

Effect of Supportive Nursing Care on Symptom Intensity and Quality of Life of Hepatocellular Carcinoma Patients undergoing Transarterial Chemoembolization.

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Abstract

Background: Hepatocellular carcinoma (HCC) is recognized as a highly malignant tumor and a major contributor to the cancer-related disease burden in many regions of the world with a modest survival benefit of current treatment. HCC patients are vulnerable to disease and treatment-related symptoms that may negatively affect overall QOL. **Aim:** This study aimed to evaluate the effect of supportive nursing care on symptom intensity and quality of life of hepatocellular carcinoma patients undergoing transarterial chemoembolization. **Design:** Quasi-experimental research design was employed to attain the aim of the research. This study was carried out at ElmahallaHepatology Hospital, in the inpatient department and outpatient clinics, Elmahalla al-Kubra. A purposive sample of 60 adult hepatocellular carcinoma patients of both sexes, undergoing TACE therapy were recruited for the current study. They were assigned randomly into study and control groups. **Tools:** Three instruments were utilized; Patient's data sheet, Edmonton Symptom Assessment Scale (ESAS), and Functional Assessment of Cancer TherapyQuestionnaire. **Results:** There were statistically significant differences between the study and control groups concerning domains and total score of FACT-Hep., ESAS items and total score of ESAS, two weeks post-implementation of the supportive nursing care and at follow-up. **Conclusion:** supportive nursing care had a positive effect on decreasing symptom intensity and improving QOL of hepatocellular carcinoma patients undergoing transarterial chemoembolization . **Recommendations:** supportive nursing care should be initiated for HCC patients undergoing transarterial chemoembolization. Provide training programs for nurses regarding supportive nursing care of HCC patients undergoing transarterial chemoembolization.

Key words: supportive nursing care, symptom intensity, quality of life, hepatocellular carcinoma, transarterial chemoembolization.

Introduction

Hepatocellular carcinoma (HCC) is the seventh most common malignancy and the second most common cause of cancer-related deaths including a continued increase in incidence globally (Ferlay et al., 2019; Wang, Yan & Fu, 2019). It is common cancer with a lower prognosis, compared with high a significant burden of disease and economic costs. The patient may experience great discomfort from advanced disease, treatment side effects, or decompensation of underlying cirrhosis.

Currently, the clinical HCC treatment includes radiofrequency ablation (RFA) or percutaneous ethanol injection (PEI), TACE, and surgery. Though, most patients who underwent those traditional treatments also experience unpleasant side effects of HCC treatment are also severely affects their quality of life (QoL). Besides, psychological disorders, such as depression and anxiety (Zhang et al., 2020). The selection of the treatment depends on the characteristics of the tumor, the severity of underlying liver dysfunction, age, other medical comorbidities, and available local expertise and medical resources (Yang, et al.2019).

Transarterial chemoembolization (TACE) is a useful treatment choice for a patient with intermediate-stage HCC (Yang, et al., 2019; Niu et al., 2012). It is considered as palliative treatment for unresectable HCC patients with multifocal or large tumors. It is typically repeated at fixed intervals for some courses or till death befalls. Generally, a patient receiving TACE has an average of 3–4 days' hospitalization and requires extensive follow-up at an outpatient clinic 2 weeks post-discharge. It involves

two chief steps; intra-arterial infusion of cytotoxic drugs and delivery of embolization particles into the tumor-feeding artery, leading to ischemic tumor necrosis (Yang, et al.2019; Shun et al., 2012; Sun &Sarna, 2008). Evidence has revealed that TACE can improve the 3-year survival rate from 10% to 40% – 50%, with a duration of 16 –20 months median survival (Shun et al. 2012).

Nevertheless, post embolization syndrome (e.g., nausea, abdominal pain, transient fever, and elevated alanine aminotransferase) and side effects of chemotherapy(e.g., nausea, fatigue, vomiting) are the most frequently reported complications. Such symptoms could affect patient's overall quality of life and psychological health post-discharge and might further reduce patient's adherence to treatment,leading them to potentially refuse to receive another course of treatment. Notwithstanding these significant problems, health care personnel chiefly focus on controlling physical distress rather than patient QOL following discharge in clinical areas (Shun et al., 2012). Quality of Life is defined as people's perceptions of their position in life in the context of the value and culture systems in which they live, concerning their expectations, concerns, goals, and standards (Gandhi, Khubchandani&Iyer, 2014).

Improving patient QOL and symptom burden are essential goals of any supportive care intervention (Temel et al., 2017). Symptom management and relief is a relevant issue in the nursing discipline, and nurses are ideally positioned to influence patient outcomes through effective clinical evaluation and management of cancer-related symptoms (Sun &Sarna, 2008). Nurses caring for

HCC patients must recognize the QOL and symptom concerns, and support for aggressive symptom management for these vulnerable patients (Sun, et al. 2008). Supportive nursing care is defined as the care provided to promote the quality of life of a patient who has a serious or life-threatening disease. Its goal is to prevent or treat as early as possible the symptoms of a disease, treatment side effects, and social, spiritual, and psychological problems related to the disease or its treatment. Additionally, it is described as palliative care, symptom management, or comfort care (National Cancer Institute, 2020; Fitch, 2008).

Aim

The current study aimed to investigate the effect of supportive nursing care on symptom intensity and quality of life of hepatocellular carcinoma patients undergoing transarterial chemoembolization.

Research hypotheses:

- **Study group would report decrease symptom intensity after applying the supportive nursing care than the control group.**
- **Study group would report improving QOL after applying the supportive nursing care than the control group.**

Subjects and Method

Research design:

Quasi-experimental research design was utilized.

Setting:

This study was conducted in ElmahallaHepatology Hospital, ElmahallaAl-Kobra in the inpatient department and outpatient clinics for patient follow-up. The hospital consists of a ground floor and five upper floors. The ground floor includes outpatient clinics, the first floor includes laboratories and

ICU, the second floor has the radiological unit and endoscopy unit, the third floor has the operating theaters, the fourth floor includes two medical departments (male ward and female ward) and the fifth floor has two medical paid wards and health insurance(male ward and female ward). Each medical ward has 15 rooms, each room had two beds (two patients). These medical departments receive HCC patients on Saturday, Sunday, and Monday each week from the outpatient clinics.

