Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Basma Mohamed Abdelrahman[1], Wafaa Atta Mohammed[2] and Hedya Fathy Mohey El-Deen[3]

(1, 2, 3) Assistant Professors of Community Health Nursing, Faculty of Nursing, Benha University, Egypt

Abstract

Background: Liver transplantation operation encompasses a critical period in the patient's life which comes with an increase in the risk of poor health outcomes, so self-efficacy plays a crucial role in shaping self-management behaviors. **Aim**: This study aimed to evaluate the effect of applying 5A's model on self-care efficacy and dependency level among patients with liver transplantation. **Design**: A quasi-experimental research design was operated in this study. **Setting:** The study was done at the Outpatient Clinic within liver transplantation unit of the National Liver Institute affiliated to Menoufia University, Egypt. **Sample:** Purposive sample of 64 patients with liver transplantation were included. **Tools:** Three tools were used; **I**: A structured interviewing questionnaire to assess patients' sociodemographic characteristics, previous and current medical history, knowledge and reported practices toward liver transplantation. **II**: Barthel index scale to assess patients' dependency level in performing activities of daily living. **III:** Chronic disease self-efficacy scales to assess patients' self-care efficacy regarding liver transplantation. **Results**: A statistically significant difference on the patients' total levels of knowledge, reported practices, dependency of activities of daily living activities and self-care efficacy was observed post one and 3 months of 5A's model application. **Conclusion**: 5A's model application raised the studied patients' total levels of knowledge, reported practices, dependency in performing activities of daily living and self-care efficacy regarding liver transplantation. **Recommendations**: Continuous application of 5A's model for patients with liver transplantation to enhance their dependency level in performing activities of daily living and self-care efficacy in different settings.

Keywords: 5A's model, self-care efficacy, dependency level, liver transplantation, patients.

Introduction

Patients with End-Stage Liver Disease (ESLD) suffer from permanent damage to livers and develop cirrhosis that is worsened by ascites, variceal bleeding, hepatic encephalopathy, or renal failure. Viral hepatitis, alcoholic hepatitis, metabolic diseases, and some hepatic cancers are among the causes of ESLD. One well-established course of treatment for ESLD patients is liver transplantation (**Ali et al., 2025**).

Liver transplantation is a life-saving procedure in which a recipient's damaged liver is removed and replaced with a donor's full or partially healthy liver. There are two types of liver transplants: Cadaveric and living donor. While cadaveric transplantation from brain-dead individuals is favored over transplantation from living donors, it has some drawbacks, such as a lengthy waiting period and a poor prognosis. In a living donor liver transplant, a healthy person who has a relationship by blood or who the ethical committee deems eligible to donate despite not being related by blood provides a portion of the liver. The remaining portion of the donor's liver can grow back to normal, and the portion that was donated can also be renewed (**Shedeed et al., 2021; Soultan et al., 2021**).

Globally, the number of Liver Transplants (LTs) has increased, although access to LTs varies greatly. Globally, 34,694 liver transplants were carried out in 2021, this is a 6.5% increase from 2020 and a 20% increase from 2015 (alive or deceased). The number of LTs in the US has grown by about 18% over the past five years, reaching over 9400 annually. The largest proportionate rise has been among living donors, and higher risk donors (such as older donors) are being used more frequently. In several Asian countries, most transplants are Live Donor Liver Transplant (LDLT), even though deceased donor LT represents over 90% of LT in the West. Although both deceased donors and LDLT have been increasing in the United States, just 4.3% of LT used living donors in 2020 **(Terrault et al., 2023).**

Post-transplant care, which necessitates effective patient education in several areas, including nutrition, medication regimen, infectious disease prevention, daily activities, and physical activity, determines the survival rate of patients following transplantation. Liver transplant recipients must get education to take an active role in their own care and to improve health. Healthy behaviors, efficient self-care, symptoms management, and control of additional diseases brought on by liver transplantation are all improved by educational programs **(Langarizadeh et al., 2023**).

Patients frequently express feelings of gratitude, optimism, hope, and rebirth in the early post-operative phase. Following the post-operative recovery phase, LT recipients face additional difficulties in readjusting to life after transplantation, including the need to find new stability, reestablish function in daily life, restore independence, and return to work. Functional status of the LT recipient may be affected by adverse outcomes from post-transplant problems, liver disease sequelae, anxiety, despair, somatization, lifelong immunosuppressive drugs side effects, and future uncertainty **(Aberg, 2020).**

The 5A's model is an illustration of a chronic disease self-management approach that enables patients to actively engage with healthcare professionals. The five phases of this evidence-based strategy for behavior change and health promotion are assessment, advice, agreement, assistance and arrangement. The 5A's-based self-management strategy is founded on evaluating the patient's motivation, behavior, and beliefs; advising patients about health risks; enabling them to set realistic goals; assisting the patient with anticipating obstacles and creating an action plan; and encouraging follow-ups **(Rahgoi, 2025).**

Self-efficacy refers to a person's belief in own ability to carry out a certain behavior as well as assessment of cognitive and behavioral capacities. Investigating a practical strategy to enhance liver transplant recipients' self-efficacy is crucial. The ability of a person to control the symptoms, course of treatment, physical and psychological effects, and lifestyle adjustments that come after having a chronic illness is known as self-management. However, self-efficacy is one of the most important characteristics that can influence self-management **(Guo et al., 2023).**

The term "Activities of Daily Living" (ADL) refers to the fundamental tasks involved in taking care of oneself and one's body, such as eating, clothing, toileting, transferring, ambulating, personal care, mobility, and grooming. Because ADLs are linked to dependence and are considered the most crucial characteristics of a person's health. Health professionals frequently use a person's ability or inability to do ADLs as a

means of assessing their functional state, particularly for those with disabilities **(Abdelrahman et al., 2023).**

