

# Effect of Educational Program on Activities of Daily Living among Post Liver Transplantation Patients

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**Background:** Liver transplantation is an important therapeutic option for patients with life-limiting liver disease, which may present in the form of acute liver failure, end-stage chronic liver disease, primary hepatic cancers, or inborn metabolic disorders. **The aim of the study:** Evaluate the effect of educational program on activities of daily living among post liver transplantation patients. **Research design:** Quasi experimental research design was used. **Setting:** The study was conducted in Liver Transplantation Unit of National Liver Institute, Menoufia University, Egypt. **Sample:** A purposive sample of patients who attended the previously mentioned unit through ١٢ months they were taken from both sexes, their age ranged from ٢٠ to ٦٠ years old during ١٢ months (n= ٥٠). **Tools:** three tools were used; (١) The General Data Questionnaire (٢) Barthel Index Scale **Results:** shows that ٢٥.٧٧% of recipients had total mean score information program implementation, then increased to ٧٦.٩٦% and ٧٦.٣٧% post immediate implementation and at discharge, respectively. Also, there was positive improvement regarding patients' independency in activities of daily living post implementing educational strategy. **Conclusion:** the degree of independence among post liver transplantation patients significantly improved post program implementation which reflects that program was effective in improving patients' daily activity performance with high statistically significance differences. **Recommendations:** The need for continuous educational and training programs for post liver transplantation patients regarding activity of daily living and maintaining healthy life style.

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**Key words:** Activities of Daily Living, Educational Program, Liver Transplantation

## Introduction

Liver transplantation (LT) may be prescribed as a curative or life prolonging for appropriately selected patients with acute liver failure, advanced cirrhosis, hepatic malignancy, or inborn metabolic disorders. Given vast improvements in surgical technique, organ preservation and procurement, and immunosuppression over the past several decades, modern LT is characterized by remarkable improvements in post-transplant patient survival, graft survival, and quality of life. (Mahmud, ٢٠٢٠)

Liver transplantation is a life-saving surgery includes removing a diseased or injured liver

from patient, called recipient and replace it with a donated whole or partial healthy liver from another person, called a donor. The transplanted liver may be cadaveric or living donor transplantations. Cadaveric transplantation taken from patients who are declared brain dead and it is preferred over living donor transplantation, but the form has a number of disadvantages including long waiting time and low chance of survival. In living donor liver transplantation, a healthy individual related by blood or an individual who is considered by the ethical committee as suitable to donate, although not related by blood, provides a portion of the liver. The remaining liver has the ability to regenerate

both the segment that was donated and the remaining part of the donor's liver will grow to normal. (*Shedeed et al.*, ۲۰۲۱)

Some indications of liver transplantation include, acute liver failure which is caused by acute viral hepatitis A,B,C,D, autoimmune hepatitis, acute fatty liver, drug or toxin induced hepatotoxicity, cirrhosis from chronic liver disease (chronic viral hepatitis B,C , wilson's disease, alcoholic liver disease, non alcoholic steatohepatitis, cirrhosis with MELD score  $\geq 10$  , malignant disease of liver (hepatocellular carcinoma, cholangiocarcinoma , carcinoid tumor),metabolic liver disease (glycogen storage disease, hereditary and neonatal hemochromatosis, cystic fibrosis) ,cholestatic liver disease (primary biliary cirrhosis, secondary biliary cirrhosis, biliary atresia ) miscellaneous (adult polycystic liver disease, hepatic trauma, nodular regenerative hyperplasia). (*Shah et al.*, ۲۰۲۳)

Physical activity after liver transplantation is an important determinant of long-term health, and is as important as the value of pre-transplant activity for withstanding the immediate stress of transplantation. Although transplantation usually enables rapid recovery of synthetic liver function and metabolism, recovery of physical capacity and performance to normal levels is delayed and often incomplete (*Dunn et al.*, ۲۰۲۰)

Activities of daily living (ADL) comprise the basic actions that involve caring for one's self and body, including personal care, mobility, and eating. Activities of daily living (ADL) comprise the basic actions that

involve caring for one's self and body, including, grooming/personal hygiene, dressing, toileting/continence, transferring/ambulating, and eating. (*Dixe*, ۲۰۲۰)

Activities of daily living (ADLs), often termed physical ADLs or basic ADLs, include the fundamental skills typically needed to manage basic physical needs, comprised the following areas: grooming/personal hygiene, dressing, toileting/continence, transferring/ambulating, and eating. Basic ADLs are generally categorized separately from Instrumental Activities of Daily Living (IADLs), which include more complex activities related to independent living in the community e.g., managing finances and medications food preparation, housekeeping, and laundry. (*Edemekong et al.*, ۲۰۲۳)

