

Effect of Counseling on Liver Transplantation Recipients Compliance with Therapeutic Regimen

Enass Ibrahim Al-Saaied, Mona Nadr Ebrahim, Tahany El Senousy, Hanan Shehata
Medical-Surgical Nursing Department, Faculty of Nursing, Ain Shams University

Abstract

Back ground: Counseling is the process of helping a patient to recognize and cope with stressful psychological or social problems, to develop improved interpersonal relationships and to promote personal growth. It involves providing emotional, intellectual, and psychological support to patients. The **aim of this study:** was to assess the effect of counseling on liver transplant recipient through the following: Assessing recipient's needs as regarded to; physical, psychological, spiritual and social. Planning and implementing the counseling sessions based on need assessment. Evaluating the effect of counseling sessions on liver transplant recipient's therapeutic compliance. **Research design:** A quasi experimental design was utilized to meet the aim of the study. **Setting:** The study was conducted in liver transplantation outpatient clinic at El Manial specialized Cairo University hospital. **Subjects:** A purposive sample, of 40 patients post LT surgery from the LT outpatient clinic. **Tools:** LT recipient's needs assessment regarding physical, psychological, social and spiritual information related to LT and evaluation of levels of LT recipient's compliance pre and post counseling sessions. After construction of the tool, it was evaluated by 9 expertise in the field of this study for content validity, face validity and reliability of the tool. **Results:** There were high statistical significant difference between patients under study pre and post counseling sessions regarding their compliance with the therapeutic regimen. **Conclusion:** there was a satisfactory level of information post counseling sessions among LT recipients. **Recommendations:** counseling programs for patients undergoing liver transplantation should start from admission to the hospital till discharge.

Key words: Liver Transplantation, counseling, Compliance, Therapeutic Regimen.

Introduction

End stage liver disease (ESLD) is a major health problem in Egypt and the number of patients is continuously increasing. It is a healthy crisis of alarming proportions up to nine million Egyptians who has been exposed to hepatitis C virus (HCV), and tens thousands are exposed to die yearly unless they receive a liver transplant. According to studies done in Egypt about thirty percent of people are infected with HCV quarter of cases leads to cirrhosis and

liver failure, and treatment options are limited for HCV carriers with end stage liver disease **Gad et al. (2015).**

The numbers of patients undergoing (LT) are increasing in Egypt; nursing has a significant role and responsibility for planning, administering, and evaluating the care of liver transplantation patient as a member of the team. Needs assessment is used to determine the programs requiring attention and the way to best meet these needs **Hinkle et al. (2014).**

Compliance is the extent to which a person's behavior aligns with medical or health advice, most commonly it refers to medication compliance, but can also apply to other medical instructions, use of self-care or self-directed exercise, pain and stress management strategies **Hinkle et al .(2014)**.

Compliance aims at promote healthy lifestyles to optimize health outcomes for patients undergoing (LT). Raising awareness about the importance of patients' compliance with medical instruction has positive effects on patient recovery and satisfaction. The nurse has important role in providing access to patients' education to improve their knowledge, skills and compliance **Hartely & Vance (2011)**.

Significance of the study

It is essential for (LT) patient to comply with treatment to prevent complications and to save their life. From the clinical experience and observations, it is obvious that the patients undergoing (LT) need counseling program to maintain lifestyle modification. This study conducted to ensure (LT) patient's compliance with therapeutic regimen through implementation of counseling program.

Aim of the study

The aim of this study was to assess the effect of counseling on liver transplant recipient through the following:

- Assessing recipient's needs as regarded to; physical, psychological, spiritual, social and their compliance.
- Planning and implementing the counseling sessions based on need assessment.
- Evaluating the effect of counseling sessions on liver transplant recipient's therapeutic compliance.

Subjects and Methods

The research hypothesis

This study hypothesized that:

At the end of the study the counseling sessions will enhance the level of liver

transplant recipient's therapeutic regimen compliance as measured by tool.

Research design:

A quasi experimental design was utilized to meet the aim of this study. A quasi experimental design is an empirical study used to estimate the causal impact of an intervention on its target population without random assignment.

The present study was carried out through:

Technical design.

Operational design

Administration design.

Statistical design.

Technical design:

The technical design includes; the setting, subjects and the tools used in the study.

Setting:

The study was conducted in liver transplantation outpatient clinic at El Manial specialized Cairo University Hospital.

Subjects:

A purposive subject, of 40 patients post liver transplantation surgery from the liver transplantation outpatient clinic were included in the study. The subjects were assessed twice, pre and post the counseling sessions implementation and the effect of counseling sessions were evaluated 3 months after the counseling period in order to follow up the effect of the counseling sessions on the patients compliance and their needs.

Inclusion criteria:

Patients included in this study were those fulfilling the following criteria:

- 1- Post-operative patients after liver transplantation in the stage of stabilization (patient after liver transplantation who is free from immediate post-operative complications after two weeks post discharge) in the follow-up period.

