

## Caregivers' Awareness toward Health Care of their Patients with Hepatocellular Carcinoma

Amal Ramadan Abd AL-Hafez <sup>(1)</sup>, Hanan Ibrahim Ahmed <sup>(2)</sup>, Asmaa Talaat Mohamed <sup>(3)</sup>

<sup>1</sup> Nursing supervisor of CCU-Ain Shams University specialized Hospital.

<sup>2</sup> Professor of Community Health Nursing, Faculty of Nursing -Ain Shams University.

<sup>3</sup> Lecturer of Community Health Nursing, Faculty of Nursing -Ain Shams University.

### Abstract

**Background:** Caregivers of patient with hepatocellular carcinoma have great burden in caring their patients and having crucial role for management of their diseases. **Aim:** the current study aimed to assess caregivers' awareness toward health care of their patients with hepatocellular carcinoma. **Research Design:** A descriptive design was used. **Sample:** Purposive sample of 130 caregivers of patients with hepatocellular carcinoma **Setting:** The study was conducted at outpatient clinic in liver tumor clinic in Ain Shams University Specialized Hospital. **Tools:** Two tools were used for data collection. **First tool:** interviewing questionnaire was divided into three parts: Demographic data of patients and their caregivers, medical history of patient, caregivers' knowledge, and reported practices of caregivers. **Second tool** Likert scale to assess attitude of caregivers. **Results:** 54.6% of the caregivers had satisfactory knowledge, 91.5% of the caregivers had adequate reported practices, and 73.1% of the caregivers had positive attitude. **Conclusion:** there is a highly statistically significant relation between caregivers' total level of knowledge and their total practices; there is no statistically significant relation between caregivers' total level of knowledge and their total attitude. Also, there is a statistically significant relation between caregivers' total attitude and their total practices. **Recommendations:** Information related to health care services should be disseminated for the caregivers and Enhancement of nurses' role in health education hepatocellular carcinoma caregivers, encourage patients' coping strategies to overcome their condition.

**Keywords:** Caregivers, Awareness, Hepatocellular Carcinoma.

### Introduction

Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer in adults and is currently the most common cause of death in people with cirrhosis. HCC is the third leading cause of cancer-related death worldwide. HCC occurs in the setting of chronic liver inflammation, and is most closely linked to chronic liver hepatitis infection (hepatitis B or C) or exposure to toxins such as alcohol, aflatoxin, or pyrrolizidine alkaloids. (Petrick, et al., 2020).

Hepatocellular carcinoma (HCC) remains a global health challenge with an estimated incidence of > million cases by 2025 Hepatocellular carcinoma (HCC) is the most

common form of liver cancer and accounts for 90% of cases infected by hepatics B and hepatitis C virus are the main risk factor for HCC development although nonalcoholic steatohepatitis associated with metabolic syndrome or diabetes mellitus is becoming a more frequent risk factor in the west. moreover, nonalcoholic steatohepatitis associated HCC has unique molecular pathogenesis. Approximately 25%of all HCC present with potentially actionable mutations which are yet to be translated into clinical practice. (Llovét, et al., 2020)

Hepatocellular carcinoma (HCC) is a universal problem and its epidemiological data showed variation from place to place.

Hepatocellular carcinoma (HCC) is the sixth and fourth common cancer in worldwide and Egypt, respectively. Egypt ranks the third and 15th most populous country in Africa and worldwide, respectively. The aim of this review is to compare the status of HCC in Egypt to that in the worldwide from different issues; risk factors, screening and surveillance, diagnosis and treatment, prevention, as well as research strategy (Forner, et al., 2018).

Hepatocellular carcinoma (HCC) is now the third leading cause of cancer deaths worldwide, with over 500, 000 people affected. The incidence of HCC is highest in Asia and Africa, where the endemic high prevalence of hepatitis B and hepatitis C strongly predisposes to the development of chronic liver disease and subsequent development of HCC Hepatocellular carcinoma (HCC) is the most common primary liver tumor and results in approximately 700, 000 deaths annually worldwide (Emedicine, 2019).

