١٠٥	٤٣.٨
Read and write	٣٣	١٣.٧
Intermediate education	٨٤	٣٥.٠
University education and more	١٨	٧.٥
Occupation		
Work	٦٣	٢٦.٣
Free business	٣١	١٢.٩
Doesn't work	١٤٦	٦٠.٨
Income		
Enough and saves	٥٢	٢١.٦
Enough	٩٤	٣٩.٢
Not enough	٩٤	٣٩.٢
live with whom		
Alone	٦	٢.٥
With family	٢٣٤	٩٧.٥

Table (٢) Distribution of studied patients according to medical history (n=٢٤٠).

Items	No.	%
*Previous diseases		
Liver cirrhosis	١١٦	٤٨.٣
Hepatitis "C" virus	٢٠٨	٨٦.٧
Hepatitis "B" virus	١	٠.٤
Fatty liver	١٩	٧.٩
Nothing	١٩	٧.٩
*Previous surgery		
Surgery unrelated to hepatocellular carcinoma	١٠٥	٤٣.٨
Surgery related to hepatocellular	٨٣	٣٤.٦

carcinoma		
No previous surgery	٩٩	٤١.٣
*Other chronic diseases		
Heart diseases	٩	٣.٨
Renal diseases	٦	٢.٥
Respiratory system diseases	٤	١.٧
Rheumatism	١	٠.٤
Hypertension	٦٠	٢٥.٠
Diabetes mellitus	٨٥	٣٥.٤
Nothing	١٢٩	٥٣.٨

*****The results were not mutually exclusive.

Table (٣) Distribution of studied patients according to their knowledge about hepatocellular carcinoma (٢٤٠)

Items	Correct answer		Correct& incomplete		In correct answer	
	No.	%	No.	%	No.	%
Meaning of hepatocellular carcinoma	١٧٥	٧٢.٩	١	٠.٤	٦٤	٢٦.٧
Incidence of hepatocellular carcinoma	٤٤	١٨.٣	٣	١.٣	١٩٣	٨٠.٤
Etiology of hepatocellular carcinoma	٣٢	١٣.٣	١٩٦	٨١.٧	١٢	٥.٠
Risk factors of hepatocellular carcinoma	٣٧	١٥.٤	١٦٤	٦٨.٣	٣٩	١٦.٣
Signs and symptoms appear	١٤٥	٦٠.٤	٤	١.٧	٩١	٣٧.٩
Advanced signs and symptoms	٥٩	٢٤.٦	١٢٧	٥٢.٩	٥٤	٢٢.٥
Treatment of hepatocellular carcinoma depend on	٤٩	٢٠.٤	١٣٤	٥٥.٨	٥٧	٢٣.٨
Treatment options for not spread tumor	٦٠	٢٥.٠	١٣٢	٥٥.٠	٤٨	٢٠.٠
Conditions for tumor resection	٣٥	١٤.٥	١١١	٤٦.٣	٩٤	٣٩.٢
Ethanol injection	٩٠	٣٧.٥	٨٣	٣٤.	٦٧	٢٧.٩

				٦		
Optimal treatment for hepatocellular carcinoma	٦١	٢٥.٤	٢٤	١٠.٠	١٥٥	٦٤.٦
Chemotherapy depends on	٩٧	٤٠.٤	٢	.٨	١٤١	٥٨.٨
Methods of hepatocellular carcinoma prevention	٥٥	٢٢.٩	١٥٧	٦٥.٤	٢٨	١١.٧

Table(٤) Distribution of studied patients life style patterns according to nutritional habits (n=٢٤٠).