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- 2- Free from any side effect or complications post the surgery.
- 3- Adult and from both sexes.
- 4- With variable levels of education.
- 5- Accepted to participate in the study.

Didn't participate in previous educational program regarding liver transplantation surgery.

Tools of data collection:

Data were collected by the following tool:

- An interview questionnaire sheet:

This tool was developed by the researcher in simple Arabic language based on reviewing the related literature: **Potter & Perry (2011)**, **Phipps et al. (2003)**; **Mueller et al. (2004)**, **Swearingen (2003)**, **Luu et al. (2008)**, **Myers and Pellino (2009)**, **Abby and Crystal (2004)**; This tool consisted of four parts as following:

The first part: it concerned with socio-demographic characteristics of the patients under study such as (age, sex, level of education, residence, marital status, type of work, income, and the number of family members).

The second part: it concerned with the data of the present & past medical history of the patients included in the study as chronic disease, duration from the surgery occurred, duration of hospitalization post liver transplantation surgery.

The third part: it concerned with data related to their needs assessment regarding physical, psychological, social, and spiritual information related to liver transplantation, this tool adapted from **Potter and Perry (2011)** and **Swearingen (2003)**.

It includes the following sections:

Section (1): concerned with physical needs assessment as regard to body system including Cardio vascular, Respiratory, Neural, Gastrointestinal tract, Activity & movement, Elimination, Skin, Rest & Sleep and Sexual relation. It includes (43) items.

Section (2): concerned with the psychological needs assessment. It includes (7) items.

Section (3): concerned with the social needs assessment. It includes (7) items.

Section (4): concerned with the spiritual needs assessment. It includes (5) items.

The scoring system of the interview questionnaire sheet (part 3) first 4 sections include the following:

Yes for the needs that were meet. No for un meet needs

Yes was checked = one. No was checked as= zero

≥ 60% (meeting needs considered)

< 60% (not meeting needs considered)

Section (5): concerned with patient's information needs assessment regarding liver transplantation surgery, as; the warning signs of complications post-surgery, information about signs & symptoms of rejection, measures of prevention of infection and\ or bleeding as well as information about medication & nutrition and, daily activity regimen instructions. It includes (81) items.

The total score was divided into two categories as follows:

- Less than 60%, the patient level of information were considered unsatisfactory level.

- While ≥ 60%, the patient level of information were considered as satisfactory level.

- The fourth part: it concerned with evaluation of levels of liver transplant recipient's compliance it was adapted from **Chariton (1993)**, **Varstad et al.(1998)** and **Rheiner (2004)** and modifications were done by the researcher based on reviewing of the related literature for: **Williams & Bar (1998)**, **Pudner (2008)**, **Swearingen (2003)**,

Phipps et al (2003). The assessment done twice throughout the study pre and post the counseling sessions.

➤ **The scoring system:**

All of this items were checked as (yes) or (no) answer, (yes) answer got (1) score, while (No) answer got (0) score.

The total score was divided into two categories as follows:

- Less than 60% the patient was graded as incompliance to his post-operative regimen.
- 60% and above the patient was graded as compliance with his post-operative regimen.

Content validity and reliability:

Validity:

The study tools were given to 9 consultants' expertise in the medical surgical nursing field to test its Validity, four members were professors, three assistant professors, and the other two were lecturers.

The Validity is two types face and content validity. The Face validity aimed at inspecting the items to determine whether on face of it, the tool measures what it supposed to measure. Content validity was conducted to determine whether the tool covers the appropriate and necessary content as well as its relevance to the tools aims.

The Reliability: It tested by using cronbach alpha test the reliability score of tool is (0.74, 0.79 and 0.81) for total needs, knowledge and compliance.

Reliability is the degree to which an assessment tool produces stable and consistent results.

Operational design

The operational design includes (preparatory phase, pilot study and field work).

Preparatory phase:

It included reviewing of the current related available literature and theoretical knowledge of the various aspects of these issues, using books articles, periodicals, magazine and internet in order to develop the tools for data collection.

Pilot study:

Before performing the actual study, a pilot study was done on 4 patients (equal 10% of the study group). The pilot study was conducted to assess tools applicability and feasibility and time needed to answer it. Based on the results of the pilot study, and then final form was developed. So the patients included in the pilot study did not excluded for the study subjects.

Assessment phase:

It was aimed to collect data from the study group about the patient's demographic characteristics, and to identify physical, psychological, social spiritual needs and knowledge needs related to liver transplantation surgery in addition assessment of patients' compliance with the prescribed therapeutic regimen after liver transplantation surgery before counseling session's implementation on the outpatient clinic. As data collection were done for each patient from 30-45 minutes.

Developing counseling sessions:

Based on identified needs. The counseling sessions content (in the form of the program booklet and visual materials) were prepared by the researcher and corrected by the supervisors for the study group including patient's physical, psychological, social and information needs assessment.

Field work:

Purposive subjects, included (40 patients) were included in the study from El Manial specialized Cairo University hospital, data were collected two days per week from 9 Am to 3 Pm at the outpatient clinic within study period starting from March 2016 until June 2017.