Symptoms of HCC Most people don't have signs and symptoms in the early stages of HCC. When signs and symptoms of HCC appear, they may include general weakness and fatigue, abdominal pain or tenderness, especially in the upper right part of the abdomen, swollen abdomen (ascites), nausea and vomiting, loss of appetite, unexplained weight loss, yellow skin or eyes (jaundice), light stools, and easy bruising or bleeding. (Elghitany, 2019)

Awareness is the ability to directly know and perceive to feel or to be cognizant of events More broadly, it is the state of being conscious of something. By understanding patients' knowledge, attitudes and lifestyle practices following diagnoses, health providers can begin to provide patient-centered care and education, help patients and their family to better understand the illness and help them to lead as normal a lifestyle as possible (Ayubmed, 2019)

Caregiver is an individual who provides continuous assistance care & support for the patient at home help their patients to cope with and adapt to the difficulties of HCC treatment

caregivers helping patients understand and process their disease, they can positively impact patients' treatment decisions as well as their ability to adjust to the new reality. serve as home health aides and companions. They may help feed, dress, and bathe the patient. Caregivers arrange schedules, manage insurance issues, and provide transportation. They are legal assistants, financial managers, and housekeepers. They often have to take over the duties of the person with hepatocellular carcinoma, and still meet the needs of other family members. (McGlynn, et al., 2021).

Nurses play an important role in clients' education. Nurses explain hepatitis and liver cancer to infected clients, tell them how the disease usually progresses and advise them on when to contact a doctor. Nurse should have acquired adequate information and insights to care effectively and safely for clients with hepatocellular carcinoma. The primary care nurse may undertake tasks such as specific diagnosis and initial assessment of the severity of disease, counseling the clients about the current understanding of the disease process and potential complications, as well as general issues of diet, mental health, and recommendations about health-promoting lifestyle (Yahia, 2018)

#### **Significance of the study:**

Hepatocellular carcinoma (HCC) is a universal problem and its epidemiological data showed variation from place to place. Hepatocellular carcinoma (HCC) is the sixth and fourth common cancer in worldwide and Egypt, respectively. Egypt ranks the third and 15th most populous country in Africa and worldwide, respectively. The aim of this review is to compare the status of HCC in Egypt to that in the worldwide from different issues; risk factors, screening and surveillance, diagnosis and treatment, prevention, as well as research strategy (Forner, et al., 2018).

#### **Aim of the study:**

This study aims to assess caregivers' awareness toward health care of their patients with hepatocellular carcinoma through:

1. Assessing knowledge of caregiver about hepatocellular carcinoma.
2. Assessing practices of caregiver during care of patient with hepatocellular carcinoma.
3. Assessing attitude of caregiver toward patient with hepatocellular carcinoma.

#### Research Questions:

1. Is there a relation between knowledge and practice of caregiver of patient with hepatocellular carcinoma?
2. Is there a relation between knowledge and attitude of caregiver of patient with hepatocellular carcinoma?
3. Is there relation between practice and attitude of caregiver of patient with hepatocellular carcinoma?

#### Subjects and Methods

The current study aimed to assess caregivers' awareness toward health care of their patients with hepatocellular carcinoma

The subject and methods of the current study were discussed under the following four designs:

#### I. Technical Design:

The technical design for the study included research design, setting of the study, study subjects, and tools of data collection.

#### Research design:

A descriptive research design was used to achieve the aim of the current study.

#### Settings:

The current study was conducted at outpatient clinic in medicine clinic in Ain Shams University Specialized Hospital in Cairo Governorate assisted to El-Abaseya, Elweili, Kobri El Qobba, Hadaeq Al Qubbah, Alf Maskan, Ezbet El Nakhl, El-Khalifa El-Maamoun, and service include (liver tumor clinic, oncology clinic, hemodialysis unit, physiotherapy and rehabilitation, operation rooms, postoperative intensive care unit, liver-kidney transplantation intensive care unit, diagnostic, intervention radiation includes chest x ray, CT, MRi, Doppler, Mammogram, atomic

scanning, ultrasound waves, thermal frequency and providing all health service to the community.

#### Subjects:

Purposive sample of 130 caregivers of patients with hepatocellular carcinoma out of 200 caregivers who attend the outpatient medicine clinic Ain Shams Specialized Hospital at 2018-2019. Sample size was calculated using Steven and Thompson equation as the following formula

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

N= Population (200)

Z= confidence level 95% (1.96)

P= probability (50%)

d= margin of error (0.05)

So, sample size (n) = 132

#### Inclusion Criteria:

- Care givers of patients with hepatocellular carcinoma and their ages range from 30to 55 years.
- Patient diagnosed with hepatocellular carcinoma at least one year.

#### Tools of data collection:

Two tools were used to achieve the aim of this study

**First tool:** An interviewing questionnaire was used. It was designed by the investigator based on reviewing the current and related literature review it was written in Arabic language. It consists of three parts:

**Part I (A)** Demographic characteristics of caregivers, as age, gender, marital status, educational level, occupation, income and place of residence. question No (1-7).