The basic ADLs include the following categories: Ambulating: The extent of an individual's ability to move from one position to another and walk independently. Feeding: The ability of a person to feed oneself. Dressing: The ability to select appropriate clothes and to put the clothes on. Personal hygiene: The ability to bathe and groom oneself and maintain dental hygiene, nail, and hair care. Continence: The ability to control bladder and bowel function. Toileting: The ability to get to and from the toilet, use it appropriately, and clean oneself. (*Carmona et al.*, ۲۰۱۹)

### **Significance of the study**

Egypt is ranking the first line in the world; in liver transplantation that considered this only chance of cure and long-term survival

for patients in recent decades. On the other hand, with LTRs, the patients are at risk for common complications in this critical period of post-transplantation, so patients' education are important in preventing expected complications and achieving the best possible practice for improvement and recovery then promote their daily living activities

According to National Liver Institute records, **Shebin ELkoom ,Menoufia Governorate**, the total numbers of cases of liver transplantation during the year ٢٠٢٠ were around ٤٠-٤٥ cases and about ٦٠-٧٠ cases follow in the institute after liver transplantation in other centers. (**Statistical Office at Shebin ELkoom ,Menoufia University Hospital, ٢٠٢١**). After liver transplantation, physical activity levels generally improve. Recipients' expectations and intensity of motivation are important determinants of their achieved level of physical performance, which may reach that of most non transplanted individuals. (*Beekman,etal., ٢٠١٨*).therefor this study was conducted to improve activity of daily living for post transplanted patients.

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

The study aimed to evaluate effect of educational program on activities of daily living among post liver transplantation patients

### **Research hypothesis**

**H<sup>١</sup>**: there will be an improvement in level of dependency between pre and post educational program implementation.

**H<sup>٢</sup>**: there will be highly statistically significant difference regarding activities of daily living.

### **Subjects and Methods**

### **Research design**

Quasi- experimental research design was utilized to achieve the study's aim.

### **Study setting**

This study was carried out at Liver Transplantation Unit of National Liver Institute, Menoufeya University, Egypt which considered the first center in the Middle East where liver transplantation takes place and it differentiates from other transplantation center by high attendance and following of patients from all over Egypt and Middle East

### **Subject**

A purposive sample consisted of fifty patients with liver diseases who underwent liver transplantation surgery in the liver transplantation unit at national liver institute, Menoufeya University; Patients were enrolled in the study over a period of twelve months from the beginning of December, ٢٠٢٢ to the end of November, ٢٠٢٣.

The sample size was calculated according the following formula: **Stephen Thompson s equation (Fearon et al., ٢٠١٧)**:

$$n = \frac{N \times p (1 - p)}{\left( (N - 1) \times (d^2 \div z^2) \right) + p (1 - p)} = 50$$

### **Data Collection Tools**

**Two tools were used to collect data for this study as the following:**

#### **Tool I: The General Data Questionnaire :**

It was adopted from (*Mahmud, ٢٠٢٠*) to assess Recipients' demographic characteristics and medical history for patients with liver transplantation. It was collected by the researcher and consisted of the following parts:

**Part I: Demographic characteristics of recipients:** This part concerned with assessment of patients; demographic characteristics and included (٧) questions as age, gender, marital status, level of education, nature of work, residence and treatment costs.

**Part II: - Recipients' medical history:** This part aimed to assess patients' medical data of the past and current disease and its management as well as, the life style of the patients with liver transplantation and included (١٢) questions related to onset of diagnosis of liver failure, associated physical disorders, causes of liver failure, main complain when diagnosed, family history of liver disease, previous hospitalization due to liver disorders, previous medication, smoking, number of cigarettes per day, previous blood transfusion, number of transfused bags and sleeping alteration.

**Part III :** Recipients' informational needs Assessment Questionnaire.: It was adopted from (*Craig & Heller, ٢٠٢١*) It aimed to assess patient's informational needs regarding liver transplantation pre and post educational strategy implementation. It included ٢٧ open ended questions about general concept of liver, liver transplantation and complications, prevention of complication and discharge plan.

**Tool II: Barthel index for Activities of Daily Livings (ADL) :** This tool was adopted from (*Donna, ٢٠١٢*) to assess the patient's ability to perform activities of daily living independency. The scale composed of ١٠ categories "bowels control, bladder control, grooming, toileting, feeding, transferring, mobility, dressing, stairs climbing and bathing". Each category has ٣

items "completely dependent, needs assistant and independent".

#### **Scoring system for barthel index :**

The scores responses for every item were as follows:

- Completely dependent was scored zero
- Need assistant was scored ١
- Independent was scored ٢.

The total scores of independency level ranged from ٠-٢٠, the higher scores reflect the higher independency level. It was categorized as the following:

- ٠- ٦ was considered "completely dependent".
- ٧-١٣ was considered "needs assistance".
- ١٤-٢٠ was considered "independent".

