Physical and Psychosocial Needs for Patients with Hepatocellular Carcinoma

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Abstract: **Hepatocellular carcinoma represents the sixth commonest cancer worldwide. However, in Egypt, it represents the fourth common cancer. The reason for increased incidence attributed to improvement in screening programs and diagnostic tools, increasing the survival rate of cirrhotic patients that increases the chance of developing its incidence and complications Aim: This study aimed to assess physical and psychosocial needs for patients with hepatocellular carcinoma. Design: A descriptive exploratory research design study was carried out on a Purposive sample of (100 patients) from Oncology Hepatic Clinic at Ain Shams Specialty Hospital. Tools: 1) demographic characteristics questionnaire, 2) Medical data, 3) Physical and psychosocial assessment Questionnaire and 4) Patient self-care assessment questionnaire. Results: This study represented that all the studied patients had 100% physical needs. Additionally, all the studied patients had psychosocial needs. Furthermore, 98% of the studied patients' had satisfactory level of knowledge. Conclusion: Current study concluded that, majority of studied patients has suffered from physical and psychosocial needs and its consequences. As well there was a significant statistical negative correlation between total level of knowledge regarding self-care and physical needs at < 0.05. Recommendation: Designate instructional module in Arabic booklet to be readily accessible for nurses and hepatocellular carcinoma patients with the comprehensive knowledge base about the disease, patients' needs and all dimensions of competent self-care.**

Keywords: **Hepatocellular carcinoma, Physical and Psychosocial needs.**

1. INTRODUCTION

Hepatocellular carcinoma is the most prevalent primary cancer of the liver accounting for 75% to 85% of primary liver cancers worldwide. It is the sixth most prevalent cancer in the globe and the fourth most prevalent cause of death from cancer, it occurs in males 2 to 3 times higher than in females. Geographical distribution of HCC varies throughout the world being highest in East Asia and sub-Saharan Africa. In general, HCC risk factors include viral infections, cirrhosis, alcohol, non-alcoholic fatty liver disease, aflatoxins, diabetes mellitus and obesity(**American Cancer Society,2021**).

The most common unmet needs were in the domains of health system and information, psychological and physical needs, and daily living activities. These needs are influenced by socio demographic factors such as age, sex, marital status, income level and clinical factors such as location of cancer, stage of disease, and tumor size **(Graf & Stengel, 2021)**. Comprehensive nursing care that include; Routine nursing intervention (comprehensive understanding of the patient's physical condition which was carried out to facilitate subsequent intensive intervention and changes of the patient's condition were closely observed and recorded), physiological nursing, psychological nursing, environmental nursing, complication nursing, discharge guidance(**Yu, Sun, Li & Lei, 2020**).

Significance of the study:

Hepatocellular carcinoma is the most prevalent primary cancer of the liver accounting for 75% to 85% of primary liver cancers worldwide. It is the sixth most prevalent cancer in the globe and the fourth most prevalent cause of death from cancer, it occurs in males 2 to 3 times higher than in females. (**American Cancer Society, 2021**).

In Egypt, it represents the fourth common cancer **(Rashed, et al, 2020)**.

The aim of the study:

The aim of the present study is to assess physical and psychosocial needs for patients with hepatocellular carcinoma.

Research Questions: -

1-What are the physical and psychosocial needs for patients with hepatocellular carcinoma?

2. SUBJECTS AND METHODS

Technical item:

It includes research design, setting, subject and tools for data collection.

Research item

A descriptive exploratory design was utilized in this study. It is also known as   statistical research that describes phenomena as they exist. It is used to identify and obtain information on characteristic of particular issue like community, group, or people **(Hunter, McCallum & Howes,2018)**.