**(B)** Demographic characteristics of patients with hepatocellular carcinoma, as age, sex and marital status, educational level,

occupation, place of residence. Question No (8-13)

(C) Medical history of the patients as suffering from previous hepatic disease, method of discovering disease, duration of hepatocellular carcinoma, place of receiving treatment, type of treatment, receiving of health education, frequency of physician visits. Question No (14-20).

**Part II:** Caregiver knowledge regarding hepatocellular carcinoma as definition, causes, risk factors, symptoms, diagnosis, complications, treatment, prevention, definition of chemotherapy, goal of chemotherapy, types of chemotherapy, method of administration chemotherapy, complication of chemotherapy, goals of radiotherapy, side effects of radiotherapy, method of administration radiotherapy, palliative of therapy, sources of knowledge. Question No (21-38).

❖ **Scoring system:**

Total knowledge question included (17) and scored (34) degree. Caregiver's responses were scored as correct=2, incomplete correct=1, incorrect=zero. The scores of the items were summed up and the total divided by the number of items, these scores were converted to percent score. Total score of caregivers' knowledge considered satisfactory if total percent score was 50% or more representing (17-34) and unsatisfactory if the total percent score was less than 50% representing (0-16). (Khallaf, 2019). The source of knowledge question was excluded from the scoring system.

**Part III: Reported practices of caregivers**

This tool was adopted from (Hansen, 2017) and modified by investigator and aims to collect data about caregiver's practices of patients with hepatocellular carcinoma including, person of hygiene includes (5 statements), medication administration includes (8 statements), Pain management include (5 statements), Nutrition includes (16 statements), Elimination includes (5 statements), Transferring includes (6 statements), rest and

sleep, sport includes (9 statements) (Hansen, 2017).

❖ **Scoring system:**

Total practice questions included (54) and scored (54 degree). The responses scored as done=1, not done=zero.

The scores of the items were summed up and the total divided by the number of items. These scores were converted to percent score. Total score of caregivers' reported practices considered adequate 60% or more representing (32-54) and inadequate if the total percent score was less than 60% representing (31). (Ebrahem, 2015).

**Second tool: Likert scale for assessing attitudes of caregivers of patient with hepatocellular carcinoma**

Likert scale to assess attitude of caregiver adopted from Rensis Likert, (1932) and adapted by (Wilson, et al., 2016) and modified by the investigator to meet the aim of the study.

Including physical aspects including (13 statement), Psychological aspects including (11 statement), Social aspects including (9 statement).

❖ **Scoring system:**

Total attitude question included (33) and scored (66)

Responses of the caregivers were "never" or "sometimes" or "always" which scored zero, one, and two respectively. The scores of the items were summed up and the total divided by the number of items. These scores were converted to percent score. Total score of caregivers' attitudes considered positive if total percent score was 60% or more representing (39-66) and negative if the total percent score was less than 60% representing (38) (Ebrahem, 2015).

**Tools Validity:**

Content validity of the study tools was assessed by jury group consisted of three experts (Professors) in community nursing from faculty of nursing Ain shams university. Jury group members judge tools for comprehensiveness, accuracy and clarity in language. Based on their recommendation's correction, addition and / or omission of some items were done.

#### **Tools Reliability:**

Study tools were tested for its internal consistency by Cronbach's Alpha. It was 0.791 for Self-administered questionnaire, 0.832 for reported practices of caregivers, and 0.821 for attitude of caregivers

#### **II- Operational Design:**

The operational design for this study included three phases namely; preparatory phase, pilot study, and field work.

##### **Preparatory phase:**

This phase started with a review of current and past, national and international related literature concerning the subjects of the study, using textbooks, articles, journals, and websites. This review was helpful to the investigator in reviewing and developing the data collection tools, and then the investigator tested the validity of the tool through jury of expertise to test the content, knowledge, accuracy, and relevance of questions for tools.

##### **Pilot study:**

Pilot study was carried out on 10% of the total study sample representing (13 caregiver's) to evaluate the applicability, efficiency, clarity of tools, assessment of feasibility and time needed, beside to detect any possible obstacles that might face the investigator and interfere with data collection. The pilot sample was included in the main study sample, as there were no modifications done for the tools.

##### **Field work:**

Data collection of the study was started at the beginning of January 2021, and completed by the end of March 2021. The investigator attended at outpatient clinic in liver

tumor clinic in Ain Shams University Specialized Hospital in Cairo Governorate. Three days per week (Sunday, Tuesday, Thursday) from 8am to 12pm meet the caregivers in the break area of clinic, clinic work days (Sunday, Tuesday, Thursday).

