

# Effect of Palliative Care Program on Quality of Life for Elderly Patients with Hepatocellular Carcinoma

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## Abstract

**Background:** Hepatocellular carcinoma (HCC) incidence is growing especially in elderly, and adversely affects quality of life (QOL). The increased access to palliative care services will be helpful for the elderly population. **Aim:** Determine the effect of palliative care program on the quality of life for hepatocellular carcinoma of elderly Patients. **Design:** the researcher used quasi-experimental research design. **Setting:** outpatient clinics at Gastrointestinal Surgery Center (GISC) hepatology unit affiliated to Mansoura University, Dakahlia governorate, Egypt. **Subjects:** The study subjects included a random purposive sampling of 72 HCC elderly patients of both sex diagnosed at least 6 months. **Tools:** Data collection is done by two tools namely Patients' interview schedule sheet (elderly Demographic and Health Relevant Characteristics) and Functional Assessment of Cancer Therapy- For elderly patients with Hepatobiliary cancer (FACT-Hep) Version4: **Results:** the age of the studied participants ranged from 60 to above 70 years. The elderly patient in study group total quality of life scores increased significantly in post one and post three follow up after implementation of palliative care program ( $P=0.000$ ), while no improvement was observed in the control group. **Conclusion:** the QOL of elderly patients with HCC is improved by implementation of palliative care program. **Recommendation:** distribution of developed illustrated palliative care program booklet to all elderly patients and their families at Mansoura University Hospitals and Centers should be done.

**Keywords:** Elderly, Palliative care, hepatocellular carcinoma and quality of life.

## Introduction

Hepatocellular carcinoma (HCC) considers a universal issue and vary across countries. Hepatocellular carcinoma (HCC) is the 6<sup>th</sup> around the world and the 4<sup>th</sup> common cancer in Egypt. Egypt ranks the third most populous country in Africa and the 5<sup>th</sup> worldwide (Rashed et al., 2020). The incidence of HCC among general population especially in elderly (Woodrell et al., 2018, Brozzetti et al., 2018 and Guo et al., 2017). In US hepatocellular carcinoma is one of the fastest reasons of death with a significant healthcare economic burden (Ghouri et al., 2017). In Egypt, cancer now and in the future will become a significant health problem in terms of rank order, and incidence and mortality as well (Elshamy K, 2015). In addition, liver cancer among Egyptian people is the first most common cancer in males and the second in females (Baghdady et al., 2014).

Elderly populations are excessively affected by HCC and considered 'fragile' due to their comorbidities and aging itself is accompanying by a progressive decline multiple

organ systems function, elevated rates of disability and decreased in physical, emotional, and social stress tolerance. So, they are considered more vulnerable to poor quality of life (QOL) (Cho et al., 2019 & Guo et al., 2017).

HCC is usually associated with severe physical symptoms; seriously affect the quality of life of elderly patients, and easy to make patients lose the courage and confidence of life. Palliative care is an active, holistic approach to care for patients with incurable diseases. The main approach is to control pain and other symptoms, manage mental, social, and spiritual problems, and improve the lives of patients and their families Quality (Dai, 2002 and Fan et al, 2017).

Palliative care, specialized interdisciplinary care that focuses on quality of life while living with a serious illness, has the potential to offer additional support in patients with HCC and their families as they navigate life with the disease (Kelley and Morrison, 2015). The increased availability of palliative care services

should be beneficial to those elderly patients (Woodrell et al., 2018 and Hudgens, 2018 & Ayman et al., 2016 & Gandhi et al., 2014).

According to the World Health Organization, Palliative care is an approach aiming to optimize the quality of life for patients and their caregivers to face life-threatening illness complications (Radbruch et al., 2020). Prevention and release of suffering, support the best possible quality of life for elderly individuals and their families irrespective to their disease stage or the need for other treatment options is the main goal of palliative care (Hammad et al., 2017). Palliative care is also interdisciplinary care offered to individuals with a life-threatening illness, and can be delivered at any stage of disease and at any age. Management of symptom, discussion of treatment preferences, decisional support, care coordination, and psychosocial support involving religion and spirituality are services which can be provided by palliative care.

