# Quality of life for patients with Hepatocellular carcinoma undergoing Radio frequency Ablation

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## Abstract

**Background:** Hepatocellular carcinoma (HCC) is considered as one of the most challenging tumors with high incidence, prevalence and mortality rates. Radiofrequency Ablation (RFA) is one of the emerging therapeutic modalities used for the minimally invasive treatment in the management of early-stage of HCC. **Aim:** This study aimed to assess quality of life for patients with Hepatocellular Carcinoma undergoing Radio Frequency Ablation. **Design:** Descriptive design was used to achieve the aim of this study. **Setting:** This study was conducted at the Interventional Radiology Unit, affiliated to Ain Shams University Hospital **Subject:** A purposive sample of 50 patients with Hepatocellular Carcinoma. undergoing RadioFrequency Ablation. **Tools:** (I)Structured Interview Questionnaire for patients with Hepatocellular Carcinoma undergoing Radio Frequency Ablation. It is composed of three parts. Socio-demographic characteristic, Assessment of Patients' medical health and knowledge about HCC and RFA. (II) Quality of life of cancer Survivors Questionnaire. **Results:** The present study revealed that near two thirds of patients had an unsatisfactory level of knowledge to all items about HCC and RFA. On the other hand there were statistically insignificant relations between the patient's Quality of life and their level of knowledge. **Conclusion:** More one half of the studied patients had Low QoL regarding physical, social, emotional, functional and Spiritual wellbeing. The most prominent physical problem with low effect quality of life of physical dimension among the studied patients were chest pain, lack of energy recurrent infection and urinary retention. Social and family problem concerning with low quality of life of social and family dimension was treatment cost as burden on patient's family. **Recommendations:** Health education programs about disease and its treatment modalities should be provided for HCC patients using new methods of teaching such as computer assisted instructions and home videos should be performed. Further studies about the effect of the bio-psychosocial needs on the patients` quality of life and outcomes.

**Key words**: Hepatocelullar Carcinoma HCC, Radiofrequency ablation, quality of life.

## Introduction

Hepatocellular carcinoma (HCC) is the second leading cause of cancer-related deaths globally and has an incidence of approximately 850,000 new cases per year. HCC represents approximately 90% of all cases of primary liver cancer. **(American Cancer Society, 2018).**

Hepatocellular carcinoma rapidly reduces quality of life and typically causes death 6 months–1 year from diagnosis. Globally, it is the fifth leading cause of cancer and the third leading cause of cancer death., with rising incidence in Egypt. The primary risk factors for hepatocellular carcinoma (HCC) are hepatitis B virus (HBV), hepatitis C virus (HCV), dietary aflatoxin exposure, and chronic alcohol consumption **(American Cancer Society, 2019).**

Radiofrequency Ablation (RFA) is one of the emerging therapeutic modalities used for the minimally invasive treatment in the management of early-stage of HCC when liver transplantation or surgical resection are not suitable options. **(Andrea Casadei, 2019).**

Radiofrequency Ablation has become the standard care for the treatment of primary tumors. The goal of this treatment is to produce necrosis by raising local tissue temperatures, while limiting the collateral damage to adjacent healthy tissue **(Gervais et al., 2019).**

As regards nursing role regarding RFA procedure, the nurses have a role in the pre, intra, and post procedural care of patients undergoing RFA. The nurse helps facilitate care, improves patient care, collaborates with medical, nursing, patients and significant others. The outcomes include fewer delays, earlier discharge, decrease readmission, effective, efficient, consistent care and improved communication **(Todd, Cooney, Hayes, Mims & Worden, 2017).**

There are numerous factors affecting quality of life for HCC patients that including: culture, age, educational level, diagnosis, clinical stage of the disease and treatment pattern. Quality of life often deteriorates further due to treatment related side effects. Early treatment of reduced quality of life could be beneficial for some but probably not all patients. However many factors may not be amenable to nursing intervention (e.g., diagnosis, family illness history, predisposing characteristics and medical treatment) **(King & Hinds, 2014).**