Community Health Nurses (CHNs) are often the first point of contact for patients and families, providing vital information and assistance from the first assessment to the recovery period following surgery and ongoing monitoring. CHN are responsible for a variety of tasks, such as managing medication, arranging care, doing thorough assessments, and offering emotional support. Additionally, routine follow-up visits, and encouragement of lifestyle modifications that support the liver transplant's health are all part of the continuing care needed for long-term success **(Oliveira, 2023; AL-Beashi et al., 2024).**

Significance of the study

Many Egyptians had ESLD which necessitates liver transplantation. Egypt accounted for more than half of all transplant cases in Arab nations. The Egyptian medical syndicate created the rules for LDLT, but cadaveric liver transplant has not yet received approval. Egypt conducted 380 LDLT surgeries between July 2018 and January 2020 **(Abd El Baste et al., 2021).**

In Egypt, the primary causes of chronic hepatitis, liver cirrhosis, and liver cancer (hepatocellular carcinoma, which needs liver transplantation, are the hepatitis B virus, hepatitis C virus (HCV), and hepatitis D virus (HDV). In Egypt, HCV prevalence among the 15-59 years age group is estimated to be 14.7%. **(Mohamed et al., 2024).** According to statistics from the National Liver Institute in Shebin ELkoom, Menoufia Governorate, there were approximately 40–45 liver transplant cases overall in 2020, with an additional 60–70 cases occurring at the institute following liver transplants at other

centers **(Statistical Office at Shebin ELkoom, Menoufia University Hospital, 2023).** Because of the high prevalence of patients suffering from end-stage liver diseases and the difficulty and comprehensive nature of the transplantation process which requires consistent provision of information, so this study was carried out to assess effect of applying 5A's model on self-Care efficacy and dependency level among patients with liver transplantation**.**

Aim of the study:

This study aimed to evaluate the effect of applying 5A's model on self-care efficacy and dependency level among patients with liver transplantation.

Research objectives

- Assess patients' knowledge regarding liver transplantation.
- Assess patients' reported practices post liver transplantation.
- Assess patients' self-care efficacy regarding liver transplantation.
- Assess patients' dependency level regarding activities of daily living.
- Design, implement and evaluate the effect of 5A's model on self-care efficacy and dependency level among patients with liver transplantation.

Study hypotheses

H1: Knowledge and reported practices of patients with liver transplantation will be improved after applying 5A's model.

H2: 5A's model application will improve self-care efficacy and dependency level in performing activities of daily living among patients with liver transplantation.

Operational definitions:

5A's model: It is a behavioral change counseling strategy that was first developed in 1993 by National Cancer Institute researchers based on research on quitting smoking. It was

modified over time and eventually served as the basis for numerous therapeutic and educational initiatives. It is an evidence-based approach for behavior modification and self-care which consists of five stages: assessment, advice, agreement, assistance, and follow-up.

Subjects and methods:

Research design:

A quasi-experimental research design was operated to accomplish the aim of this study (one group, pre- post one and post three months test).

Research setting:

The study was performed at outpatient Clinic within the Liver Transplantation Unit of the National Liver Institute affiliated to Menoufia University, Egypt. It was chosen as it considered the first liver transplant center in the Middle East and known for its high patients attendance and patients follow up as it serves the patients who performed liver transplant surgery within the liver institute or in any other settings.

Sampling:

Sample type and criteria: A Purposive sample was utilized which included 64 patients with liver transplantation and have the following inclusion criteria:

- Performed the surgery since 1-3months .

The **exclusion** criteria included:

- Completely dependent patients

- Participating in another similar study.

Sample size:

Stephen Thampsons equation **(Fearon et al., 2017**) was employed to identify the sample size.

$$n = \frac{N \times p\,(1-p)}{\left(\left(N-1 \times (d^2 \div z^2)\right) + p\,(1-p)\right)} = 64$$

N = Population size is 105, **p** = Ratio provides a neutral property equal to 0.12, **d** = the error rate is equal to 0.05, **z** = Class standard responding to the level of significance equal to 1.96. **Sample size (n)** =64 patients

Tools for data collection: Three tools were utilized.

First tool: A structured interviewing questionnaire: It was created by the researchers using the relevant literature and composed of the following:

Part I: patients' sociodemographic characteristics which involved six questions about age, sex, marital status, level of education, residence and monthly income (reported by patient).

Part II: Patients' history included:

a- **Previous medical history** comprised of 9 questions as time since diagnosis of liver failure, suffering from other chronic diseases, causes of liver failure, the main complaint, family history of liver disease, degree of kinship, number of previous hospital admission due to previous liver disorders, previous treatment and smoking.

b- **Current medical history** comprised of 3 questions as time since performing surgery, period of hospital stay after surgery and person who provides care after surgery.

Part III: Patients' knowledge regarding liver transplantation included 11 closed ended questions covered concept of liver transplantation, indications, causes, complications, the warning signs of complications, the concept of transplanted liver rejection, the nature of the immune system's rejection, signs and symptoms of rejection, signs of infection, measures to follow after liver transplantation and measures to prevent the rejection. This part used pre, post one and 3 months of 5A's model.

Scoring system:

2 points were scored for completely correct answer, 1 point was scored for

incompletely correct answer, and don't know was scored zero. Total scores were 22 points. The total knowledge level was categorized into good knowledge if equals ≥ 75% (≥16 points), average knowledge if equals 50% - < 75% (11-<16 points) and poor knowledge if < 50% (<11 points).