#### **Tools validity:**

The face and content validity of the tools were checked through a jury consisting of five experts in the field of medical surgical nursing from the faculty of nursing, Benha University. The experts reviewed the tools to check the relevancy, simplicity, clarity, comprehensiveness, and applicability of the questions. The consensus among experts regarding the questionnaire was ٩٨ %, the observational checklist and patients' health outcomes assessment sheet was ٩٩ % for most items. Also, a designed program which covered all items related to liver transplantation care for post liver transplantation patients'

based on recent current literatures, it was revised by the same experts then all required modifications were done consequently and the final form of the tools was used for data collection.

**Tools reliability**

In the present study, reliability had been tested using cronbach’s alpha coefficient Reliability of the following

**Table (1) :** Alpha Cronbach reliability analysis for the study tools (as general).

Tools	Alpha	P
General Data Questionnaire	٠.٨٣٥	<٠.٠٠١
Barthel Index scale	٠.٨١	<٠.٠٠١

**Ethical considerations:**

The ethical research considerations in the study included the following:

- The study approval was obtained from the ethical committee of nursing faculty before initiating the study work.
- The researcher clarified the purpose and aim of the study to patients included in the study before data collection.
- Verbal consent was obtained from the patients to participate in the study.
- The researcher was assured maintaining anonymity and confidentiality of data.
- The patients were informed that they allowed to choose their participation in the study and they have the right to withdraw from the study at any time.

**Pilot study:**

A pilot study was conducted on ١٠٪ (٥ patients) of the study subjects in order to test the clarity and applicability of

the study tools and the program, also to estimate the time required for each tool to be filled by the researcher as well as to identify any possible obstacles that may hinder data collection. Based on the results of the pilot study the necessary modifications were done for more applicable tools to collect data. The patients selected for the pilot study were excluded from the study subjects. The pilot study was done two weeks before starting the study.

**Fieldwork:**

Data collection of the current study was carried out through twelve months, from the beginning of December, ٢٠٢٢ to the end of November, ٢٠٢٣. The researcher attended the setting four days (Saturday, Monday, Tuesday and Thursday) per week during afternoon shifts. - Each interview took a time of about ٣٠-٤٥ minutes. The precautionary practice measures for infection control as maintaining physical distance, wearing facemask, gloves and using alcohol aseptic solution for both the researcher and the patients included in the study. The study was conducted through four phases:

**Assessment phase:**

It was carried out for all studied patients by the researcher to collect data

regarding individual recipients’ sociodemographic characteristics and medical history as general characteristics information using **tool I**, then the researcher collected the recipients' information needs assessment ( **pre-operative preparation period and pre implementing educational**

**program** ) using **tool II** (activity of daily living scale ( **٢<sup>nd</sup> day of post-operative period**) as a baseline data assessment before implementing the instruction and practicing by the study patients postoperatively (post-liver transplantation )for comparing with post-assessment using the same tools.

### **Planning phase:**

Once the initial assessment finished, an educational program was designed based on individual learning needs. The researcher set up teaching plan covering general and specific objectives. This program was developed from recent literatures, revised and modified based on the experts' comments, in order to be implemented using various methods. The program resources and facilities were allocated (printed material and location or site of session that best serve the learner). The researcher determined the timetable of sessions with the patients for starting program sessions.

### **Implementation phase:**

(The program implementation): It included the following steps: ١- The program implementation had been carried out in liver transplantation unit two days preoperatively and was conducted in ٢ sessions (two theoretical session and one practical sessions). Each session lasted about ٣٠-٤٥ minutes/ day for one patient/session considering time table for operation, including periods of discussion according to the patients' progress and feedback. Motivation, problem solving and reinforcement techniques were used to enhance active participation of the patient in the educational sessions..

➤ ١<sup>st</sup> session: (introductory session) explanation of reasons and importance of the program and give an explanation about the definition of liver, function causes of liver failure and liver transplantation.

➤ ٢<sup>nd</sup> session: instructions about liver transplantation complication ,prevention of complication and discharge plan .

➤ ٣<sup>rd</sup> session :application of burger allen test and early movement from bed , range of motion exercise ,grooming , bathing and dressing.

Different teaching and learning methods were used during the sessions which included; discussion, demonstration and re-demonstration, instructional media include mobile videos and printed handout with pictures, which was presented in clear and concise form to learn patients postoperative liver transplantation care techniques. The program colored booklet was given to each studied patient in order to help them for reviewing and support teaching.

At the beginning of the first session, patients were oriented regarding the program contents, its purpose and impact on his condition and expected outcomes. Patients were informed about the time of the next session at the end of the sitting.

Each session was started by a summary about what has been discussed in the previous session and the objectives of the new session, using simple Arabic language, also the session ended by a summary of its contents and feedback was obtained from the patients to ensure that he/ she got the maximum benefit.

At the end of all sessions, the researcher asked them about their opinion on the program and their benefits from the subject. The researcher informed the patients that they will be evaluated by the researcher.