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

Chronic liver inflammation or infection can lead to HCC (Llovet et al, 2016). Elderly patients sometimes face multi-morbidity which require several medical visits, thus the uniquely complex treatment scheme of hepatocellular carcinoma. Furthermore, deterioration of patients' functional status is the result of liver disease symptoms, like minimal hepatic encephalopathy. Studies proved that health related QOL of elderly patients with hepatocellular carcinoma worsens gradually along their illness if no advanced treatment protocols were used (Woodrell et al., 2018).

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

The present study aims to evaluate the effect of palliative care program on quality of life for hepatocellular carcinoma of elderly patients.

**Research Hypothesis:** The quality of life of elderly patients with HCC will be improved after implementation of palliative care program.

#### **Subjects and Methods**

**Research Design:** A quasi experimental study design was used to accomplish the aims of this study. It identified a pre-group that is as

similar as possible to the post group in terms of baseline characteristics. Differences in outcome between the pre and post group were noted (Campbell and Stanley, 2015).

**Study setting:** This study was done at outpatient clinics in Gastrointestinal Surgery Center (GISC) hepatology unit affiliated to Mansoura University, Dakahlia governorate, Egypt.

#### **Subjects:**

A purposive sample of 72 elderly patients were included, who were randomly drawn from all waiting patients at the Hepatology Unit over one-year duration from January to the end of December 2020. The study subjects should meet the following criteria: aged 60 years old and over, can communicate and agreed to participate in the study was diagnosed with HCC and had no previous history of mental disorders.

#### **Sample:**

Subjects were allocated to two groups by block randomization using sealed opaque envelopes. Each block included 8 patients who were randomly allocated to either the study or the control group (36 elderly patients in each group). The process involves recruiting participants in small blocks to ensure that half of the participants within each block are allocated to intervention "A" and the other half to "B". Control.

**Tools:** Two tools were used to collect the necessary data.

#### **Tool I: Elderly Patients' interview schedule sheet (Demographic and Health Relevant Characteristics):**

This tool was designed and developed by the researcher: it included demographic data such as age, sex, marital status, level of education, occupation before retirement; and income. In addition, health-relevant data such as, the presence of other co morbidities; and family history of HCC.

#### **Tool II: Functional Assessment of Cancer Therapy- For patients with Hepatobiliary cancer (FACT-Hep) Version4:**

The FACT-Hep questionnaire is a self-report tool which consists of 45 item and

designed specifically with patient and clinician input in order to measure health-related quality of life in hepatobiliary cancers patients (Cella et al., 2005). It composed from the FACT-General, that assesses symptoms and physical, social/family, emotional, and functional well-being with an 18-item disease-specific hepatobiliary cancer subscale. Combined, the FACT-General and hepatobiliary cancer subscale form the FACT-Hep. FACT-based questionnaires responses rated by a 5-point Likert scale which range from 0 to 4 (not at all, very much) respectively. This tool scores range from 0 to 184, and higher scores means better quality of life.

### Methods

1. Official letter from faculty of nursing was issued to the director of the gastrointestinal surgery center to obtain his approval for collecting the data needed.
2. Tool II (Functional Assessment of Cancer Therapy- For elderly patients with Hepatobiliary cancer (FACT-Hep) Version4) was translated into Arabic language by the researchers; and was tested for its reliability test – retest measurement was used  $r = 0.85$ .
3. Content validity of study tools was tested by a jury of five experts in the specialty fields. The researchers do the necessary modifications.
4. A pilot study was done on 7 elderly patients at gastrointestinal surgery center to ascertain the clarity and applicability of the tools, and to determine time needed to answer all tools and necessary modifications were done.
5. Based on the relevant literature the researchers developed the palliative care program for elderly patients with HCC (Hui & Bruera, 2016, Hammad et al., 2017, Woodrell et al., 2018, and Rakoski, & Volk, 2019).
6. The studied subjects divided into two groups; the study group received the usual follow up and palliative care program, while the control group received the usual follow up.
7. The elderly patient with HCC in both groups was interviewed individually by the researchers to obtain the data needed by using study tools
8. The palliative care program was implemented individually to each elderly patient with HCC in the study group.
9. The palliative care program was implemented over a period of one month with an average of two session per week; 2 days /week (Saturday and Tuesday) according to routine of outpatient clinics; the duration for each session took about 25 to 30 minutes approximately.
10. The researchers used to start each session by reemphasizing the important points in the previous session.
11. Each elderly patient in both groups was interviewed separately by the researchers at the outpatient clinic waiting room starting from 9 Am to 2 pm to collect the baseline data. It was possible to interview 3-4 elderly patients 2 days /week (Saturday and Tuesday).