Items	Always		Sometimes		Never	
	No.	%	No.	%	No.	%
Follow a healthy diet before having disease	٣٥	١٤.٦	١٥	٦.٢	١٩٠	٧٩.٢
Have three meals daily	١٥٠	٦٢.٥	٦٠	٢٥.٠	٣٠	١٢.٥
Have snacks between basic meals	٢	.٨	٦٩	٢٨.٨	١٦٩	٧٠.٤
Avoid eating outside door	١٩٣	٨٠.٤	٤٦	١٩.٢	١	٠.٤
Avoid fatty foods (fatty meat-butter)	١٥٢	٦٣.٣	٧٠	٢٩.٢	١٨	٧.٥
Have enough quantities of fruits and vegetables	١٩٩	٨٢.٩	٤٠	١٦.٧	١	.٤
Avoid foods added flavor and fragrance	١٩٨	٨٢.٥	٤١	١٧.١	١	.٤
Avoid foods rich in protein	١٢٤	٥١.٧	١٠٢	٤٢.٥	١٤	٥.٨
Drink enough water and liquids daily	٢١٦	٩٠.٠	٢٣	٩.٦	١	.٤
Avoid consumption of un safe stored foods	١٨٢	٧٥.٨	٥٦	٢٣.٤	٢	.٨

Table (٥) Distribution of studied patients life style patterns according to physical exercises (n=٢٤٠).

Items	Always		Sometimes		Never	
	No.	%	No.	%	No.	%
Exercise regularly daily	٣١	١٢.٩	١٠٨	٤٥.٠	١٠١	٤٢.١
Prefer simple exercises(walking- running down)	٨٣	٣٤.٦	٩٠	٣٧.٥	٦٧	٢٧.٩
Prefer to climb the ladder using elevator	٨١	٣٣.٨	٩٢	٣٨.٣	٦٧	٢٧.٩
Exercise cause tiredness	١٢٢	٥٠.٨	٩٤	٣٩.٢	٢٤	١٠.٠
Have exercise program	٢٨	١١.٧	٨٦	٣٥.٨	١٢٦	٥٢.٥
Health status hinder exercise	١٠٨	٤٥.٠	١٠٢	٤٢.٥	٣٠	١٢.٥

Table (٦) Distribution of studied patients life style patterns according to medication adherence (n=٢٤٠).

Item	Always		Sometimes		Never	
	No.	%	No.	%	No.	%
Take medication regularly as doctor say	٢١٠	٨٧.٥	١٧	٧.١	١٣	٥.٤
Take a small amount of drugs daily	٨٧	٣٦.٣	٩٣	٣٨.٧	٦٠	٢٥.٠
Avoid reading side effect of drugs before taking	١٩٣	٨٠.٤	٢٢	٩.٢	٢٥	١٠.٤
Stop medication make difference	١١٧	٤٨.٨	٧٩	٣٢.٩	٤٤	١٨.٣
Avoid taking anabolic steroids(sex hormones) (males n=١٧٧)	١٠٥	٥٩.٣	٣	١.٧	٦٩	٣٩.٠
Avoid taking oral contraceptive pills (females n=٦٣)	٤٣	٦٨.٣	٥	٧.٩	١٥	٢٣.٨

Table (٧) Distribution of studied patients life style patterns according to sleeping (n=٢٤٠).

Items	Always		Sometimes		Never	
	No.	%	No.	%	No.	%
Sleep enough hours at night (٦-٨) hours	٩٨	٤٠.٨	٨٠	٣٣.٤	٦٢	٢٥.٨
Have trouble sleeping at night	٦٧	٢٧.٩	٧٥	٣١.٣	٩٨	٤٠.٨

Sleep during the day	٦٢	٢٥.٨	٩٥	٣٩.٦	٨٣	٣٤.٦
Avoid drinking stimulants as coffee and tea	١٥٣	٦٣.٧	٧٢	٣٠.٠	١٥	٦.٣
Health status hinder go sleeping	٦١	٢٥.٤	٨٢	٣٤.٢	٩٧	٤٠.٤

Table (٨) Life style patterns of patients having different duration of the disease (n=٢٤٠).