In addition, it is also influenced by factors over which nurses have some control environment information provided to patients and family members, personal or social issues, symptoms management and nursing intervention **(Vauthey & Brouquet, 2017).**

**Significance of the study:**

There is an increased rate of patients with HCC who are undergoing Radiofrequency Ablation, in which 500 cases are admitted annually at the Radiological department in Ain Shams University Hospital according to statistical research office at Ain shams University Hospital. In addition, around 80% of these patients complained of adverse effects that hindered their ability of resume normal activity that lead to subsequent financial load on the patients and their families, as well as the healthcare system. Patient with a new therapy may react with a lot of fears and insecurity feelings, which lead to increased patient's anxiety. The nurses had the responsibility to explain to patients and their families what to expect during and after a treatment session, and give them the opportunity to talk about their concerns before therapy begins.

All patients with Hepatocellular Carcinoma under Radiofrequency Ablation therapy need to understand and be aware about its treatment and its adverse effects. I hope that findings of this study will help in providence based data can promote nursing practice and research.

**Aim of the study**

This study aimed to assess quality of life for patients with Hepatocellular Carcinoma undergoing Radio Frequency Ablation through:

1- Assessment of quality of life dimensions for patients with Hepatocellular Carcinoma undergoing Radio Frequency Ablation.

2- Assessment of patient's knowledge related to Hepatocellular Carcinoma and Radiofrequency Ablation.

**Subjects and Methods**

**Design:** A descriptive study design was used to achieve the aim of this study.

**Setting:** The present study was conducted at the Interventional Radiology Unit, affiliated to Ain Shams University Hospital

**Subject:**

A purposive sample of (50) patient with HCC undergoing RFA during the year (2016-2017) was studied (500 patients).

**Criteria of selection:** Adult patients, from both sexes, primarily diagnosed with

Hepatocellular Carcinoma, undergoing Radio frequency Ablation. And willing to participate in the study.

**Tools of data collection***:* Two tools were used for data collection related to this study:

- **Structured interview questionnaire tool:** It was developed by the researcher based on reviewing of literatures ***(Smeltzer, S., Bare, B., Hinkle, K. &Cheever, K. 2014)*** considering the aim of the study and the data needed to be collected. It was divided into three parts and it was consisted of close ended questions.

- **First part**: Socio-demographic data: were used to describe characteristic of patients under study as regard (age, gender, marital status, level of education, residence, occupation, cost of treatment, income, number of family members..

- **Second part**: **Assessment of Patients' medical health** family history, past medical/surgical history as (previous surgery and comorbid diseases) and Present medical history as (present complaint, hospital admission, number of sessions Radiofrequency Ablation and investigations). It composed of (8) yes or no with open end questions for question with yes response.

- **Third part:** It included questions to assess patients' knowledge about HCC,and RFA

It was included (26) MCQ and yes or no questions, it was covered the following three sections.

**Section 1:** It was concerned with assessment of patient's knowledge regarding HCC such as definition, risk factors, types, signs and symptoms, investigations and complications. It was composed of (6) MCQ

**Section 2:** It was concerned with assessment of patient's knowledge regarding Radiofrequency Ablation procedure such as definition, uses, purpose, instructions before the procedure, investigations contraindications, and benefits. It was composed of (7) MCQ.

**Section 3:** It was concerned with assessment of patient's knowledge regarding side effects and complications after Radiofrequency Ablation. It was composed of (9)questions with two responses yes or no such as nausea, vomiting, stomatitis, pneumothorax, liver abscess and post ablation syndrome and (4) MCQ about major complications after the RFA therapy as infection, bleeding, abscesses.

❖ **Scoring system**

The score for correct answer for each statement was (1) and incorrect answer was (0). The total score of patients' knowledge assessment were (26) marks.The satisfactory level was equal or more than 70% while the unsatisfactory level was less than 70%.

2-Quality of life of cancer Survivors Questionnaire: It was used to measure the quality of life for patients with Hepatocellular Carcinoma undergoing RFA. It was adapted from **(Üstündag& Zencirci, 2015)**. It was consisted of (37) likert-type items formulated into separate subscales: physical (17 items), social & family (7 items), psychological & emotional (6 items), functional (3 items) and spiritual wellbeing (4 items).