Part IV: Patients' reported practices post liver transplantation adopted from **Perry et al., (2018**) and modified by the researchers. It comprised of 55 items divided into deep breathing exercise (6 items), cough exercise (7 items), wound care (14 items), practices to avoid infection (13 items), healthy nutrition (10 items) and medication adherence and regular follow up (5 items) used pre, post one and 3 months of 5A's model.

Scoring system:

1 point was scored for done, while not done was scored 0. The total score of the reported practices was 55 points. The total level of reported practices was classified into: Satisfactory if the score equals 60% or more (≥33 points) and unsatisfactory if the score is less than 60% (< 33 points).

Second tool: Chronic disease self-efficacy scales which were adopted from **lorig et al., (1996); Marconcin et al., (2021)** and modified by researchers**.** It was considered a self-report measure for self-care self-efficacy for chronic illness and used by researchers to assess the patient's self-care efficacy that greatly influences self-care. This tool used pre, post one and 3 months of 5A's model and composed of a total of 33 items divided into 10 subscales which are exercise regularly (3 items), get information about disease (1 item), obtain help from community, family and friends (4 items), communicate with physician (3 items), manage disease in general (5 items), do chores(3 items), social /recreational activities (2 items), manage

symptoms (5 items), manage shortness of breath (1 item) and control / manage depression(6 items).

Scoring system:

Each response was given a score of "2" for confident, "1" for semi confident and "0" for in confident. The total self-care efficacy scores ranged from 0-66 points, and the total level of self-care efficacy was categorized as:
- High level if the score ≥ 75% (≥49 points).
- Moderate level if the score 50-<75% (33<49 points).
- Low level if the score <50% (< 33points).

Tool III: Barthel index of activities of daily living, adopted from **Farag et al., (2022)** and modified by the researchers to assess dependency level of patients with liver transplantation in performing activities of daily living. The scale is composed of 10 categories involving bowels, bladder, toilet use, feeding transfers, mobility, dressing, grooming, stairs and bathing. It was used pre, post one and 3 months of 5A's model.

Scoring system:

The score for each item is determined by the patient's ability to complete the task on their own, with help, or completely dependent. The scoring 0 that indicates dependent, 1 indicates need for assistance or help, and 2 indicates independent. To calculate the overall score out of 100, the scores for the ten items are summed together and multiplied by 5. Barthel scores are classified as follows:
-    0-20 indicate "total" dependency
-    21-60 indicate "severe" dependency
-    61-90 indicate "moderate" dependency
-    91-99 indicate "slight" dependency
-    100 indicate "total" independence

Administrative design:

A formal letter from the Dean of Faculty of Nursing, Benha University referred to the Director of the National Liver Institute

affiliated to Menoufia University requesting collaboration and agreement to accomplish the study after being notified of its objectives.

Ethical considerations:

The research was approved by Benha Faculty of Nursing, Scientific Research Ethical Committee through providing an ethical research code (REC.CHN. P.52). Researchers informed the patients that any information collected from them would be kept confidential and used only for research purposes, the patients gave their agreement to participate in the study. The anonymity, privacy, safety, and protection of liver transplant recipients were secured. Patients are allowed to withdraw from the study whenever they want.

Tools validity:

Three jury experts from Community Health Nursing field assessed the tools to ensure validity. The proposed modifications were made in accordance with the findings to ensure completeness and relevance.

Tools reliability:

Tools reliability was performed by Cronbach's alpha coefficient test to evaluate the internal consistency of the tools as follows:

Tools	Cronbach's alpha coefficient test
Patients' knowledge	$\alpha = 0.944$
Patients reported practices	$\alpha = 0.944$
Tool II: Self-care efficacy scale	$\alpha = 0.745$
Tool III: Barthel index scale	$\alpha = 0.695$

A pilot study

10% of the total sample (7 patients) took part in a pilot study to evaluate the tools' applicability, simplicity, and expected fill-out time. Since no changes were made following an analysis of the pilot's results, the patients who shared in the pilot study were incorporated in the research overall sample.

Field work:

The research was conducted over a period of nine months from the start of August 2024 to the end of April 2025. Following an explanation of the study's purpose to the National Liver Institute administrator, formal permission to perform the study was given. The researchers visited the aforementioned setting once a week on Thursday from 9 a.m. to 12 mid-day until the completion of the identified sample size.

Subsequently, structured interview was conducted with each patient individually; on average, 3 to 4 patients were interviewed each week. The patients' data was gathered while they were waiting for evaluation and follow-up. In order to give the patients, the necessary information and resources, the researchers arranged the sessions with them. These sessions were conducted with small groups of six to eight patients. Each session lasted from 45-60 minutes. 9 groups of patients were formed. Interviews with the patients were accomplished in the unit's waiting area beside the outpatient clinic. About twenty to thirty minutes were needed to finish the tools.

Patients with liver transplantation received a booklet about liver transplantation which was prepared in simple Arabic language to meet their level of understanding in the first session. A copy of this booklet left in the Unit to be available for all patients.

Getting feedback on the previous session's content and outlining the goals of the current one while keeping in mind the necessity to use simple language to meet the patients' educational level. The 5A's model was implemented in 4 sessions and presented

in the following five stages assess stage, advice stage, assist stage, agree stage and arrange stage. These stages were applied separately as follows.