Duration of disease	Total Lifestyle patterns					
	Unhealthy (n=٤٠)		Healthy (n=٢٠٠)		X^2	P-value
	No.	%	No.	%		
< ٦ months	١٠	٢٥.٠	٥٤	٢٧.٠	١٣.٣٦	٠.٠٥*
٦ months – year	٦	١٥.٠	٣١	١٥.٥		
>one year	٢٤	٦٠.٠	١١٥	٥٧.٥		

***Significant p≤ ٠.٠٥**

Table (٩)

Correlation between total knowledge score and total life style patterns score (n=٢٤٠).

Total lifestyle patterns score	Total Knowledge Score	
	r	p-value
	٠.٦٥	**٠.٠٠٠

**** Highly significant p<٠.٠٠١**

Figure (١) Distribution of studied patients according to source of information (n=٢٤٠).

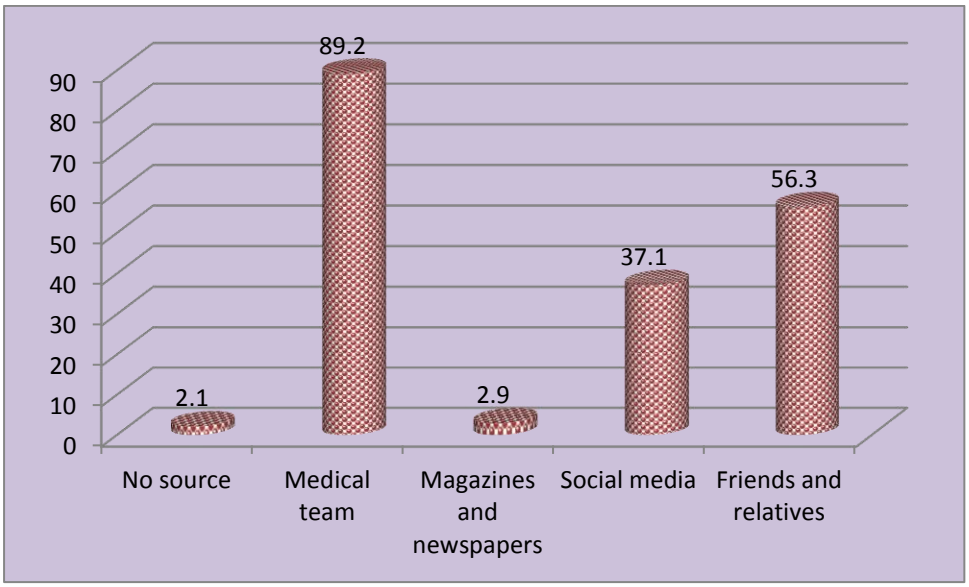


Figure (٢) Distribution of studied patients according to their history of smoking (n=٢٤٠).