❖ **Scoring system:**

Each item had 5 responses ranging from 0-4 as the following: (0) very much, (1) Quite a bite, (2) Somewhat, (3) little a bite and (4) not at all, when the response scored by 4 it was considered very high QoL, 2-3 moderate QoL and 0-1= low QoL.

#### Validity and reliability

**Validity:** Was ascertained by a group of seven experts. (5) from Medical Surgical Nursing department at Faculty of Nursing at Ain Shams University and (2) from Medical consultants of the Interventional& Vascular Radiology unit at Ain Shams University Hospitals), Reliability: Testing the reliability of the same tool was done by using Alpha-Cronbach Test (0. 833).

**Pilot study**: It was carried out on fife patients (10%) of total study subjects were included and chosen randomly from the previously mentioned setting to test clarity, applicability of the tools and time required to fill them. The patients who are involved in the pilot study were included in the main study group. No modification were done to the tools

**Field work:** The actual field work of this study started at the beginning of June 2018 till December 2018. The previously mentioned settings were attended by the researchers three days/week (Sunday, Tuesday and Thursday).

- Firstly the researcher was prepared and translated tools for data collection.

- The researcher held the first meeting with each patient before presentation to multidisciplinary committee at the outpatients' clinics in Interventional & Vascular Radiology Unit, affiliated to Ain Shams University Hospitals to introduce her-self and briefly explained the nature and the purpose of the study. They were informed that participation in this study was voluntary and they had the right to withdraw at any time. Oral approval from patients to share in this study was achieved.

- The researcher took telephone number at the first contact to determine the next appointment in order to complete data collection process.

The researcher provided an overview and clarification about the tools, then, the structured questionnaire was distributed to each patient to assess socio-demographic characteristic, medical health, knowledge and quality of life and. It was filled by the patients in a time ranged from 30 to 40 minutes distributed as the following: patients' socio-demographic characteristics took about 5 minutes, patients' medical health took about 5 minutes, knowledge took about 10minutes and quality of life took about 20minutes.

#### Ethical considerations:

Before the initial interview, an oral consent was secured from each subject after being informed about the nature, purpose and benefits of the study. Patients were also informed that participation is voluntary and about their right to withdraw at any time without giving reasons. Confidentiality of any obtained information was ensuring through coding of all data.

#### Statistical Design:

The Statistical Package for Social Science (SPSS) version 12 was used for data analysis. Data were presented using numbers, percentage, chi-test and level of significant was thresholds at p<0.05.

## Result

**Table (1):** shows that, the mean age of studied patients were ( 44.9±4.86) 54% were females Also 50% of the them were married, 38% of them were Diploma education and 54% of studied patients were resident in Urban area. And 66% of studied patients were not work, while 48% of patients were treated by government. In relation to monthly income, 70% of studied patients were stated that not sufficient income for treatment. Finally 58% of them having four members in their families.

**Table (2):** shows that 74% of studied patients had negative family history of Hepatitis C. As regards their previous operation, 60% of them were performed

previous surgeries. Also 56% of the studied patients hadn't co-morbid diseases.

**Table (3):** illustrates that, 78% of studied patients were aware of their disease, 44% of them discovered their disease from one month to less than one years. Also 54% of them admitted to hospital due to suffering from abdominal pain, jaundice and abdominal swelling (58%). Also 64%of them had not previous session of RFA. 100% of them must be performed investigation before session of RFA.

**Figure (1):** shows that, near two thirds (64%) of the studied patients had unsatisfactory knowledge regarding HCC, RFA and side effects of RFA.

**Table (4):** shows that, the most prominent physical problem with low effect quality of life of physical dimension among the studied patients were lack of energy, chest pain, lack of energy recurrent infection and urinary retention(88.0%, 82.0% &82.0%)

**Table (5):** reveals that, there were statistically insignificant relations between the patient's Quality of life and their level of knowledge.

