Patient's Knowledge and Self Care Practice Post Trans-Hepatic Arterial Chemoembolization

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Abstract:

Background: Hepatocellular carcinoma (HCC) is considered one of the most challenging tumors with high incidence, prevalence, and mortality rates. Transhepatic arterial chemoembolization (TACE) is the first line treatment of choice for intermediate stage HCC. **The aim** of this study was to assess of knowledge and practice for Patients undergoing TACE. **Design:** A descriptive research design was carried out. **Setting:** The study was conducted in interventional radiology center and arterial catheterization at surgical Zagazig University Hospitals. **The study sample:** composed of seventy adult patients, purposeful selected from both sexes. **Tools:** Two tools were used to collect the study data: **I)** Self-administered questionnaire. **II)** Self-reported practice **Results:** The current study shows that the mean age was 58.55±8.48 years and 88.6% of them were females, 38.3% of studied patients made TACE before, and near half of the patients were secondary education and not working. The present study clarified that, majority of studied patient had unsatisfactory knowledge and unsatisfactory self-care practice. **Conclusion:** Based on the results can be concluded that the studied patients had unsatisfactory level of knowledge and self-care practice post TACE and need to be improved. Also, there was no significant relation between total knowledge score and total practice score **Recommendation:** Training programs about TACE and HCC disease and its treatment modalities should be provided for HCC patients using new methods of teaching such as computer assisted instructions and home videos should be performed and Regular follow-up for all patients.

Keywords: Hepatocellular carcinoma, knowledge, Self-reported practice, Transhepatic arterial chemoembolization

Introduction:

Liver cancer remains a global health challenge and its incidence is growing worldwide. Hepatocellular carcinoma (HCC) is the most common form of liver cancer and accounts for ~90% of cases (**Jiang, et al., 2022**). The global burden of hepatic cancer continues to rise and is estimated

to reach one million cases per annum by 2025 (**Ezz El Din, et al., 2022**). In Egypt, HCC is a major public health problem. It is responsible for 33.63% and 13.54% of all cancers in men and women, respectively (**Mohamed, Mohammed & ElShishtawy, 2020**).

Trans-catheter Arterial Chemoembolization (TACE) is one of the most commonly used non-surgical therapeutic methods for HCC. TACE combines the embolization of the tumor feeding arterial vessels and infusion of anticancer agents (e.g. doxorubicin or cisplatin) to obtain both ischemic and cytotoxic effect with a median survival of up to 40 months in patients without vascular invasion or extra hepatic spread. TACE is the first line treatment of choice for intermediate stage disease; however, in real life, approximately 40% of procedures are performed in early stages with significant impact on success rate and survival (**Xingshi, et al., 2020**).

The decision to treat a patient with TACE requires multidisciplinary consideration. The process is initiated with a referral from medical oncology, hepatology, or liver transplantation services to interventional radiology. Latest imaging studies, such as a triple-phase computerized axial tomography (CAT) scan, liver ultrasound, or magnetic resonance imaging (MRI), are reviewed by the multidisciplinary team, including the interventional radiologist, to confirm criteria for undergoing TACE (**Rojas, 2020**).

Contraindications for TACE have been considered and relative based on both patient and tumor factors, it include occlusion main portal vein, relevant node or metasis stage, impaired liver and kidney function, decompensated portal hypertension and severe iodinated contrast allergies (**Sanyal, et al., 2018**).

Complications of TACE include infection, pain, bleeding, and extrahepatic artery thrombosis. Also, due to the possibility of liver and kidney damage, it is recommended to evaluate the function of the liver and kidneys seven days after it. Cirrhosis of the liver, vascular damage and severe liver failure are some of its contraindications. TACE is similar to systemic chemotherapy, which may cause systemic side effects and uncomfortable symptoms. The most common side effect of this method is post -embolization syndrome with symptoms of pain, nausea, vomiting, ileal paralysis, and fever with increased liver enzymes. In the recent years, much attention has been paid to this post-TACE complication because it can interfere with the treatment process and result in a poor prognosis of the patient (**Zhang, et al., 2022**).

Regarding nursing roles regarding TACE procedure, the nurses have a role in the pre, intra, and post-procedural care of patients undergoing TACE. The nurse facilitates and improves patient care, collaborates with medical, nursing, patients, and significant others. The outcomes include fewer delays, earlier discharge, decrease readmission, effective, efficient, consistent care, and improved communication (**Zaki, et al, 2021**).

