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Nursing Management to Reduce Fatigue for Hepatocellular Carcinoma Patients

Sahar A. Ahmed¹, Mona A. Mohammed² & Asmaa A. Mahgoub³.

¹. Clinical Nurse Specialist at the Unit of Treatment of Viral Hepatitis, Ministry of Health, Egypt.

². Assistant professor of Critical & Emergency Care Nursing, Faculty of nursing, Assiut University.

³. Lecturer of Critical & Emergency Care Nursing, Faculty of Nursing, Assiut University.

Abstract

Fatigue is frequently reported symptom influencing up to 90% of hepatocellular carcinoma patient. **Aim:** Evaluate the effectiveness of educational and physical intervention to reduce fatigue for hepatocellular carcinoma patient. **Design:** Quasi-experimental design. **Setting:** Viral Hepatitis Treatment Unit at Assiut Health Directorate. **Subjects:** A purposive sample of 60 patients diagnosed with HCC and infected by hepatitis C, B virus or both. **Methods:** Patients in the study group encourage to perform physical exercises in sessions for 6 months follow up and give information about this disease. **Tools:** two tools were applied **Tool I:** Patient assessment sheet **Tool II:** Functional Assessment of Chronic Illness Therapy (Fatigue Scale). **Results:** There were significant statistical differences existed between study and control groups regarding to patients' fatigue and patients' knowledge of p-value (0.001). There is very high statistical difference between groups regarding practice exercise & relaxation technique of p-value (0.0001). **Conclusion:** The nursing intervention had statistically significant beneficial effects on improving patient's outcomes. **It recommends** replication of nursing intervention of this study on a larger probability sample.

Keywords: *Fatigue, Cancer Related Fatigue, Hepatocellular Carcinoma & Nursing Intervention.*

Introduction

Fatigue is frequently reported by hepatocellular carcinoma patients can be highly distressing and can have a profound impact on daily performance. Cancer-Related Fatigue (CRF) is a constant sensation of physical, emotional and cognitive tiredness related to cancer or cancer treatment that interferes with healthy performance (Minton et al., 2013).

Worldwide hepatocellular cancer (HCC) is considered one of the most well-known cancers and one of the 100 main reasons for morbidity and mortality in the world. In Egypt, hepatocellular carcinoma (HCC) is the second most common cancer in men and the 6th most common cancers in women (Atti, 2015).

Some of the most common symptoms of hepatocellular carcinoma are: weight loss, loss of appetite, feeling very full after a small meal, nausea or vomiting, felt as a mass under the ribs on the right side, pain in the abdomen or near the right shoulder blade, swelling or fluid build-up in the abdomen, itching, feeling tired or fatigue, yellowing of the skin and eyes (jaundice), some other symptoms can include fever, enlarged veins on the belly that can be seen through the skin, and abnormal bruising or bleeding (American Cancer Society, 2016).

Evidence-based interventions to reduce CRF must be determined based on the needs and desires of individuals. A range of non-pharmacologic and pharmacologic interventions has been tested to reduce CRF. Guidelines for CRF reduction are written for all cancer patients according to stage diagnosis on the cancer pathway: on effective

treatment, after treatment, or at the end of life (Berger et al., 2012).

Non-pharmacological interventions are effective in reducing CRF alone and in combination with selected pharmacological treatments. Non-pharmacological interventions include exercise, sports therapy, patient and family education, psycho-psychological and social therapy, and nutritional counseling (Yeo et al., 2015).

Pharmacological treatment is generally based on the treatment of symptoms and reduction of condensation factors. Therefore, drugs are used with a wide range of CRF treatment mechanisms and must be used conservatively to demonstrate their safety and effectiveness (Howell et al., 2013).

Critical care nurses' role in decreasing CRF includes. Assess severity and recurrence of fatigue by functional assessment of chronic illness therapy scale (The FACIT Fatigue Scale), routine screening for fatigue at regular intervals and assess activities connected with increased fatigue, encourage the patient to get enough rest and balanced nutrition. Determine the cause of fatigue that could be treated. Help the patient to develop a schedule for daily activity and rest (Weis & Horneber, 2015).