**Table (1):** Distribution of the socio-demographic characteristics among the study patients   (n =50).

| Socio-demographic | N | % |
|---|---|---|
| **Age** | | |
| From 30 to less than 40 | 10 | 20% |
| from 40 to less than 50 | 23 | 46% |
| above 50 | 17 | 34% |
| Mean ±SD ( 44.9±4.86) | | |
| **Sex** | | |
| Male | 23 | 46% |
| Female | 27 | 54% |
| **Marital status** | | |
| Single | 6 | 12% |
| Married | 25 | 50% |
| Widower | 13 | 26% |
| Divorced | 6 | 12% |
| **Educational level** | | |
| Illiterate | 11 | 22% |
| reads and writes | 5 | 10% |
| Diploma education | 19 | 38% |
| High qualified | 15 | 30% |
| **Residence** | | |
| Urban | 27 | 54% |
| Rural | 23 | 46% |
| **Occupation** | | |
| Work | 17 | 34% |
| Not work | 33 | 66% |
| **The costs of treatment** | | |
| Governmental | 24 | 48% |
| health insurance | 22 | 44% |
| Private | 4 | 8% |
| **Monthly income** | | |
| Not enough for treatment | 35 | 70% |
| Enough to cover the cost of treatment | 15 | 30% |
| **The number of family members** | | |
| 3 | 21 | 42% |
| Four and more | 29 | 58% |

**Table (2):** Number and percentage distribution of studied patients regarding their family and past history (n= 50).

| Family and past history | | No | % |
|---|---|---|---|
| **Family history of hepatitis C** | | | |
| | No | 37 | 74% |
| | Yes | 13 | 26% |
| **Previous operation** | | | |
| | No | 20 | 40% |
| | Yes | 30 | 60% |
| **Co-morbid diseases** | | | |
| | Yes | 22 | 44% |
| | No | 28 | 56% |

**Table (3):** Number and percentage distribution of studied patients regarding present history (n=50).

| Present history | No | % |
|---|---|---|
| **Awareness of diagnosis** | | |
| No | 11 | 22 |
| Yes | 39 | 78 |
| **Discovering disease** | | |
| 1 month < 1 year | 22 | 44 |
| 1year < 2years | 19 | 38 |
| Two years and more | 9 | 18 |
| **Hospital admission** | | |
| Yes | 27 | 54 |
| No | 23 | 46 |
| **Admission causes** | | |
| Jaundice | 28 | 56 |
| Abdominal swelling | 27 | 48 |
| Dark urine | 21 | 42 |
| Weight loss | 23 | 46 |
| Abdominal pain | 29 | 58 |
| Discoloration stool | 13 | 26 |
| Anorexia | 17 | 34 |
| Nausea | 13 | 26 |
| Fatigue | 15 | 30 |
| **Take Radiofrequency Ablation before** | | |
| No | 32 | 64 |
| Yes | 18 | 36 |
| **Number of session of RFA** | | |
| None | 32 | 64 |
| One | 14 | 28 |
| Two | 4 | 8 |
| **Investigation before session** | | |
| Yes | 50 | 100.0 |
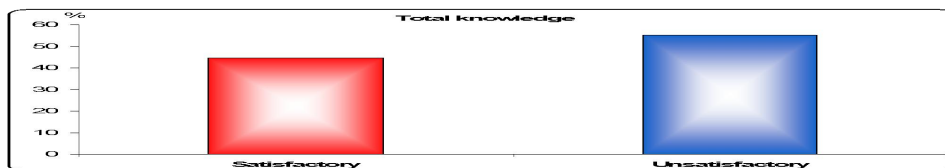
**Figure (1):** Percentage distribution of total patients' level of knowledge regarding HCC, and RFA (n=50).