### **Evaluation phase:**

This phase aimed to evaluate the effectiveness of educational program on

activities of daily living among post liver transplantation patients,

First :the researcher evaluated the recipient's informational needs post immediate the sessions and at discharge by the same tools of data collection of preprogram implementation through the following phases:

Second : Evaluation of activity of daily living was done on 1<sup>st</sup> day as abaseline .Then The follow-up evaluation done on the 1<sup>st</sup> and 3<sup>rd</sup> months post-discharge using **tool II** (Barthel index scale). The researcher asked the recipients to follow them on the telephone and to be evaluated in the outpatients' clinic

### Data Analysis

Data analysis was performed using the SPSS software (version 20). For determining the normal distribution of quantitative variables was used to Kolmogorov-Smirnov test. Qualitative data was presented as a number and percent. Furthermore, quantitative data was described as mean or standard deviation, as appropriate. Chi-square test was used to examine the difference and relation between qualitative variables during different periods. Fisher's exact test was applied on smaller sample sizes, alternative to the chi-square test, when the frequency count is  $< 5$  for more than 10% of cells . Freidman test for differences on dependent quantitative variables between more than two related groups. Cochran test for differences on a dichotomous dependent variable between three or more related groups For comparing the mean scores in two groups , Mann Whitney test for non parametric quantitative data and Kruskal walis for more than two groups . Spearman-rho method was used to

test correlation between numerical variables. Linear regression was used for multivariate analyses on activity of daily living as dependent factor. A p-value  $< 0.05$  was considered significant, and  $< 0.001$  was considered highly significant .

### Results:

**Table (1):** reveals that 60% of recipients were in the category 40- 60 years old, with mean age  $56.20 \pm 0.98$ . Males were more prevalent and constituted 80% of the studied patients and 90% of them were married . Regarding their educational level 80 % had secondary education and 60% of them had manual work and 82% lived in rural areas. Concerning treatment costs, it was found that 60% of them were treated at state's expense

**Table (2):** Shows percentage distribution of the studied recipients regarding their medical history, it revealed that 42% of the studied patient had been diagnosed with liver failure since more than 10 years ago. Sixty percent of them had virus C and B as a main cause of liver failure, and the most complain when they had diagnosed were sleeping disorders for 60% followed by ascites for 40% and they had diabetes mellitus 62% and had no family history with liver disease. Regarding their hospitalization, 60% reported that they were hospitalized for one week last year due to liver disease and they had taken the analgesics as a previous medication. Fourty percent of them were smokers which 90% of them were smoking more than 5 cigarette a day and sixty percent of studied patients

received blood transfusion and 83.3% of them had received less than 3 bags of blood

**Table (3):** reveals that there was highly statistically significant difference regarding activities of daily living concerning their bowels , bladder, toilet use, feeding , transfer , mobility , dressing and grooming.

**Figure (1):** shows percentage distribution among the studied recipients patients regarding their total activity level of daily living pre and post educational implementation. It revealed that 86% of them were totally dependent at 1<sup>st</sup> day post transplantation , while 14% of them were

very dependent . at 1<sup>st</sup> month post transplantation 20% of them were minimally dependent while 80% were totally independent. At 3<sup>rd</sup> month post transplantation , 8% of them were minimally dependent and 92% were totally independent . it also shows that there was an improvement in level of dependency between pre and post educational implementation

**Figure (2):** illustrates that percent of change regarding activity of daily living of studied recipients was 32.80% at 1<sup>st</sup> month post transplantation while it was 84.20% at 3<sup>rd</sup> month post transplantation



**Table (١):** Frequency distribution of the studied recipients regarding their personal data (N.=٥٠).

<b>Personal data</b>	<b>(N.)</b>	<b>%</b>
<b>Age /year</b>		
٢٠-<٤٠	٢٠	٤٠.٠
٤٠-٦٠	٣٠	٦٠.٠
$\bar{x} \pm SD$	٤٦.٢٠ $\pm$ ٠.٩٨	
<b>Sex</b>		
Female	١٠	٢٠.٠
Male	٤٠	٨٠.٠
<b>Marital status</b>		
Married	٤٥	٩٠.٠
Single	٥	١٠.٠
<b>Educational Level</b>		
Can't read and write	١٥	٣٠.٠
Secondary education	٢٥	٥٠.٠
University education	١٠	٢٠.٠
<b>Nature of Work</b>		
Manual work	٣٠	٦٠.٠
Mental work	١٠	٢٠.٠
No work/ Household	١٠	٢٠.٠
<b>Residence</b>		
Rural	٤١	٨٢.٠
Urban	٩	١٨.٠
<b>Treatment costs</b>		
Treatment at his own expense	١٠	٢٠.٠
Health insurance	١٠	٢٠.٠
At the state's expense	٣٠	٦٠.٠