### **Program implementation:**

Before start of each session, the researchers had applied the precautionary measures for COVID-19 such as wearing a face mask, and sterile gloves, saving the personal distance, frequent alcohol disinfection; then the researcher welcomed each elderly patient on admission, ensures that the patient is seated comfortably, introduced herself and explained the purpose of the study.

**Palliative care program was carried out in eight sessions; First session:** it included overall information about disease and palliative care, **Second session:** included physical care for symptoms associated with HCC as (pain, fatigue) , **Third session:** - included physical care for symptoms associated with HCC as (Anorexia and nausea, Vomiting and Pruritus, **Fourth session:** Information about: - Healthy diet and exercise, compliance with medication and importance of medical checkup that improve health and QOL., **Fifth session:** Included simple information about psychological and social aspects of car , and **Sixth session** (Spiritual, religious and cultural

aspects of care, **Seventh session** included ethical and legal aspects of care and **Eighth session** included care of the imminently dying patient, family/caregiver support.

12. The sessions conducted in morning after finishing the medical checkup. The researchers use different teaching methods like PowerPoint presentation, videos, and educational Booklet.
13. As a way to attract the attention, motivate and support teaching and practicing of the participants the researcher offered a printed palliative care booklet to elderly patients.
14. Evaluating the effect of the program on the quality of life is done by reassessment of each study participants post one (1 month) and post two (three months) after implementation of palliative care program using tool II.
15. All patients were given contact information for the researcher and the number for the 24-hour on-call for asking questions and reassurance. In addition the researchers called the patients to ensure that the patient followed the instructions, reassured and answered their questions.
16. After final evaluation (post 2) one elderly patient in the control group and three in the study group were died.

#### **Ethical considerations:**

An Ethical approval was attained from the Research Ethical Committee at Faculty of nursing, Mansoura University; after explanation of the study purpose to participant's verbal consent was obtained. Privacy and confidentiality of the elders and data collected were assured. The participants informed about their right to withdraw at any stage of the study.

**Statistical analysis:** Data was analyzed using PC with statistical package for social science (SPSS) version 22. The 0.05 and 0.01 levels was used as the cut off value for statistical significance and the following statistical measures were used; descriptive statistics (Count, percentage, mean, SD) and analytical statistics (student t-test, paired sample t-test, ANOVA test of significance and Spearman's correlation coefficient). In the results (p)<sup>1</sup> comparing before and after palliative care implementation, while (p)<sup>2</sup> comparing before and 3 months after palliative care implementation among the elderly subjects.

#### **Results:**

**Table 1: Distributions of the study subjects according to their socio-demographic characteristics.** It was observed from the table that studied subjects age ranged from 60 to above 70 years, with a mean of 66.52 ± 3.89 years for elderly patients in the study group and 67.19±3.32 for those in the control group. Regarding sex, the majority of the elderly patients in the both groups were male 58.3% in the study group and 66.7% for those in control group. Concerning marital status 66.7% of the elderly patients in the study group were married compared to 66.1% for those in control group. As for level of education it was noticed that the majority of elderly patients in both groups were illiterate 41.7% for those in the study group and 58.3% in the control group. Also the majority of the studied subjects in both groups were farmer, had no enough income and resident in rural area (44.4%, 69.4% and 63.9 respectively for elderly patients with HCC in the study group compared to 50.0%, 60.1% and 52.8% respectively for elders in the control group). No statistically significant differences were observed between the elderly patients in the study and control group regarding all sociodemographic characteristics.