Significance of the study

Hepatocellular Carcinoma is the primary hepatic tumor most common in adults. In Egypt, cancer liver accounts for 11.75% of malignant tumors in all organs of the digestive system, 1.68% of all malignant tumors and 70.48% of all liver tumors among Egyptians (Holah et al., 2015) Fatigue is now

recognized as one of the most common and distressing adverse effects of cancer and cancer therapy. Fatigue can be elevated before treatment onset and typically increases during radiotherapy, chemotherapy, and hormonal and/or biological therapies. In many epidemiological studies, CRF prevalence rates range from 59-100% in cancer patients (Weis & Horneber, 2015).

Aim of the study

Evaluate the effectiveness of educational and physical intervention to reduce fatigue for hepatocellular carcinoma patients.

Patients & Methods

Research Design: Quasi-experimental design used for Evaluate the effectiveness of the structured practical and teaching program of the current study.

Setting

The study was done at Assiut Health Directorate at the Viral Hepatitis Treatment Unit.

Sample

A purposive sample of 60 patients diagnosed with HCC and infected by hepatitis C virus (HCV) or hepatitis B virus (HBV) or both. They divided into 2 groups; study group and control group 30 for each.

Inclusion criteria

Classification A score (5-6) points of Child-Turcotte-Pugh (CTP) or classification B score (7-9) points of Child-Turcotte-Pugh (CTP) for HCC patients. (Janevska et al., 2015).

Exclusion criteria

- Patient under aged of 18 years.
- Patient diagnosed with haemangiomas, focal nodular hyperplasia (FNH) and hepatocellular adenoma (HCA).
- Terminal stage as hepatic encephalopathy, hepatocellular carcinoma Patient with Child-Turcotte-Pugh(CTP) classification C score (10-15) points.
- Anemic patient.

Tools of data collection

Two tools were used in this study.

Tools (1) patient assessment sheet

To assess patient's personal data and medical data it includes two parts:-

Part I: Demographic data Includes age, sex, marital status, place of residence, level of education, and occupation, past medical history, family history, other chronic disease, previous medical and surgical intervention.

Part II: laboratory investigation data

Includes CBC, kidney and liver function, pro-thrombin time and concentration, alpha-fetoprotein (AFP) and imaging test.

Tools (2): Functional Assessment of Chronic Illness Therapy (The FACIT Fatigue Scale):

This tool was adopted by (Tennant K., 2012).it is measured by the individual's level of fatigue during normal daily activities. The level of fatigue is measured on Likert scale of four points.

Item scoring

Four = Not At All, three = A Little Bit, two = somewhat, one = Quite A Bit, zero = Very Much, EXCEPT items #7 and #8 which are reversed scored. Score range from zero to fifty-two. Less than thirty indicates severe fatigue. The higher score, better quality of life.

Guidelines for FACIT-Fatigue Subscale scoring:

- 1.Record answers in "item reply" column. If missing mark with an X.
- 2.Perform reversing operations.
- 3.Total individual items to get a score.
- 4.Multiply the sum of the item's points by the number of items in the sub-value, then divide by the number of items that are answered.

V. Methods

Four consecutive stages: assessment, preparation, implementation and evaluation were used to conduct the study. Assessment phase: This phase aimed to assess the patient's fatigue, patient's knowledge and patient's physical daily activities.

Preparatory phase

- From the manager of Viral Hepatitis Treatment Unit at Assiut Health Directorate a formal order was achieved to gather the essential information after clarification the aim of the study.
- By group of five specialists in critical care nursing, the tool was examined to validate its contents.
- **Reliability** was examined for tool one and tool two by using Cronbach's coefficient alpha ($r=0.827$, 0.859 respectively) which is acceptable.
- **Then, a pilot study** was carried out previously from beginning collection of data on 6 patients for testing the tool's feasibility and applicability. Then the necessary modification was done.

Ethical consideration

- Written approval from the place manager and verbal consent should be taken from persons participating study. The purpose of the study was explained to the director and every person participating in the study.
- Patients have the right to refuse to participate and or withdraw from the study any time.
- There is no risk for study subject during application of the research.
- Confidentiality and anonymity was being assured.
- Patient was assured that the data of his research will not be refused without second permission.

Implementation phase:- (for both groups)

- The study was carried out during morning in the unit, when patient admitted to unit.
- The researcher filled out sheet through interviewing each patient individually to obtain the necessary information.
- Time taken for complete each questionnaire was around 5-10 minutes depending on the patient's responses to question.
- About 3-4 patients per week was collected started from Feb, 2017 to end of June, 2017.
- Before implementation of nursing intervention, the researcher review the patient's medical and personal data which is followed by an assessment of patient's current level of understanding, capacity and motivation for learning new information and emotional status.