Setting:

This study was conducted at Ain Shams Specialty Hospital. This hospital involves 39 clinics. The sample size collected from Oncology Hepatic Clinic at Ain Shams Specialty Hospital.

a. **Subjects:**

A Purposive sample of (100 patients) included Adult male and female patients diagnosed with hepatocellular carcinoma from Oncology Hepatic Clinic in Ain Shams Specialty Hospital. It is also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which investigator rely on their own judgment when choosing members of the population to participate in their surveys**.** The researchers depended on the following equation to calculate the sample size: Sample size Equation: at 95% confidence, error 0.05. The researchers depended on the following equation to calculate the sample size **.**

Tools of data collection:

The investigator was used four tools to collect the data during the study:

Tool I: Demographic characteristics questionnaire: This tool was developed by the investigator based on the literature review guided by **(Debes, et al, 2018)**. Which consisting of 10 items such as e.g. gender, age, educational level, income, job, marital status, place of residence, smoking, alcohol drinking & history of using medication.

Tool II: Medical data questionnaire: it was developed by the investigator based on the literature review and guided by **(Zhu, et al., 2015 and Kim, et al., 2017)**. Which Consisting of 7 items such as e.g. the cause of hepatocellular carcinoma, stage of hepatocellular carcinoma and detect disease, family history of hepatocellular carcinoma, chronic disease, tumor elsewhere in the body, obesity.

Tool III.   Physical and psychosocial assessment Questionnaire: It was developed by the investigator based on the literature review **(Chiu, et al., 2018 & Chen, et al, 2019)**. Including the following three parts.

Part I: is used for assessing physical needs which involves five items concerned with assessing physical condition, job role, severity of pain, pain control and vitality of patients with hepatocellular carcinoma.

Item I: is used for assessing physical condition for patients with hepatocellular carcinoma. Which consisting of 27 items such as: 3 items for respiratory symptoms, 3 items for cardiovascular symptoms, 4 items for nervous symptoms, 5 items for digestive symptoms, 2 items for bowel , 2 items for urination pattern abnormities, 3 items for rest and sleep abnormities, 2 items for sexual abnormities and 3 items for motor pattern abnormities.

Item` II: is used for assessing job role of patient with hepatocellular carcinoma, which consisting of 5 items.

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Item III: is used for assessing severity of pain of patient with hepatocellular carcinoma, which consisting of 1item.

Item IV: is used for assessing vitality of patient with hepatocellular carcinoma, which consisting of 4 items.

Item V: is used for assessing pain control of patient with hepatocellular carcinoma, which consisting of 4 items.

Part II: Social Needs: which consisting of 9 items such as e.g. illness affected patients participation in social activity**,** illness affected patients relationship with friends and relatives**,** patients' needs to practice exercise to renew activity**,** patient feels insecure, patient find it difficult to adapt to health condition**,** patient loses emotional support from family**,** patients monthly income sufficient to meet health needs**,** patient receives any financial support and patients costs of treatment burden on family

Part III: Psychological Needs: which consisting of 7 items such as e.g. patient feels worry about health condition, patient feels a lack of confidence, patient feels irritable, patient disease occupies great deal of time thinking about the future, patients feels afraid of disease complications, patient sees the joyful Side of things and patient misses the enjoyment of personal appearance.

Tool IV: Patient self-care knowledge questionnaire: It was developed by the investigator based on the literature review **(Ewees, 2016)**. Including the following four parts.

Part I: Is used for assessing knowledge regarding follow-up self-care for patients with hepatocellular carcinoma, which consisting of 3 items such as e.g. all medicines must be brought when coming to clinic, following doctors order regarding the frequency of follow-up appointments and any of the following symptoms should be reported to the physician immediately such as hematemesis, melena, hematuria and disturbed of consciousness.

Part II: Is used for assessing knowledge regarding lifestyle self-care for patients with hepatocellular carcinoma, which consisting of 6 items such as e.g. activities improve nutritional status: Reducing salt , reducing pickles, refrain from eating saved food, eating more snacks throughout the day, reducing of fat and abstain from caffeine in food such as tea and coffee

Part III: Is used for assessing knowledge regarding the emotional and psychological self-care for patients with hepatocellular carcinoma, which consisting of 6 items such as e.g. feeling sad and unhappy, dissatisfaction with the way alive with my sick person ,losing hope in resisting disease, jitter and excessive nervousness ,inability to enjoy life and dissatisfaction with physical image.