Table (1): Distribution of the study subjects regarding their socio-demographic characteristics

Items	Study group		Control group		Test of significance
	N= (36)	%	N= (36)	%	
<b>Age ( in years )</b>					
60-	12	33.3	6	16.6	$\chi^2 = 3.272$ (0.192)
65-	17	47.2	24	66.6	
70+	7	19.4	6	16.6	
<b>Mean <math>\pm</math> SD</b>	<b>66.52<math>\pm</math>3.89</b>		<b>67.19<math>\pm</math>3.32</b>		
<b>S e x</b>					
Male	21	58.3	24	66.7	$\chi^2 = 1.390$ (0.173)
Female	15	41.7	12	33.3	
<b>Marital l status</b>					
Married	24	66.7	22	61.1	$\chi^2 = 3.077$ (0.215)
Widow	8	22.2	13	36.1	
Divorced	4	11.1	1	2.8	
<b>Educational level</b>					
Illiterate	15	41.7	21	58.3	$\chi^2 = 5.760$ (0.124)
Read & write	10	27.8	12	33.3	
Preparatory	7	19.4	2	5.6	
University	4	11.1	1	2.8	
<b>Occupation</b>					
Farmer	16	44.4	18	50.0	$\chi^2 = 5.440$ (0.145)
Housewife	13	36.1	11	30.6	
Employee	5	13.9	7	19.4	
Free business	2	5.6	0	00.0	
<b>Residence</b>					
Rural	25	69.4	22	61.1	$\chi^2 = 0.091$ (0.786)
Urban	11	30.6	14	38.9	
<b>Living condition</b>					
partner	19	52.8	18	50.0	$\chi^2 = 3.494$ (0.174)
family	7	19.4	13	36.1	
son	10	27.7	5	13.9	
<b>Income</b>					
Enough	13	36.1	17	47.2	$\chi^2 = 2.025$ (0.118)
Not enough	23	63.9	19	52.8	

**Table (2): Distribution of the elderly patients with HCC according to their health history.** It was found that, 69.4% of elderly patients in the study group and 75.0% in control group had diabetes mellitus, while 69.4% in study group and 75.0% in control group had hypertension. Also it was noticed that 63.9% of elderly patient in the study group compared to 80.6% in the control group had a past history of HCV. Regarding family history of HCC it was noticed that 52.8% of elders in the study group had a positive family history of HCC compared to 69.4% in control group. No statistically significant differences were found between the elderly patients in the intervention and control group.

**Table (2): Distribution of the elderly patients with HCC according to their health history**

Items	Study group		Control group		Test of significance $\chi^2$
	N= (36)	%	N= (36)	%	
<b>Co morbidities:</b>					
Diabetes Mellitus					
Hypertension	25	69.4	27	75.0	0.227 (0.763)
Renal disease	25	69.4	27	75.0	0.277 (0.793)
Cardiac disease	24	66.7	26	72.2	0.262 (0.798)
	24	66.7	26	72.2	0.262 (0.798)
<b>Hepatic disease</b>					
HCV (Liver cirrhosis)	23	63.9	29	80.6	2.492 (0.188)
Obesity	21	58.3	23	63.9	0.891 (0.354)
HBV	21	58.3	23	63.9	0.891 (0.354)
Family history	19	52.8	25	69.4	1.317 (0.215)
<b>Type of treatment</b>					
Radiation	6	16.7	10	27.8	
Chemical	15	41.7	11	30.6	1.714 (.634)
Surgical	13	36.1	12	33.3	
Other	2	5.5	3	8.3	