Subjects :

A purposive sample of 60 adult hepatocellular carcinoma patients undergoing TACE, their age falls between 20 and 60 years old of both sexes, were admitted to the previously mentioned setting. They were randomly assigned to study and control groups; the study group consisted of 30 adult patients receiving supportive nursing care. The control group composed of 30 adult patients receiving their usual hospital routine care. These patients were admitted to the medical wards one day before the TACE session, and stayed a day after the session, and then they were discharged (3 days hospitalization). A hospital stay might reach 3-5 days according to the patient's condition.

Inclusion criteria:

- Males or females patients, 20 - 60 years of age.
- Diagnosis of hepatocellular carcinoma in stage A, stage B, and early diagnosed stage C, according to staging classification of Barcelona-Clinic Liver Cancer (BCLC).
- Willing to participate in the study.
- Full conscious, able to comprehend, communicate and cooperate during care.

Exclusion criteria:

- History of chronic illness (such as DM, Hypertension and renal impairment)
- Active clinically serious infections.

Tools :

In order to collect for the study, three instruments were used :

Tool 1: Patient's data sheet:

This tool was designed by the researcher to get the socio-demographic and the medical data of the patient after a review of related literature.

Part 1: Socio-demographic data of the patients (sex, age, marital status, and educational level).

Part 2: Patient Medical history: included patient's problems, family history of cancer, hepatocellular carcinoma risk factors.

Tool2:Edmonton Symptom Assessment Scale (ESAS)

It measures symptom intensity, using numerical rating scales with discrete checkboxes (range, 0 to 10). It assesses the (9) symptoms; nausea, pain, activity, anxiety, drowsiness, depression, appetite, shortness of breath, and sense of well-being. The range of scores (0-900), the higher scores denote the higher symptom intensity (Bakitas et al., 2009). Cronbach's alpha was 0.72 indicating good to excellent internal reliability (Dong et al., 2015). It was translated into the Arabic Language by the researcher.

Tool3:(FACT-HepQuestionnaire) Version4; Functional Assessment of Cancer Therapy- ForHepatobiliary cancer patients (Heffernan et al., 2002)

It is a self-reported questionnaire (45 items) developed specifically to cover health-related quality of life (HRQoL) for hepatobiliarycancer patients. It consists of the FACT-G which has four dimensions; physical well-being (seven items), functional well-being (seven items), social/family

well-being (seven items), and emotional well-being (six items), and an eighteen-item of hepatobiliary cancer subscale (HCS) which evaluates gastrointestinal symptoms such as anorexia, weight loss, and jaundice, as well as back and stomach pain. It is a five-point Likert scale ranging from zero (not at all) to four (very much). Total scores for this tool ranging from 0 to 180 and the higher scores denote the better quality of life. It takes not more than 10 minutes for completing (Salem et al., 2013).

In a group of hepatobiliary cancer patients, the FACT-Hep questionnaire revealed strong internal consistency (Cronbach's a 0.94), strong test-retest reliability (Spearman correlation 0.91), and convergent and divergent validity (Cella et al, 2013).). The Arabic version was used

(<https://www.facit.org/measure-languages/FACT-Hep-Languages>).

Total Fact -Hep.scores

- < 50% ----- Low QOL
- 50 % - 75% -Moderate QOL
- above 75% ----- High QOL

Pilot study

A pilot study was carried out on six (10% of the total participants) patients to assess the clarity, applicability of the tools, as well as estimate the time needed to fill out the tools. Minor modifications were done according to the pilot study before data collection. The participants of the pilot study were precluded from the study.

Ethical consideration and human rights

Official permission to perform the purposed research was gained from the Faculty of Nursing, Mansoura University, and the general director of Mahalla Hepatology Hospital. Informed consent was received from each participant in the current study after an

illustration of the study aim. Participants were assured that their data is confidential and used for the study purpose only and their involvement in the study was entirely voluntary, with the option to withdraw at any time. Each patient's data was encoded to ensure privacy and anonymity.

Field Work

- **Preparatory phase:**

After reviewing the nationally and internationally related literature, tools were obtained and prepared for data collection. The official agreement to proceed the study was obtained. Informed consent was obtained from the patients after explaining the purpose of the study. A pilot study was done and the validity of the tools was revised by five medical and surgical members for the jury.

- **Implementation phase**

Data were collected for 7 months and extended for 9 months from October 2017 to June 2018. Sixty patients met the inclusion criteria. Patients who fulfilled the study criteria and agreed to participate in the study were selected randomly and assigned equally to study and control groups. When a patient was admitted, the researcher visited him in the medical ward and introduced herself, explaining the purpose of the study. Then, the researcher started to fill the study tools (Patient's data sheet, ESAS, and FACT-Hep.) to determine the patient's complaints, actual or potential problems, which took about 25 -35 minutes and checked the patient's medical record to obtain medical data for the control and study groups.

Directly the researcher began to provide supportive nursing care (direct care according to the patient's problems and complaints inclusive routine nursing care, psychological support, nursing

interventions with relaxation therapy, combined with his prescribed medications) for the patient in the intervention group during his hospitalization (in a quiet calm environment). Also, provide information that was needed related to the diagnosis, treatment and its side effects, how to prevent, manage, or relieve his problems and burden symptoms, in the presence of his relative for including him in the care, to encourage and reinforce the patient to follow the instructions. Taking into consideration, the use of Arabic language that suited the level of the patient.

Motivation and reinforcement during giving nursing care were used to enhance self-care and follow the given instructions. Besides, giving a booklet (including measures to prevent and manage common problems that facing him (such as fatigue, pain, constipation, fever, anxiety...etc.) to be a reference after discharge. .The patient had the time to ask questions, express his feelings and anxiety. Instruct the patient to adhere to medication and follow up visit schedule.