**Table (4):** Number and percentage distribution of studied patients regarding physical dimension of quality of life (n =50).

| Physical dimension Items | Low No | Low % | Moderate No | Moderate % | High No | High % |
|---|---|---|---|---|---|---|
| lack of energy | 41 | 82.0% | 9 | 18.0% | 0 | 0.0% |
| Nausea | 39 | 78.0% | 10 | 20.0% | 1 | 2.0% |
| Vomiting | 30 | 60.0% | 11 | 22.0% | 9 | 18.0% |
| Urinary retention | 41 | 82.0% | 1 | 2.0% | 8 | 16.0% |
| Constipation | 11 | 22.0% | 3 | 6.0% | 36 | 72.0% |
| Loss of appetite | 39 | 78.0% | 11 | 22.0% | 0 | 0.0% |
| Fatigue | 40 | 80.0% | 10 | 20.0% | 0 | 0.0% |
| Bleeding easily | 38 | 76.0% | 8 | 16.0% | 1 | 2.0% |
| Recurrent infection | 41 | 82.0% | 11 | 22.0% | 1 | 2.0% |
| Eye problem | 30 | 60.0% | 18 | 36.0% | 2 | 4.0% |
| Swelling in site of needle | 39 | 78.0% | 10 | 20.0% | 1 | 2.0% |
| Chill | 24 | 48.0% | 15 | 30.0% | 11 | 22.0% |
| Dyspnea | 15 | 30.0% | 13 | 26.0% | 22 | 44.0% |
| Inflammation and redness of the skin | 25 | 50.0% | 7 | 14.0% | 18 | 36.0% |
| High temperature | 18 | 36.0% | 5 | 10.0% | 27 | 54.0% |
| Pain in the back and chest | 44 | 88.0% | 6 | 12.0% | 0 | 0.0% |
| Sleep disturbance | 17 | 34.0% | 25 | 50.0% | 8 | 16.0% |

**Table (5):** Relation between total patients` quality of life and level of knowledge among the study patients (n=50).

| Quality of life dimensions | Satisfactory N | Satisfactory % | Knowledge Unsatisfactory N | Knowledge Unsatisfactory % | chi-square $X^2$ | P-value |
|---|---|---|---|---|---|---|
| **Physical dimension** | | | | | | |
| Low | 5 | 27.8% | 10 | 31.3% | 0.49 | 0.486 |
| Moderate | 13 | 72.2% | 22 | 68.8% | | |
| **Family &social dimension** | | | | | | |
| Low | 2 | 11.1% | 4 | 12.5% | 0.02 | 0.885 |
| Moderate | 16 | 88.9% | 28 | 87.5% | | |
| **Psychological dimension** | | | | | | |
| Low | 5 | 27.8% | 10 | 31.3% | 0.07 | 0.797 |
| Moderate | 13 | 72.2% | 22 | 68.8% | | |
| **Functional dimension** | | | | | | |
| Low | 11 | 61.1% | 15 | 46.9% | 0.94 | 0.333 |
| Moderate | 7 | 38.9% | 17 | 53.1% | | |
| **Spiritual dimension** | | | | | | |
| Low | 7 | 38.9% | 15 | 46.9% | 0.55 | 0.585 |
| Moderate | 11 | 61.1% | 17 | 53.1% | | |

> 0.05 insignificant *≤ 0.05 significant **≤ 0.01 highly significant

## Discussion

Hepatocellular carcinoma is the commonest primary cancer of the liver represents approximately 90% of all cases of primary liver cancer. Incidence is increasing and HCC has risen to become the fifth commonest malignancy worldwide and the third leading cause of cancer-related death, exceeded only by cancers of the lung and stomach **(Johnson, 2016).**

Radiofrequency can be an effective treatment for primary liver cancer and for cancers that have spread to the liver in select patients whose liver tumors are unsuitable for surgical resection, in most studies, more than half of the liver tumors treated by ablation have not recurred **(Sherman, 2019).**

The patients with HCC face many physical, psychological and functional problems that affect their life span and daily activities The side effects with RFA can often impact on patient's health and quality of life **(Izumi, 2016).**

The results of the present study revealed that, the mean age of the studied patients were (44.9±4.86), while this finding is consistent with **Kew, (2012)** in study entitled **"**Epidemiology of Hepatocellular Carcinoma" who founded that The incidence of HCC generally increases with increasing age.