The investigator first explained the aim of the study to the caregiver's patients and reassures them that information collected will be treated confidentiality and that used only for the purpose of the research. The investigator met caregiver's patients at outpatient clinic in liver tumor clinic in Ain Shams University Specialized Hospital, the investigator takes 30 minutes for each tool to complete the sheet with caregiver's patient.

#### **III- Administrative Design**

An official letter requesting permission to conduct the study was directed from the dean of the faculty of nursing Ain Shams University to outpatient clinic in medicine clinic in Ain Shams University Specialized Hospital at Cairo Governorate, to obtain their approval to carry out this study. This letter included the aim of the study and photocopy from data collection tools in order to get their permission and help for collection of data.

#### **Ethical Consideration**

Prior study conduction, ethical approval was obtained from the scientific research ethical committee of the faculty of nursing, Ain Shams University. The researcher met director of outpatient clinic in medicine clinic in Ain Shams University Specialized Hospital, at Cairo Governorate to clarify the aim of the study and take their approval. The researcher also met the caregiver's patients to explain the purpose of the study and obtain their approval to participate in the study. They were reassured about the anonymity and confidentiality of the collected data, which was used only for the purpose of scientific research. The subjects' right to withdraw from the study at any time was assured.

#### **IV- Statistical Design:**

Data entry and statistical analysis were done using (SPSS) statistical software package. Quality control was at the stage of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentage for qualitative variables; mean and standard deviation for quantitative variable. Qualitative categorical variables were compared Chi-square ( $X^2$ ) test; the hypothesis that the row and column variables are independent, without indicating strength or direction of the relationship.

#### Significant of the result:

Statistical significance was considered at (P-value <0.05).

- -Highly significant at p-value <0.01
- -Statistically significant was considered at p-value <0.05
- -Not significant at p-value >0.05

#### Results:

**Figure (1):** shows that (54.6%) of the caregivers had satisfactory knowledge while 45.4% of them had unsatisfactory total knowledge.

**Figure (2):** shows that 57% of patients received information from physician. 22% from family members. While, 12% from advertisement, 9% from scientific books and pamphlets.

**Figure (3):** shows that (91.5%) of the caregivers had adequate reported practices while (8.5%) of them had inadequate reported practices.

**Figure (4):** shows that (73.1%) of the caregivers had positive attitude while 26.9% of them had negative attitude.

**Table (1):** reveals that there is a highly statistically significant relation between caregivers' total knowledge and their educational level and their work, also, there is no statistically significant relation between caregivers' total knowledge and their ages, gender, marital status and income

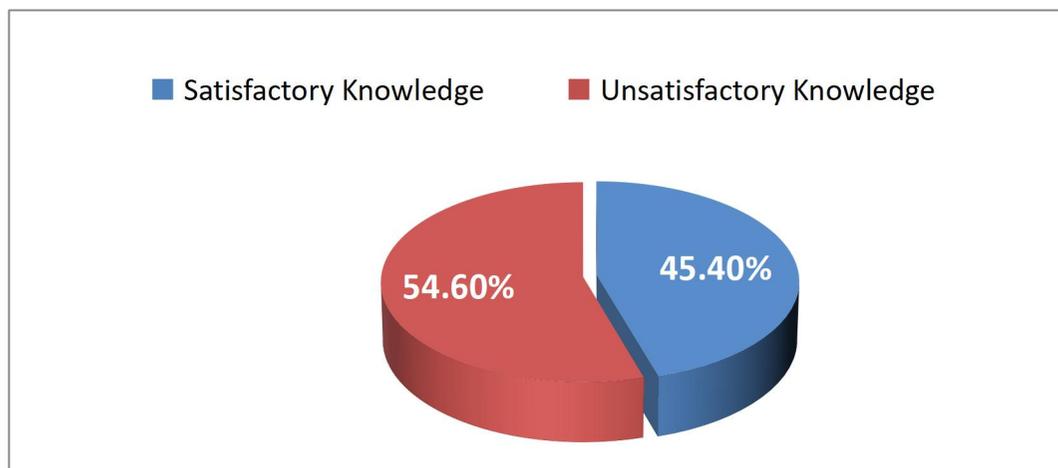
**Table (2):** reveals that there is a highly statistically significant relation between caregivers' total practice and their ages, and educational level, also, there is a statistically significant relation between caregivers' total practice and their income, while there is no statistically significant relation between caregivers' total practice and their gender, marital status, and their work.