Implementation of the counseling sessions:

Regarding studied patients under study each patient was interviewed individually by the researcher at a suitable place in the outpatient clinic. Counseling sessions were theoretical 4 sessions planned and implemented according to the needs of each patient. Each session lasted from 30-45 minutes. The counseling sessions were implemented according to five stages of DASIE technique as the following:

- D:** Develop the therapeutic relationship and assess patient's information needs.
- A:** Assess the patients problems
- S:** State working goals and plan the intervention
- I:** Intervene to develop self-helping skills and to provide information regarding to the therapeutic regimen
- E:** End and evaluate the consolidation of the patient's self-helping information, skills and compliance.

Evaluation

The evaluation phase was emphasized on estimating the effect of the counseling sessions on patient's needs and compliance to the therapeutic regimen pre and post-sessions implementation.

Administration design.

An official permission was issued from faculty of nursing/ Ain Shams University to the director of liver transplantation unit at El Manial Specialized

Cairo University hospital which the study was conducted.

Statistical design.

Data were presented in tables and charts. Data were analyzed using Statistical Program for Social Science (SPSS) version 20.0. Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

Ethical consideration

Ethical approval was obtained from the scientific ethical committee in faculty of nursing, Ain Shams University before starting the study. Purpose of the study was explained to the patients who agree to participate in the study prior to any data collection they were assured that any anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture and beliefs were respected.

Result:

The presentation and analysis of data obtained in this study will be displayed as follows:

Part I: demographic characteristics of the patients under study regarding their age, gender, residence, education, job, marital status.

Part II: patient's assessment regarding their physical, social, psychological spiritual and information needs after liver transplantation surgery for pre and post counseling sessions

Part III: effect of compliance with therapeutic regimen regarding medication, nutrition, wound care, physical activity, follow up and precautions for prevention and early detections of bleeding and infection pre- and post-counseling sessions as shown in table (8), correlation of compliance with

the study subjects physical, psychological, social, spiritual and educational needs ,and relation between the effects of counseling sessions in relation to post-operative period needs pre and post counseling sessions.

Table (1): shows that the mean value of age for the study subjects was 48.58 ± 7.97 . Regarding the gender (72.5%) of the study subjects were males, and (47.5%) of them are highly educated while (35%) of them have administrative jobs. Regarding marital status, it was found that (95%) of the study subjects were married, also (57.5%) of them are from rural residence.

Table (2): showed that the mean value of the respiratory system disorders among the study subjects pre-sessions and post-sessions were (1.75 ± 0.58 and 0.48 ± 0.16). Also there was highly statistical significant difference between pre- and post-sessions regarding dyspnea at night and chest wheezing, also among dyspnea all time with $p. (<0.001, 0.002)$.

Regarding cardiovascular system disorders, was a highly statistical significant difference regarding discomfort in the feet, feet edema and hypotension.

In relation to nervous system disorders, there were highly statistical significant difference regarding memory disorders, lack of concentration, disorder in concentration for long time and headache with $p. (<0.001)$.

As regards GIT symptoms, there were highly statistical significant differences regarding flatulence after feeding, nausea and vomiting, feel anorexia, stomachache, weight change (loss or gain) and acidity.

Considering movement/ activity disorders, there was a highly statistical significant difference regarding the ability to take shower alone and the ability to wear clothes alone.

Elimination alternation among the study subjects showed highly statistical significant difference regarding suffering from constipation, oliguria, dysuria, diarrhea, polyuria and change in urine color.

Skin alteration among the study subjects pre and post sessions showed high statistical significant differences regarding skin itching and jaundice $p. (<0.001)$.

Considering comfort and sleep alteration, among the study subjects pre and post counseling sessions showed a highly statistical significant difference regarding difficulty to go to sleep ,sleep disorders and reduce sleeping hours after surgery with.

Concerning sexual relation alteration, among the study subjects showed statistical significant differences regarding effect of relationship positively as well as the effect of desire of intercourse.

Also there was statistical significant difference between pre and post-sessions regarding all of the physical parameters with $p.(0.003)$,except movement and activity with $p.(0.115)$.

Table (3): regarding psychological needs among the study subjects, pre and post counseling sessions, there were highly statistical significant differences regarding level of worry after surgery, coping with the changes, Fear due to the progress of their condition. Also the operation affect negatively on their personal appearance, Lack of self-confidence, and feeling of ashamed.

Considering psychological needs, (95%) of the study subjects were fear due to the progress of their condition, (82.5%) wanted to cry all the time.

Also there was statistical significant difference between pre and post-sessions

regarding total psychological needs except wanted to cry all the time with $p(0.009)$.

Table (4): illustrate that social alterations among the study subjects, showed highly statistical significant differences regarding negative effect of surgery on the study subjects social activities and needs help from family due to conflict of their social role . Also, there was an effect on financial expenses. While friendship relation, loss of interest in home affairs and loss of pleasure& happiness atmosphere showed no statistical significant difference between pre & post sessions.