Post procedural nursing care involves ensuring hemostasis of the puncture site through patient discharge, monitors vital signs, pain level and assesses the puncture site and distal pulses with the

patient remaining flat as per institutional protocol, encourage patient receiving contrast to drink large amounts of clear liquids or increase administration of intravenous fluids **(Tong, et al., 2017)**.

Self-care is the practice of activities that individuals initiate and perform on their behalf in maintenance life, health, and wellbeing. Self-care is purposeful and conducted to meet self-care requisites (need) of individuals themselves or others in need of care (dependent care). Self-care depends on knowledge, resources, and action **(Zaki, et al, 2021)**.

Patient and care giver education includes providing basic information about the procedure, use of sedation, and informs the patient to remain still to avoid motion artifact. Discharge instruction forms should be include activity restrictions, possible complications, diet, medications, specific care related to the procedure and when and whom to call for help **(Rothrock, 2019)**.

Significance of the study:

Hepatocellular carcinoma in Egypt, where it accounts for 33.63 % of all malignancies in men and 13.54% in women **(Elkenawy, et al., 2022)**. TACE is widely recommended in clinical practice due to its high efficacy in patients with unresectable HCC. TACE can significantly increase the 2-year survival rate from 27% to 63%. However, TACE generally brings patients physical discomfort of different degrees which brings negative emotions that increase the psychological pressure of patients, influence the prognosis in a negative way, and reduce the quality of life of patients **(Ma, et al., 2021)**. Therefore, the nurses were responsible for explaining to patients and their families what to expect during and after the treatment session and allowing them to talk about their concerns before therapy begins. All patients with HCC under TACE need to understand, promote self-care practices and be aware of its treatment and its adverse effects.

Aim of the study: The current study aimed to assess patient' knowledge and self-care practice post transhepatic arterial chemoembolization.

Research Question:

-What is the level of patients' knowledge regarding transhepatic arterial chemoembolization?

-What is the level of patients' practice post transhepatic arterial chemoembolization?

Research design: A descriptive   research design was carried out in this study.

Setting: The study was conducted in interventional radiology center and arterial catheterization that consist of operating room, examination room, recovery room, and waiting area which located in the first floor at surgical Zagazig University Hospital.

Subjects: A purposive sample of 70 patients undergoing Trans-Hepatic Arterial Chemoembolization was selected to conduct this study and fulfill the following criteria:

▪ **Inclusion Criteria**

Patients who are diagnosed with HCC, have unresectable tumors, medically inoperable status, or refusal of surgery, age between 20 - 60 years old and agree to participate in the study.

▪ **Exclusion Criteria**

Advanced liver disease level III, active GI bleeding, encephalopathy, refractory ascites, presence of vascular invasion or portal vein occlusion due to liver tumor, extra hepatic metastases, proto-systemic shunt, end stage tumor disease, auditory deficits and psychological problems

Tools of data collection:

Tool I: Self-administered questionnaire: -

This tool was designed by the researcher after extensive review of the relevant literature. **(Sun, et al., 2021); (Zaki, et al., 2021)& (Young, Craig & Golzaria, 2019).** The questionnaire covered three parts as the following:

Part I: Socio-Demographic Questions: concerened with assessment of socio-demographic characteristics of the patients, it was contained 13 questions covered age, gender, marital status, occupation, level of education, Living condition, crowding index (family members and number of rooms in the house), monthly income, area of residence, treatment costs, and body mass index (height in m^2 and weight in kg).

Part II: Patients' Medical Health Assessment Questionnaire it was included: -

1. Past, Family and Medical History of Patient e.g. history of previous liver diseases, presence of genetic and metabolic diseases affecting liver, history of onset and progression of symptoms, information from patient such as (Jaundice, abdominal pain, nausea, vomiting …etc.) and assess degree of pain by using numerical rating scale.

2. Investigation it was included: -

2.1. Physical examination: Examination of eye, skin, chest, abdominal and limbs for any abnormality, activity and exercise, assess level of consciousness by using Glasgow coma scale and assessment of vital signs for any abnormalities...