Post-discharge, the researcher used the telephone to call each patient in the intervention group to be sure that he was following the provided instructions, supporting and reinforcing him to follow these instructions. The researcher interviewed each patient once daily during hospitalization, providing supportive nursing care during the morning or afternoon or night shift for about 3-5 hours. Each patient in the study group received both supportive nursing care and the usual hospital routine of care Whereas, the patient in the control group received only the usual hospital routine of care.

Evaluative phase

Two weeks post-discharge (on the first visit to the outpatient clinic), the

researcher individually interviewed each patient of the intervention and control groups and filled out the tools (ESAS, and FACT-Hep.). Then, after one month of the first visit, during follow-up, the researcher refilled out the tools (ESAS, and FACT-Hep.) from each patient of the intervention and control groups in outpatient clinics. Patient was evaluated for the effect of supportive nursing care on his symptom intensity and QoL (study group) in comparison to the control group and to be sure on the study group patients compliance to the given instructions by using tools (2 and 3).

Statistical analysis

The collected data were coded, handled, and analyzed by using the SPSS (Statistical Package for Social Sciences) version 15 for Windows® (SPSS Inc, Chicago, IL, USA). The qualitative data were shown as numbers and percentages. Comparison between the groups was achieved by using the Chi-Square test. The quantitative data were examined for normality by the Kolmogrov-Smirnov test. In addition, normally distributed data were shown as mean ± SD. The Student t-test was utilized to differentiate between the two groups. Pearson's correlation coefficient was utilized to examine the correlation between the study variables. $P \leq 0.05$ was recognized to be statistically significant.

Results:

Table 1 showed socio-demographic data of study and control groups. It is apparent that (83.3 %, 86.7 %, respectively) of the study and control groups, their age ranged 50-60 years. (76.7%, 80%, respectively) were males. Whereas, (70%, 80%, respectively) were married. Relating, education 40% and 40% respectively, had primary education.

Table (2) presented medical data of study and control groups. Regarding patients complain, it is apparent that abdominal pain reported the highest percent (93.3%, 90%, respectively) of the study and control groups, followed by jaundice (90% , 76.7% respectively), then anemia (70%, 53.3%, respectively), constipation (53.3%, 30% respectively). Concerning, family history of cancer, (3.3%, 3.3%, respectively) of the study and control groups had a family history of hepatocellular carcinoma. Regarding, risk factors (90%, 100%, respectively) had HCV. All patients of the study and control groups had cirrhotic liver.

Table (3) reported the comparison between the study and control groups pre - intervention regarding ESAS. There was no statistical significant difference between the two groups regarding ESAS at pre- intervention.

Table (4) clarified the comparison between the study and control groups pre - intervention regarding Fact-Hep domains. There was no statistical significant difference between the two groups regarding Fact-Hep domains (physical, social, emotional, functional, and Hep- concern well-being) and total FACT-HEP score.

Table (5) illustrated the comparison between the study and control groups two weeks post discharge regarding ESAS. There was statistical significant difference between the two groups regarding ESAS post two weeks of intervention ($P < 0.05$)(except, nausea and dyspnea). This means that supportive nursing care had an effect on decreasing symptom intensity two weeks post-discharge.

Table (6) demonstrated the comparison between the study and control groups two weeks post discharge regarding Fact-Hep domains. There was

a statistical significant difference between the two groups regarding Fact-Hep domains (physical, social, emotional, functional, and Hep- concern well-being) and total FACT-HEP score. This reveals that supportive nursing care had a positive effect on the QOL of hepatocellular carcinoma patients.

Table (7) presented the comparison between the study and control groups regarding ESAS at follow - up. There was a statistical significant difference between the two groups regarding ESAS at follow- up ($P < 0.05$). This means that supportive nursing care had an effect on decreasing symptom intensity for the study group.

Table (8) demonstrated the comparison between the study and control groups regarding Fact-Hep domains at follow-up. There was a statistical significant difference between the two groups regarding Fact-Hep domains (physical, social, emotional, functional, and Hep- concern well-being) and total Fact-Hep score. This reveals that supportive nursing care had a positive effect on the QOL of hepatocellular carcinoma patients.

Figure 1: reported the comparison between the study and control groups regarding total ESAS pre and post-intervention, and at follow-up. It reported that there was a statistical significant difference between the two groups post-intervention and at follow-up.

Figure 2: reported the comparison between the study and control groups regarding total Fact-Hep. pre and post-intervention, and at follow-up. It is apparent that there was a statistical significant difference between the two groups.

Table (9) showed the relation between sociodemographic data and total ESAS grade of the study group pre - intervention. It described that there was no statistical significant relation between socio-demographic data and total ESAS grade of the study group pre-intervention.

Table 10, showed the relation between socio-demographic data and total FACT.HEP grade of the study group pre- intervention. It described that there was no statistically significant relation between socio-demographic data and total FACT. HEP grade of the study group pre- intervention.

Table 11, reported correlation between the FACT- HEP and ESAS pre, post- intervention and at follow- up for the study group. It clarified that there was a statistically significant inverse correlation between the FACT- HEP and ESAS pre – intervention for the study group. There was a negative correlation between the FACT- HEP and ESAS post- intervention and at follow-up for the study group, but did not reach a significant level.

Table (1): Sociodemographic data of study and control groups

	Intervention (n=30)		Control (n=30)		2	P
	No	%	No	%		
Age						
40- < 50	5	16.7%	4	13.3%	0.131	0.718
50 – 60	25	83.3%	26	86.7%		
Sex						
Male	23	76.7%	24	80%	0.098	0.754
Female	7	23.3%	6	20%		
Marital status						
Single	6	20%	5	16.7%	1.291	0.524
Married	21	70%	24	80%		
Widow	3	10%	1	3.3%		
Education						
Illiterate	10	33.3%	7	23.3%	1.273	0.736
Primary	12	40%	12	40%		
Secondary	6	20%	7	23.3%		
University	2	6.7%	4	13.3%		

Table (2): Medical data of the study and control groups.