A- 1st stage (Assess):

The initial stage of the 5A's model is the first session in which the researchers outlined the study's objectives and purpose. This stage was conducted through individual sessions for every patient. Each patient with LT was asked to respond to study tools completely after disseminating the study tools. The patients who cannot read and write, the tools were explained for them by the researchers. Socio demographic data, medical history, knowledge, reported practices, daily living activities and self-care efficacy were assessed (pretest data). Moreover, the pretest results were utilized to determine the studied patients' status, dependency levels in performing activities of daily living and their self-care efficacy level to change their behaviors and carry out self-care post liver transplantation.

B- 2nd stage (Advice):

This is the second session of the 5A's model and based on the findings attained from the assessment stage. Following creation of general research objectives which are :
- Enhancing the studied patients' knowledge and reported practices post liver transplantation
- Improving the studied patients self-care efficacy and dependency in performing activities of daily living post liver transplantation.

An explanation for the studied patients about their condition which greatly affects disease course and symptoms was provided concerning knowledge about LT such as identifying concept of LT, causes, indications, complications, warning signs of

complications, concept of liver transplant rejection, the nature of the immune system's rejection of the transplanted liver, signs and symptoms of transplanted liver rejection, signs of infection, measures to follow after liver transplantation and measures to prevent the rejection of the transplanted liver and how to perform post LT reported practices as coughing and breathing exercise, care of wound , healthy nutritional practices, avoidance of infection, medication adherence and follow up, improving dependency in performing activities of daily living and raising self-care efficacy to exercise regularly, get social support from family, friends and community, communicate with physician, manage disease in general, do chores, do recreational activities and keeping self away from stress and sadness and control depression.

PowerPoint presentations, questions and answers, demonstration, and discussions were all employed as teaching strategies for the studied patients.

C- 3rd stage (Agree):

It is the third session in which the interests and priorities of each patient as well as findings obtained from the first stage were taken into consideration when determining the behavioral goals. An agreement was reached with the study participants for changing behavior and implementing a practical plan to achieve the goals. At this stage, a practical plan related to coughing and breathing exercise, wound care, nutrition, avoidance of infection, medication adherence, activities of daily living and self-care efficacy was determined. Following that the studied patients should be encouraged to rate their behavioral change and identify the achieved objectives.

D- 4th stage (Assist):

During the fourth session and the assistance stage, the studied patients were helped to discuss obstacles to the implementation of practical plan and obstacles removal strategies. These obstacles include inadequate awareness, a lack of reliable information, time constraints, a perceived lack of patient motivation for self-care, restricted access to resources, a lack of social support and family motivation after behavioral change, and inappropriate communication between the patients and the healthcare provider. Through using several barrier-removal methods that are suitable for each patient, the researchers can help the patients get beyond these obstacles.

F- 5th stage (Arrange):

Depending on the studied patents' preferences, their improvement regarding self-care efficacy and dependency in performing activities of daily living was followed through the telephone calls performed, 4 calls (when permitted by the patient) per month were made between the researchers and LT patients. Each call takes ten minutes, but this varies based on the patient's needs and understanding. Additionally, WhatsApp applications were used to conduct speech and questions and answers sessions based on the patients' needs.

After applying 5A's model five stages the researchers evaluated the patients' knowledge, reported practices, self-care efficacy and dependency level using the same tools used in the Assess stage. The researchers evaluated the studied patients post one month of applying 5A's model and post 3 months of 5A's model during patients' follow up visits and through telephone calls.

Statistical Analysis:

The statistical package for social science (SPSS), version 25, was used to examine the data. The mean, standard deviation (SD), and range were employed for expressing numerical data. Both percentage and frequency were used to present the qualitative data. To compare the mean scores across two distinct periods within the same group, the paired t-tests were employed, and the chi-square test was utilized to look at the differences between qualitative variables. The Pearson product-moment correlation coefficient and spearman correlation for categorical variables were used to evaluate for correlation between various numerical variables. Significant p-values were those less than 0.05, while highly significant p-values were those less than 0.001.

Results:

Table (1): Shows that 50% of the studied patients aged from 40 to less than 50 years with Mean ± SD 44.71 ± 7.30. Moreover, 57.8% were males and 59.4% of them were married. In addition, 40.6% had university education, 65.6% were working, 48.4% were from rural areas and 50% had enough monthly income.

Table (2): Clarifies that 68.8% of the studied patients diagnosed with liver failure from more than or equal 10 years and 59.4% were suffering from cardiac disease. Moreover, liver failure resulted from hepatitis C or B in 76.5 % of them and all the studied patients had abdominal ascites as a main complaint. Also, 25% had a family history of liver disease, 68.8% were the second degree of kinship, 73.4% of them had three times or more previous hospital admission due to liver disorders, all patients received diuretics as a previous treatment and 51.6% of them didn't smoke.

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Table (3): Illustrates that 42.2% of the studied patients performed the surgery since one month, 60.9% stayed at hospital after surgery for more than or equal 20 days and 31.2% of them were cared for by their children after surgery.

Table (4): Presents that; there was a highly statistically significant difference between the studied patients knowledge items pre and post one month of 5A's model implementation(p≤0.001), while there was a statistically significant difference between the studied patients knowledge pre and post one month of 5A's model implementation (p≤0.05) related to (indications of liver transplantation, the concept of transplanted liver rejection, and measures to follow after liver transplantation). Additionally, there was a statistically significant difference between the studied patients' knowledge items pre and post three months of 5A's model implementation (p≤0.05).

Figure (1): Illustrates that 4.7% of the studied patients had good total knowledge level regarding liver transplantation pre 5A's model implementation which enhanced to 71.9% and 70.3% post one and 3 months of the 5A's model implementation respectively. While 70.3% of them had poor total knowledge level pre 5A's model implementation and declined to 6.2% and 10.9 % post one and 3 months of the model implementation respectively.