**Table (٢):** Frequency distribution of the studied recipients regarding their medical history (N.=٥٠).

<b>Recipients' medical history</b>	<b>(N.)</b>	<b>%</b>
<b>Onset of diagnosis for liver failure</b>		
< One year	١٢	٢٤.٠
١-<٥ years	١٧	٣٤.٠
٥-<١٠ years	٠	٠.٠
$\geq ١٠$	٢١	٤٢.٠
$\bar{x} \pm SD$	٥.٦٠ $\pm$ ١.٢٦	
<b>Associated disorders#</b>		
None	١٠	٢٠.٠
Diabetes millitus	٣١	٦٢.٠
digestive disorders	٢٠	٤٠.٠
<b>Causes for liver failure#</b>		
Schistosomiasis	٢٠	٤٠.٠
Viruses (hepatitis B or C)	٣٠	٦٠.٠
Non-alcoholic fatty liver	٢٠	٤٠.٠
Autoimmune disease	١٠	٢٠.٠

<b>Main complaint when had been diagnosed#</b>		
Ascites in the abdomen	٢٢	٤٤.٠
Hematemesis	١.٠	٢.٠.٠
Swelling of the extremities	١.٠	٢.٠.٠
Recurrent hepatic coma	٣	٦.٠
Jaundice	١٨	٣٦.٠
Abdominal pain	١٨	٣٦.٠
Suffering from sleep disorders	٣.٠	٦.٠.٠
<b>Family history of liver failure #</b>		
None	٣.٠	٦.٠.٠
Fatty liver	٢.٠	٤.٠.٠
Hepatitis B and C	١.٠	٢.٠.٠
<b>Previous hospitalization last year due to current disorder</b>		
No	١.٠	٢.٠.٠
One week	٣.٠	٦.٠.٠
two weeks	٥	١٠.٠
Three weeks	٥	١٠.٠
<b>Previous Medications#</b>		
Antiviral medication	٢.٠	٤.٠.٠
Medicines to get rid of heavy metals	١.٠	٢.٠.٠
Analgesics	٣.٠	٦.٠.٠
<b>Smoking</b>		
No	١.٠	٢.٠.٠
Yes	٢.٠	٤.٠.٠
Stopped smoking	٢.٠	٤.٠.٠
<b>Number of cigarettes /day (no.=٣٠)</b>		
>٥/day	١٥	٧٥.٠
>١٠/day	٥	٢٥.٠
<b>Had a blood transfusion</b>		
No	٢.٠	٤.٠.٠
Yes	٣.٠	٦.٠.٠
<b>Number of blood bags (no.=٣٠)</b>		
<٣ bags	٢٥	٨٣.٣
>٣ bags	٥	١٦.٧

(#) Not mutually conclusive

**Table (٣)** Frequency distribution and significant difference of the studied recipients according to their activity of daily living pre and post educational implementation (N.=٥٠)

<b>Barthel index scale</b>		<b>Baseline</b>		<b>Follow up</b>				<b>□٢ test</b>	<b>Pvalue</b>
		<b>٣<sup>rd</sup> day of operation</b>		<b>١<sup>st</sup> month post operation</b>		<b>٣<sup>rd</sup> month post operation</b>			
		<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>		
<b>Bowels</b>	Completely dependent	١٨	٣٦.٠	٠	٠.٠	٠	٠.٠	٤.٧٧١	٠.٠٢٩*
	Needs assistance	٣٢	٦٤.٠	٥	١٠.٠	٠	٠.٠		
	Independent	٠	٠.٠	٤٥	٩٠.٠	٥٠	١٠٠.٠		
<b>Bladder</b>	Completely dependent	٤٢	٨٤.٠	٠	٠.٠	٠	٠.٠	١٢.٣٣٣	<٠.٠٠١**
	Needs assistance	٨	١٦.٠	٥	١٠.٠	٠	٠.٠		
	Independent	٠	٠.٠	٤٥	٩٠.٠	٥٠	١٠٠.٠		
<b>Toilet Use</b>	Completely dependent	٤٥	٩٠.٠	٠	٠.٠	٠	٠.٠	٢٢.٢٢٢	<٠.٠٠١**
	Needs assistance	١٠	٢٠.٠	١٨	٣٦.٠	٧	١٤.٠		