	Intervention (n=30)		Control (n=30)		2	P
	No	%	No	%		
Complain						
Abdominal pain	28	93.3%	27	90%	0.218	0.640
Jaundice	27	90%	23	76.7%	1.920	0.166
Anemia	21	70%	16	53.3%	1.763	0.184
Constipation	16	53.3%	9	30%	3.360	0.067
Vomiting	8	26.7%	4	13.3%	1.667	0.197
Ascites	7	23.3%	11	36.7%	1.270	0.260
Edema	6	20%	4	13.3%	0.480	0.488
Dyspnea	5	16.7%	1	3.3%	2.963	0.085
Family History						
Hepatocellular carcinoma	1	3.3%	1	3.3%	1.018	0.601
another cancer	1	3.3%	0	0%		
Risk factors						
Heavy smokers	8	26.7%	12	40%	1.200	0.273
obesity	8	26.7%	4	13.3%	1.667	0.197
HCV	27	90%	30	100%	3.158	0.076
HBV	4	13.3%	2	6.7%	0.741	0.389
Cirrhotic liver	30	100%	30	100%	-	-

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Table (3): Comparison between the study and control groups pre intervention regarding ESAS.

	Intervention (n=30)	Control (n=30)	t	P
Pain	8.13 ± 0.43	7.77 ± 1.17	1.615	0.115
Tiredness	5.57 ± 3.02	6.50 ± 0.97	1.609	0.113
Drowsiness	5.30 ± 2.20	4.50 ± 1.61	1.606	0.114
Nausea	5.77 ± 2.33	5.2 ± 1.35	1.153	0.255
Lack of appetite	4.63 ± 3.19	5.87 ± 1.89	1.822	0.075
Dyspnea	7.27 ± 2.1	6.37 ± 2.11	1.656	0.103
Depression	7.27 ± 2.1	6.37 ± 2.11	1.656	0.103
Anxiety	7.8 ± 1.27	7.67 ± 1.65	0.351	0.727
Best wellbeing	5.2 ± 3.9	6.67 ± 1.58	1.965	0.057
Total ESAS	55.8 ± 13.73	57.03 ± 12.26	0.367	0.715

*significant P value ($P \leq 0.05$)

Table (4) : Comparison between the study and control groups pre intervention regarding Fact-Hep domains.

Fact-Hep domains	Intervention (n=30)	Control (n=30)	t	P
Physical well- being	8.47 ± 2.4	9.1 ± 5.45	0.583	0.563
Social well- being	21.43 ± 3.45	22.87 ± 3.4	1.620	0.111
Emotional well- being	7.6 ± 1.35	8.2 ± 3.34	0.913	0.367
Functional well- being	16.47 ± 2.08	15.97 ± 3.6	0.659	0.512
Hep- Concern well- being	20.13 ± 2.8	21.4 ± 6.7	0.955	0.346
Total FACT-HEP score	74.1 ± 2.89	77.53 ± 9.97	1.812	0.079

*significant P value ($P \leq 0.05$)

Table (5): Comparison between the study and control groups two weeks post discharge regarding ESAS.

Items	Intervention (n=30)	Control (n=30)	t	P
Pain	3.77 ± 1.94	4.8 ± 1.16	2.504	0.015
Tiredness	3.27 ± 2.36	5.13 ± 1.43	3.701	0.001
Drowsiness	1.7 ± 0.92	2.53 ± 1.43	2.686	0.010
Nausea	2.8 ± 1.21	3.77 ± 1.52	2.717	0.009
Lack of appetite	3 ± 1.46	4.87 ± 1.46	4.955	0.000
Dyspnea	2.07 ± 1.23	3.1 ± 1.56	2.848	0.006
Depression	2.67 ± 1.56	3.87 ± 2.27	2.386	0.020
Anxiety	3.27 ± 1.55	4.23 ± 1.76	2.260	0.028
Best wellbeing	2.87 ± 2.45	5 ± 1.64	3.968	0.000
Total ESAS	27.53 ± 7.24	37.3 ± 11.55	3.925	0.000

*significant P value ($P \leq 0.05$)

Table (6): Comparison between the study and control groups two weeks post discharge regarding Fact-Hep domains.

Fact-Hep domains	Intervention (n=30)	Control (n=30)	t	P
Physical well- being	13.6 ± 2.4	10.73 ± 2.65	4.389	0.000
Social well- being	22.03 ± 3.86	19.3 ± 3.23	2.973	0.004
Emotional well- being	12.27 ± 1.8	10.53 ± 3.36	2.491	0.017
Functional well- being	16.07 ± 3.12	10.6 ± 4.22	5.704	0.000
Hep- Concern well- being	29.37 ± 3.36	26.03 ± 4.34	3.326	0.002
Total FACT-HEP score	93.33 ± 6.42	77.2 ± 8.38	8.371	0.000

*significant P value ($P \leq 0.05$)

Table (7): Comparison between the study and control groups regarding ESAS at follow up.

Items	Intervention (n=30)	Control (n=30)	t	P
Pain	8.13 ± 0.43	7.77 ± 1.17	10.418	0.000
Tiredness	4.73 ± 3.43	6.63 ± 1.16	11.208	0.000
Drowsiness	5.83 ± 2.31	4.5 ± 1.61	11.319	0.000
Nausea	5.77 ± 2.33	5.2 ± 1.35	7.099	0.000
Lack of appetite	4.1 ± 3.62	5.87 ± 1.89	14.056	0.000
Dyspnea	7.27 ± 2.1	6.37 ± 2.11	7.247	0.000
Depression	7.27 ± 2.1	6.37 ± 2.11	9.382	0.000
Anxiety	7.8 ± 1.27	7.67 ± 1.65	10.491	0.000
Best wellbeing	4.9 ± 4.15	6.67 ± 1.58	10.653	0.000
Total ESAS	55.8 ± 13.73	57.03 ± 12.26	14.352	0.000

*significant P value ($P \leq 0.05$)

Table (8): Comparison between the study and control groups regarding Fact-Hep domains at follow -up.