Table (5): showed that spiritual alterations had no statistical significant difference between pre and post counseling sessions with $p(0.184)$.

Table (6): showed highly statistical significant differences between the result of the pre & post sessions regarding all items except; purpose of liver transplant, Importance of immunosuppressive medications and Instructions regarding medication used.

Also there was highly statistical significant difference between pre and post-sessions regarding total satisfactory level of information with $p(<0.001)$.

Table (7): showed that there was a highly significant difference among compliance of the study subjects between pre and post counseling sessions regarding medications, nutrition, physical activities, follow up schedule and precautions for prevention of (bleeding, infection) with ($x= 7.790, 32.281, 42.217, 21.587, 33.800$) respectively.

Table (8): Regarding correlation between compliance to therapeutic regimen of patients under study, it was found that there were high statistical significant correlation regarding total physical, and psychological needs with($r=0.375, 0.380$ respectively), also there was statistical significant correlation regarding total social needs with($r= 0.223$), while there was highly negative statistical significant correlation regarding total satisfactory information level with($r=-0.507$).

Table (9): showed that there was negative correlation between total physical, psychological and social needs pre counseling sessions with ($r= -0.109, -0.023\& -0.099$ respectively). While there was highly statistical significant correlation regarding total spiritual needs with($r=0.567$).

There was negative correlation between total physical, social and total satisfactory information level post counseling sessions with duration post-surgery were($r= -0.122, -0.255\& -0.164$ respectively). Also there was negative statistical significant correlation regarding total psychological needs with($r=-0.350$, at $p=0.027$) while there was statistical significant correlation regarding total spiritual needs with (0.383 , at 0.015).

There was negative correlation between total physical, psychological and social needs and total duration of pre and post counseling sessions post-surgery with ($r= -0.062, -0.110, -0.139$ respectively). While there was highly statistical significant correlation regarding total Spiritual needs and total duration of pre and post counseling sessions post-surgery with ($r=0.481, p=0.000$).

Table (1): Demographic characteristics of the study subjects (N=40).

Items	No.	%
Age (years)	4	10
• 20<40	36	90
• 40<60		
• Mean±SD	48.58±7.97	
Gender		
• Female	11	27.5
• Male	29	72.5
Marital status		
• Single	0	0
• Married	38	95
• Divorced	2	5
Educational level		
• Illiterate	4	10
• Basic	17	42.5
• High	19	47.5
Job		
• Professional	26	65
• Administrative	14	35
Residence		
• Urban	17	42.5
• Rural	23	57.5

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Table (2): Percentage distribution of the study subjects according to their physical needs pre and post counseling sessions (N=40).

Physical needs	Pre sessions		Post sessions		x ²	p	T-test
	No.	%	No.	%			
Respiratory system							
Dyspnea all time	28	70.0	14	35.0	9.825	0.002*	
Dyspnea at night	26	65.0	5	12.5	23.226	<0.001**	
Bluish color in nails and lips	2	5.0	0	0.0	2.051	0.152	
Chest wheezing	14	35.0	0	0.0	16.970	<0.001**	
Total	18	45	5	12.5	9.585	0.002*	
Mean±SD	1.75±0.58		0.48±0.16			<0.001**	-9.412
Cardiovascular system							
Hypotension	4	10.0	0	0.0	4.211	0.040*	
Hypertension	17	42.5	11	27.5	1.978	0.160	
discomfort in the feet	26	65.0	6	15.0	20.171	<0.001**	
Feet odema	17	42.5	1	2.5	18.351	<0.001**	
Total	16	40	5	12.5	7.055	0.008*	
Mean±SD	1.60±0.53		0.45±0.15			<0.001**	-9.067
Nervous system							
Memory disorders	21	52.5	3	7.5	19.288	<0.001**	
Lack of concentration	9	22.5	0	0.0	10.141	<0.001**	
disorder in concentration for long time	31	77.5	5	12.5	34.141	<0.001**	
Headache	17	42.5	0	0.0	21.587	<0.001**	
Disequilibrium in balance	25	62.5	21	52.5	0.818	0.366	
Total	21	52.5	6	15	11.891	<0.001**	
Mean±SD	2.58±0.86		0.73±0.24			<0.001**	-11.431
GIT alteration							
Acidity	31	77.5	20	50.0	6.545	0.011*	
Flatulence after feeding	29	72.5	5	12.5	29.463	<0.001**	
Nausea and vomiting	24	60.0	1	2.5	30.770	<0.001**	
Feel anorexia	21	52.5	6	15.0	12.579	<0.001**	
Stomachache	21	52.5	2	5.0	22.029	<0.001**	
Hematemesis	0	0.0	0	0.0	1.000	1.000	
Weight change(loss or gain)	27	67.5	10	25.0	14.534	<0.001**	
Total	19	47.5	6	15	9.109	0.003*	
Mean±SD	3.85±1.28		1.10±0.37			<0.001**	-14.060
Movement/ Activity							
Improvement in movement and activities	25	62.5	25	62.5	0.000	1.000	
Improvement in ability to climb stairs	27	67.5	33	82.5	2.400	0.121	
<i>Improvement in the ability to:</i>							
Drink alone	37	92.5	40	100.0	3.117	0.077	
Take shower alone	20	50.0	35	87.5	13.091	<0.001**	
Wear clothes alone	27	67.5	37	92.5	7.813	0.005*	
Total	34	85	27	67.5	2.485	0.115	
Mean±SD	3.40±1.13		4.25±1.42			<0.001**	5.687
Elimination							
<i>Suffering from:</i>							
Constipation	20	50.0	1	2.5	23.309	<0.001**	
Diarrhea	8	20.0	1	2.5	6.347	0.012*	
Bloody stool	0	0.0	0	0.0	0.000	1.000	
Polyuria	5	12.5	0	0.0	5.475	0.019*	
Oliguria	15	37.5	1	2.5	15.313	<0.001**	
enuresis	0	0.0	0	0.0	0.000	1.000	
Dysuria	18	45.0	0	0.0	23.226	<0.001**	
Burning pain during urination	24	60.0	19	47.5	1.257	0.262	
Change in urine color	7	17.5	0	0.0	7.671	0.006*	
Hematuria	1	2.5	0	0.0	1.013	0.314	
Total	10	25	2	5	5.342	0.021*	
Mean±SD	2.45±0.82		0.55±0.18			<0.001**	-10.776
Skin							
Skin itaching	23	57.5	3	7.5	22.792	<0.001**	
Jaundice	15	37.5	0	0.0	18.462	<0.001**	
Total	19	47.5	2	5	18.196	<0.001**	
Mean±SD	0.95±0.32		0.08±0.03			<0.001**	-4.653