Study group

Study group received nursing intervention to patient diagnosed with hepatocellular carcinoma disease .

The researcher assessed patient according to the designed assessment sheet for six month

First month: give theoretical part for patients that diagnosed with hepatocellular carcinoma.

Second and third months: give practical part for patients that diagnosed with hepatocellular carcinoma.

Fourth and fifth months: make follow up for theoretical and practical parts.

At the end of sixth months: make evaluation for all patients.

The following nursing intervention implemented for study group includes

Theoretical part :Designed by the researcher based on the related literature and consists of:

- Definition, main risk factors, clinical manifestation and treatment for HCC.
- Information about what is fatigue, causes of cancer related fatigue.
- Evaluate all patients for fatigue.
- Nursing intervention for patient to improve the quality of sleep.

Make sure the room you sleep in is comfortable and go to sleep at the same time every day.

Avoid

- Intensive exercise 4 hours before bedtime.
- Drinking too much fluid, Coffee, and nicotine before going to sleep.
- Nursing intervention to conserve energy and manage activity such as Plan your day & Balance your activities.
- Information about nutrition and dietary habits to patient with hepatocellular carcinoma.
- Nursing intervention to patient with hepatocellular carcinoma for managing mental

fatigue such as doing activities that give a feeling of being away from all of your worries.

Practical part

- Prepare patients for exercises and explain benefit of this exercise for patients.
- Explain all forms and types of exercises to the patient.
- Explain exercises to patients can be done on the bed such as ankle exercises, knee flexion / extension, static quadriceps, abduction / adduction, straight leg raise and inner range quadriceps.
- Explain exercises to patients can be done when sitting in a chair such as inner range quadriceps, arm exercises, sit to stand and deep breathing exercises.
- Regular exercises several times a week can help to relieve fatigue.
- Doing each exercise 5 times then increase gradually to 10 times.
- STOP exercising and rest if you feel: dizzy, chest pain, abnormal pulse.
- Explain relaxation technique to patients.
- Tighten a group of muscles for 5-10 seconds.
- Release muscle tension at once.
- Keep relaxed for 10 - 20 seconds. Start with your hands or feet and move through the muscle groups.

Control group

Received the routine care in the unit where assessed by the researcher using first tool: assessed socio-demographic data and medical date, past and present history of disease for patients.

Evaluation phase

The evaluation phase was stressed on assessing the effect of nursing intervention on patient's outcomes. Study and control groups were followed up monthly for 6 months.

Statistical design

By using (SPSS) version (11), the collected data were arranged, encoded, computerized, tabulated and analyzed. Data analysis was completed by the utilization of number, percentage distribution; mean, standard deviation, and independent sample T test, chi-square test-one way ANOVA, analyses was used to test the significance of some variances. A significant level value was considered when $p < 0.05$, non-significant (NS) if $P > 0.05$, Highly Significant (HS) if $P < 0.01$.

Results

Table (1): Distribution of sample related to socio-demographic data of patients

| socio-demographic data | Study Group | | Control Group | | P-value |
|------------------------|-------------|------|---------------|------|---------|
| | No. (n=30) | % | No. (n=30) | % | |
| Gender | | | | | 0.591 |
| Male | 19 | 63.3 | 21 | 70 | |
| Female | 11 | 36.7 | 9 | 30 | |
| Age: | | | | | 0.685 |
| 20 to < 35 | 3 | 10 | 4 | 13.3 | |
| 35 to < 55 | 10 | 33.3 | 10 | 33.3 | |
| > 55 | 17 | 56.7 | 16 | 53.4 | |
| Education Level | | | | | 0.376 |
| Illiterate | 23 | 76.6 | 25 | 83.3 | |
| Read and write | 3 | 10 | 4 | 13.3 | |
| Primary | 2 | 6.7 | - | - | |
| University | 2 | 6.7 | 1 | 3.4 | |
| Residence | | | | | 0.647 |
| Rural | 27 | 90 | 28 | 93.3 | |
| Urban | 3 | 10 | 2 | 6.7 | |

NS = no statistical significant difference

Table (2): comparison between study and control group post intervention regarding fatigue.