Table (5): Indicates that there was a statistically significant difference between the studied patients reported practices regarding liver transplantation pre and post one month of 5 A's model implementation(p≤0.05) and a statistically significant difference between the studied patients reported practices pre and post three months of 5A's model implementation (p≤0.05) except for wound care.

Figure (2): Portrays that 26.6% of the studied patients had satisfactory total reported practices level regarding liver transplantation pre 5A's model implementation which improved to 84.8% and 79.7% post one and 3 months of the model implementation, respectively. While 73.4% of them had unsatisfactory total reported practices level pre 5A's model implementation and decreased to 6.2% and 10.9 % post one and 3 months of the model implementation, respectively.

Table (6): Indicates that there were highly statistically significant differences between the studied patients self-care efficacy pre, post one and 3 months of 5A's model implementation (p≤0.001). While, there was a statistically significant differences between the studied patients total self-care efficacy pre and post one month of 5A's model (p≤0.05) and highly statistically significant difference between the studied patients total self-care efficacy pre and post 3 months of 5A's model implementation (p≤0.001).

Figure (3): Explains that 73.4% of the studied patients had total low self-care efficacy level pre 5A's model implementation which declined to 7.8% and 4.7% post one and 3 months of the model implementation respectively. Also, none of the studied patients had total high self-care efficacy level pre 5A's model implementation while improved to 75% and 78.1% post one and 3 months of the 5A's model implementation respectively.

Table (7): Indicates that there were statistically significant differences between the studied patients regarding to their activity of daily living pre, post one and three months of 5A's model implementation (p≤0.05)

Figure (4): Clarifies that 84.4% of the studied patients had total moderate dependency level regarding activities of daily living pre 5A's model implementation which reduced to 12.5% post one month of 5A's model and to 7.8% post 3 months of 5A's model implementation. While none of the studied patients had total independence level pre 5A's model implementation and elevated to 4.7% post one month of 5A's model and 10.9% post 3 months of 5A's model implementation.

Table (8): Shows that there was a statistically significant correlation between the studied patients' daily living activities, total knowledge and total reported practices post one and 3 months of 5A's model. In addition, there was a statistically significant correlation between the studied patients' self-care efficacy, total knowledge and total reported practices post one and 3 months of 5A's model. While there was a highly statistically significant correlation between the studied patients' self-care efficacy and daily living activities post one and 3 months of 5A's model implementation.

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Table (1): Distribution of studied patients according to their socio-demographic characteristics (n= 64)

Patients' socio-demographic characteristics	No.	%
Age/yrs		
- 18-<30	5	7.8
- 30- <40	5	7.8
- 40-<50	32	50.0
- 50-60	22	34.4
Mean ± SD	**44.71 ± 7.30**	
Sex		
-Male	37	57.8
-Female	27	42.2
Marital status		
-Single	10	15.6
-Married	38	59.4
- Widowed	10	15.6
- Divorced	6	9.4
Level of education		
- Can't read and write	11	17.2
- Basic education/ read and write	11	17.2
- Intermediate education	16	25.0
- High education	26	40.6
Working status		
-Working	42	65.6
-Not working	22	34.4
Residence		
-Urban	33	51.6
-Rural	31	48.4
Monthly income (Reported by patient)		
-Enough and save	0	0.0
-Enough	32	50.0
-Not enough	32	50.0

Table (2): Distribution of studied patients according to their previous medical history (n= 64).

Patients' previous medical history	No.	%
Time since diagnosis of liver failure		
- 1<5 years	10	15.6
- 5- <10 years	10	15.6
- ≥10 years	44	68.8
Suffering from other chronic diseases #		
- Diabetes mellites	26	40.6
- Cardiac disease	38	59.4
- Gastrointestinal disease	36	56.2
Causes of liver failure #		
-Schistosomiasis	28	43.7
-Hepatitis B or C	49	76.5
- Primary liver tumors	26	40.6
- Non-alcoholic fatty liver disease	5	7.8
The main complaint #		
- Abdominal ascites	64	100.0
- Vomiting	16	25.0
- Recurrent bleeding	43	67.1
- Swelling in the limbs	10	15.6
- Recurrent hepatic coma	32	50.0
Family history of liver disease		
-Yes	16	25.0
-No	48	75.0
Degree of kinship (n=16)		
- Second	11	68.8
- Third	5	31.2
Number of previous hospital admission due to previous liver disorders		
-Twice	17	26.6
-Three times and more	47	73.4
Previous treatment #		
-Antivirals	25	39.0
-Immune drugs	53	82.8
-Diuretics	64	100.0
-Analgesics	16	25.0
Smoking		
-No	33	51.6
-Yes	10	15.6
- Stopped smoking	21	32.8

(#) Results are not mutually conclusive

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Table (3): Distribution of studied patients according to their current medical history (n= 64).

Patients' current medical history	No.	%
Time since performing surgery		
- One month	27	42.2
- Two months	25	39.0
- Three months	12	18.8
Period of hospital stay after surgery		
- <20 days	25	39.1
- ≥20 days	39	60.9
Person who provides care after surgery #		
- Husband	15	23.4
- Wife	14	21.8
- Children	20	31.2
- Father	10	15.6
-Mother	5	7.8

(#) Results are not mutually conclusive

Table (4): Difference of patients' knowledge regarding liver transplantation pre and post periods of 5A's model implementation (n=64).