While more than one half of studied patients were females. This finding is inconsistent with **Pirisi et al. (2015)** in study entitled "Hepatocellular Carcinoma Incidence, Mortality, and Survival Trends in the United States From 2000 to 2005"who showed that Incidence rates were approximately three times higher among men than among women throughout this time period.

As regard to educational level, less than one thrid of the studied patients had diploma education.That might be due to most of them from low social class. This finding was supported by **Kundu, Mehta & Agrawal, (2015)** in the study entitled "Prevalence of Hepatitis B virus and Hepatitis C virus among chronic liver disease patient" who stated that the majority of study were educated

Regarding residence, the current study showed that, more than one half studied patients who lived in urban area

This finding was supported by **Hassan, Zaghloul & El-Serag, (2014)** in the study entitled "The role of hepatitis C in hepatocellular carcinoma: a case control study among Egyptian patients" who stated that the majority of cases were from urban areas

From the researcher point of view this data doesn't reflect the real image because the primary risk factor for HCC, hepatitis C viral infection, was widely transmitted by inoculations to control schistosomiasis, which is a disease more common among Egyptian men particularly those in rural areas who acquire it occupationally as farm workers. It might be more than one half of studied patients were female.

Related to occupation less than two third of the studied patients were not working. This finding was supported by **Abdelrehaim, (2017)** in the study entitled "Knowledge of patient with liver cirrhosis regarding ascites self- management instruction nursing guidelines" who mentioned that more than two third of subjects weren't workers.

In relation to treatment costs, less than one half of the studied patients were resorted to treatment from health insurance.

This result is consistent with study conducted in **Minia** University about "Investigating the informed consent process, therapeutic misconception and motivations of Egyptian research participants: a qualitative pilot study" by **Sayyed & Eissawy, (2012),** who revealed that Less than one half of our study subjects received free drugs or free medical care by government.

Concerning patients' family history of the studied patients less than two thirds of them hadn't family history of liver diseases. This finding was the same line with **Abdelaziz et al., (2014)** in research

article entitled "Survival and Prognostic Factors for Hepatocellular Carcinoma: an Egyptian Multidisciplinary Clinic Experience" which mentioned that the Minority of the patients had not positive family history of HCC.

Regarding present history, the results of the current study indicated that less than one half of the studied patients were discovered their disease from month to less than one year. This might be due to the selection of the researcher to newly diagnosed HCC patients. This finding was supported by **American Cancer Society, (2017)** stated that catching HCC disease early often allows for more treatment options and improve patient outcome. Also **Frank, Mohamed, Strickland, (2015)**: Recommended that it is necessary of raising awareness of people about importance of regular medical checkup for early detection of cancer.

Concerning causes of hospital admission, more than one half of studied patients admitted to hospital due to abdominal pain, and jaundice and abdominal swelling.

These finding are in accordance with **El Shobary & Hamdy, (2014).** In study entitled **"**Prognostic factors affecting survival and recurrence after hepatic resection for hepatocellular carcinoma in cirrhotic liver" who showed that the majority of cases were complain of right hypochondria pain.

Concerning patients` level of total knowledge regarding HCC, RFA, the current study revealed that near two thirds of the studied patients had unsatisfactory total level of knowledge. This may be due to lack of effective communication between nurses and patients, or might be due to lack of continuous educational programs to increase awareness of the patient.

This finding is consistent with **Aziz (2011)** who found that, unsatisfactory level of total knowledge of the studied patients regarding disease and its management and there were highly statistically significant differences in patient's level of knowledge

pre/ post one month and post six months from the educational intervention about cancer.

Concerning physical dimension of quality of life the most prominent physical problem had negative effect on quality of life of physical dimension among the studied patients were lack of energy, chest pain, lack of energy Recurrent infection and Urinary retention this finding is consistence with **Green, et al.(2011)** who stated that Cancer-related pain reduces quality of life and is associated with depression and poor functioning.

Concerning social and family dimension of quality of life, the current study revealed that, the social and family problem concerning with low quality of life of social and family dimension was treatment cost as burden on patient's family. This finding are in the same contrast with , **Siegel et al. (2012)**who stated that relationships with family and friends, including intimacy and sexuality. Employment, insurance, and financial concerns also affect social well-being.