Fact-Hep domains	Intervention (n=30)	Control (n=30)	t	P
Physical well - being	19.70 ± 2.00	17 ± 5.36	2.586	0.014
Social well - being	16.97 ± 2.91	12.90 ± 6.23	3.239	0.002
Emotional well - being	18.70 ± 2.05	14.93 ± 3.78	4.798	0.000
Functional well - being	12.33 ± 4.71	8.13 ± 5.54	3.161	0.003
Hep- Concern well - being	41.90 ± 3.50	38.23 ± 5.49	3.086	0.003
Total FACT-HEP score	108.67 ± 7.10	91.20 ± 7.79	9.077	0.000

*significant P value ($P \leq 0.05$)

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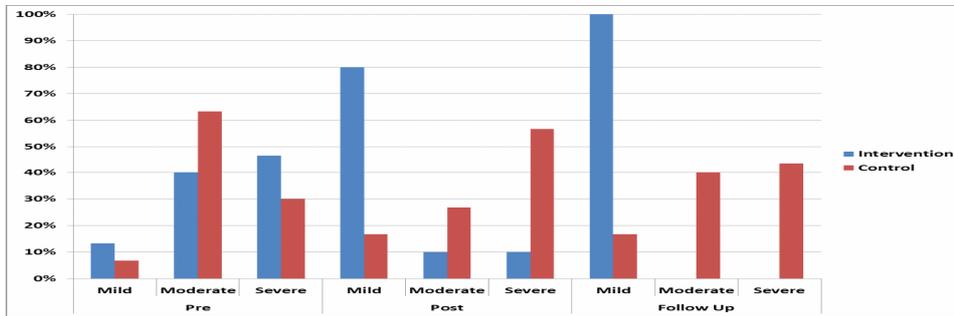


Figure 1: Comparison between the study and control groups regarding total ESAS grade pre and post -intervention, and at follow-up.

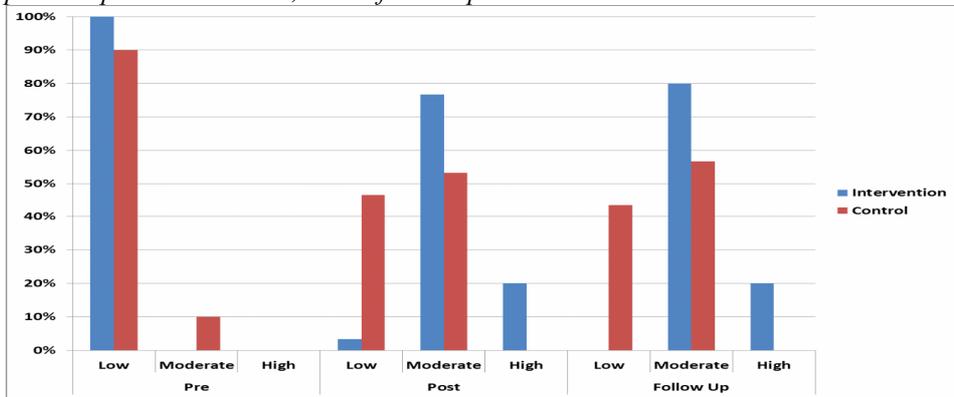


Figure 2 : Comparison between the study and control groups regarding total Fact-Hep. grade, pre and post -intervention, and at follow-up.

Significant P value (P ≤ 0.05)

Table (9): Relation between sociodemographic data and total ESAS grade of the study group pre intervention

Socio demographic data	Total ESAS grade						2	P
	Mild (n = 4)		Moderate (n = 12)		Severe (n = 14)			
	No	%	No	%	No	%		
Age								
41-50	1	25%	3	25%	1	7.1%	1.714	0.424
51-60	3	75%	9	75%	13	92.9%		
Sex								
male	4	100%	10	83.3%	9	64.3%	2.715	0.257
female	0	0%	2	16.7%	5	35.7%		
Marital status								
single	1	25%	3	25%	2	14.3%	1.156	0.885
married	3	75%	8	66.7%	10	71.4%		
widow	0	0%	1	8.3%	2	14.3%		
Education								
illiterate	2	50%	3	25%	5	35.7%	9.357	0.154
primary	0	0%	4	33.3%	8	57.1%		
secondary	2	50%	4	33.3%	0	0%		
university	0	0%	1	8.3%	1	7.1%		

$P \leq 0.05$

Table (10): Relation between socio-demographic data and total FACT.HEP grade of the study group pre- intervention.

Socio demographic data	Total FACT.HEP grade						2	P
	Low QOL (n = 30)		Moderate QOL (n = 0)		High QOL (n = 0)			
	No	%	No	%	No	%		
Age								
41-50	5	16.7%	0	0%	0	0%	--	---
51-60	25	83.3%	0	0%	0	0%		
Sex								
male	23	76.7%	0	0%	0	0%	--	--
female	7	23.3%	0	0%	0	0%		
Marital status								
single	6	20%	0	0%	0	0%	--	
married	21	70%	0	0%	0	0%		--
widow	3	10%	0	0%	0	0%		
Education								
illiterate	10	33.3%	0	0%	0	0%	--	
primary	12	40%	0	0%	0	0%		--
secondary	6	20%	0	0%	0	0%		
university	2	6.7%	0	0%	0	0%		

$P \leq 0.05$

Table (11): Correlation between the FACT- HEP and ESAS pre, post intervention and at follow up for the study group.

Item	Total FACT.HEP					
	Pre		Post		Follow up	
	r	P	r	P	r	P
Total ESAS	-0.428	0.018*	-0.043	0.823	-0.051	0.789

Discussion

Hepatocellular carcinoma occurs in the case of underlying liver disease, this population suffers from the symptoms of both cancer and end-stage liver disease(Woodrell, Hansen, Schiano& Goldstein, 2018). Also, a patient with end-stage liver disease has a predictable and progressive decline in his QoL due to physical symptoms and

psychological distress(Baumann et al., 2015).

Part I: Socio-demographic and medical data of the patients:

This study showed that there is no a statistical significant difference was established between the study and control groups concerning their socio-demographic characteristics. As regarding age, it was noticed that the higher percentage of the study group and

control group were in the age between 50 to 60 years old, and concerning sex, males were more prevalent. This is consistent with the study by Kew, (2015) found that men were higher in the incidence of the disease than women with a mean age of 50.9 and 51.0 years respectively. Also, Abdel-Wahab et al., (2007), documented that the mean age of the participants was 54.26 years old with a higher prevalence between 51 and 60 years, and the male to female ratio was 5:1 folds.