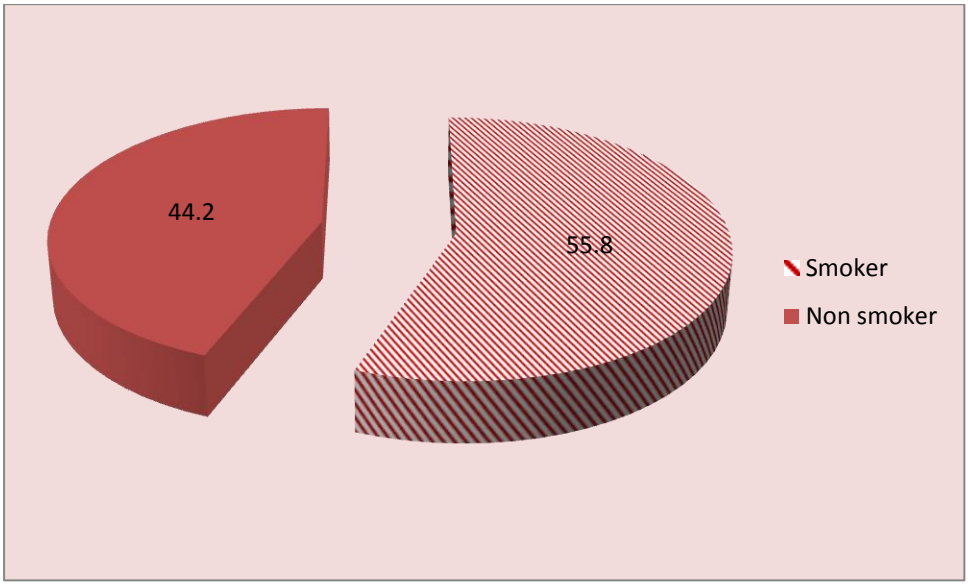
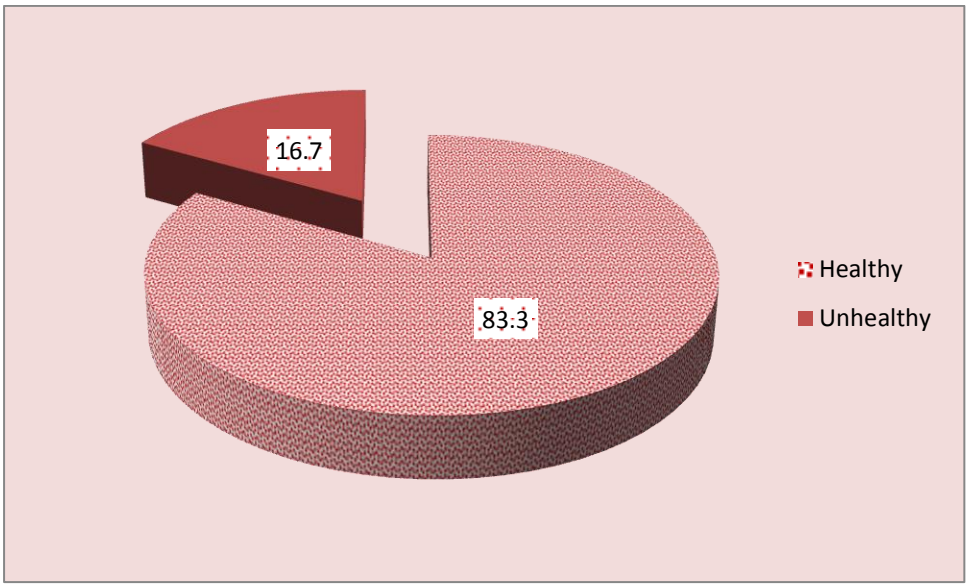


Figure (٣) Distribution of studied patients regarding total lifestyle patterns score (n=٢٤٠).



Discussion

Hepatocellular carcinoma is a multistage disease its occurrence is linked to environmental, dietary and lifestyle factors. Unlike other cancers, HCC usually arises on a previously damaged organ, mostly in the setting of chronic hepatopathy, cirrhosis, or in association with hereditary diseases such as hemochromatosis, Wilson's disease and a-١-antitrypsin deficiency. However, in about ١٥٪-٢٠٪ of cases HCC may occur in the non-fibrotic liver or in livers with minimal portal fibrosis without any septal fibrosis **(Schlageter et al., ٢٠١٤).**

Concerning previous medical history of studied patients with hepatocellular carcinoma, majority of them had hepatitis C virus and about half of them had liver cirrhosis **(table ٢).**This finding was in agreement with **Mabrouk (٢٠١٢)**,who performed a study on "Health- related quality of life in Egyptian patients after liver transplantation"; reported that ٨١.٦٪ of patients had hepatitis C virus. This may be due to that hepatitis C virus and cirrhosis are major causes for HCC.