Part IV: Is used for assessing knowledge regarding medicines self-care for patients with hepatocellular carcinoma, which consisting of 7 items such as e.g. improves medication self-care: The prescribed medications must be taken on time, all prescribed treatment must be completed even if symptoms disappeared**,** never stop taking medication without telling physician, medications mustn't be stopped immediately when any side effects occurs, avoid doing an enema without doctor order, using laxative to avoid constipation and avoid taking painkillers frequently

Scoring system:

The total numbers of questions were 22 questions that equal 22 grades. Each correct answer was given one grade and the incorrect answer was given zero. Based on the statistical analysis, the scores were summed up and converted into percentages, and based on the statistical analysis considered as the following:

III-   < 70% were considered unsatisfactory level of knowledge when the total grades were < 15.4 grades.

IV-   ≥ 70% were considered satisfactory level of knowledge when the total grades were ≥ 15.4 grades.

Operational item:

It includes the preparatory phase, content validity of the modified tool and reliability, ethical consideration, pilot study and field work.

The Preparatory phase:

It includes reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals, and magazines to develop tools for data collection.

Ethical consideration:

▪ Approval was obtained from the Scientific Research ethics committee of Faculty of Nursing – Helwan University.

▪ The study facilitation letter to conduct the study was received from the department of postgraduate studies at Faculty of Nursing– Helwan University and was sent to the Nursing Director of Ain-Shams University Specialized Hospital for data collection

▪ An official permission was obtained from the nursing director of Ain-Shams University Specialized Hospital for data collection.

▪ Oral consent was obtained from the patients after informing them the purpose and nature of the study.

▪ Participation in the study is voluntarily and based on the patient's agreement to give informed oral consent.

▪ The investigator assured maintaining anonymity and confidentiality of all patient's data.

▪ Confidentiality was maintained on data collection forms by using codes to identify participants instead of names or any other personal identifiers. A master list of participant names was kept separated from the data collection forms.

▪ All data collection forms were kept in a locked file in separate from the master list.

Validity and reliability:

Testing validity:

Content and face validity was conducted to determine whether the tool covers the aim. The tools were revised by a jury of 5 experts: of Medical-Surgical Nursing from Faculty of Nursing, Helwan University who reviewed the content of the tools for comprehensiveness, accuracy, clarity, relevance and applicability, minor modification were done.

Reliability: is the consistency of measuring instrument. It is a degree to which the used tools measure what was supposed to be measured with the same way each time & under the same condition with the same subjects. (**Middleton, 2021**).

Testing reliability:

Reliability for the utilized tools was tested to determine the extent to which the items of the tools are inter-correlated to each other. The Cronbach's alpha model is one of the most popular reliability statistics in use today and considered as a model of internal consistency that used to estimate of reliability of test scores. Reliability of physical and psychosocial assessment sheet and patient self-care assessment of knowledge questionnaire was good (α =0.977 & 0.840, respectively). Statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0-1. The table clarifies

Pilot study:

Pilot study was carried out with 10% (10 patients) of total number of the studied patient's group under study to test the applicability, clarity, and efficiency of the tools. No modifications were needed. Studied patients included in the pilot study were included in the study as no modifications were done.

Field work includes the following:

-Sampling was started and completed within seven months from February (2021) until the end of September (2021).

-. The investigator was met the patient 2 days/week on Saturday and Wednesday from 10:00 am to 1:00 pm within 7 months for data collection. Patients number who accept to participate in the study was 2 patients /day = ∼ 16 patients / month (8 visit / month) = ∼ 100 patients / 7 months (the calculated sample size).

-Investigator used interview method for data collection.