**Table 3: Quality of Life among study and control group before and after implementation of palliative care program.** In particular, the total mean score of the physical domain of quality of life before the application of palliative care program in the study group was  $6.12 \pm 1.93$  improved to  $16.69 \pm 2.67$  and  $16.69 \pm 2.67$  one and three months respectively after the intervention and the difference is statistically significant ( $16.891 (.000)^*$ ,  $15.931 (.000)$ ); While slightly improvement was observed in control group as the total mean score of physical domain increased from  $6.88 \pm 1.87$  to  $7.11 \pm 1.73$  and  $7.38 \pm 1.84$  one and three months respectively after receiving the usual hospital care. Regarding social domain of quality of life it was noticed that; the total mean score at baseline was  $6.36 \pm 2.58$  increased to  $14.19 \pm 1.81$  and  $15.61 \pm 2.07$  one and three months respectively after the program implementation in the study group and the difference is statistically significantly ( $13.885 (.000)^*$  and  $18.566 (.000)^*$  and there is no improvement in the control group. Also the total mean score of the emotional status in the study group increased from  $3.88 \pm 1.14$  to  $13.78$  and  $14.63 \pm 1.88$  one and three months respectively after the intervention; the difference is highly significant compared to no improvement in the control group was observed. In addition a markedly significant difference was noticed in the total mean scores of functional and additional domains of quality of life subscales in the study group and the difference is highly significant; while slightly improvement was noticed in control group in functional domain of QOL.

**Table (3):** Quality of Life among study and control group before and after implementation of palliative care program

Items	Study group			Control group			t- test (p) <sup>a</sup>	t- test (p) <sup>b</sup>	t- test (p) <sup>c</sup>
	Pre	Post 1	Post 2	Pre	Post 1	Post 2			
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD			
Physical	6.12 ± 1.93	16.30±2.55	16.69± 2.67	6.88 ± 1.87	7.11±1.73	7.38±1.84	2.216 (.058)	17.891 (.000)*	17.214 (.000)*
t- test (p) <sup>1</sup>	15.931 (.000)*			1.381 (.167)					
t- test (p) <sup>2</sup>	16.891 (.000)*			2.527 (.026)*					
Social	6.36 ± 2.58	14.19 ±1.81	15.61±2.07	8.22 ± 5.83	8.27±2.13	8.32±5.81	1.750 (.084)	17.773 (.000)*	7.163 (.000)*
t- test (p) <sup>1</sup>	13.885 (.000)*			1.005 (.183)					
t- test (p) <sup>2</sup>	18.566 (.000)*			1.664 (.105)					
Emotion	3.88 ± 1.14	13.78	14.63±1.88	4.31 ± 1.24	4.43±1.11	4.61±1.24	2.162 (.073)	5.008 (.000)*	26.615 (.000)*
t- test (p) <sup>1</sup>	7.882 (.000)*			1.221 (.218)					
t- test (p) <sup>2</sup>	30.286 (.000)*			1.504 (.142)					
Function	6.63 ± 1.74	14.55±2.03	14.61±1.94	6.66 ± 1.51	6.54±1.73	6.78±1.51	0.072 (.943)	24.253 (.000)*	19.342 (.000)*
t- test (p) <sup>1</sup>	18.490 (.000)*			2.032 (.058)					
t- test (p) <sup>2</sup>	19.962 (.000)*			2.140 (.039)*					
Additional	15.47 ± 3.1	46.19 ±5.71	48.44±6.63	14.38 ± 2.18	13.97± 1.56	14.44±2.32	1.704 (.093)	31.852 (.000)*	29.272 (.000)*
t- test (p) <sup>1</sup>	29.133 (.000)*			0.652 (.538)					
t- test (p) <sup>2</sup>	26.676 (.000)*			0.805 (.426)					
Total score	38.25±6.28	102.00±7.39	110.00±8.01	40.00±5.74	40.11±5.29	40.55±5.31	1.233 (.222)	38.92 (.000)*	43.30 (.000)*
t- test (p) <sup>1</sup>	32.79 (000)*			0.135 (0.880)					
t- test (p) <sup>2</sup>	37.55 (000)*			0.727 (0.472)					

*Paired –sample t-test (p)<sup>1</sup>*: comparing pre and post 1 intervention to each group.

*Paired –sample t-test (p)<sup>2</sup>*: comparing pre and post 2 intervention to each group.

*Student t-test (p)<sup>a</sup>*: comparing both groups pre intervention.

*Student t-test (p)<sup>b</sup>*: comparing both groups post 1 the intervention.