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Physical needs	Pre sessions		Post sessions		x ²	P	T-test
	No.	%	No.	%			
Comfort and sleeping							
Sleep disorders	29	72.5	16	40.0	8.584	0.003*	
Difficulty to go to sleep	18	45.0	2	5.0	17.067	<0.001**	
Reduce sleeping hours after surgery	15	37.5	4	10.0	8.352	0.004*	
Total	21	52.5	7	17.5	10.057	<0.001**	
Mean ± SD	1.55±0.052		0.55±0.18			<0.001**	-39.983
Sexual relation							
Effect of relationship positively	21	52.5	33	82.5	8.667	0.003*	
Effect of desire of intercourse positively	19	47.5	31	77.5	8.023	0.005*	
Total	32	80	20	50	7.197	0.007*	
Mean ± SD	1.14±0.33		1.60±0.53			<0.001**	4.920
Total physical	19	47.5	7	17.5	7.671	0.003*	

* Statistical significant difference

**Highly statistical significant difference

Table (3): Percentage distribution of the study subjects according to psychological needs pre and post counseling sessions (N=40).

Psychological needs	Pre sessions		Post sessions		x ²	p
	No=40		No=40			
	No.	%	No.	%		
More Worried after surgery	13	32.5	1	2.5	12.468	<0.001**
Suffer from Lack of self confidence	6	15.0	1	2.5	3.914	0.048*
Can't cope up with changes	15	37.5	2	5.0	12.624	<0.001**
Fear due to progress of my condition	38	95.0	17	42.5	25.658	<0.001**
Ashamed more	5	12.5	0	0.0	5.333	0.021*
The operation affect negatively on my personal appearance	23	57.5	7	17.5	13.635	<0.001**
Wanted to cry all the time	34	85.0	33	82.5	0.092	0.762
Total	19	47.5	7	17.5	6.893	0.009*

Table (4): Percentage distribution of the study subjects according to social needs pre and post counseling sessions (N=40).

Social needs	Pre sessions		Post sessions		x ²	p
	No=40		No=40			
	No.	%	No.	%		
Negative effect of surgery on social activities	31	77.5	8	20.0	26.476	<0.001**
Need help from family due to conflict of the social role	26	65.0	5	12.5	22.550	<0.001**
Negative effect on work due to sick leave	10	25.0	3	7.5	3.510	0.061
Negative effect on financial expenses	35	87.5	24	60.0	7.813	0.005*
Loss of friendship relation	38	95.0	40	100.0	2.051	0.152
Loss of interest in home affairs	38	95.0	40	100.0	2.051	0.152
Loss of pleasure and happiness atmosphere	9	22.5	3	7.5	3.529	0.060
Total	26	65	19	47.5	4.829	0.047*

Table (5): Percentage distribution of the study subjects according to spiritual needs pre and post counseling sessions (N=40).

Spiritual needs	Pre sessions		Post sessions		x ²	p
	No=40		No=40			
	No.	%	No.	%		
able to do daily religious activity	22	55.0	24	60.0	2.484	0.146
Religious activity support me psychologically	18	45.0	21	52.5	2.461	0.182
Do you have specific aim for being a live	20	50.0	23	57.5	2.256	0.167
Surgery cause positive change in life	21	52.5	24	60.0	2.092	0.155
Feel peace self	22	55.0	25	62.5	1.918	0.142
Total	20	50.0	22	55.0	2.482	0.184

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Table (6): Comparison of the study subjects according to their satisfactory level of information needs pre and post counseling sessions (N=40).