-The procedure conducted throughout three phases:

- Welcome phase: the investigator welcomes the patient, introduce herself and explain the purpose of the study that takes around 20 min then, Second phase, investigator assess patient demographic data then patient medical history that take

around 15 min ,third phase, the investigator started to fill out the needs assessment tool and knowledge of self-care assessment tool that takes around 25min.

Administrative item:

An official permission was obtained from the medical and nursing director of Hepatic clinic in Ain Shams Specialty Hospital in which the study was conducted. A letter was issued to them from the faculty of nursing and Helwan University explains the aim of the study for obtaining the permission for data collection.

Statistical item:

The collected data were organized, tabulated, and statistically analysed using SPSS software (Statistical Package for the Social Sciences, version 32, SPSS Inc. Chicago, IL, USA). For quantitative data, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-square test (x^2). The correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance **(Siregar, 2021)**.

Table (1): Percentage distribution of demographic characteristics of the studied patients (N=100).

Patients' Characteristics	Items	%
Age (in years)	41-50	30
	51 – 60	**66**
	61- 65	4
Mean + SD	52.9+ 6.21	
Educational level	Illiterate	11
	Read & write	13
	Basic education	16
	Intermediate education	**51**
	High education	9
Job	Governmental employee	**60**
	Nongovernmental employee	10
	Retired	18
	Housewife	12
Marital status	Married	**79**
	Single	2
	Divorced	7
	Widow	12
Monthly Income	Enough	29
	Not enough	**71**
Place of residence	Urban	**79**
	Rural	21

Table (1) shows that, (66%) of the studied patient were between (51 – 60) years with mean age (52.9 ± 6.21) years. While, regarding to educational level, (51%) of the studied patients were educated with intermediate level, (11%) of them were illiterate and 9% were have high educational level. Additionally, (60%, 79%, 71% & 79%) of the studied patients were governmental employees, married, haven't enough income and from urban areas, respectively.
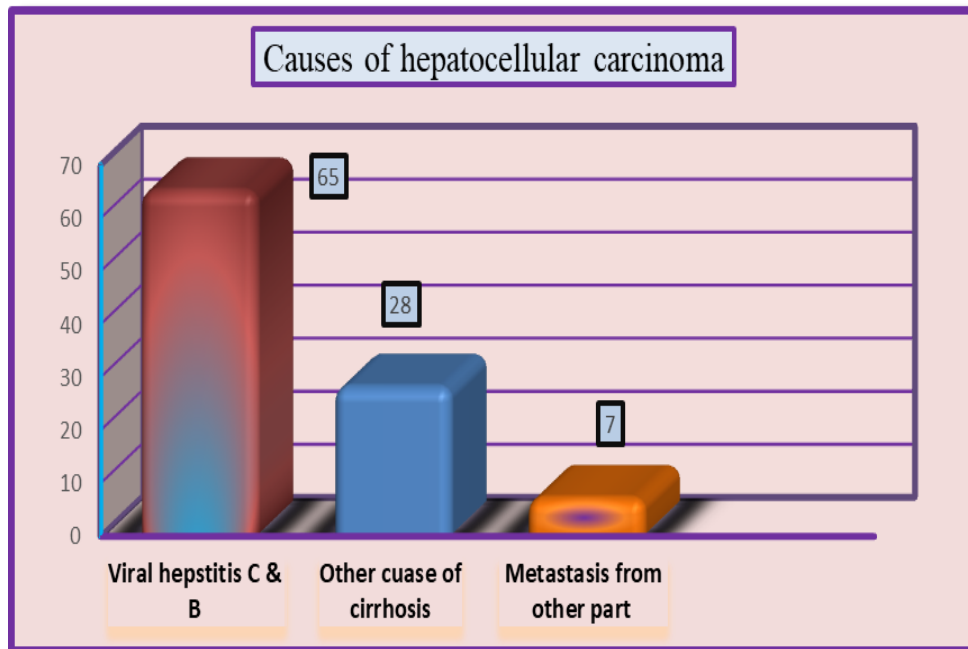
Figure (1): Precentage distribution of the studied patients' causes of hepatocellular carcinoma (n=100)

This figure represents that, (65%) of the studied patients suffered from viral hepatitis B and C. While, (7%) of them suffered from other malignant tumor.