Total patients' knowledge items		Pre- 5 A's model		Post 1 month 5 A's Model		Post 3 months of 5 A's model		χ^2 (p value) (1)	χ^2 (p value) (2)
		No.	%	No.	%	No.	%		
Concept of liver transplantation	Completely correct	0	0.0	43	67.2	37	57.8	22.808 FE <0.001**	10.727 FE 0.002*
	Incompletely correct	27	42.2	21	32.8	27	42.2		
	Incorrect/don't know	37	57.8	0	0.0	0	0.0		
Indications of liver transplantation	Completely correct	0	0.0	54	84.4	43	67.2	6.208 FE 0.012*	5.592 FE 0.025*
	Incompletely correct	22	34.4	10	15.6	21	32.8		
	Incorrect/don't know	42	65.6	0	0.0	0	0.0		
Causes of liver transplantation	Completely correct	0	0.0	48	75.0	37	57.8	15.568 FE <0.001**	10.727 FE 0.002*
	Incompletely correct	27	42.2	16	25.0	27	42.2		
	Incorrect/don't know	37	57.8	0	0.0	0	0.0		
Complications of liver transplantation	Completely correct	0	0.0	50	78.1	41	64.1	9.387 FE 0.001**	4.591 0.032*
	Incompletely correct	22	34.4	14	21.9	23	35.9		
	Incorrect/don't know	42	65.6	0	0.0	0	0.0		
The warning signs of complications from liver transplantation	Completely correct	0	0.0	43	67.2	37	57.8	13.673 FE <0.001**	8.265 FE 0.005*
	Incompletely correct	27	42.2	21	32.8	27	42.2		
	Incorrect/don't know	37	57.8	0	0.0	0	0.0		
The concept of transplanted liver rejection	Completely correct	0	0.0	54	84.4	48	75.0	8.649 FE 0.004*	4.805 FE 0.041*
	Incompletely correct	27	42.2	10	15.6	16	25.0		
	Incorrect/don't know	37	57.8	0	0.0	0	0.0		
The nature of the immune system's rejection of the transplanted liver	Completely correct	0	0.0	38	59.4	37	57.8	18.092 FE <0.001**	11.205 FE 0.001**
	Incompletely correct	22	34.4	26	40.6	27	42.2		
	Incorrect/don't know	42	65.6	0	0.0	0	0.0		
Signs and symptoms of transplanted liver rejection	Completely correct	0	0.0	53	82.8	48	75.0	11.720 FE <0.001**	6.776 FE 0.011*
	Incompletely correct	30	46.9	11	17.2	16	25.0		
	Incorrect/don't know	34	53.1	0	0.0	0	0.0		
Signs of infection	Completely correct	0	0.0	43	67.2	43	67.2	24.227 FE <0.001**	24.227 FE <0.001**
	Incompletely correct	22	34.4	21	32.8	21	32.8		
	Incorrect/don't know	42	65.6	0	0.0	0	0.0		
Measures to follow after liver transplantation	Completely correct	0	0.0	54	84.4	38	59.4	5.788 FE 0.023*	5.868 FE 0.029*
	Incompletely correct	21	32.8	10	15.6	26	40.6		
	Incorrect/don't know	43	67.2	0	0.0	0	0.0		
Measures to prevent the rejection of the transplanted liver	Completely correct	0	0.0	38	59.4	32	50.0	12.898 FE <0.001**	7.752 FE 0.011*
	Incompletely correct	27	42.2	26	40.6	32	50.0		
	Incorrect/don't know	37	57.8	0	0.0	0	0.0		

(*) Statistically Significant at ≤0.05   (**) Highly statistically Significant at ≤0.001

(FE)Fisher's exact

(1) Difference between pre and post one periods of 5 A's model

(2) Difference between pre and post 3 months of 5 A's model

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation
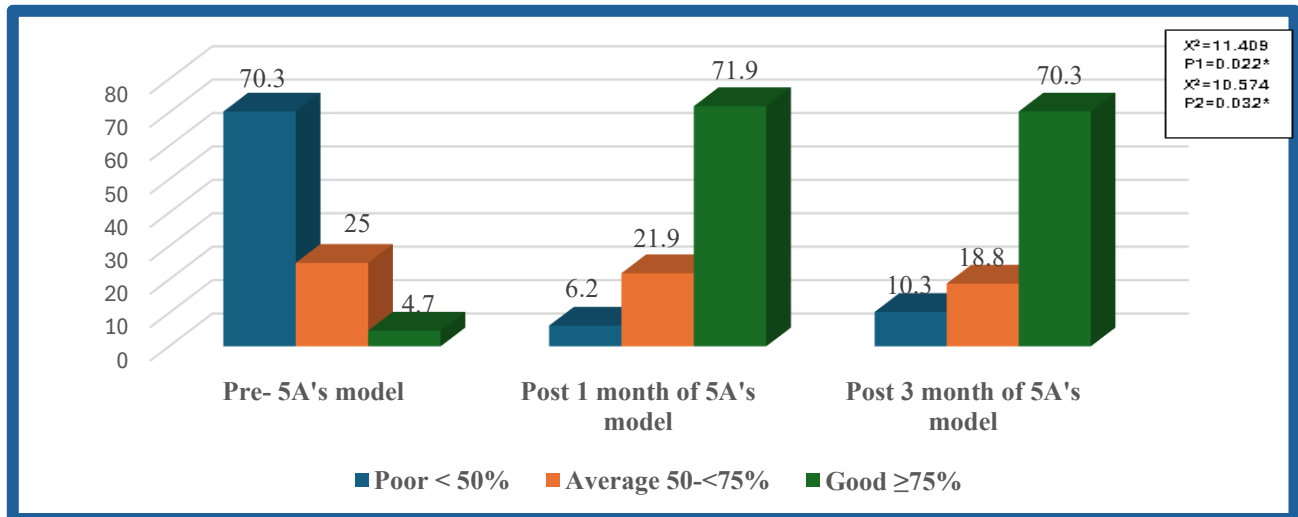

Figure (1): Percentage distribution of studied patients according to their total knowledge level regarding liver transplantation pre and post periods of 5 A's model implementation (n=64)

    (*) Statistically Significant at ≤0.05

(1) Difference between pre and post one periods of 5 A's model

(2) Difference between pre and post 3 months of 5 A's model

Table (5): Difference of patients' reported practices post liver transplantation pre and post periods of 5 A's model implementation (n=64).