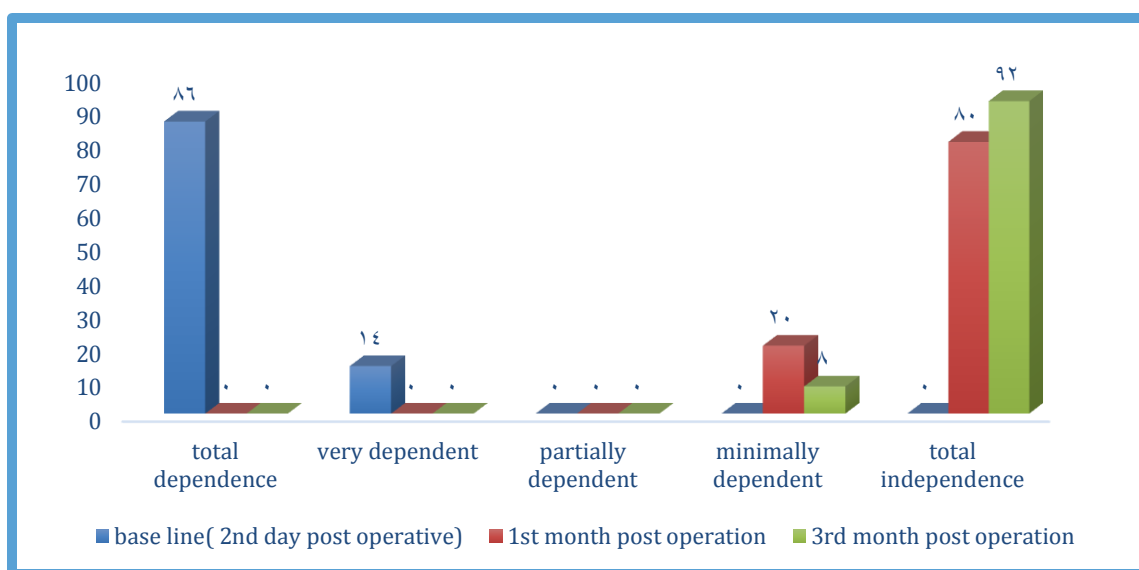
	Independent	•	••	۳۲	۶۴•	۴۳	۸۶•		
Feeding	Completely dependent	۳۸	۷۶•	•	••	•	••	۵۰۹۱۵	••۰۱۵*
	Needs assistance	۱۲	۲۴•	۱۵	۳۰•	۵	۱۰•		
	Independent	•	••	۳۵	۷۰•	۴۵	۹۰•		
Transfer (bed to chair and back)	Completely dependent	۴۲	۸۴•	•	••	•	••	۶۰۳۶	••۰۱۴*
	Needs complete assistance	۸	۱۶•	۵	۱۰•	•	••		
	Partial assistance	•	••	۲۰	۴۰•	۱۶	۳۲•		
	Independent			۲۵	۵۰•	۳۴	۶۸•		
Mobility	Completely dependent	۴۵	۹۰•	•	••	•	••	۱۰۳۴۵	••۰۰۶*
	Needs complete assistance	۱۰	۲۰•	۷	۱۴•	•	••		
	Partial assistance	•	••	۱۷	۳۴•	۱۰	۲۰•		
	Independent	•	••	۲۶	۵۲•	۴۰	۸۰•		
Dressing	Completely dependent	۳۶	۷۲•	•	••	•	••	۹۰۱۳۳	••۰۰۳*
	Needs assistance	۱۴	۲۸•	۲۳	۴۶•	۷	۱۴•		
	Independent	•	••	۲۷	۵۴•	۴۳	۸۶•		
Grooming	Completely dependent	۴۴	۸۸•	۱۵	۳۰•	•	••	۷۰۱۷۹	••۰۲۸*
	Needs assistance	۶	۱۲•	۳۵	۷۰•	۳	۶•		
	Independent	•	••	•	••	۴۷	۹۴•		
Stairs	Completely dependent	۵۰	۱۰۰•	۱۶	۳۲•	•	••	N.A	N.A
	Needs assistance	•	••	۳۴	۶۸•	۶	۱۲•		
	Independent	•	••	•	••	۴۴	۸۸•		
Bathing	Completely dependent	۵۰	۱۰۰•	۱۴	۲۸•	۴	۸•	N.A	N.A
	Needs assistance	•	••	۳۶	۷۲•	۴۶	۹۲•		
	Independent	•	••	•	••	•	••		

• \* Significant at  $p < 0.05$ .