Concerning the marital status and the level of education, it was found that more than half of the studied participants of both groups were married and more than one-third of them were illiterate. These findings are similar to the results by Phukan et al., (2018) most of the participants were illiterate, also their mean age was 54.7 years among the study group and 55.6 years in the control. Additionally, the illiterate group of a study by Hossain, Huq, and Ahmad, (2016) was at the top of the list represented about 40%, and the mean age was 48.78 years old and of patients was males and only 14% of them were females.

Regarding, patients' symptoms and complaints, there were no statistically significant differences found among patients in both groups. Most of the patients of both groups complain of abdominal pain followed by jaundice. Most of the patients reported that they have no family history of cancer. Regarding the risk factors, most of the patients had HCV and all patients had cirrhotic liver.

This result consistent with the result by Christian-Miller and Frenette, (2018), who mentioned that abdominal pain in the right upper quadrant is one of the most commonly reported symptoms

by HCC patients. Also, it was reported that abdominal pain (defined as dull visceral pain) was the most prevalent symptom experienced by the patients (Laube, et al., 2020).

Sun and Sarna, (2008) reported that pain is one of the most frequent and distressing symptoms in patients with cancer. Abdominal pain is common in hepatocellular carcinoma, this is anticipated primarily to the visceral involvement that arises from the primary or metastatic lesion involving the abdominal or pelvic viscera. Pain occurs during and post-TACE in most HCC patients treated with transarterial chemoembolization (TACE).

Barghini, Donnini, Uzzau, and Soardo, (2013), postulated that jaundice is a common sign of HCC presentation. It can be an explanation of liver failure, due to extended tumor infiltration of a cirrhotic liver or by worsening of underlying hepatitis that can occur in presence of HCC.

Risk factors correlated with HCC include liver cirrhosis, infections with viral hepatitis B and C, and alcohol intake. HCC incidence has been rising due to the increased burden of hepatitis C infection (Gandhi et al., 2014).

Part II: Comparison of the study and control groups at pre intervention:

The current study showed no statistically significant differences were observed between the two groups at pre-intervention concerning either FACT-Hep or ESAS.

Hepatocellular carcinoma patients have worse physical, emotional, and functional health-related quality of life as compared with the general population (Laube, et al., 2020). Results suggest that such patient is burdened with both low QOL and multiplied symptom concerns (Sun, et al., 2008). Also, Temel et al.,

(2017), illustrated that patients' QOL did not differ significantly between the studied groups at baseline. Additionally, no significant differences were seen in baseline quality of life between the two groups. The QoL, involving functional well-being, physical, and emotional are significantly impaired due to the complications and extra-hepatic manifestations of advanced disease (Gandhi, et al., 2014).

On the other hand, at the baseline of a study by Sun et al., (2008), clarified that across the FACT-Hep subscales, scores were higher for social well-being, but contrariwise, scores were lower for functional well-being.

The occurrence of multiplied symptoms results in a rapid deterioration in patients' function and QoL, and increases mortality and morbidity. Treatment modalities frequently lead to post-treatment morbidity and symptom burden, with simple or no improvements in survival (Sun et al., 2008). In contrast, the study by Zimmermann et al., (2014) revealed an imbalance between the study group and the control group at baseline, tending to higher outcome measure scores in the study group.

Part III: Comparison of the study and control groups post intervention and at follow-up regarding ESAS and FACT-Hep:

Regarding the FACT-Hep domains and total FACT-Hep score, it was shown that there was a significant difference between the study and control groups after two weeks post-intervention and at follow-up. This means that the supportive nursing care had a positive effect on improving the quality of life of hepatocellular carcinoma patients after two weeks and at follow-up.

These findings are consistent with the study by Laube, et al., (2020), who

described that high-quality nursing care (HQNC) has been notified to adequately prevent psychological disorder and improve the QoL in HCC patients. These results are in agreement with the study by Li, He, and Li, (2018) concluded that for HCC patients, comprehensive nursing effectively reduces the pain from TACE and improves the satisfaction and QoL. On the same line, Temel, et al., (2017) found that intervention patients (versus usual care) reached a higher QOL improvement from baseline to week 24.

On the same line, Krakauer, (2019) mentioned that providing palliative care improves patients QoL and their families who are challenging problems accompanied with a life-threatening illness, whether physical, psychosocial, or spiritual, as it prevents and alleviates suffering throughout the early identification, accurate evaluation, and treatment of pain and other problems, whether physical, psychosocial or spiritual. Findings by Maltoni et al., (2016) were considerably in favor of the experimental group, QoL was reported to be improved after 12 weeks. Furthermore, Yang et al., (2015) proved that health-related QOL of hepatocellular carcinoma patients worsens gradually along with their illness if no advanced treatment protocols were used.

It is proved that the early integrated palliative care repairs QOL and mood of patients, and also has positive effects on patient outcomes. It also has the benefit of increasing patients' capacity to cope with their prognosis and enhancing their communication concerning care preferences with doctors (Temel et al., 2017).

Patient with positive illness perception and better performance status tended to describe better health-related QOL, but the patient with negative illness perception and who used more emotion-oriented coping had poorer health-related QOL (Fan, Eiser, Ho, & Lin, 2013). In the contrast, Zimmermann et al., (2014), illustrated that early referral to a palliative care team did not significantly improve QoL as compared with usual cancer care.

Concerning, the ESAS items and total score, there was a significant difference between the study group and control group, post two weeks of implementation of supportive nursing care (except, nausea and dyspnea) and at follow-up. This means that supportive nursing care had a positive effect on symptom intensity of hepatocellular carcinoma patients post two weeks and at follow-up.

This is consistent with the study by Baumann et al., (2015) which showed that early care intervention had a great impact on patients' symptoms control. Also, Radl, (2015) found that early care consultations result in quickly handling functional, physical, emotional, social/family, and spiritual problems.