*Student t-test (p)<sup>c</sup>*: comparing both groups post 2 the intervention. *Significant at p≤0.05*

**Table (4): Relation between socio-demographic characteristics of the elderly patients in the study group and the total mean score of quality of life before and after implementation of palliative care program.** The table revealed that, there is a significant relationship was observed between socio demographic characteristic of the elderly patients in the study group, and the total mean score of quality of life before and after implementation of palliative care program. it was observed that is a statistically significant difference was noticed between age and quality of life as the total mean score of QOL increased in elderly aged 60 years to less than 65 years than those from 65 years and above. Regarding sex, statistically significant difference was noticed between sex and quality of life as the total mean score of QOL increased in elderly female than elderly male. In addition, the total mean score of QOL increased in married, highly educated, and elders with enough income and the difference is statistically significant.

**Table (4):** Relation between socio-demographic characteristics of the elderly patients in the study group and the total mean score of quality of life before and after implementation of palliative care program.

Socio –demographic characteristics	Mean score of ( FACT-Hep) Version 4 Mean $\pm$ SD	
	Post 1	Post 2
<b>Age (in years)</b>		
60-	104.51 $\pm$ 7.26	11.92 $\pm$ 7.97
65-	103.24 $\pm$ 8.48	109.12 $\pm$ 8.58
70+	98.29 $\pm$ 8.45	106.86 $\pm$ 7.17
<b>Test of significance</b>	$f=4.101(0.000)^*$	$f=2.003(0.001)^*$
<b>S e x</b>		
Male	97.65 $\pm$ 8.03	107.33 $\pm$ 7.82
Female	106.17 $\pm$ 7.66	113.42 $\pm$ 8.01
<b>Test of significance</b>	$t=5.201(0.000)^*$	$t=3.212(0.007)^*$
<b>Social status</b>		
Married	104.71 $\pm$ 6.98	113.25 $\pm$ 7.53
Widow	98.25 $\pm$ 9.76	106.38 $\pm$ 8.19
Divorced	100.25 $\pm$ 11.08	105.75 $\pm$ 10.62
<b>Test of significance</b>	$f=2.358(0.006)^*$	$f=3.125(0.001)^*$
<b>Educational level</b>		
Illiterate	95.53 $\pm$ 7.99	104.60 $\pm$ 7.55
Read & write	102.60 $\pm$ 6.02	109.50 $\pm$ 5.73
Preparatory	100.57 $\pm$ 8.86	111.43 $\pm$ 19.72
University	106.25 $\pm$ 9.53	113.50 $\pm$ 9.67
<b>Test of significance</b>	$f=2.654(0.012)^*$	$f=3.125(0.001)^*$
<b>Income</b>		
Enough	104.61 $\pm$ 7.57	112.87 $\pm$ 7.58
Not enough	100.46 $\pm$ 8.25	108.01 $\pm$ 8.66
<b>Test of significance</b>	$t=1.419(0.165)$	$t=1.131(0.266)$

## Discussion

Hepatocellular carcinoma (HCC) incidence is increasing among general population and especially among elderly population, and adversely affects quality of life (QOL). Older adults will benefit from improved accessibility to palliative care services. To our knowledge, this is the first study that comprehensively evaluates effect of palliative care program on quality of life for hepatocellular carcinoma of elderly patients. The present study was conducted on 72 HCC elderly patients who were randomly drawn from all patients waiting at the Hepatology Unit and divided into study and the control group. The age of the studied participants ranged from 60 to above 70 years, elderly patients mean age in the intervention group was  $66.52 \pm 3.89$  and  $67.19 \pm 3.32$  for the control group, the majority of the elderly patients in the two groups were male. No statistically significant differences were found between the elderly patients in the study and control group

Prior to the implementation of palliative care program, the total score of physical and functional domains of QoL did not differ significantly between the study and the control group. Immediately After the program implementation, however, the elders belonging to the study group had a significantly higher total score of physical and functional domains of QoL and improvement was maintained at Post 2. The QOL improvement in the study group can be contributed to acquisition of new knowledge played an essential role in motivating elders to comply with the palliative care program, the therapeutic regimen and the continuous researcher follow up. While slightly improvement in the control group was reported may be justified by enhance physical health as a result of taking medical treatment for physical complains (table3). This result is in the agreement with **Sharif et al., (2010)** found significant higher improvement in all dimensions of QoL related to physical and functional well-being. In addition, **Badger et al., (2013)** found significant improvement in physical well-being in the study group. Also, this result is in line with those of **Hammad et al., (2017)** in USA & **Ayman et al., 2016** in Qatar and a similar result was found in the

study by, **Woodrell et al., (2018)** they were reported that quality of life enhanced significantly in nearly all domains and in summary score after implementation of the intervention.