Total patients' reported practices	Pre- 5 A's model		Post 1 month 5 A's Model		Post 3 months of 5 A's model		χ^2 (p value) (1)	χ^2 (p value) (2)
	No.	%	No.	%	No.	%		
Deep breathing exercise								
Satisfactory ≥60%	20	31.3	55	85.9	54	84.4	5.387	4.760
Unsatisfactory <60%	44	68.8	9	14.1	10	15.6	FE 0.024*	FE 0.047*
Cough exercise								
Satisfactory ≥60%	15	23.4	52	81.3	49	76.6	5.998	4.521
Unsatisfactory <60%	49	76.6	12	18.8	15	23.4	FE 0.014*	0.033*
Wound care								
Satisfactory ≥60%	16	25.0	53	82.8	-	-	5.973	-
Unsatisfactory <60%	48	75.0	11	17.2			FE 0.014*	
Practices to avoid infection								
Satisfactory ≥60%	14	21.9	49	76.6	44	68.8	5.018	4.568
Unsatisfactory <60%	50	78.1	15	23.4	20	31.3	FE 0.028*	0.033*
Healthy nutrition								
Satisfactory ≥60%	15	23.4	53	82.8	50	78.1	5.486	4.066
Unsatisfactory <60%	49	76.6	11	17.2	14	21.9	FE 0.028*	0.044*
Medication adherence and Regular follow up								
Satisfactory ≥60%	27	42.2	59	92.2	56	87.5	6.672	3.958
Unsatisfactory <60%	37	57.8	5	7.8	8	12.5	FE 0.017*	0.047*

(FE)Fisher's exact   (*) Statistically Significant at < 0.05

(1) Difference between pre and post one month of 5 A's model

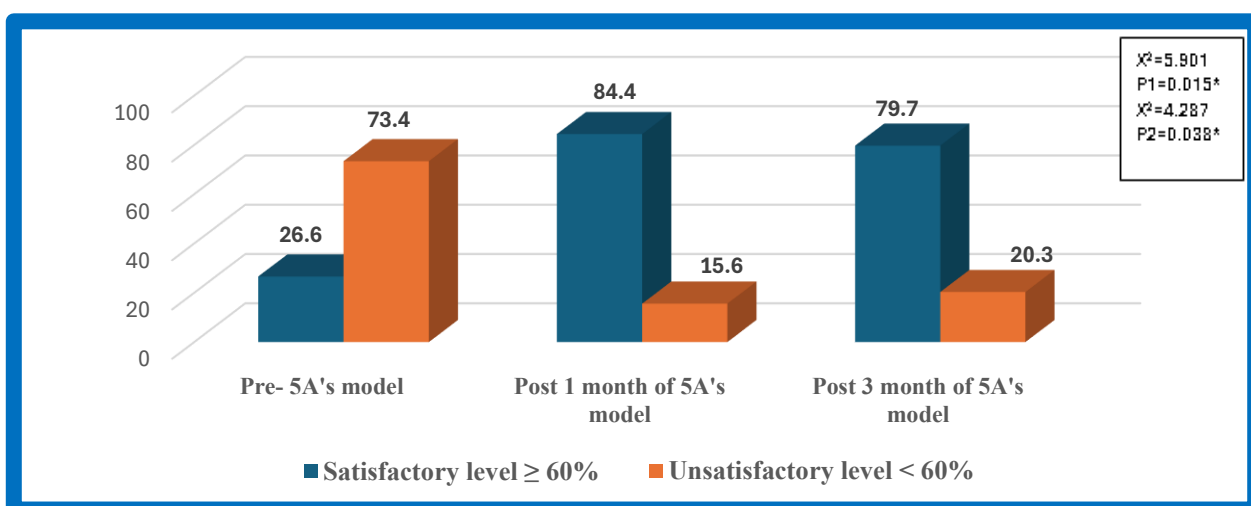(2) Difference between pre and post 3 months of 5A's model

Figure (2): Percentage distribution of studied patients according to their total reported practices level post liver transplantation pre and post periods of 5 A's model implementation (n=64).

* Significant at p ‹0.05.
(1) Difference between pre and post one month of 5 A's model
(2) Difference between pre and post 3 months of 5 A's model

Table (6): Difference of the studied patients according to their self-care efficacy pre and post periods of 5 A's model implementation (n=64).