2.2. Laboratory Assessment: It was included kidney function tests (S.urea– creatinine), liver function tests (ALT, AST, prothrombin time and concentration, total and indirect bilirubin, serum albumin),complete blood picture and baseline level of viremia HCV using polymerase chain reaction (PCR), tumor marker alpha-fetoprotein (AFP).

2.3. Imaging assessment included; abdominal ultrasonography and fibro scan to assess tumor size and assess response to treatment.

2.4. The Albumin-Bilirubin (ALBI) score:

The albumin-bilirubin (ALBI) score, by combining the serum albumin and bilirubin, is a new model for assessing the severity of liver dysfunction in patients with hepatocellular carcinoma **(Gui, et al., 2018 &Johnson, et al., 2015).**

Part III: Patient's Knowledge Questionnaire: Concerned with assessment patient's knowledge regarding TACE. It was designed by researcher in Arabic form to avoid misunderstanding. It was consisted of (58) questions in the form of MCQ and yes or no questions, it was covered the following two sections. **Section 1:** It concerned with assessment of patient's knowledge regarding HCC and treatment with TACE such as definition, risk factors, types, signs and symptoms, investigations, purpose of TACE, patient preparation, indication and contraindication of TACE.

Section 2: It concerned with assessment of patient's knowledge regarding discharge plan such as complication and how to deal with it, follow up system, medication post discharge…

Scoring System for Patient's Knowledge Assessment:

Each question is scored "zero" for the incorrect and "one" for the correct answer, and these points are counted for each patient. The general patients' knowledge is classified into satisfied knowledge if the score is ≥ 60% from the maximum score and unsatisfied knowledge if it is < 60% based on statistical analysis.

Tool II: Self-Reported Practice: It was guided by **West (2023)** to evaluate patients' practices regarding the most important skills post TACE. It was covered 7 procedures with totally 97 steps include: measurement of body temperature eleven steps, hot application to decrease pain nine steps, cold compress application to decrease body temperature five steps, manage nausea and vomiting six steps, use incentive spirometer nine steps, deep breathing exercise six steps and progressive muscle relaxation fifty-one steps.

Scoring System for Patients' Practice

Each step is scored "zero" for not done and "one" for done correctly; and these points are counted for each patient. The general patients' practice is classified into satisfied practice if the score is ≥ 60% from the maximum score and unsatisfied practice if it is < 60% based on statistical analysis.

Administrative and ethical consideration:

An official permission for data collection in Zagazig University was obtained from the hospital administrative personnel by the submission of a formal letter from the Dean of the faculty of Nursing Zagazig University explaining the aim of the study in order to obtain permission and help. At the interview, each subject was informed about the purpose, benefits of the study, and studied patients were informed that participation is voluntary, and they have right to withdraw from the

study at any time without given any reason. In addition, confidentiality, and anonymity of the subjects were assured through coding of all data. The researcher assured that the data collected will be confidential and would be used only to improve patients' knowledge, practice post TACE.

Pilot study:

Was carried out in order to check and ensure the clarity, applicability, relevance and feasibility of the tools. For this study, the researcher selected seven (10%) patients random to participate in the pilot testing of the questionnaire and checklist from interventional radiology center and not excluded from the study sample because of no modifications in the tools.

Field work:

Once the approval was granted to progress in the study, the researcher started to organize a schedule for collecting the data. The researcher visited study setting to be familiar with work process, time of work and observe patients attending the study settings to a set schedule for data collection.

The researcher used to go to the study setting for interviewing the patients. The purpose of the study was explained to each patient individually, and then the patients were asked to participate in the study. The study was implemented in 6 months beginning from September 2021 to November 2022 where the researcher was available four days weekly from 9 am to 5 pm. The time needed to complete the checklist varies between 30-45 minute.

Content validity& Reliability:

The tools were revised by a panel of seven experts from nursing staff which included one professor and two assistant professors and four lectures of medical surgical nursing that revised the tools content for clarity, relevance, comprehensiveness, and ease for implementation. All recommended modifications were done. Reliability was measured by Alpha Cronbach for knowledge questionnaire was 0.72%. Reliability of self-reported practice was 0,851%.

Statistical analysis:

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp. Quantitative data were expressed as the mean $\pm$ SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. Pearson's correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. p-value < 0.05 was considered statistically significant (S), p-value < 0.001 was considered statistically significant (HS) and p-value $\geq$ 0.05 was considered statistically insignificant (NS).