Concerning psychological and emotional dimension of quality of life, the current study revealed that, emotional &psychological problem that lead to low quality of life was unsatisfaction of patients coping with disease. This finding consistence with **Siegel, et al. (2012)** who state that Emotional, or psychological, well-being refers to the ability to maintain control over anxiety, depression, fear of cancer recurrence, memory loss, and concentration difficulties.

Concerning the relation between total patients quality of life and total level of patients` knowledge, this study revealed that, there were statistically insignificant relations between the patients` quality of life and their level of knowledge. This may because most of studied patient had unsatisfactory level of knowledge that affect their quality of life negatively In this finding, **Husson,et al (2011)**who stated that, Satisfied patients, with fulfilled information needs, and patients who

experience less information barriers, in general have a better QoL.

**Conclusion**

Near two thirds of the studied patients had unsatisfactory knowledge regarding HCC, and RFA.

More one half of the studied patients had Low QoL regarding physical, social, emotional, functional and Spiritual wellbeing

While the most prominent physical problem had negative effect on quality of life of physical dimension among the studied patients were lack of energy, chest pain, lack of energy recurrent infection and urinary retention.

Social and family problem concerning with low quality of life of social and family dimension was treatment costs as burden on patient's family.

Emotional &psychological problem that lead to low quality of life psychological and emotional dimension was unsatisfaction of patients coping with disease.

**Recommendation**

Training programs about radiofrequency and HCC disease and its treatment modalities should be provided for HCC patients using new methods of teaching such as computer assisted instructions and home videos should be performed.

Further studies about the effect of the bio-psychosocial needs on the patients` quality of life and outcome.

**Reference**

**Andrea Casadei, E. (2019):** Radiofrequency Ablation of Hepatocellular Carcinoma: A Meta-analysis of Overall Survival and Recurrence-free Survival - Oncology Nurse Advisor. Retrieved 21 December 2019, from https: //www. oncologynurseadvisor.com/home/cancer-types/liver-cancer/radiofrequency-ablation-of-hepatocellular-carcinoma-a-meta-analysis-of-overall-survival-and-recurrence-free-survival/. Accessed at 12 Feb 2019

**Abdelaziz, A. O., Elbaz, T. M., Shousha, H. I., Ibrahim, M. M., El-Shazli, M. A. R., Abdelmaksoud, A. H., & Nabeel, M. M. (2014):** Survival and prognostic factors for Hepatocellular Carcinoma: an Egyptian multidisciplinary clinic experience. Asian Pac J Cancer Prev, 15(9), 3915-3920.

**Abdelrehaim, R. (2017):** Knowledge of patient with liver cirrhosis regarding ascites self- management instruction nursing guidelines, Published Master Thesis. Medical- Surgical department. Faculty of Nursing. Ain Shams University.

**American Cancer Society (2017):** Hepatocellular Carcinoma Early Detection, Diagnosis, and Staging. Retrieved from https: //www.cancer.org/content/ dam/ CRC/PDF/ Public/8651.00.pdf. Accessed 5, August 2019.

**American Cancer Society (2018):** Key Statistics about Liver Cancer. Available at: https://www.cancer. org/cancer/liver-cancer/about/what-is-key-statistics.html. Accessed Mai 25, 2019.

**American Cancer Society (2019):** Liver cancer risk factors https: //www.cancer.org/cancer/liver-cancer/ causes-risks-prevention/risk-factors.html. **Accessed Jan 1, 2020**

**Aziz, A.W.(2011):** Patient education: it's effect on quality of life of patients with cancer on chemotherapy. Journal of American Science: 7(8), 541-542.

**El Shobary, N. & Hamdy, S. (2014):** Prognostic factors affecting survival and recurrence after hepatic resection for hepatocellular carcinoma in cirrhotic liver. Natl J Cancer Inst 204; 12: 87–93.