Regarding previous surgery, more than two fifth of studied patients hadn't previous surgery **(table ٢).**This result was in agreement with **Mohamed(٢٠١٣)**,who studied "The impact of self- care instructional program on quality of life of patients with liver cirrhosis at El Kasr El- Ainy Cairo University Hospital in Egypt"; reported

that ٧٠٪ of patients didn't had any previous surgery. This may be due to no relation between liver cancer and any surgery for other body organs

Regarding other chronic diseases, about one third of studied patients had diabetes mellitus and one forth had hypertension **(table ٢).**This findings were in agreement with **Mohamed (٢٠١٣),** who reported that ٣٣.٥٪ of patients had diabetes mellitus and ٣٣.٥٪ had hypertension. However, this result disagreed with **Koh et al.(٢٠١٣)**, who performed a study on "Diabetes mellitus and risk of hepatocellular carcinoma in China"; reported that ٨.٩٪ of patients had diabetes mellitus. This may be due to that diabetes mellitus is a risk factor for HCC and hypertension and diabetes mellitus are chronic diseases companion to elderly people.

Concerning studied patients source of information, the finding of the current study revealed that majority of studied patients had information from medical team, and more than half of them had information from friends and relatives **(figure ١).**This finding was in agreement with **Chen et al. (٢٠١٣)**,who performed a study on "Perceptions about preventing hepatocellular carcinoma among patients with chronic hepatitis in Taiwan"; reported that ٧٠.٥٪ of patients had information from health team and ٤٧.٢٥٪ from friends and relatives. This may be due to that patients trust the medical team but information incomplete so they ask friends and relatives for information which may be wrong.

Concerning past history of smoking, the findings of the current study revealed that more than half of patients were smoking before discovering disease **(figure ٢).**This result was in accordance with **Fages et al. (٢٠١٥)**, who studied "Metabolic profiles of hepatocellular carcinoma in a European prospective cohort in Europe"; found that ٣٩.٣٪ of patients were smoking before discovering diseased. This finding was also in agreement with **Mohamed (٢٠١٢)**,who studied "Impact of proposed nursing rehabilitation program on self management of selected side effects of chemotherapy for elderly patients with gastrointestinal cancer in Egypt"; found that more than half of patients were smoking. Meanwhile, smoking contains harmful chemicals which become carcinogens when metabolized in liver.

Regarding studied patients knowledge about etiology of HCC, minority of studied patients had correct knowledge about etiology of HCC **(table ٣).** This finding was in accordance with **Islam et al.(٢٠١٤)**, who studied "Hepatitis and liver disease knowledge and preventive practices among health workers in Mexico"; reported that ٢٠٪ of the studied sample had good knowledge about etiology of HCC; and also **World Hepatitis Alliance (٢٠١٣),** mentioned that ١٥٪ of patients had good knowledge about etiology of HCC. This may be due to majority of patients couldn't read and lack of health centers that provides health education programs for patients.

Concerning studied patients knowledge about risk factors of HCC, about two thirds of studied patients had correct& incomplete knowledge about risk factors of HCC**(table ٣).**This finding was disagreed with **Burnham et al.(٢٠١٤)**, who performed a study on "Knowledge, attitudes and beliefs of patients with chronic liver disease in Washington"; reported that ٧٥٪ of patients had poor knowledge about risk factors of HCC.

Considering studied patients knowledge about advanced signs and symptoms of HCC, the finding of the current study revealed that more than half of studied patients had correct& incomplete knowledge about advanced signs and symptoms of HCC **(table ٣).** This finding was in disagreement with **Burnham et al.(٢٠١٤),** who reported that lack of knowledge of patients about disease signs and symptoms. This may be due to that most of patients with HCC experienced some of these signs and symptoms.

Regarding studied patients knowledge about conditions for tumor resection, the finding of the current study revealed that minority of studied patients had correct knowledge about tumor resection **(table ٣).** This finding was in accordance with **Forner et al.(٢٠١٢)**, who studied "Natural history and staging for hepatocellular carcinoma in Barcelona"; reported that minority of patients had good knowledge about conditions for tumor resection. This may be due to most patients avoided surgical treatment for HCC.