Additionally, studies by Bruera and Yennurajalingam, (2012) had shown improved symptom control in advanced cancer patients due to the result of a palliative care consultation. Patient accomplished significant improvement in most cancer-related symptoms, following the consultation at the first follow-up visit. In another study by Casarett, Johnson, Smith, and Richardson, (2011), patients admitted and received adequate specialized care accomplished better control of symptoms than patients at regular clinical settings of care (as medical or surgical departments).

Moreover, the study by Follwell et al. (2009) reported significant improvement in patient's symptoms of getting palliative care in the outpatient settings. Bakitas et al., (2009), reported that QOL and mood were found to be significantly better in the palliative-care group, although symptom relief, quality of end-of-life care, and survival were similar. On the other hand, Bakitaset al., (2015) found that QOL, symptom relief, and mood didn't differ between the two groups.

Correlation between the total scores of FACT-HEP and ESAS in the study group (pre-intervention, post intervention and at follow-up).

According to the correlation between the study variables, a highly significant inverse correlation between the QoL and symptoms intensity at pre-intervention in the study group was detected. It was found that inverse correlation between the quality of life and intensity of symptoms at post-intervention and at follow-up in the study group but not reached to a significant level.

The study by Khalili-Parapary, Heidarzadeh, Mozaffari and Naseri, (2017) demonstrated a high and inverse correlation between FACT and ESAS ($P < 0.001$). Since lower scores in ESAS indicated less distress in patients and higher scores in FACT indicated better performance.

Conclusion

Supportive nursing care had a positive effect on decreasing symptom intensity and improves QOL of hepatocellular carcinoma patients undergoing transarterial chemoembolization.

Recommendations

Supportive nursing care should be initiated for HCC patients undergoing

transarterial chemoembolization. Provide training programs for nurses regarding supportive nursing care of HCC patients undergoing transarterial chemoembolization.

References

- Abdel-Wahab, M., El-Ghawalby, N., Mostafa, M., Sultan, A., El-Sadany, M., Fathy, O., and Ezzat, F., (2007). Epidemiology of hepatocellular carcinoma in lower Egypt, Mansoura Gastroenterology Center. *Hepato-Gastroenterology*, 54(73), pp.157-162.
- [Attwa](#), M., and [El-Etreby](#), S. (2015). Guide for diagnosis and treatment of hepatocellular carcinoma. *World J Hepatology*, 7(12), pp. 1632–1651.
- Bakitas, M., Lyons, K., Hegel, M., Balan, S., Brokaw, F., Seville, J., Hull, J., Li, Z., Tosteson, T., Byock, I. and Ahles, T., (2009). Effects of a Palliative Care Intervention on Clinical Outcomes in Patients With Advanced Cancer. *JAMA*, 302(7), p.741.
- Bakitas, M., Tosteson, T., Li, Z., Lyons, K., Hull, J., Li, Z., Dionne-Odom, J., Frost, J., Dragnev, K., Hegel, M., Azuero, A., and Ahles, T., (2015). Early Versus Delayed Initiation of Concurrent Palliative Oncology Care: Patient Outcomes in the ENABLE III Randomized Controlled Trial. *Journal of Clinical Oncology*, 33(13), pp.1438-1445.
- Barghini, V., Donnini, D., Uzzau, A., and Soardo, G., (2013). Signs and symptoms. *Hepatocellular carcinoma-future Outlook*. Intech Open.
- Baumann, A., Wheeler, D., James, M., Turner, R., Siegel, A., & Navarro, V., (2015). Benefit of early palliative care intervention in end-stage liver patients awaiting liver transplantation. *Journal of pain and symptom management*, 50(6), pp.882-886.
- Bruera, E. and Yennurajalingam, S., (2012). Palliative Care in Advanced Cancer Patients: How and When?. *The Oncologist*, 17(2), pp.267-273.
- Casarett, D., Johnson, M., Smith, D. and Richardson, D., (2011). The Optimal Delivery of Palliative Care. *Archives of Internal Medicine*, 171(7).
- Cella, D., Butt, Z., Kindler, H., Fuchs, C., Bray, S., Barlev, A. and Oglesby, A., (2013). Validity of the FACT Hepatobiliary (FACT-Hep) questionnaire for assessing disease-related symptoms and health-related quality of life in patients with metastatic pancreatic cancer. *Quality of Life Research*, 22(5), pp.1105-1112.
- Christian-Miller, N., and Frenette, C., (2018). Hepatocellular carcinoma pain; impact and management challenges. *Journal of hepatocellular carcinoma*, 5(75).
- [Dong](#), Y., [Chen](#), H., [Zheng](#), Y., [Guo](#), Y., [Kwon](#), J., [Liu](#), E., [Guo](#), H., and [Bruera](#), E., (2015). Psychometric Validation of the Edmonton Symptom Assessment System in Chinese Patients. *Journal of Pain and Symptom Management*, 50(5):712-717
- Fan, S., Eiser, C., Ho, M., and Lin, C., (2013). Health-related quality of life in patients with hepatocellular carcinoma: the mediation effects of illness perceptions and coping. *Psychooncology*, 22(6)pp.1353-60.