**Table (3):** describes that there is a highly statistically significant relation between caregivers' total attitude and their ages, gender, educational level, and their work, also, there is a statistically significant relation between caregivers' total attitude and their marital status and income.

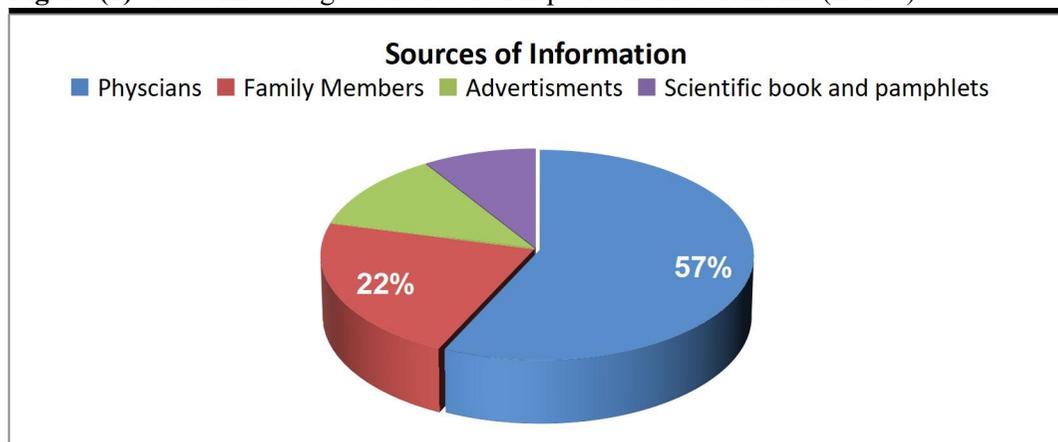
**Table (4):** reveals that there is a highly statistically significant relation between caregivers' total level of knowledge and their total practices.

**Table (5):** reveals that there is no statistically significant relation between caregivers' total level of knowledge and their total attitude.

**Table (6):** reveals that there is a statistically significant relation between caregivers' total attitude and their total practices.



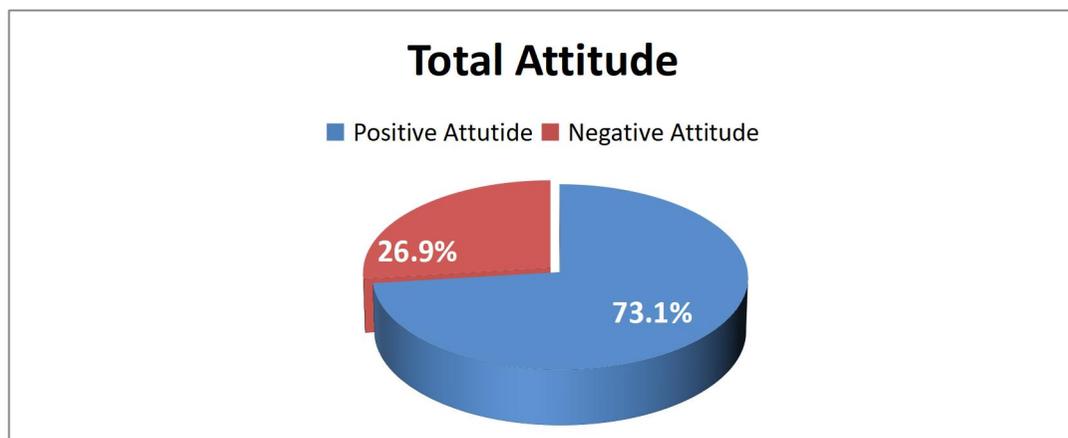
**Figure (1):** Total knowledge score level of hepatocellular carcinoma (n=130).