Concerning studied patients knowledge about ethanol injection, more than one third of studied patients had correct knowledge about ethanol injection **(table ٣).** This

finding was in accordance with **Yu et al.(٢٠١٦),** who performed a study on "Percutaneous ethanol injection therapy is comparable to radiofrequency ablation in hepatocellular carcinoma smaller than ١.٥ cm in Korea"; reported that ٤٦.٢٪ of patients had good knowledge about ethanol injection. This may be due to it's one of the most used options for HCC treatment.

Considering studied patients knowledge about optimal treatment for HCC, the finding of the present study revealed that about two thirds of studied patients had incorrect knowledge about optimal treatment for HCC **(table ٣).** This finding was in agreement with **Yen et al.(٢٠١٧)**, who studied "Treatment stage migration maximizes survival outcomes in patients with hepatocellular carcinoma treated with sorafenib in United State of America"; reported that ٧٠٪ of patients had poor knowledge about optimal treatment for HCC. This may be due to false belief , sever fear of patients from surgical treatment (tumor resection and liver transplantation) and it is very expensive.

Concerning studied patients knowledge about chemotherapy, the finding of the current study showed that two fifth of studied patients had correct knowledge about chemotherapy treatment **(table ٣).**This finding was supported by **Kirstein et al.(٢٠١٧)**, who performed a study on "Patterns and challenges of treatment sequencing in patients with hepatocellular carcinoma in German"; reported that ٢٥٪ of patients had good knowledge about chemotherapy treatment. This may be due to that chemotherapy treatment is more used for treatment of HCC.

Regarding studied patients knowledge about methods of HCC prevention, more than one fifth of studied patients had correct knowledge about prevention of HCC **(table ٣).**This finding was in agreement with **Saleh et al.(٢٠١٥)**, who studied " Preventing hepatocellular carcinoma in Egypt"; found that limited knowledge of patients about prevention of HCC. This may be due to lack of knowledge about causes and risk factors for HCC.

Regarding studied patients life style patterns related nutritional habits the present finding revealed that, about four fifth of studied patients never follow a healthy diet before discovering disease **(table ٤).**This finding was in agreement with

Kheterpaul (٢٠١٤), who studied "A study on dietary habits and assessment of nutritional status of cancer patients in Haryana, India"; reported that ٩٠٪ of patients never follow a healthy diet before discovering disease. This may be due to wrong nutritional habits of most Egyptians and most of patients living in rural areas.

Concerning studied patients obtain three meals daily, the finding of the present study revealed that more than three fifth of studied patients always had three meals daily but in small quantity **(table ٤).**This finding was in accordance with **Opanga et al.(٢٠١٧)**, who studied "Nutritional status of cancer outpatients using scored patient generated subjective global assessment in two cancer treatment centers in Nairobi, Kenya"; reported that ٦٩٪ of patients had three meals daily. This may be due to that patients have to eat to take medications before and after meals.

Considering studied patients avoid eating outside door, about four fifth of studied patients always avoid eating outside doors **(table ٤).** This finding was in accordance with **Mohammed (٢٠١٣)**,who emphasized that fast and processed food must be restricted and replaced by fresh food. This may be due to that fast, spicy, fatty and processed food is an overload on liver and causing liver damage progress.

As regards studied patients avoidance eating fatty foods, more than three fifth of studied patients avoid eating fatty foods **(table ٤).**This finding was in agreement with **Cancer Association of South Africa (CANSA) (٢٠١٦)**, which published that patients with liver cancer should avoid fatty foods and replace it by healthy fats as canola oil, olive oil, nuts and nut butters. This may be due to that medical team confirms the patients' avoidance fatty foods as patients with chronic liver diseases can't digest fatty foods.