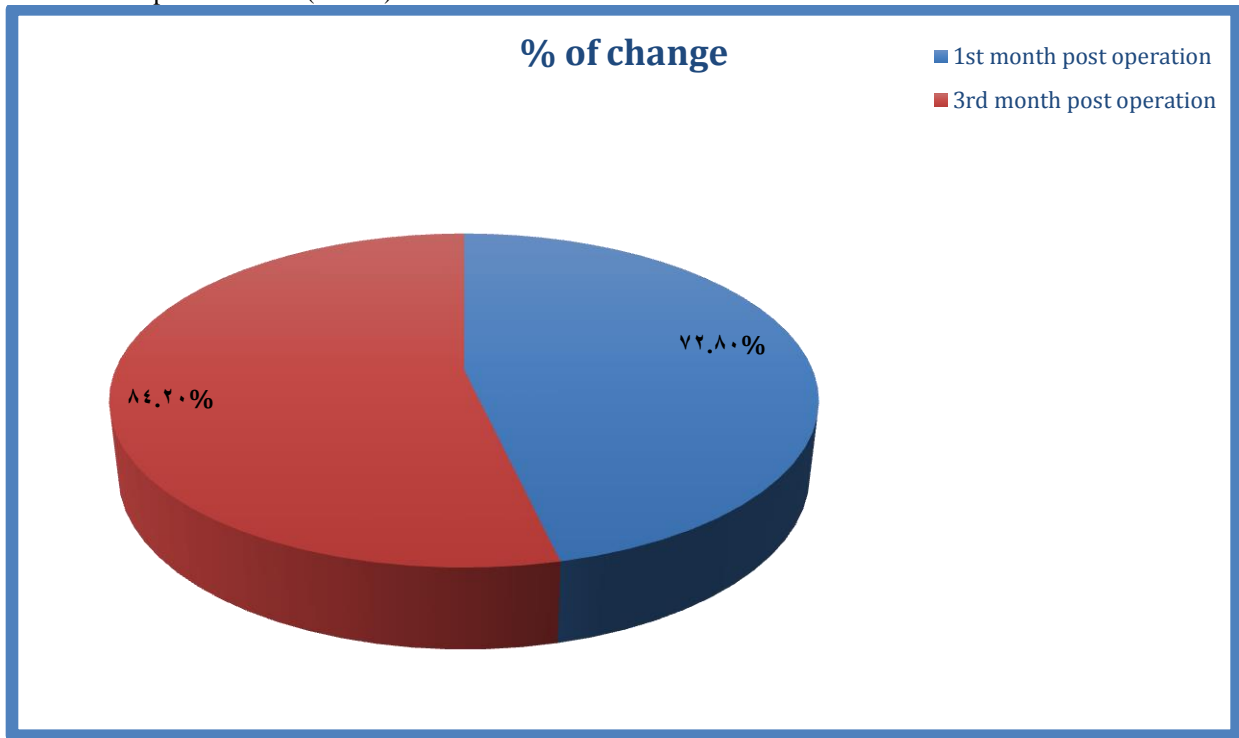
\*\*Highly significant at  $p < 0.001$ .

NA: Not applicable

**Figure(1):** Frequency distribution among the studied recipient patients regarding their total activity level of daily living pre and post educational implementation (N.=۵۰)



**Figure(٢):** Percent of change among the studied recipient patients regarding their activity of daily living post educational implementation (N.=٥٠)



## Discussion

**Regarding age**, the current study revealed that more than half of the studied patients were in the age category forty to sixty years old with mean age  $56.2 \pm 0.98$  years, From the researcher point of view, this might be due to end stage of liver disease which common in old age as a result of chronic cirrhosis and liver failure for long time that necessitating liver transplantation when conventional therapeutic resources are not sufficient to treat liver disease. This result in the same line with study by *Gil et al.*, (2014) about "Recipient age and mortality after liver transplantation: a population-based cohort study", showed that most liver transplantation were performed on patients in their fifties.

**As regard to sex**, the current study results showed that, the majority of the studied patients were males. From researcher point of view, that might be due to nature of life in rural areas, as most men work in agriculture and at risk of contact schistosomiasis and hepatitis, lack of awareness of the proper use of medications, and liver diseases are common in male than female. This finding is in agreement with a study conducted by *Demir & Saritas* (2020) titled "Effects of massage on vital signs, pain and comfort levels in liver transplant patients" and stated that less than two thirds of the studied patients were males.

Also, *Kothari et al.*, (2017), who studied about "Inpatient rehabilitation after liver transplantation decreases risk and severity of 30-day readmissions, California, United States" reported that more than half of studied patients were males.

**Concerning marital status**, the result revealed that most of the studied patients were married. This finding supported by *Demir & Saritas* (2020) who revealed that the majority of the studied patients were married.

**Owing to medical history**, the current study revealed that less than half of the studied patients had been diagnosed with liver failure since more than 10 years ago. From the researcher point of view, this might be due to the studied patients suffered from liver disease from long period of time to become chronic disease that affect functions of liver. This finding is in agreement with *Shedeed et al.*, (2021) who studied about "Home Health Care Model to Improve Quality of Life among Post Liver Transplant Recipients" and reported that more than half of the studied

patients suffered from liver disease since more than ten years

This finding is in contradicted with study conducted by *Soultan et al.*, (2022) titled "Effect of an Educational Program on the Quality of Life of Patients Undergoing Liver Transplantation" and illustrated that less than two thirds were diagnosed with liver disease since more than 10 years

**Regarding causes of liver failure**, the current study revealed that more than half of the studied patients were have hepatitis viruses, Similar to *Mukhtar et al.*, (2014) study finding titled "Infection complications and pattern of bacterial resistance in living-donor liver transplantation" and illustrated that less than half of patients were having hepatitis c virus. It was supported by, *Mohamed & Mostafa*, (2018) study and reported that the majority of the study sample were having hepatitis c with liver cirrhosis.