| Patients' fatigue | post-study group(n=30) | | Control group (n=30) | | p-value |
|---|------------------------|------------|----------------------|------------|---------|
| | No. | % | No. | % | |
| Satisfactory Level FACIT Scoring ≥ 30 | 21 | 70 | 0 | 0 | 0.001** |
| Unsatisfactory Level FACIT Scoring < 30 | 9 | 30 | 30 | 100 | |
| Total | 30 | 100 | 30 | 100 | |

One-way ANOVA

Statistical significant differences ($p < 0.05$)

Table (3): Percentage & correlation between patient' fatigue (post-study & control) groups.

| Scale item | post-study No. 30 | | | | | | | | | | Control No. 30 | | | | | | | | | | P-value |
|---|-------------------|------|--------------|------|-----------|------|-------------|------|-----------|------|----------------|---|--------------|----|-----------|----|-------------|------|-----------|---------|--------------|
| | Not at all | | A little bit | | Some what | | Quite a bit | | Very much | | Not at all | | A little bit | | Some what | | Quite a bit | | Very Much | | |
| | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | |
| Do you feel fatigued? | 7 | 23.3 | 17 | 56.7 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 23.3 | 23 | 76.7 | 0.004** |
| Do you feel weak all over? | 10 | 33.3 | 14 | 46.7 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 20 | 3 | 10 | 21 | 70 | 0.002** |
| How much time feels listless? | 10 | 33.3 | 14 | 46.7 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 16.7 | 5 | 16.7 | 20 | 66.6 | 0.003** | |
| Do you feel tired? | 10 | 33.3 | 17 | 56.7 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 13.3 | 9 | 30 | 17 | 56.7 | 0.001** | |
| Do you have trouble starting things because tired? | 11 | 36.7 | 13 | 43.3 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 20 | 4 | 13.3 | 20 | 66.7 | 0.003** | |
| Do you have trouble finishing things because tired? | 10 | 33.3 | 17 | 56.7 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 13.3 | 9 | 30 | 17 | 56.7 | 0.001** | |
| Do you have energy? | 0 | 0 | 5 | 16.7 | 0 | 0 | 10 | 33.3 | 15 | 50 | 0 | 0 | 12 | 40 | 18 | 60 | 0 | 0 | 0 | 0 | 0.001** |
| Do you able to do your usual activities? | 0 | 0 | 2 | 6.7 | 0 | 0 | 11 | 36.7 | 17 | 56.6 | 0 | 0 | 15 | 50 | 15 | 50 | 0 | 0 | 0 | 0 | 0.000** * |
| Do you need to sleep during the day? | 9 | 30 | 15 | 50 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 30 | 0 | 0 | 0 | 0 | 21 | 70 | 0.004** |
| How much time you feel too tired to eat? | 9 | 30 | 15 | 50 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 20 | 4 | 13.3 | 20 | 66.7 | 0.003** | |
| Do you need help doing your usual activities? | 3 | 10 | 15 | 50 | 11 | 36.7 | 1 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 50 | 15 | 50 | 0.001** |

Table (3):Cont. Percentage & correlation between patient' fatigue (post-study & control) groups.

| Scale item | post-study No. 30 | | | | | | | | | | Control No. 30 | | | | | | | | | | P-value | | | | | | |
|---|-------------------|----|--------------|------|-----------|------|-------------|---|-----------|---|----------------|---|--------------|---|-----------|---|-------------|---|-----------|---|---------|---|----|------|----|------|---------|
| | Not at all | | A little bit | | Some what | | Quite a bit | | Very much | | Not at all | | A little bit | | Some what | | Quite a bit | | Very Much | | | | | | | | |
| | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | No | % | | | | | | | |
| How much time you feel frustrated by being too tired to do the things you want to do? | 6 | 20 | 17 | 56.7 | 7 | 23.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 60 | 12 | 40 | 0.001** |
| How much time has to limit your social activity because you tired? | 3 | 18 | 60 | 8 | 26.7 | 1 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 43.3 | 17 | 56.7 | 0.001** |

One-way ANOVA

Statistical significant differences (p<0.05)

Table (4): comparison between study and control group post physical practice.

| Patients 'practice | post-study (n=30) | | Control group (n=30) | | p-value |
|----------------------|-------------------|-----|----------------------|-----|-----------|
| | No. | % | No. | % | |
| Satisfactory Level | 30 | 100 | 0 | 0 | 0.0001*** |
| Unsatisfactory Level | 0 | 0 | 30 | 100 | |
| Total | 30 | 100 | 30 | 100 | |