Items	Pre session		Post sessions		X ²	p
	Information need		Satisfactory level			
	No.	%	No.	%		
Definition of liver transplant	19	47.5	38	95.0	22.061	<0.001**
Purpose of liver transplant	23	57.5	29	72.5	4.692	0.196
Advantages of liver transplant	12	30.0	39	97.5	38.498	<0.001**
Importance of immunosuppressive medications	37	92.5	40	100.0	3.117	0.077
Characteristics of the donor	31	77.5	39	97.5	12.468	<0.001**
Warning signs for potential complications	6	15.0	32	80.0	53.334	<0.001**
Preventive measures for complications as:						
Rejection	16	40.0	40	100.0	34.286	<0.001**
Infection	17	42.5	40	100.0	32.281	<0.001**
Bleeding	8	20.0	39	97.5	49.568	<0.001**
Instruction regarding						
Medications	38	95.0	35	87.5	0.626	0.429
Nutrition	3	7.5	40	100.0	68.837	<0.001**
Daily living activities	11	27.5	36	90.0	32.237	<0.001**
Total Satisfactory level of information	16	40	32	80	22.491	<0.001**

Table (7): Compliance with therapeutic regimen of the study subjects pre and post counseling sessions (N=40).

Compliance regarding	Pre session		Post sessions		x ²	p
	No.	%	No.	%		
Medications	27	67.5	39	97.5	7.790	<0.001**
Nutrition	17	42.5	40	100.0	32.281	<0.001**
Wound care	18	45.0	27	67.5	12.481	0.013*
Physical activity	8	20.0	37	92.5	42.217	<0.001**
Follow up schedule	23	57.5	40	100.0	21.587	<0.001**
Precautions for prevention and early detections of (bleeding, infection)	7	17.5	33	82.5	33.800	<0.001**
Total compliance	17	42.5	34	85	17.481	<0.001**

Table (8):Correlation between compliance to therapeutic regimen of patients under study and their total physical, psychological, social, spiritual, and satisfactory information level pre and post counseling sessions (n=40).

Pre and post counseling sessions needs	Compliance to therapeutic regimens	
	r	p-value
Total physical needs	0.375**	0.001 HS
Total Psychological needs	0.380**	0.001 HS
Total Social needs	0.223*	0.047 S
Total Spiritual	0.006	0.957 NS
Total satisfactory information level	-0.507**	0.000 HS

Table (9): Correlation between the patient needs and total duration pre and post counseling sessions.

Needs of the Patients	Duration post-surgery					
	pre counseling sessions		post counseling sessions		Total	
	r	p-value	r	p-value	r	p-value
Total physical needs	-0.109	0.502	-0.122	0.453	-0.062	0.588
Total Psychological needs	-0.023	0.887	-0.350*	0.027	-0.110	0.331
Total Social needs	-0.099	0.542	-0.255	0.113	-0.139	0.219
Total Spiritual needs	0.567**	0.000	0.383*	0.015	0.481**	0.000
Total satisfactory information level	0.235	0.144	-0.164	0.312	0.093	0.414
Compliance to therapeutic regimen	0.031	0.849	0.165	0.309	0.047	0.677

Discussion

The age of the liver transplant recipients was in congruent with *Paternoster et al. (2010)* found that the age of the liver transplant recipients in their study, was thirty two years at the time of transplantation. Also *Belloni et al (2012)* who found that the age of the liver transplant recipients at transplantation, was forty seven years old. The present study result could be due to that liver transplant recipients in Egypt take time until they found the matching donor and the fund. Also it could be due to that middle age patients had healthy hepatic synthetic function than the older ones.

In relation to gender, the results showed that more than two third of the liver transplant recipients under study were males. This result was congruent with *Mabrouk (2012)* who studied the health- related quality of life in Egyptian patients after (LT), assessment of functional health study among patients with (LT) at Dar El- Fouad hospital and found that the most of the study subject were males. The researcher referred these findings to that more than half of the study subjects were from rural areas and usually male persons were more affected by bilharziasis due to their swimming in the canal.

In relation to marital status, the result of the present study indicated that the majority of the liver transplant recipients were married. This result is supported by *Peixian et al (2012)* who studied the health related quality of life of recipients after (LT) and *Santo ((2010)* who studied the anxiety levels observed in candidates for (LT) they found that the majority of the liver transplant recipients were married and minority of them were divorced.

Regarding to the educational level, the current study revealed that almost two fifths of the liver transplant recipients were highly-educated. This finding was in agreement with *Banker (2010)* who studied the positive effect of medication on health also *Masala et al. (2012)* who studied the quality of life and physical activity in (LT) patients they found that around half of liver transplant recipients in their study were at high school and around one quarter had academic degree. This finding could be due to that patients with high level of education are more oriented about liver transplantation than the other group of patients.