**Figure (2):** Percentage distribution of caregivers of hepatocellular carcinoma sources of information



**Figure (3):** Total reported practices score level of patient with hepatocellular carcinoma (n=130).



**Figure (4):** Total level of attitude of hepatocellular carcinoma (n=130).

#### Part VI: Relations between the study variables

**Table (1):** The relation between caregivers' demographic characteristics and their total level of knowledge (n=130).

Demographic characteristics	NO	Unsatisfactory knowledge (n=59)		Satisfactory knowledge (n=71)		X <sup>2</sup>	P-Value
		No	%	No	%		
<b>Age</b>							
35:40 years	79	35	27	44	33.8	.54	.085
40:50 years	28	12	9.2	16	12.3		
50:55 years	23	12	9.2	11	8.5		
<b>Gender</b>							
Male	32	15	11.5	17	13.1	.038	.502
Female	98	17	13.1	81	62.3		
<b>Marital status</b>							
Single	3	2	1.6	1	0.8	1.74	.627
Married	86	36	27.7	50	38.4		
Divorced	17	8	6.2	9	6.9		
Widowed	24	13	10	11	8.4		
<b>Education</b>							
Illiterate	9	9	6.9	0	0	82.8	.000**
Read and write	13	13	10	0	0		
Basic education	23	23	17.7	0	0		
Secondary and above	85	14	10.8	71	54.6		
<b>Work</b>							
Working	118	47	36.2	71	54.6	15.9	.000**
Not working	12	12	9.2	0	0		
<b>Income</b>							
Adequate	89	41	31.5	48	36.9	0.15	.485
Inadequate	41	18	13.9	23	17.7		

(\*\*) Highly statistically significant correlation at P-value <0.01

(\*) Statistically significant correlation at P-value <0.05

**Table (2):** The relation between caregivers' demographic characteristics and their total practice (n=130)

Demographic characteristics	NO	Inadequate practice (n=11)		Adequate practice (n=119)		X <sup>2</sup>	P-Value
		No	%	No	%		
<b>Age</b>						43.7	.000**
35:40 years	79	0	0	79	60.8		
40:50 years	28	11	8.5	17	13		
50:55 years	23	0	0	23	17.7		
<b>Gender</b>						3.92	.036
Male	32	0	0	32	24.6		
Female	98	11	8.5	87	66.9		
<b>Marital status</b>						0.502	.857
Single	3	0	0	3	2.3		
Married	86	8	6.1	78	60		
Divorced	17	1	0.8	16	12.3		
Widowed	24	2	1.6	22	16.9		
<b>Education</b>						55.9	.000**
Illiterate	9	0	0	9	6.9		
Read and write	13	0	0	13	10		
Basic education	23	11	8.5	12	9.2		
Secondary and above	85	0	0	85	65.4		
<b>Work</b>						1.22	.329
Working	118	11	8.5	107	82.3		
Not working	12	0	0	12	9.2		
<b>Income</b>						14.7	.002*
Adequate	89	2	1.6	87	66.9		
Inadequate	41	9	6.9	32	24.6		

(\*\*) Highly statistically significant correlation at P-value &lt;0.01

(\*) Statistically significant correlation at P-value &lt;0.05

**Table (3):** The relation between caregivers' demographic characteristics and their attitude (n=130).

Demographic characteristics	NO	Negative attitude (n=35)		Positive attitude (n=95)		X <sup>2</sup>	P-Value
		No	%	No	%		
<b>Age</b>						13.4	.000**
35:40 years	79	26	20	53	40.8		
40:50 years	28	0	0	28	21.5		
50:55 years	23	9	6.9	14	10.8		
<b>Gender</b>						15.6	.000**
Male	32	0	0	32	24.6		
Female	98	35	26.9	63	48.5		
<b>Marital status</b>						.251	.683
Single	3	1	0.8	2	1.6		
Married	86	24	18.4	62	47.7		
Divorced	17	4	3.1	13	10		
Widowed	24	6	4.6	18	13.8		
<b>Education</b>						38.1	.000**
Illiterate	9	9	6.9	0	0		
Read and write	13	0	0	13	10		
Basic education	23	11	8.5	12	9.2		
Secondary and above	85	15	11.5	70	53.9		
<b>Work</b>						28.2	.000**
Working	118	24	18.4	94	72.3		
Not working	12	11	8.5	1	0.8		
<b>Income</b>						8.77	.003*
Adequate	89	17	13.1	72	55.4		
Inadequate	41	18	13.8	23	17.7		

(\*\*) Highly statistically significant correlation at P-value &lt;0.01

(\*) Statistically significant correlation at P-value &lt;0.05

**Table (4):** The relation between caregivers' total level of knowledge, practice (n=130).

		Total level of knowledge	Total practices
Total level of knowledge	R	1	.334
	P	--	.000**
Total practices	R	.334	1
	P	.000**	--

(\*) Statistically significant relation at P-value <0.05

**Table (5):** The relation between caregivers' total level of knowledge, their attitude (n=130).

		Total level of knowledge	Total attitude
Total level of knowledge	R	1	.143
	P	--	.104
Total attitude	R	.143	--
	P	.104	1

(\*) Statistically significant relation at P-value <0.05

**Table (6):** The relation between caregivers' total level of practice and their attitude (n=130)

		Total practices	Total attitude
Total practices	R	1	.185
	P	--	.036*
Total attitude	R	.185	--
	P	.036*	1

(\*) Statistically significant relation at P-value <0.05

## Discussion:

Regarding caregivers' total knowledge about hepatocellular carcinoma, findings of the current study showed that, more than half of the caregivers had satisfactory knowledge while less than half of them had unsatisfactory total knowledge. (Figure 1).