**Frank, C, Mohamed, M.K, Strickland, G.T, (2015)**: The role of parenteral antischistosomal therapy in the spread

of hepatitis C virus in Egypt. Lancet 2000; 355: 887–91.

**Gervais, D. A., Goldberg, S. N., Brown, D. B., Soulen, M. C., Millward, S. F. & Rajan, D. K. (2019)**: Society of Interventional Radiology position statement on percutaneous radiofrequency ablation for the treatment of liver tumors. Journal of Vascular and Interventional Radiology, 20(7), S342-S347

**Green ,CR., Hart-Johnson, T., Loeffler, DR. (2011);** Cancer-related chronic pain: examining quality of life in diverse cancer survivors.Cancer. 117:1994-2003

**Hassan, M.M., Zaghloul, A.S. and El-Serag, H.B. (2014):** The role of hepatitis C in hepatocellular carcinoma: a case control study among Egyptian patients. Clin Gastroenterol. (2); 33: 123–6.

**Husson, O., Mols, F., & Van de Poll-Franse, L. V. (2011).** The relation between information provision and health-related quality of life, anxiety and depression among cancer survivors: a systematic review. Annals of Oncology, 22(4), 761-772.

**Izumi, N. (2016):** Recent advances of radiofrequency ablation for early hepatocellular carcinoma. Journal of Gastroenterology and Hepatology, 26, pp.115-122.

**Johnson, P. (2016):** Malignant tumours of the liver. In Bacon B, O'Grady G, Di Bisceglie A, Lake J, eds. Comprehensive Clinical Hepatology, 2nd ed. Philadelphia, PA: Elsevier Mosby publications, 453–85.

**Kew, M.C. (2012):** Epidemiology of Hepatocellular carcinoma. Toxicology, 181, 35-38

**King, C.R. & Hinds, P.S. (2014):** Quality of Life From Nursing and Patient Perspectives, 3rd ed., Jones Bartlett Learning, Canada, Pp.525-527.

**Kundu,G, Mehta, B. & Agrawal, (2015):** Prevalence of Hepatitis B virus and Hepatitis C virus among chronic liver disease patient; 67(1): 87-89

**Pirisi, M., Avellini, C., Fabris, C., Scott, C., Bardus, P., Soardo, G. & Bartoli, E. (2015):** Portal vein thrombosis in hepatocellular carcinoma: age and sex distribution in an autopsy study. Journal of cancer research and clinical oncology, 124(7), 397-400.

**Sayyed, J.S.A. & Eissawy, A.G.M. (2012):** Effect of Teaching Program for Patients with leukemia on Their Self-care. Journal of American Science; 8 (8): 112- 115.

**Sherman, M. (2019):** Primary malignant neoplasms of the liver. In: Dooley J, Lok ABurroughs AHeathcote E, 8th ed. Sherlock's Diseases of the Liver and Biliary Tract, 12th ed. Singapore: Willey-Blackwell, PP; 681–703.

**Siegel, R., DeSantis, C., Virgo, K., Stein, K., Mariotto, A., Smith, T. & Ward, E. (2012):** Cancer treatment and survivorship statistics, 2012. CA: a cancer journal for clinicians, 62(4), 220-241.

**Smeltzer, S., Bare, B., Hinkle, K. &Cheever, K. (2014)**: Brunner & Suddarth's Text Book of Medical-Surgical Nursing, 12th ed, Lippincott Williams & Wilkins, China, pp.1517-1531.

**Todd III, R.F., Cooney, K.A., Hayes, T.G., Mims, M. B., & Worden, F.P. (2017):** Tumor Board Review Guideline and Case Reviews in Oncology, 2nd ed., Demos Medical Publishing, USA, Pp. 278-280

**Vauthey, J. & Brouquet, A. (2017):** Multidisciplinary Treatment of Hepatocellular Carcinoma. Berlin, Heidelberg, Springer pp. 28-36

**Üstündag, S. & Zencirci, A. D. (2015):** Factors affecting the quality of life of cancer patients undergoing chemotherapy: A questionnaire study. Asia-Pacific Journal of Oncology Nursing, 2(1), 17.