One-way ANOVA

Statistical significant differences (p<0.05)

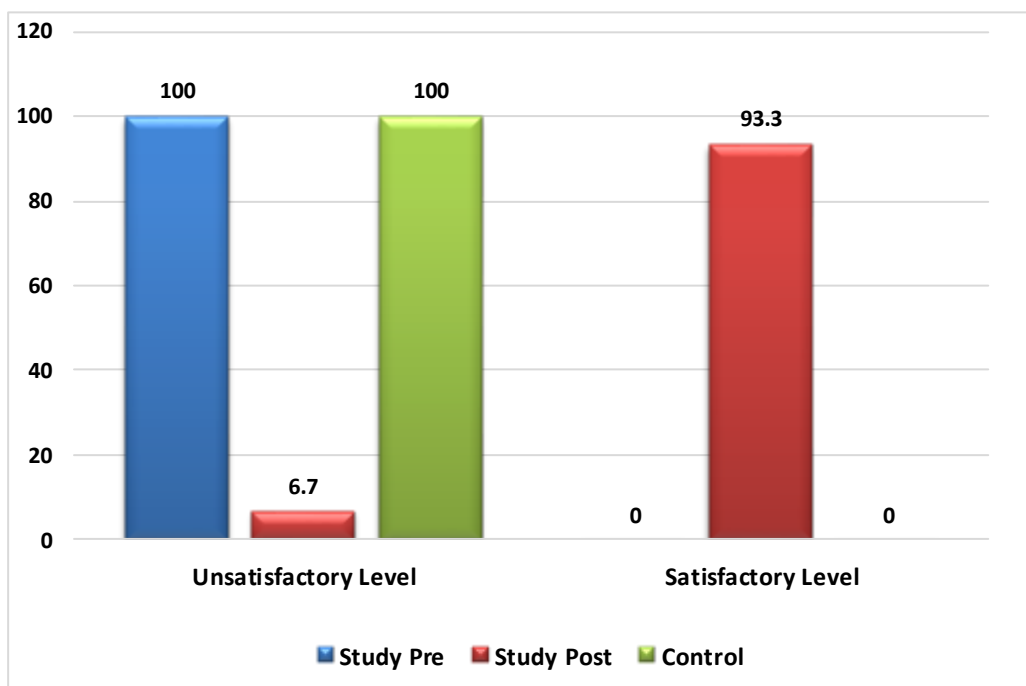


Figure (1): Percentage distribution of patients' knowledge.

Table (5): comparison & correlation between post-study & control groups regarding to patients' practice [A-Exercise].

| A- Exercise | Study group (Post) (n=30) | | | | | | Control group (n=30) | | | | | | p-value |
|------------------------------|---------------------------|------|-------------|-----|----------|---|----------------------|------|-------------|------|----------|------|---------|
| | Done | | | | Not Done | | Done | | | | Not Done | | |
| | Correctly | | Incorrectly | | | | Correctly | | Incorrectly | | | | |
| | N | % | N | % | N | % | N | % | N | % | N | % | |
| 1- On the bed | | | | | | | | | | | | | |
| Ankle exercises | 28 | 93.3 | 2 | 6.7 | 0 | 0 | 0 | 0 | 3 | 10 | 27 | 90 | 0.002** |
| Knee flexion / extension | 30 | 100 | 0 | 0 | 0 | 0 | 4 | 13.3 | 3 | 10 | 23 | 76.7 | 0.003** |
| Static quadriceps | 30 | 100 | 0 | 0 | 0 | 0 | 2 | 6.7 | 3 | 10 | 25 | 83.3 | 0.003** |
| Abduction / adduction | 29 | 96.7 | 1 | 3.3 | 0 | 0 | 1 | 3.3 | 2 | 6.7 | 27 | 90 | 0.002** |
| Straight leg raise | 28 | 93.3 | 2 | 6.7 | 0 | 0 | 1 | 3.3 | 3 | 10 | 26 | 86.7 | 0.003** |
| Inner range quadriceps | 28 | 93.3 | 2 | 6.7 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.001** |
| 2- Sitting in a chair | | | | | | | | | | | | | |
| Inner range quadriceps | 28 | 93.3 | 2 | 6.7 | 0 | 0 | 2 | 6.7 | 3 | 10 | 25 | 83.3 | 0.003** |
| Arm exercises | 30 | 100 | 0 | 0 | 0 | 0 | 2 | 6.7 | 4 | 13.3 | 24 | 80 | 0.003** |
| Sit to stand | 30 | 100 | 0 | 0 | 0 | 0 | 4 | 13.3 | 3 | 10 | 23 | 76.7 | 0.003** |
| Deep breathing exercises | 27 | 90 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.001** |