The current study revealed that patients who had sufficient income equal to that who had insufficient income. This finding contradicted with *Masala et al. (2012)* who found that less than half of liver transplant recipients had moderate monthly

income. This result related to the governmental financial support authorities to the patients for surgery and medications costs.

Findings of the current study revealed that more than half of the liver transplant recipients were from rural areas. This finding was in accordance with *Karman (2013)*, who studied social disparity in LT, and found that the majority of liver transplant recipients were from non-capital cities. Urban versus rural is also one of the factors that may lead to discrimination in the allocation of organs transplantation.

In relation to physical needs, the present study showed that the activity/movement and sexual alterations were the highest physical needs of the patients under study and these alterations were highly statistically improved post counseling sessions. The present study results may be due to that patients following to the instructions of the counseling sessions and successfully done the transplantation surgery these results were inconsistent with *Danzinger and Kumar (2010)* whose study revealed that cardiopulmonary complications are the highest needs among their study group. They added also that, pulmonary complications were gradually recovered.

In the same line, sexual function after transplantation has become a very important parameter for evaluating the recipients' condition after surgery. The present study showed that improvement of sexual alteration post counseling sessions, this findings was in agreement with *Burra and Germani (2013)*, who studied long term quality of life of transplant recipients and found that a significant improvement of sexual function after transplantation among such group of patients.

In relation to physical needs, the study results showed a highly statistical significant difference regarding the total physical needs at pre and post counseling sessions, this might be due to the improvement of the

recipient condition related to successful transplant operation, these findings go on line with *Lemzyea et al. (2012)* who found that after implementation of the educational program, statistically significant improvements in patient's physiological function. In addition, *Abdo (2012)* found in his study regarding comparison between before and three months after transplantation, the physical domain showed significant improvement.

In relation to total physical needs the current study stated that more than two fifth of the patients under study had physical needs pre counseling sessions and decreased to less than one fifth after counseling sessions, with statistical significant difference between the result of the pre and post sessions. This findings go in the same line with *Bawnik and Saab (2009)*, who studied health related quality of life after liver transplantation for adult recipients and stated that after liver transplantation the majority of physical and mental components of health related quality of life scores were improved.

Regarding to the psychological needs of patients under study at pre counseling sessions, more than two fifths of the liver transplant recipients had psychological alteration; while become less than one fifth at the post counseling sessions; with statistically significant difference between the result pre and post sessions. This finding coincided with *Mohamed (2011)* who found that during the first year after transplantation, transplant patients reported a high quality of life in psychological aspects domain. The finding of the present study was due to the improvement of patients' condition post-surgery.

In relation to the social needs of patients under study, it was found that about two thirds of patients under study had social alterations pre counseling period while only, about half of them had social alterations post counseling period with statistical significant

difference between the pre, and post counseling sessions results. This finding was in agreement with *Barcelos et al. (2008)* who observed an improvement in all variables in social domain of the patients after (LT) in periods of 1, 3, 6, 9 and 12 months. The findings of the present study were due to the improvement of the patient's condition post-surgery and decreased his reliance on others.

Regarding percentage distribution of the study subjects according to their spiritual needs pre and post the counseling sessions, it was showed that spiritual alterations had no statistical significant difference between pre and post counseling sessions. The findings of the present study may be due to long period of disease before transplantation caused stabilization of the recipients' spiritual condition. This finding was disagreed with *Leeson et al. (2015)* who's result suggest that spirituality may be a resilience factor that could be targeted to improve quality of life for recipients after transplantation . While the present result agree with *King et al. (2013)* who stated that there were no significant associations between spiritual status and quality of life, pain, or depressive symptoms post transplantation.

Regarding satisfactory level of information of the study subjects regarding the surgical definition, characters of the donor and preventive measures for complications rejection, infection and bleeding there were highly statistical significant difference between pre and post counseling sessions, the previous results were supported by *Abdelhameed (2013)* who found that, post total mean knowledge scores of his studied subjects were increased significantly as a results of the implementation of the educational program.

Regarding the informational needs of patients under study that related to warning signs for potential complications, this study showed that pre counseling sessions, less than fifth of the liver transplant recipients

had correct answers, while after implementation of the counseling sessions, higher than three fourths of them had correct answers. With highly statistically significant differences between pre and post implementation of the sessions.

The current study result emphasized a highly significant difference for improving knowledge related to daily living activities post counseling sessions, This finding coincided with that of *Hazem et al. (2010)* who found that statistical positive correlations between post-operative activity of daily living and patient's knowledge. This could be due to that the results are the mirror which reflects the improvement of the patients' knowledge.

In relation to comparison of the study subjects according to their satisfactory level of needed information pre and post counseling sessions the present study found that highly statistical significant differences between the result of the pre and post sessions regarding all items of information except; purpose of liver transplant, importance of immunosuppressive medications and instructions regarding medications used. These findings go on line with *Tayebi and Ali (2008)* which studied liver transplant patient's needs, and found that almost half of the subject got satisfactory level of general knowledge about personal hygiene and measures of isolation. The present study results may be due to that the patients under study got satisfactory level of information needs due to the simplicity of information given in the counseling sessions.