Table (2): Correlation between total level of knowledge regarding self-care and physical needs among the studied patients (n=100)

Physical Needs	Total Level of Knowledge of Self-Care			
	Satisfactory %	Unsatisfactory %	$\chi2$	P-Value
Respiratory problems				
Yes	35	33	22.1	<0.000 **
No	31	1		
Cardiovascular problems				
Yes	53	32	3.35	0.06
No	13	2		
Nervous system problems				
Yes	40	31	9.66	0.002**
No	26	3		
Digestive system problems				
Yes	66	34		NC
No	0.0	0.0		

NC: $\chi2$ not computed as variable is constant **highly significant p < 0.01

Table (2) show that, there was a significant statistical negative correlation between total level of knowledge of self-care and physical needs (respiratory & nervous problems) among the studied group, at **P = < 0.01**.

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Table (3): Correlation between suffering of chronic disease and smoking among the studied patients (n=100)

Variables	Smoked	Not smoked	$\chi 2$	P-Value
	N=%			
Chronic disease				
Suffered	35	5	17.17	<0.000 * *
Not suffered	28	32		
Diabetes mellitus				
Suffered	34	5	16.02	<0.000 * *
Not suffered	29	32		
Hypertension				
Suffered	30	3	16.46	<0.000 * *
Not suffered	33	34		
Heart disease				
Suffered	8	1	2.844	0.092
Not suffered	55	36		

**Highly significant p < 0.01

 Table (3) denotes that there was a highly statistical significant difference between suffering of chronic disease (Diabetes and hypertension) and smoking at **P < 0.000**.

Table (4): Correlation between total knowledge scores regarding self-care and the studied patients age (n=100)

Total Knowledge Scores.	Age	
	Correlation Coefficient (r)	P- Value
Self-care activities	-0.938	<0.000 * *
Adequate nutritional status	-0.855	<0.000 * *
Emotional self-care	-0.828	<0.000 * *
Medication self-care	-0.755	<0.000 * *
Total Score	-0.899	<0.000 * *

**Highly significant p < 0.01

 Table (4) show that, there was a statistical significant negative correlation between total mean knowledge scores and the studied group's age (r = - 0.899, at **P = < 0.000**).

Table (5): Correlation between total mean knowledge scores regarding self-care and educational level of studied patients (n=100)

Total Knowledge Scores.	Educational level	
	Correlation Coefficient(r)	P- Value
Self-care activities	0.857	<0.000 * *
Adequate nutritional status	0.912	<0.000 * *
Emotional self-care	0.881	<0.000 * *
Medication self-care	0.897	<0.000 * *
Total Score	0.930	<0.000 * *

 **Highly significant p < 0.01

Table (5) show that, there was a highly statistically significant positive correlation between total mean knowledge scores and educational level of the studied patients, r = 0.930, at P = < 0.000.

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3. DISCUSSION

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. HCC is one of the most common malignancies associated with poor prognosis, worldwide **(Rashed, et al, 2020)**. Patients with HCC always have a various aspects of daily life needs. Gaining knowledge about physical and psychosocial needs experienced by patients with hepatocellular carcinoma is critical for designing symptom management strategies that are comprehensive and tailored to patients to optimize their quality of life **(Lee, et al, 2021)**. So, the aim of the current study was to evaluate physical and psychosocial needs for patients with hepatocellular carcinoma.

Part I: Socio-demographic characteristics of the studied groups.

Regarding Socio-demographic characteristics of the studied groups, the present study shows that, the mean age of studied patient was (52.9 ± 6.21) years. This finding could be due to viral hepatitis B and C, liver cirrhosis and other primary malignant tumor, which considered as a causative factor for hepatocellular carcinoma and . HCC is common in elderly people.