Table (6): comparison & correlation between post-study & control groups regarding to patients' practice [B-Relaxation technique].

| B- Relaxation technique | Post-Study group (n=30) | | | | | | Control group (n=30) | | | | | | p-value |
|---|-------------------------|------|-------------|------|----------|---|----------------------|------|-------------|-----|----------|------|-----------|
| | Done | | | | Not Done | | Done | | | | Not Done | | |
| | Correctly | | Incorrectly | | | | Correctly | | Incorrectly | | | | |
| | N | % | N | % | N | % | N | % | N | % | N | % | |
| Gently breathe in – hold & go. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 10 | 27 | 90 | 0.002** |
| Pull toes up towards knees -slightly hold & go. | 26 | 86.7 | 4 | 13.3 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.001** |
| Press heels into the ground contract then let go. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.3 | 29 | 96.7 | 0.001** |
| Pull knees together hold briefly then let drift apart. | 27 | 90 | 3 | 10 | 0 | 0 | 0 | 0 | 1 | 3.3 | 29 | 96.7 | 0.001** |
| Press the buttocks together - hold and go. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.0001*** |
| Gently pull tummy muscles towards spine hold briefly then let go. | 28 | 93.3 | 2 | 6.7 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.001** |
| Pull the shoulders gently towards the ears. hold then go. | 30 | 100 | 0 | 0 | 0 | 0 | 2 | 6.7 | 3 | 10 | 25 | 83.3 | 0.003** |
| Press elbows and upper arms to the body sides | 27 | 90 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.001** |
| Hands – gently clench – hold – and let go . | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6.7 | 28 | 93.3 | 0.002** |
| Push head forward slightly – hold & go. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.3 | 29 | 96.7 | 0.002** |
| Grit teeth together – hold & let jaw sag slightly. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.0001*** |
| Press Lips then let go until hardly touching. | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.0001*** |
| Press tongue to mouth roof – hold & drop loosely | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.0001*** |
| Eyes – screw them up a little – hold – and let go . | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 10 | 27 | 90 | 0.002** |
| Forehead – frown a little – hold – now let go . | 30 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 100 | 0.0001*** |
| Spend a few moments enjoying feeling release. | 30 | 100 | 0 | 0 | 0 | 0 | 4 | 13.3 | 0 | 0 | 26 | 86.7 | 0.003** |

One way ANOVA

* Statistical significant differences ($p < 0.05$)

Table (1): Show that; Most groups were male greater than half of the groups aged > 55 years and most of them were Illiterate. Concerning residence majority of groups was rural.

Table (2): Show that; Most of the post-study group had a satisfactory level with a percentage (70.0%) regarding patients' fatigue, but all of the control group had unsatisfactory levels with a percentage (100.0%).

Table (3): Show that; There is highly statistical difference between groups (post-study and control) regarding patients' fatigue at all items of FACIT scale, but item of (Do you able to do your usual activities?) there is very high statistical difference with p-value (0.000).

Table (4): Show that; There is a very high statistical difference between post-study and control groups. All post-study groups had satisfactory level post-practice with a percentage (100.0%). All of the control group had unsatisfactory levels of practice with a percentage (100.0%).

Table (5): Show that; There is a highly statistical difference between groups (post-study and control) regarding patients' practice [Exercise] at all items with p-value (0.001, 0.002 and 0.003 respectively).

Table (6): Show that; There is a highly statistical difference between groups (post-study and control) regarding patients' practice (Relaxation technique) at most items with p-value (0.001, 0.002 and 0.003 respectively), but at few items there is very highly statistical difference with p-value (0.0001).

Figure (1): Show that; All of pre-study and control groups had unsatisfactory levels of knowledge with a percentage (100.0%). the post-study group had satisfactory level post-knowledge with a percentage (93.3%).