Considering studied patients having enough quantities of fruits and vegetables, the result of the current study revealed that majority of studied patients always had enough quantities of fruit and vegetables **(table ٤).**This finding was in contrast with **Mandair et al.(٢٠١٤)**, who studied "The impact of diet and nutrition in the prevention and progression of hepatocellular carcinoma in London"; reported that increase consumption of fruits and vegetables decrease HCC progression. This may

be due to that fruits and vegetables have many of vitamins, easy in digestion and rich in fibers which help in defecation process.

Concerning studied patients must avoid foods rich in protein, more than half of studied patients always avoid foods rich in protein **(table ٤).**This finding was in agreement with **Muthike (٢٠١٣)**,who performed a study on "Nutritional knowledge in association with dietary practices of cancer patients in Nairobi"; reported that ٥٥٪ of patients never eat foods rich in proteins. This may be due to that consumption of highly protein rich foods can cause hepatic encephalopathy.

Regarding studied patients must avoid consumption of unsafe stored foods, three quarters of studied patients always avoid consumption of unsafe stored foods **(table ٤).**This finding disagreed with **Glauert et al.(٢٠١١)**,who studied "Dietary antioxidants in the prevention of hepatocarcinogenesis in Lexington, United States"; reported that ٥٥٪ of patients had HCC in relation to Aflatoxin B١ exposure as a result of consumption of unsafe stored foods. This may be due to that low income of patients make them unable to save foods.

As regards studied patients life style patterns related physical exercises the present finding revealed that, more than two fifth of studied patients never do exercise regularly **(table ٥).** This finding disagreed with **Kheterpaul (٢٠١٤)**,who reported that ١٠٪ of patients never do exercise regularly. This may be due to sense of fatigue and tiredness most of time.

Concerning studied patients prefer simple exercises as walking and running down, more than one third of studied patients prefer simple exercises **(table ٥).** This finding was in accordance with **Kheterpaul (٢٠١٤)**, who reported that ٢٠٪ of patients prefer light exercises. This may be due to inability to do hard exercises and it not recommended for patients with HCC.

Regarding exercise cause tiredness, one half of studied patients always suffer from tiredness during exercises **(table ٥).** This was in agreement with **Berzigotti et al.(٢٠١٦)**,who performed a study on "Physical activity and liver diseases in United States of America"; reported that ٥٠٪ of patients always suffer from tiredness during exercises.

Regarding health status hinder exercises, less than half of studied patients their health status always hinder exercises **(table ٥).** This result was in accordance with **Lai et al.(٢٠٠٧)**, who studied "Fatigue experiences in hepatocellular carcinoma patients during six weeks of stereotactic radiotherapy in China"; reported that ٦٥٪ of patients their health status hinder exercises.

Concerning studied patients life style patterns related medication adherence the present finding revealed that, majority of studied patients always take medication as doctor order **(table ٦).**This finding was in agreement with **Kikuchi et al. (٢٠١٧)**,who performed a study on "Adherence to BCLC recommendations for the treatment of hepatocellular carcinoma in Sao Paulo"; reported that ٥٢٪ of patients were good adherence to medications. This finding disagreed with **Kuo et al.(٢٠١٦)**,who studied "Factors associated with medication non- adherence in patients with end stage liver disease in California"; reported that ٦٧٪ of patients were low adherence. This may be due to positive effect of medication on their health status.

Regarding amount of taken drugs, less than two fifth of studied patients sometimes take a small amount of drugs **(table ٦).**This finding was in agreement with **Zahrina et al.(٢٠١٤)**, who studied "Adherence to capecitabine treatment and contributing factors among cancer patients in Malaysia"; reported that there is association between large amount of drugs and non- adherence. This may be due to that most patients take dietary supplements supportive for hepatic cells beside other medications for chronic diseases

Considering avoid reading side effect of drugs before use, majority of studied patients always avoid reading side effect of drugs **(table ٦).** This finding agreed with **Bhattacharya et al.(٢٠١٢)**, who studied "Capecitabine non- adherence: exploration of magnitude, nature and contributing factors in United Kingdom"; reported that side effects of drugs didn't affect patient adherence. This may be due to most of studied patients couldn’t read and write.