- Ferlay, J., Colombet, M., Soerjomataram, I., Mathers, C., Parkin, D., Piñeros, M., Znaor, A., and Bray, F., (2019). Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. *International Journal of Cancer*, 144(8), pp.1941-1953.
- Fitch, M., (2008). Supportive care framework. *Canadian Oncology Nursing Journal*, 18(1), pp.6-14.
- Follwell, M., Burman, D., Le, L., Wakimoto, K., Seccareccia, D., Bryson, J., Rodin, G. and Zimmermann, C., (2009). Phase II Study of an Outpatient Palliative Care Intervention in Patients With Metastatic Cancer. *Journal of Clinical Oncology*, 27(2), pp.206-213.
- Gandhi, S., Khubchandani, S., and Iyer, R., (2014). Quality of life and hepatocellular carcinoma. *J Gastrointest Oncol*, 5(4), pp.296-317
- Heffernan, N., Cella, D., Webster, K., Odom, L., Martone, M., Passik, S., Bookbinder, M., Fong, Y., Jarnagin, W., and Blumgart, L. (2002). Measuring health-related quality of life in patients with hepatobiliary cancers; the functional assessment of cancer therapy–hepatobiliary questionnaire. *Journal of Clinical Oncology*, 20(9), pp.2229-2239.
- Hossain, M., Hug, M., and Ahmad, A., (2016). Socio demographic characteristics of hepatocellular carcinoma patients attended at tertiary care hospital in Dhaka city. *Journal of Current and Advance Medical Research*, 3(2), pp.39-42.
- <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/supportive-care>, [Accessed 2020]
- <https://www.facit.org/measure-languages/FACT-Hep-Languages> [Accessed 2017]
- Kew, M., (2015). Epidemiology of hepatocellular carcinoma in sub-Saharan Africa. *Annals of Hepatology*, 12(2), pp.173-182.
- [Khalili-Parapary, Y., Heidarzadeh, M., Mozaffari, N., Naseri, P., \(2017\). The psychometric properties and factor structure of Persian version of Edmonton Symptom Assessment Scale in Cancer Patients. *Indian J Palliat Care*, 23\(4\), pp.419-424.](#)
- Krakauer, E., (2019). Palliative care; toward a more responsive definition. *Textbook of palliative care*, pp.105-109. DOI: 10.1007/978-3-319-77740-5_1.
- Laube, R., Sabih, A., Strasser, S., Lim, L., Cigolini, M. and Liu, K., (2020). Palliative care in hepatocellular carcinoma. *Journal of Gastroenterology and Hepatology*, 36(3), pp.618-628.
- Li, Y., He, R., and Li, Y. (2018). Comprehensive nursing of hepatocellular carcinoma patients after TACE. [Chinese Journal of Interventional Imaging and Therapy](#), 15(4), pp.226-229
- Maltoni, M., Scarpi, E., Dall'Agata, M., Zagonel, V., Berte, R., Ferrari, D., and Valgiusti, M., (2016). Systematic versus on-demand early palliative care; results from a multicenter, randomized clinical trial. *European Journal of Cancer*, 65, pp.61-68.
- Niu, Z., Ma, Y., Kang, P., Ou, S., Meng, Z., Li, Z., Qi, F., and

- Zhao, C.(2012). Transarterial chemoembolization compared with conservative treatment for advanced hepatocellular carcinoma with portal vein tumor thrombus: using a new classification. *Med Oncol*;29(4), pp.2992–2997
- Phukan, R., Borkakoty, B., Phukan, S., Bhandari, K., Mahanta, J., Tawsik, S., and Narain, K., (2018). Association of processed food, synergistic effect of alcohol and HBV with hepatocellular carcinoma in high incidence region of India. *Cancer Epidemiology*, 53, pp.35-41.
- Salem, R., Gilbertsen, M., Buttz, Z., Memon, K., Vouche, M., Hickey, R., Bakerk, T., Abecassis, M., Atassi, R., Riaz, A., Cella, D., Burns, J., Ganger, D., Benson, A., Mulcahy, M., Kulik, L. and Lewandowski, R., (2013). Increased Quality of Life Among Hepatocellular Carcinoma Patients Treated with Radioembolization, Compared With Chemoembolization. *Clinical Gastroenterology and Hepatology*, 11(10), pp.1358-1365.e1.
- Shun, S., Chen, C., Sheu, J., Liang, J., Yang, J., and Lai, Y., (2012) Quality of life and its associated factors in patients with Hepatocellular carcinoma receiving one course of transarterial chemoembolization treatment: A longitudinal study. *The Oncologist*, 17(5), pp.732-739.
- Sun, V., and Sarna, L., (2008). Symptom Management in Hepatocellular Carcinoma. *Clinical Journal of Oncology Nursing*, 12(5), pp.759-766.
- Sun, V., Ferrell, B., Juarez, G., Wagman, L., Yen, Y. and Chung, V.(2008) Symptom concerns and quality of life in hepatobiliary cancers. *Oncology Nursing Forum* ; 35 (3), pp.E45-E52
- Temel, J., Greer, J., El-Jawahri, A., William F. Pirl, W., Park, E., Jackson, V., Back, A., Kamdar, A., Jacobsen, J., Chittenden, E., Rinaldi, S., Gallagher, E., Eusebio, J., Li, Z., Muzikansky, A., and Ryan, D., (2017). Effects of early integrated palliative care in patients with lung and GI cancer: A randomized clinical trial. *Journal of Clinical Oncology*, 35 (8), pp.834-841.
- Wang, J., Yan, C., and Fu, A.(2019) A randomized clinical trial of comprehensive education and care program compared to basic care for reducing anxiety and depression and improving quality of life and survival in patients with hepatocellular carcinoma who underwent surgery. *Medicine* (2019) 98:44.
- Woodrell, C., Hansen, L., Schiano, T., and Goldstein (2018). Palliative care for people with hepatocellular carcinoma and specific benefits for older adults. *Clinical therapeutics*, 40(4), pp.512-525.
- Yang, J., Hainaut, P., Gores , G., Amadou, A., Plymoth, A., and Roberts, L., (2019). A global view of hepatocellular carcinoma: trends, risk, prevention and management. *NatureReviews Gastroenterology &Hepatology*, 16(10), pp.589-604.
- Yang, Z., Wan, C., Li, W., Cun, Y., Meng, Q., Ding, Y., and Chen, P.(2015). Development and validation of the simplified

Chinese version of EORTC QOL-HCC18 for patients with hepatocellular carcinoma. *Cancer investigation*, 33(8), pp.340-34.

Zhang, l., Zhang, x., Cui, z, Zhou, l., Qu, k., Wang, N., (2020). Effects of high-quality nursing care on psychological outcomes and quality of life in patients with hepatocellular carcinoma; A

protocol of systematic review and meta-analysis. *Medicine* ; 99:35

Zimmermann, C., Swami, N., Krzyzanowska, M., Hannon, B., Leighl, N., Oza, A., and Donner, A.(2014). Early palliative care for patients with advanced cancer; a cluster-randomized controlled trial. *The Lancet*, 383(9930), pp.1721-1730.