On the other hand, the present study reported a markedly significant difference was noticed in the total mean scores of additional symptoms for example loss of Wight, loss of appetite, diarrhea, vomiting, fatigue, and pain in lower back in the study group and the difference is highly significant; while no improvement was noticed in control group additional domain of QOL. These results agree with **Baumann et al., (2015)** study showed that Early Palliative Care Intervention (EPCI) had a great impact on patients' symptoms; more than three-quarters of the studied sample experienced at least one moderate-to-severe symptom. Additionally, studies by **Bruera & Yennurajalingam, (2012)** have shown evidenced control of symptom in patients with advanced cancer because of palliative care consultation. A recent study by **Yennurajalingam et al., (2011)** proved that, there is a significant improvement in most cancer-related symptoms at the first follow-up visit after implementing of their palliative care program. Also, a study by **Follwell et al. (2009)** found significant symptoms improvements in patients who receive palliative care in the outpatient setting.

All dimensions of QoL related to social, additional and emotional domains was significant higher in the study group directly after intervention and at two months follow up while no improvement was observed in the control group. These results may be due to inform the elderly how to overcome communication difficulties and inform family members how to improve their social relationship with elderly patient. This finding agrees with **Badger et al., (2013)**, **Gaston-Johansson et al., 2013**, and **Park et al., 2012** found significant enhancement in social and emotional well-being over time in the study group compared to no improvement in the control group. In addition, a study conducted in New York, by **Woodrell et al., (2018)** found that palliative care interventions can reduce patient and family distress. In contradiction some studies found no significant effects in

overall QoL, (Juarez et al., 2013, Kimman et al., 2011, Loerzel et al., 2008. Also, David et al (2011), found no significant differences in change of mean QOL between those who participated in the study group and those who were on the control. The similar contradicted result reported by Forbes et al., (2015) saw decline in overall QOL for the two groups, with no significant difference between the groups. Another contradicted study by Malmström et al., (2016) find no significant difference in QOL between the change in means of the intervention and control groups.

The results of the current study revealed that there is a significant relation between socio demographic characteristics, and total mean score of quality of life (table 4). These results are on the same line with a study done in New York, by Woodrell et al., 2018 reported that there was a statistically significant correlation between ages of their subjects and quality of life. This result also is congruent with a study done by Ayman et al., 2016 in Qatar who reported that there were significant relationships between quality of life with demographic characters such as age, gender, marital status, economic level, and level of education. This may be explained by the fact that young age has more chance and ability to knowledge acquisition, educated elderly patients have high knowledge about managing their chronic illness, and economic level also may facilitate access to health services in the process of monitoring and treating the illness. The highest social support was positively affecting the psychological state. All these factors together affect positively the QOL. After carrying out of this study, it can be observed that, implementation of palliative care to HCC elderly patients is a challenge now and in the future. So, encouraging nurses and all health care workers for implementation of palliative care is important to confirm a peaceful and dignified death with well managed symptoms and support HCC older adults' families and caregivers.

### **Conclusion:**

This research proved that developed palliative care program implementation is very effective in improving HCC elderly patients QOL.

### **Recommendations**

1. Distribution of developed illustrated palliative care program booklet to all elderly patients and their families at Mansoura University Hospitals and Centers should be done.
2. Health care professionals especially nurses must engage in research and educational courses to enhance their knowledge and practices regarding palliative care.

**Future research:** Directions given the complexity of HCC care and the lack of research to test the efficacy of different models of palliative care delivery particularly in older adults with HCC, more research is needed. It is important to consider measurement tools to be used in a trial of palliative care and quality of life–focused interventions in this age group.

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