This result is in agreement with the study done by **Fathy, et al., (2021)** found that more than half of the caregivers had satisfactory knowledge about hepatocellular carcinoma. In the same line, the current study result is in agreement with the study done by **Mudumbi, et al., (2018)** who conducted a study entitled "Palliative care and hospice interventions in decompensated cirrhosis and hepatocellular carcinoma" 2466 population caregiver in India and found that more than one third of the caregivers had unsatisfactory knowledge about hepatocellular carcinoma.

According to researcher point of view, the understanding of caregivers about hepatocellular carcinoma is dependent on their awareness of it and the effectiveness of health awareness campaigns.

Regarding caregivers' sources of information about hepatocellular carcinoma, findings of the current study showed that, more than half of the caregivers had received information from physician while less than a quarter of them had from family members. (Figure 2).

This result is in agreement with the study done by "**Zhang, et al., (2022)** who conducted a study entitled "family caregivers experiences of caring for advanced cancer patient" 170 caregivers Egypt who found that more than half of the caregivers had received information from physician. In the same line, the current study result is in agreement with the study done by **Kumar & Panda (2017)** who conducted a study entitled "Role of Supportive Care for Terminal Stage Hepatocellular Carcinoma" 291 in Pakistan found that less than a quarter of them had from family members.

From the perspective of the researcher, doctors inform caregivers about how to help patients to deal with illness, provide care to patients, and to avoid complications.

Regarding caregivers' total reported practices, findings of the current study showed that, majority of the caregivers had adequate reported practices while minority of them had inadequate reported practices. (figure3).

This result is in agreement with the study done by **Ibrahim et al., (2021)** who conducted a study entitled "Evaluation of serum alpha fetoprotein-L3 as an accuracy novel biomarker for the early diagnosis of hepatocellular carcinoma in Egyptian patients" Egypt100 caregivers and found that majority of participants had adequate practices of patients with hepatocellular carcinoma. Conversely, the current study result is in disagreement with the study done by **Kulik, (2019)** who conducted a study entitled "Epidemiology and management of hepatocellular carcinoma" Chicago 90 caregivers and found that one third of participants had inadequate practices of patients with hepatocellular carcinoma.

The researcher's point of view is that caregivers' appropriate behaviors are a result of accompanying and assisting patients throughout their therapeutic journey and preserving patients' health.

Regarding caregivers' total attitude, findings of the current study showed that, nearly three quarters of the caregivers had positive attitude while more than one quarter of them had negative attitude. (Figure 4).

This result is in agreement with the study done by **Rimassa, et al., (2019)** who conducted a study entitled "Systemic treatment options in hepatocellular carcinoma" Russia 230 caregivers and found that majority of participants of the caregivers had positive attitude of patient with hepatocellular carcinoma. Also, the current study result is in agreement with the study done by **Sagnelli, et al, (2020)** who conducted a study entitled "Epidemiological and etiological variations in hepatocellular carcinoma" Egypt 210 caregivers and found that one third of participants of the caregivers had negative attitude of patient with hepatocellular carcinoma.

From the standpoint of the researcher, involving patients in decision-making, engaging them in social activities, and having them see friends and family has beneficial impacts on them and boosts their confidence. On the other hand, ignoring patients in decision-making and using expensive medications will generate psychological pressure and have a bad impact on patient attitude.

Regarding the relation between caregivers' demographic characteristics and their total level of knowledge, findings of the current study showed that, there is a highly statistically significant relation between caregivers' total knowledge and their educational level and their work, also, there is no statistically significant relation between caregivers' total knowledge and their ages, gender, marital status and income (table 1).

This result is in agreement with the study done by **Rashed, et al., (2020)** who conducted a study entitled "Hepatocellular Carcinoma (HCC) in Egypt: A comprehensive overview" Egypt 363 patient surveys and caregiver surveys and found that there is a highly statistically significant relation between caregivers' total knowledge and their demographic characteristics. Conversely, the current study results are in disagreement with the study done by, **Yoon, et al, (2018)** who conducted a study entitled "Status of hepatocellular carcinoma in South Korea" in South Korea 1400 caregivers and found that there is no statistically significant relation between caregivers' total knowledge and their demographic characteristics.