Results:

Table 1, shows sociodemographic characteristics of the studied patients. It was found that more than third of the studied patients (41.4%) aged from 50 to 60 years with mean ± SD (58.55±8.48year), (44.3%) had secondary education and (34.3%) were employee while near half (45.7) were not working or retirements. Majority of the patients were male (88.6%), married (77.1%), and rural residents (75.7%). Furthermore, most of patients lived with their families (94.3%). Additionally, less than three quarters the ir income was not enough to life (71.4%) and their treatment costs were depended on state expense (70%).

Figure1, reveals that 30% of the studied patients were Under weight and 22,90% had obesity class II.

Past medical and family history of the studied patients was displayed in **table (2)**. It was revealed that more than half (51.4%) of studied patients had cancer liver for less one year. More than one third (38.3%) of studied patients made trans-hepatic arterial chemoembolization before and majority (85.2%) from less than 12 months ago. Also, nearly to quarter (22.9 %) of studied patients used medication in a continuous way, especially anti-hypertensive (31.25%), anti-diabetic drugs (25%) and both (43.75%) for duration ranged from five to ten years, based on doctor order. Furthermore, about two third (64.3%) of studied patients were tobacco smokers and most of patients (98.0) didn't practice exercise.

Table 3: As regard to total patients' knowledge, most (97.1%) of studied patients had unsatisfactory knowledge level regarding transhepatic arterial chemoembolization with mean ±SD 4.25±2.64.

Table 4: As regard to level of patients practice, the study finding revealed that majority (84.3%) of the studied patients had unsatisfactory level of total practice regarding care post transhepatic arterial chemoembolization with mean ±SD 28.82±22.98.

Table 5: Showed that there was there was no significant association between patients' total practice regarding transhepatic arterial chemoembolization and total knowledge.

Discussion:

Regarding sociodemographic characteristics, results of the present study revealed that the age of the studied patients ranged from 42 to 77 years old with the mean of 58.5 years. The finding of the present study is supported with **Jia et al., (2022)** in the study of "ASARA, a prediction model based on Child-Pugh class in hepatocellular carcinoma patients undergoing transarterial chemoembolization at China", the author found that the mean age of the studied patients was 59.5 years old. Majority of the patients were males. The present study is consistent with **Li et al., (2022)** in the study of "Preoperatively predicting early response of HCC to TACE using clinical indicators

and MRI features at China", found that more than three quarters of the studied patients were males.

Regarding education, the current study revealed that nearly to half of the studied patients had intermediated or secondary educational levels. The result of the present study is consistent with **Hassanin et al., (2021),** who reported in the study about "quality of life after transcatheter arterial chemoembolization combined with radiofrequency ablation in patients with unresectable hepatocellular carcinoma compared with transcatheter arterial chemoembolization alone at Minia University Hospital " that about half of the sample patients had moderate education.

While the present finding is inconsistent with **Chen, et al., (2022),** in study entitled "The impact of symptom distress on health-related quality of life in liver cancer patients receiving arterial chemoembolization: the mediating role of hope" stated that half of studied patients were primary school or basic education and **Hartrumpf, et al., (2018)** about "quality of life in patients undergoing repetitive TACE for the treatment of intermediate stage HCC at Germany" mentioned that majority of the studied patients were illiterates. The present finding could explain that HCC can occur to all persons either educated or not and the different educational level were related to different sitting.

The current study revealed that near half of the studied patients were not working or retirements. These findings were in agreement with **Wang et al., (2022)** who reported in the study of "transcatheter arterial chemoembolization plus atezolizumab and bevacizumab for unresectable hepatocellular carcinoma: a single-arm, phase II trial at China", reported that majority of patients were retirements.

The present study revealed that nearly one third of the studied patients were underweight. That may be due to most of patients with HCC suffer from anorexia and poor nutrition. These findings were in agreement with **Xingshi et al., (2020)** in the study on "therapeutic outcome of transhepatic arterial chemoembolization in combination with local thermal ablation on large hepatocellular carcinoma and risk factors at the second affiliated hospital of Soochow University " founded that majority of studied patients was under weight.