**Owing to Previous hospitalization**, the current study revealed that more than half of the recipient had been admitted to hospital for one week. It contributed to complications of end stage liver disease such as hepatic coma and ascites which necessitate preparing for liver transplantation. This finding supported by *Alfauomy et al.*, (2020) whose studied "Effect of Nursing Interventions on Self-management Behaviors of female Geriatric patients with Liver Cirrhosis" presented that two third of the studied female geriatric patients were hospitalized in the last year either one or more times

**In relation to associated disorders**, this study showed that more than half of the studied patients have diabetes mellitus, supported by *Demir & Bulbuloglu*, (2021) revealed that almost one third of the studied patients have diabetes mellitus. This finding is in the same line with study result was done by *Lai et al.*, (2022) entitled "Postoperative fever after liver resection: Incidence, risk factors, and characteristics associated with febrile infectious complication" and noticed that more than one quarter of the studied patients have diabetes mellitus.

**Regarding sleep disorders**, the current study revealed that more than half of the studied patients were complaint of sleeping disorders at diagnosis. It supported by *Marques et al.*, (2017) who study "Sleep Quality Assessment and Daytime Sleepiness of Liver Transplantation Candidates" and reported that more than two thirds were suffering from sleep

disorders. This result is in the same line with *Plotogea et al.*, (٢٠٢١) in study entitled " Assessment of Sleep among Patients with Chronic Liver Disease: Association with Quality of Life" illustrated that more than three-quarters of studied patients have nighttime disturbances and day time sleepiness.

Also this finding was in the same line with a study conducted by *Miyaaki et al.*, (٢٠٢٢) titled " Proposal for new sleep disorder criteria in patients with chronic liver disease: influence of liver-related complications" and revealed that almost one half of the studied patients had sleep disorders . Conversely, the study disagreed with *Nishikawa et al.*, (٢٠٢٠) who studied about " Frailty and sleep disorder in chronic liver diseases" and reported that more than one third of studied patients have sleep disorders.

**In relation to previous hospitalization related to liver disease**, the current study revealed that more than half of the studied patients were admitted to hospital for one week last year . It is in the same line with *Shedeed et al.*, (٢٠٢١) and concluded that the most of the studied sample were admitted to hospital related to liver disease more than one time yearly from the onset of the disease.

**Pertaining to smoking** , the current study presented that less than half of patients were smokers, This could be due to that the majority of our studied patients were males. Is in accordance with *Mokbel et al.*, (٢٠٢٠) who found that more than one third of the studied subjects were smokers. While *El-Shafiey et al.*, (٢٠١٧) concluded from their study entitled " Effect of instructional scheme for patients undergoing liver transplantation surgery on Their Performance" and reported that more than half of the studied patients were non smokers .

On other hands, *El Ashery et al.*, (٢٠١٦) results in their study titled " Effect of Teaching Guidelines on Patient Knowledge Post Liver Transplantation after Hospital Discharge " that more than three quarters of the study sample were non smokers.

**Concerning blood transfusions**, the current study presented that more than half of the studied patients were received blood transfusions. It may be attributed the elevated incidence of gastrointestinal bleeding in liver diseased patients. This result supported by *Kakkar et al.*, (٢٠٢١) who studied " Transfusion practices in cirrhotic patients at a tertiary liver care center from Northern India" and confirmed that more

than one third of the hospitalized cirrhotic patients were transfused.

**Regarding ADL**, the current study showed that there was highly statistically difference regarding activities of daily living post educational instructions implementation. Also, there was an improvement in level of dependency between pre and post educational instruction implementation. This result in the same line with *Corriveau et al.*, (٢٠١٨) who study about " ADL and IADL Limitations Resolve but New Cognitive Impairments Develop in Liver Transplant Recipients" and noticed that ADL scores was low and the impairment disappeared by ٣ and ١٢ months post-transplant

Also, this finding is in agreement with *Nader & Hafez* ,(٢٠١٨) who noticed that nearly half of the studied subjects reported dependency at performance of daily living activates post program as compared to nearly on fifth of them at pre program implementation phase with statistically significant difference between pre and post implementation scores. This finding is agreed with study was done by *Al Saaid et al.*, (٢٠١٩) and emphasized a highly significant difference for improving daily living activities post counseling sessions implementation.

**In relation to Barthel index scale** , the current study revealed that there was statistically significant difference regarding bowels between pre and post implement education instruction . this finding is supported by *Mohamed*, (٢٠١٨) who studied about " Recovery of bowel function after liver transplant surgery" and found that there was statistically significant difference regarding bowel function.

Concerning to **bowels, dressing and transferring** , the current study finding revealed that there was statistically significant difference improvement compared with before implement education instructions regarding these items , this finding is contradicted with *Samoylova et al.*, (٢٠١٧) in his study entitled " Disability in patients with end-stage liver disease: results from the functional assessment in liver transplantation study" and revealed that the most prevalent ADL disabilities were continence, dressing , and transferring .In accordance with *Jin et al.*, (٢٠٢٢) who studied " Application of enhanced recovery after surgery following liver transplantation" reported that the Barthel score for ١٠ days after surgery was significantly higher than pre surgery.

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