Regarding the relation between caregivers' demographic characteristics and their total practice, findings of the current study showed that, there is a highly statistically significant relation between caregivers' total practice and their ages, and educational level, also, there is a statistically significant relation between caregivers' total practice and their income, while there is no statistically significant relation between caregivers' total practice and their gender, marital status, and their work (table 2).

This result is in agreement with the study done by **Sayiner, et al., (2019)** who conducted a study entitled “Disease burden of hepatocellular carcinoma” Africa 400 caregivers and found that there is a highly statistically significant relation between caregivers’ total practice and their demographic characteristics. Conversely, the current study results are in disagreement with the study done by **Allam, et al., (2022)** and found that there is no statistically significant relation between caregivers’ total practice and their demographic characteristics.

Regarding the relation between caregivers’ demographic characteristics and their attitude, findings of the current study showed that, there is a highly statistically significant relation between caregivers’ total attitude and their ages, gender, educational level, and their work, also, there is a statistically significant relation between caregivers’ total attitude and their marital status and income (table 3).

This result is in agreement with the study done by Chen-hao **Zhang, et al, (2022)** who conducted a study entitled “Changing epidemiology of hepatocellular carcinoma in Asia” in Asia 400 caregivers and found that there is a highly statistically significant relation between caregivers’ total attitude and their demographic characteristics. Conversely, the current study result is in disagreement with the study done by **Hansen, et al, (2018)** found that there is no statistically significant relation between caregivers’ total attitude and their demographic characteristics.

Regarding the relation between caregivers’ total level of knowledge, practice, findings of the current study showed that, there is a highly statistically significant relation between caregivers’ total level of knowledge and their total practices (Table 4).

This result is in agreement with the study done by **Osman, et al., (2017)** who conducted a study entitled “Chromatographic determination of some biomarkers of liver cirrhosis and hepatocellular carcinoma in Egyptian patients”

120 matched patient and caregiver surveys in Egypt and found that there is a statistically significant relation between caregivers’ total level of knowledge and their total practices. Conversely, the current study results are in disagreement with the study done by **Woodrell, et al, (2018)** found that there is no statistically significant relation between caregivers’ total level of knowledge and their total practices.

Regarding relation between caregivers’ total level of knowledge and their attitude, findings of the current study showed that, there is no statistically significant relation between caregivers’ total level of knowledge and their total attitude (table 5).

This result is in agreement with the study done by **Rashed, et al., (2020)** found that there is no statistically significant relation between caregivers’ total level of knowledge and their total attitude. Conversely, the current study result is in disagreement with the study done by **Sabih, et al, (2021)** and found that there is a statistically significant relation between caregivers’ total level of knowledge and their total attitude.

Regarding relation between caregivers’ total level of practice and their attitude, findings of the current study showed that, there is a statistically significant relation between caregivers’ total attitude and their total practices (table 6).

This result is accordance with the study done by **Nahon, et al., (2021)** who conducted a study entitled “Early hepatocellular carcinoma detection using magnetic resonance imaging is cost-effective in high-risk patients with cirrhosis” 2513 French and found that there is a statistically significant relation between caregivers’ total attitude and their total practices. Conversely, the current study result is in disagreement with the study done by **Byrd, et al., (2021)** who conducted a study entitled “Role of Multidisciplinary Care in the Management of Hepatocellular Carcinoma” Italy 300 participant and found that there is no statistically significant relation between caregivers’ total attitude and their total practices.

### Conclusion:

The current study concluded that, more than half of the caregivers had satisfactory knowledge while majority of the caregivers had adequate reported practices while and nearly three quarters of the caregivers had positive attitude Also, there is a highly statistically significant relation between caregivers' total practice and their ages, and educational level; there is a highly statistically significant relation between caregivers' total attitude and their ages, gender, educational level, and their work. Moreover, there is a highly statistically significant relation between caregivers' total level of knowledge and their total practices; there is no statistically significant relation between caregivers' total level of knowledge and their total attitude. Also, there is a statistically significant relation between caregivers' total attitude and their total practices.

### Recommendations:

- Providing sufficient knowledge about caring for hepatocellular carcinoma for caregivers that had patient with hepatocellular carcinoma
- improve patients' coping strategies to overcome their condition by caregivers.
- Information related to health care services should be disseminated for the caregivers.
- Ensure the health care provider role in health education for hepatocellular carcinoma by caregivers.
- Positive caregivers' attitude should be encouraged.
- Further studies should be conducted other governorates such as El Menia and El Fayoum governorates

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