The finding of the present study revealed that, about half of studied patients stop medication always make difference with them**(table ٦).** This finding was disagreed with **Burrel et al.(٢٠١٢)**, who studied "Survival of patients with

hepatocellular carcinoma treated by trans arterial chemoembolization (TACE) using Drug Eluting Beads in Barcelona"; reported that no difference between adherence and non adherence for medications in patients with HCC. This may be due to that when lack of some medicines patients feel deterioration in their health status.

As regards studied patients avoid taking anabolic steroids in men, about three fifth of studied male patients always avoid taking anabolic steroids **(table ٦).**This finding was in accordance with **Stoot et al.(٢٠١٠)**, who studied "Malignant transformation of hepatocellular adenomas into hepatocellular carcinomas: a systematic review including more than ١٦٠٠ adenoma cases in Canada"; reported that ٧٥٪ of the patients never take anabolic steroids. This may be due to most of studied male patients older in age and from rural areas.

Concerning studied patients avoid taking oral contraceptive pills in women, about two thirds of studied female patients avoid taking oral contraceptive pills **(table ٦).**This was in contrast with **Stoot et al.(٢٠١٠)**, who reported that only ١٣٪ of patients had a positive history of taking oral contraceptive pills. This may be due to that most of studied women patients were older in age and didn't know contraceptive methods.

Considering studied patients life style patterns related sleeping the present study finding revealed that, two fifth of studied patients always sleep enough hours at night **(table ٧).**This result was in agreement with **Chu et al. (٢٠١١)**, who studied "Comparison of differences and determinants between presence and absence of sleep disturbance in hepatocellular carcinoma patients in China"; reported that ٥١.٩٪ of patients sleep enough hours at night. This may be due to that disturbance sleep patterns affect patients at advanced stages of HCC.

Concerning have trouble sleeping at night, two fifth of studied patients never had trouble sleeping **(table ٧).** This finding disagreed with **Al- Jahdali et al. (٢٠١٤)**, who performed a study on "Prevalence of insomnia and sleep patterns among liver cirrhosis patients in Riyadh"; reported that ٤٢٪ of patients had trouble sleeping. This may be due to that only studied patients who had diabetes mellitus or hypertension are most patients had trouble sleeping.

As regards avoid drinking stimulants as coffee and tea, less than two thirds of studied patients always avoid drinking stimulants **(table ٧).** This finding was in accordance with **Kheterpaul (٢٠١٤)**, who reported that only ١٩٪ of patients were drinking tea. This may be due to that doctors ask patients to avoid drinking any stimulants.

Regarding total lifestyle patterns score, the finding of the present study revealed that majority of studied patients had healthy lifestyle score .This may be due to that majority of studied patients try to adjust their lifestyle according to HCC, but some of studied patients insist never change lifestyle patterns although HCC progression.

Regarding the correlation between total knowledge score and total lifestyle patterns score. The present study revealed that there was positive correlation with highly statistically significant relation between total knowledge score and total lifestyle patterns score. This may be due to that level of studied patients knowledge reflect on their practices and their lifestyle patterns.

Conclusion

More than half of studied patients had poor knowledge regarding hepatocellular carcinoma. While, less than one third of them had average knowledge score and minority of them had good knowledge score. Majority of studied patients had healthy life style patterns score. There was highly statistically significant relation between studied patient's total knowledge score and their total life style patterns score. There was highly significant relation between level of education, monthly income and total life style patterns score. There was a significant relation between effect of hepatocellular carcinoma and life style pattern score.

Recommendations

In the light of the result of the present study, the following recommendations are suggested:

- Health education program should be conducted at Outpatient Clinics to improve knowledge and lifestyle patterns of patients with hepatocellular carcinoma.

- This study can be conducted on a larger number of patients to ensure the generalizability of results.

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