The present study revealed that about two third of the studied patients had **TACE for the first time**, may be due to more than half of studied patients had cancer liver for less one year. This finding is supported by **Kolu, Dere, & Sonmez. (2021),** in the study of "the effect of transarterial chemoembolization therapy on survival in patients with non-resectable hepatocellular carcinoma: Single-center study results at Turkey", Also **Hu & Sang, (2022)** in the study of " A real-world study of chinese hepatocellular carcinoma patients treated with TACE" they reported that more than half of studied patients had one TACE.

Concerning patients' total knowledge score the present study revealed that most patients had unsatisfactory total knowledge. This can be explained by the fact that the highest percentage of the

studied patients were intermediated education, retirements and old age. Also, it may be due to lack of time for health care providers to provide health education about TACE. This finding was in the same line with **Yehia et al. (2020)** about " effect of health education intervention on hepatocellular carcinoma risk factor prevention in Menoufia governorate, Egypt" who expressed that, the participants' knowledge about HCC and its risk factors prevention was poor before the implementation of their health educational program.

Concerning total patients' practices regarding self-care post TACE. Results of the current study revealed that, less than quarter of studied patients had total satisfactory practice regarding measurement of body temperature, cold compress application, hot application, management of nausea and vomiting, use incentive spirometer, deep breathing exercise and progressive muscle relaxation. This may be explained by the fact that patients didn't have enough information about TACE self-care practices. In the same line with **Zaki, et al., (2021),** who reported in study entitled "effect of self-care guidelines on quality of life for patients with hepatocellular carcinoma undergoing radiofrequency ablation" that all patient had unsatisfactory total self-care practice pre implementation of self-care guidelines.

Concerning with relation between patients' total practice and total knowledge. The present study results, there was no significant association between patients' total practice regarding self-care post transhepatic arterial chemoembolization and total knowledge. In the same context with **Salah et al., (2022),** who reported in the study entitled" quality of life for patients with hepatocellular carcinoma undergoing radio frequency ablation in Egypt" that there were statistically insignificant relations between the patients` QoL and their level of knowledge. This may because most of studied patient had unsatisfactory level of knowledge that affect their QoL negatively. Satisfied patients, with fulfilled information needs, and patients who experience less information barriers, in general have a better self-care practice, QoL and good outcome. This finding was supported by **Carrillo et al., (2019),** in study entitled "educational intervention (CUIDAR) in cancer patients treated with surgery: A quasi-experimental study", who mentioned that the educational intervention is a feasible strategy that increases the capacity to care at home and significantly reduces the readmissions to emergency services and improve outcome in cancer patients treated with surgery.

In regarding current research questions, the results of this study revealed that there is a need to focus on development of patients' knowledge and practice regarding self-care post transhepatic arterial chemoembolization, so effort should be directed towards enhancing level of knowledge and skills among patients.

Conclusion:

Based on the findings of the present study, it can be concluded that, most patients had unsatisfactory total knowledge and majority of studied patients had unsatisfactory total practice regarding self-care post transhepatic arterial chemoembolization. As well as there was no statistically significant relation between tota patients' knowledge and total patients' practice.

Recommendations:

In view of the main results of the study the following recommendations were derived and suggested, Training programs about TACE and HCC disease and its treatment modalities should be provided for HCC patients using new methods of teaching such as computer assisted instructions and home videos should be performed.

Regular follow-up for all patients with HCC undergoing TACE to evaluate their health conditions, detect the complications early and improve their quality of life.

A workshop for nurses working in liver ICU & gastroenterology department is to be organized for enriching nurses with recent guidelines related to trans-hepatic arterial chemoembolization.

Patients and their caregivers need to be apprised of post embolization syndrome symptoms prior to TACE and provided with adequate nursing care for symptom control.