This result is supported by**(Jang , Jeong, 2021)** which about unmet needs and quality of life of cancer patients and their families: actor–partner interdependence modelling, who reported that the more than half of the studied patient were male with a mean age of approximately 62 years old.

In the same line the study done by (**Rich, et al. 2020**), which about hepatocellular carcinoma incidence is decreasing among younger adults in the United

States. Who found that and ageing is a strong risk factor, with the highest age-specific incidence reported in patients >70 years of age.

Considering educational level, the result denotes that, more than half of the studied patients were educated with intermediate level. This finding might be due to the majority of patients had low economic status which make them unable to face the cost of university education.

This result was supported by the result of **Jie, et al. (2019)** which studied the association between socio demographic factors, coping style, illness perceptions and preference for disclosure/nondisclosure of diagnosis in Chinese patients with hepatocellular carcinoma and reported that most of the studied group were in middle school.

Regarding job, the result of this study revealed that two third of the studied patients were governmental employees, this could be due to their educational level and their age. This study data was matched with the result of **Mahmoud, et al. (2020)** which conducted a study of 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. This result was disagreed with the result of **Khamis, (2017)** which conducted a study entitled and natural history of HCV in Egyptian patients; found that about two fifths of the studied patient didn't work.

In relation to marital status, the study result showed that the majority of the studied patients were married. This study results was compatible with **Abdullah, Abd Elaziz ,Medhat (2021)** which conducted a study about quality of life among elderly patients with chronic liver diseases at Al-Rajhy Liver Hospital who mentioned that who mentioned that the most of the studied patient were married. While, this result was inconstant with **Jang and Jeong (2021)**, who reported that approximately half of them were married.

The present study clarified that more than two third of the studied patients were haven't enough income and urban areas. This could be due to low socioeconomic status for most Egyptian population. This result was agreed with the results of **Osman, (2016)** who conducted study entitled preventive measures taken by families living in contact with patients with infective hepatitis virus C in the rural community and reported that the majority of his subjects had low monthly income.

In the same line, this result reinforced by **Jang , Jeong (2021)** reported that more than two third of the studied patient were unemployed without enough monthly income and supported by their families.

This result was inconsistent with the study finding of **Chen , et al. (2019)** which done the study about the prognostic association of demographic and clinical factors with the change rates of physical symptoms and depression among patients with hepatocellular carcinoma and reported that the majority of the patients employed with steady jobs and enough income.

Concerning gender, the study result stated that, more than four fifth of the studied patients were males with a male to female ratio of 5.25:1. From the researcher point of view, in Egypt, HCC ranks the second and the sixth cancer in men and women, respectively **(Abed-Elsalam, et al, 2018)**. This gender variation can be explained based on biological reasons for the variation of HCC incidence in women is explained by the level of estrogen hormone. It partially plays a role in suppression of interleukin (IL) -6mediated inflammation that reduces both compensatory proliferation and liver injury. Whereas, testosterone in men can increase signalling androgen receptors, leading to promoting liver cell proliferation **(Elghazaly, Gaballah & Eldin 2018)**.

This result is in accordance with **Abdullah, Abd El-aziz & Medhat, (2021)** who mentioned that approximately two third of them were males. In the same line the study results of **Chen, et al (2019)** who reported that the majority of the studied patient were male with different stage of HCC. Likewise, the result of **Zheng, et al. (2017)** which reviewed gender disparity in hepatocellular carcinoma supported the same result.

Regarding causes of hepatocellular carcinoma, the data represent that about two third of studied patients suffered of liver cirrhosis. This result was consistent study finding for **Yang, et al, (2019)** which reviewed a global view of hepatocellular carcinoma, concluded that nonalcoholic fatty liver disease (NAFLD) is now the most common liver disease and a major risk factor for HCC in most developed countries. Moreover, this result was in concordance with result for **El-Serag, (2020)** which concluded that HBV and HCV remain the most important global risk factors for HCC.