Discussion

Worldwide hepatocellular carcinoma considered being the 6th most prevalent cancer and the 3rd most common reason of cancer leading to deaths. The incidence is increasing worldwide, ranging between 3% and 9% in patients with liver cirrhosis (**Hassany et al.,2015**).

Nurses can assess cancer-related fatigue through patient reports, fatigue scale, routine screening for fatigue at regular intervals and assess activities connected with increased fatigue (**Engstrom, 2010**).

The present study demonstrate that most of the patient's age ranged between (35.0 – 68.0) and the peak age of HCC in the cases was > 55 years. This supported by (**Kumar et al., 2008**) who was revealed that the median age of their HCC patients was 52 years. The rates of liver cancer increased with increased patient's age this may be due to the higher prevalence of HBs Ag carrier state, high susceptibility to environmental carcinogenesis factor.

With regard to gender, the topics subjects were revealed that more than half of studied subject were male. This agrees with (**Nordenstedt et al., 2010**) reported that more than half were men. The researcher's point of view about reasons for higher rates of liver cancer in males may relate to gender-specific differences in exposure to risk factors. Men are more likely to be infected with HBV and HCV, smoke cigarettes and also due to the culture of community.

This finding that the vast majority of the studied subject from rural areas and used to work as a farmer. This agrees with (**Shaker et al., 2013**) who found most of the cases were from rural areas and less than a quarter of cases from urban areas.

The present study demonstrate that mean of knowledge score about hepatocellular carcinoma disease and cancer-related fatigue among the control group subjects were lower than study group subjects post implementation of the nursing educational interventions. This may be attributed to theoretical sessions that were provided to study group which cover all aspects of hepatocellular carcinoma disease and also cancer-related fatigue aspects were success improvement patient's outcomes.

The findings of the present study was in line with (**Goedendorp et al., 2009**) who found that educational interventions in cancer survivors achieved a significant effect in CRF.

In addition, regarding the (FACIT) Fatigue Scale the findings of the present study showed that a high statistical significant improvement between study and control after application of the nursing intervention (non-pharmacologic interventions). There is a highly statistical difference between groups (post-study and control) regarding patients' fatigue at all items of FACIT scale. This agree with the study of (**Neefjes et al., 2013**) who reported that the FACIT Fatigue Scale scores improved after non-pharmacologic interventions for cancer-related fatigue. The researcher's point of view about reasons for improved FACIT Fatigue Scale scores this could be explained by the fact that patients were given instructions about non-pharmacologic interventions for cancer related fatigue.

The findings of the present study revealed that there is a highly statistical difference regarding patient's practice between study and control group. All study group had satisfactory level post-practice and all of the control group had unsatisfactory levels post-practice. This was agreed with (**Warburton et al.,2006**) who reported that physical activity has been consistently shown to reduce the morbidity and mortality from many chronic diseases.

The present study was in line with (**Pattanshetty & Chopde, 2016**) who reported that physical activity in

the form of exercises proved to be effective in cancer survivors experiencing cancer-related fatigue. This clear physical benefit of exercise, the routine physical activity also positively impacts a person's psychological well-being by reducing stress, fatigue, and anxiety.

The result of the present study revealed that there is a highly statistical difference between groups (post-study and control) regarding patients' practice (relaxation techniques) may help reduce stress, anxiety, and depression. This was agreed with (Hassanpour-Dehkordi et al., 2016) reported that psychotherapy and relaxation techniques therapies reduce global stress and anxiety and improve mood may decrease fatigue.

The result of the present study revealed that participation in the nursing intervention demonstrated an improvement in study group knowledge about hepatocellular carcinoma and management of fatigue related to hepatocellular carcinoma as compared to a prior participation of study and control groups in the nursing intervention.

Conclusion

The Present study we can finally conclude that, designed nursing intervention for hepatocellular carcinoma patients achieved its objective by improving patient health status and their knowledge about hepatocellular carcinoma disease, cancer related fatigue, non- pharmacological intervention for cancer related fatigue that reflected by improvement in patients fatigue, improvement physical activity of the patients participate in theoretical and practical sessions.

Recommendation

- The current study recommended replication of nursing intervention of this study on larger probability sample from different geographical areas.
- As research continues to provide updated information, the need for practice and policy change becomes a priority. For example, recommendations for treating CRF have shifted from advising energy conservation and rest to the best practice recommendation.

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