Table 1: Distribution of demographic characteristics of studied patients (n=70)

Sociodemographic Characteristics	No.	%
Age (year)		
40-	12	17.1
50-	29	41.4
60-	24	34.3
>70	5	7.1
Mean± SD	58.55±8.48	
Range	42-77	
Gender		
Male	62	88.6
Female	8	11.4
Marital status		
Married	54	77.1
Unmarried	16	22.9
Education level		
Illiterate	1	1.4
Read & Write	7	10.0

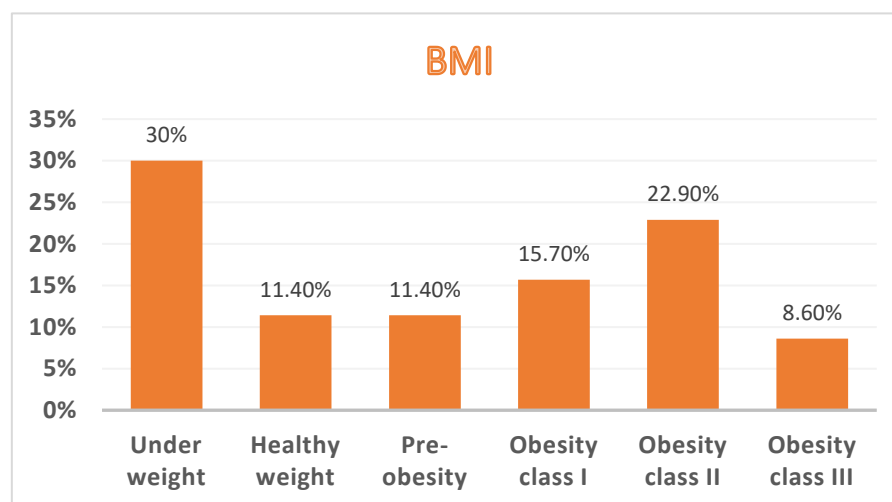|		
Basic	10	14.3
Secondary	31	44.3
University	21	30.0
Occupation		
Worker	1	1.4
Farmer	8	11.4
Employee	24	34.3
Craft work	5	7.1
Does not work	32	45.7
Living condition		
Alone	4	5.7
Family	66	94.3
Crowding index		
≤2	36	51.4
>2	34	48.6
Monthly income		
Enough	20	28.6
Not enough	50	71.4
Area of residence		
Rural	53	75.7
Urban	17	24.3
Treatment costs		
State expense	49	70.0
Health insurance	21	30.0

Figure (1): Bar Chart Showing Distribution of the Studied Patients According to Body Mass Index.

Table 2 Distribution of Past Medical and Family History of the Studied Patients (n=70).

Past medical history items	No.	%
Duration of liver cancer (year)		
< 1	36	51.4
1-	25	35.7
5-10	9	12.9
Mean± SD	2.42±2.66	
Range	1 month-10 years	
Trans-hepatic arterial chemoembolization before		
Yes	27	38.6
No	43	61.4
Specify from which time (period) (months) (n=27)		
< 12 months	23	85.2
> 12 months	4	14.8
Mean± SD	10.15±8.85	
Range	1-36	
Continuous medications use		
Yes	16	22.9
No	54	77.1
Specify type (n=16)		
Anti-hypertensive	5	31.25
Anti-diabetes	4	25
Both	7	43.75
From which time		
Mean± SD	8.50±2.31	
Range	5-10	
Medication described by (n=16)		
Doctor order	16	100.0
Smoking		
Yes	45	64.3
No	25	35.7
Practicing Exercise		
Yes	1	2.0
Family history for liver cancer		
Yes	12	17.1
No	58	82.9
Degree of relationship (n=12)		
1st degree (mother, father)	11	91.7
3rd degree(uncle , aunt)	1	8.3

Table 3 Distribution of total patients' knowledge regarding transhepatic arterial chemoembolization (n=70):

		Total Knowledge	
Mean± SD		4.25±2.64	
		N o	%
Knowledge	Satisfactory≥ 60%	2	2.9
	Unsatisfactory <60%	68	97.1
	Total	70	100.0

Table 4 Distribution of total patients' practice regarding care post transhepatic arterial chemoembolization (n=70):

Mean± SD		28.82±22.98	
		No	%
Total practice	Satisfactory ≥ 60%	11	15.7
	Unsatisfactory < 60%	59	84.3
	Total	70	100.0

Table 5: Relation between patients' total practice and total knowledge. (n=70)

			Total knowledge		Total	X^2	P –value
			Satisfactory	Unsatisfactory			
Total practice	Satisfactory	No	1	10	11	0.21	0.64
		%	38.5%	45.9%	15.7 %		
	Unsatisfactory	No	1	58	59		
		%	61.5%	54.1%	84.3%		
Total		No	2	68	70		
		%	100.0%	100.0%	100.0%		

*significant p<0.05

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