The current study results delineated that a highly statistically significant difference between total satisfactory level of patients' information under study at pre and post counseling sessions, this finding is in agreement with *Mendes et al. (2013)* in a study titled " Educational intervention for LT candidates" who found that in analyzing the correct answers of knowledge assessment on

transplantation process before and after the educational intervention, a statistically significant difference was observed.

Regarding compliance with the therapeutic regimen of the study subjects pre and post counseling sessions the present study showed that there was a highly significant difference of the study subjects compliance between pre and post counseling sessions regarding medications, nutritional needs, physical activities, follow up schedule and precautions for prevention of (bleeding and infection). This finding was agreed with **Ring and Strong (2008)** who found that the majority of liver transplant recipients were wearing mask and protect themselves against infection, also this was supported by **Burra and Germani (2013)** who found that patient's compliance regarding diet was improved. The present study results could attribute the improvement of nutritional needs and precautions for prevention of infection to the knowledge and lifestyle modification of patients post the counseling sessions.

The present study revealed that there was highly statistical significant of the study subjects compliance regarding medicational regimen pre and post counseling sessions, this was agreed with **Lamy et al. (2010)** who found that, counseling improved patients compliance with medicational regimen in the study group in contrast to patients in the control group. Also, **Suresh et al. (2008)** who assessed the impact of counseling program on the improvement of medicational knowledge and compliance. This result could be due to the improvement of patient's knowledge regarding medications doses, effects, side effects, precautions which were mentioned during the counseling sessions and the booklet.

Moreover, the present study showed that, there was highly statistical significant difference between compliance of the study subjects pre and post counseling sessions regarding compliance with follow up

schedule post the operation. This finding is in agreement with **Timms (2011)** who reported that patients undergoing surgery compliant of follow up schedule with long period. This result may be due to that the patients convinced by for the follow up schedule to improve their functional status and provide them with assurance about their condition; and their daily activities.

Regarding total compliance, the results of the present study stated that there were highly statistical significant differences between the study subjects' compliance with therapeutic regimen at pre and post counseling sessions, this results was disagreed with **Hinkle and Cheever (2014)** who reported that many patients not compliant with their prescribed regimen where as a wide range of variables appears to influence the degree of compliance, including therapeutic regimen, psychological and financial variables. The result of the improvement of the total compliance of patients under study may be due to the effect of counseling sessions and patients get convinced by their therapeutic regimen.

Regarding correlation between compliance to therapeutic regimen of patients under study and their total physical, psychological, social, spiritual, and satisfactory information level pre and post counseling sessions, the result of the present study revealed that there were positive correlation regarding total physical, and psychological needs, and the total social needs, while there was negative correlation regarding the total satisfactory information level. This result incongruent with **Parker (2011)** who stated that the patient compliance had a clinically important influence on patient's physical, psychological and social domains. The result of the present study may be due to the improvement of the patient's physical, psychological and social needs and their compliance to therapeutic regimen by following the instructions after successful surgery.

Regarding correlation between compliance to therapeutic regimen of patients under study and their total satisfactory information level, there was positive correlation. This finding is consistent with **Robert (2011)** who stated that increased knowledge improves compliance and outcome. Furthermore, **Comerota et al. (2005)** who stated that promoting patient's knowledge will improve his level of compliance. The present result may be related to effect of information included in booklet and following instructions from the health team.

Regarding correlation between the effect of counseling in relation to the total operational period needs pre and post counseling sessions, there was positive correlation between compliance to therapeutic regimen pre and post counseling sessions with duration of post-surgery, this finding is disagreed with, **Dew et al. (2009)** who reported that noncompliance appears to be relatively common during the first several years after transplantation. Furthermore, compliance in most areas of the medical regimen worsens over the first year after the transplant, just as it does for most patients who begin new medical therapies. The present result may be due to the awareness of the patients about the importance of following instructions in the program about his therapeutic regimen.

Conclusion

The conclusion from this study were as the following:

- There is statistical significant improvement of physical, psychological, social needs of the recipient post the counseling sessions.

- Also there was a satisfactory level of information post counseling sessions among liver transplantation recipients.

- As well the counseling statistically significantly improve compliance of recipients after liver transplantation under the study regarding all aspects of therapeutic regimen (medications, nutrition, physical activity, follow up, and early detection of bleeding & infection).

Recommendations

The results of this study projected the following recommendations:

- Counseling programs for patients undergoing liver transplantation should start from admission to the hospital till the discharge.

- A comprehensive and simplified booklet including the therapeutic regimen which submitted to the liver transplant patients after admission to the hospital will serve as a care guide and reference to the patient and his family.

- Replication of the study on a larger probability subjects selected from different geographical areas in Egypt is recommended to obtain more data which could be generalized.

- Studying factors affecting patients' compliance with therapeutic regimen for recipients of liver transplantation post-surgery is recommended.

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Conflict of interest:

No Yes

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