Considering correlation, the study finding denoted that there was a relation between smoking and suffering of chronic disease, especially diabetes and hypertension with a highly significant statistical difference at $P < 0.000$. The study result was concordance with the result of **Zhu, et al. (2017)** which reviewed cigarette smoking, diabetes, and diabetes complications, and concluded that there was a direct positive relation smoking and diabetes mellitus. Furthermore, result of **Campagna, et al. (2019)** which conducted smoking and diabetes: dangerous liaisons and confusing relationship supported the same result study.

The study result was concordance with the study result of **Sohn, (2018)** which assessed the relationship of smoking to hypertension in a developing country and concluded that there was a direct positive relation smoking and hypertension. Likewise, result of **Omboni, (2020)** which evaluated smoking and hypertension supported the same result study.

Considering correlation, the study result showed that, there was a significant statistical negative correlation between total mean knowledge regarding (physical, social, and psychological needs) scores and the studied group's age ($r = - 0.899$, at $P = < 0.000$). This result was consistent with the result of **Aniaku, Amedonu &Fusheini ,(2019)** which conduct study entitled with assessment of knowledge, attitude and vaccination status of hepatitis B among nursing training students, confirming that there was significant statistical negative correlation between total mean knowledge scores and the studied group's age.

In relation to knowledge regarding physical needs, the study findings confirmed that, there was a significant statistically positive correlation between total mean knowledge regarding (physical, social, and psychological needs) scores and educational level of the studied patients ($r = 0.930$, at $P = < 0.000$). This result was consistent with the result of **Pereira, et al. (2020)** which assessed the effects of a What Sapp-delivered education intervention to enhance breast cancer knowledge in women, confirming that there was significant statistical positive correlation between total mean knowledge scores and educational level of the studied patients.

This result confirmed by the results of **Alzahrani, Al-Johani & Aljehani, (2018)** which studied assessment of knowledge about liver cirrhosis among Saudi population, decided that the level of awareness among Saudi population toward liver cirrhosis was moderate which necessitates encouraging the educational campaigns on T.V, internet, and all over the whole parts of Kingdom of Saudi Arabia.

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Finally, The discrepancy between the findings of the current study and other studies could be related to the differences in the study sample, setting and cultural diversity. the findings of the study decided that there was a physical and psychosocial need for patients with hepatocellular carcinoma, which must be addressed.

4. CONCLUSION

In the light of the current study results, it can be

concluded that, all the studied patients had physical needs which including all of them had digestive system problems, suffered from physical pain and taking painkillers. As well, the most of them had motor system problems with the majority of them had cardiovascular problems with sleep and rest problems. Furthermore, two third of the studied patients had nervous and respiratory system problems. Additionally, all the studied patients had psychological needs with disturbance in job role and activities of daily living. And also, the most of them had social needs and received financial support. Likewise, the most of the studied patients' had satisfactory level of knowledge regarding personal hygiene besides two third of them developed their medication self-care. Furthermore, more than half of them follow-up their disease and get well emotional self-care. Lastly, there was a significant statistically negative correlation between total level of knowledge regarding self-care and physical needs (respiratory and nervous problems) at < 0.05. a highly statistically significant difference between suffering of chronic disease (Diabetes and hypertension) and smoking at P < 0.000.

5. RECOMMENDATIONS

Based on the result of the current study the following recommendations are suggested:

- Offer continuous educational programs with the comprehensive knowledge base until hepatocellular carcinoma patients reach the point of competency in responding to their self-care needs.

- Write or validate hospital guideline or checklist for nurses to facilitate determining hepatocellular carcinoma patients' needs and used for the process of dealing with patient problems.

- Perform standardized form of hepatocellular carcinoma patients' needs that should be written clearly and complete containing all dimension of patients' needs and strategies used for correction of events occur.

- **Further research;** designate instructional module in Arabic booklet to be readily accessible for nurses and hepatocellular carcinoma patients with the comprehensive knowledge base about the disease, patients' needs and all dimensions of self-care.

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