Patients' self – care efficacy	Pre- 5A's model	Post 1 month of 5A's Model	Post 3months of 5A's model	t- test P value (1)	t- test P value (2)
	Mean ± SD	Mean ± SD	Mean ± SD		
Exercise regularly	3.31 ± 0.66	5.10 ± 0.59	5.29 ± 0.63	-18.422 (<0.001**)	- 19.219 (<0.001**)
Get information about disease	0.65 ± 0.47	1.75± 0.43	1.87± 0.33	- 13.259 (<0.001**)	- 14.911 (<0.001**)
Obtain help from community, family and friends	4.35 ± 0.89	6.57 ± 0.49	7.01 ± 1.75	-10.492 (<0.001**)	-18.671 (<0.001**)
Communicate with physician	1.59 ± 0.49	4.98± 0.67	5.25 ± 2.07	- 14.277 (<0.001**)	- 29.508 (<0.001**)
Manage disease in general	2.68 ± 1.94	8.60 ± 1.98	8.70 ± 1.79	- 16.449 (<0.001**)	- 20.506 (<0.001**)
Do chores	1.17 ± 0.70	4.43 ± 0.83	4.73 ± 0.92	- 22.560 (<0.001**)	- 24.429 (<0.001**)
Social /recreational activities	0.64 ± 0.84	3.57± 0.66	3.75 ± 0.50	- 25.442 (<0.001**)	- 25.873 (<0.001**)
Manage symptoms	3.14 ± 1.55	8.81 ± 1.00	9.17 ± 1.01	- 23.484 (<0.001**)	- 23.640 (<0.001**)
Manage shortness of breath	0.46 ± 0.50	1.59 ± 0.49	1.76 ± 0.42	-13.265 (<0.001**)	-17.818 (<0.001**)
Control / manage depression	2.59 ± 1.09	8.92 ± 1.83	9.07 ± 1.59	- 22.60 (<0.001**)	- 27.761 (0.001**)
Total	20.62 ± 4.09	42.51 ± 1.83	40.15 ± 1.11	- 2.020 (0.047*)	- 8.125 (<0.001**)

(*) Statistically Significant at ≤0.05   (**) Highly statistically Significant at ≤0.001
(1) Difference between pre and post one month of 5A's model
(2) Difference between pre and post 3 months period of5A's model

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation
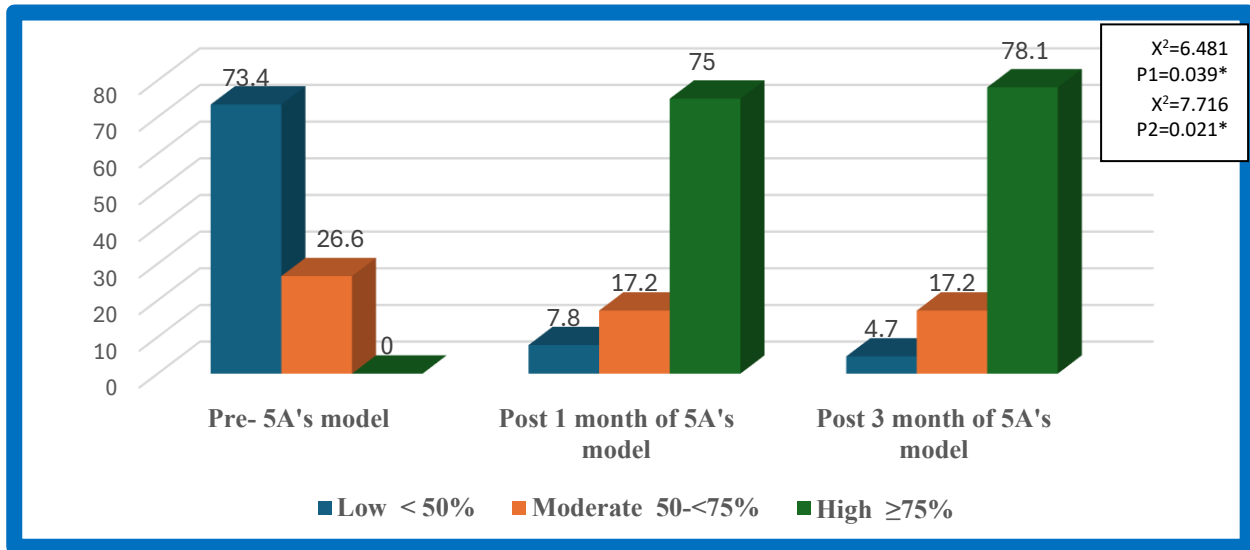

Figure (3): Percentage distribution of studied patients according to their total self-care efficacy level pre and post periods of 5A's model implementation(n=64).

(*) Statistically Significant at ≤0.05

Table (7): Difference of the studied patients according to their activity of daily living pre and post periods of 5 A's model implementation (n=64).

Activity of daily living		Pre- 5 A's model		Post 1 month of 5 A's Model		Post 3 months of 5 A's model		χ^2 (p value) (1)	χ^2 (p value) (2)
		No.	%	No.	%	No.	%		
Bowels	Needs assistance	48	75.0	22	34.4	10	15.6	3.951	4.525
	Independent	16	25.0	42	65.6	54	84.4	0.047*	0.033*
Bladder	Needs assistance	54	84.4	27	42.2	22	34.4	6.208	8.649
	Independent	10	15.6	37	57.8	42	65.6	0.013*	0.003*
Toilet Use	Needs assistance	57	89.1	32	50.0	28	43.8	3.838	4.010
	Independent	7	10.9	32	50.0	36	56.2	0.050*	0.045*
Feeding	Needs assistance	54	84.4	32	50.0	21	32.8	5.387	8.109
	Independent	10	15.6	32	50.0	43	67.2	0.020*	0.004*
Transfer (bed to chair and back)	Needs assistance	56	87.5	26	40.6	20	31.2	3.860	4.789
	Independent	8	12.5	38	59.4	44	68.8	0.049*	0.029*
Mobility	Needs assistance	53	82.2	27	42.2	22	34.4	6.958	9.693
	Independent	11	17.2	37	57.8	42	65.6	0.008*	0.002*
Dressing	Needs assistance	56	87.5	32	50.0	24	37.5	5.486	6.958
	Independent	8	12.5	32	50.0	40	62.5	0.019*	0.008*
Grooming	Needs assistance	59	92.2	32	50.0	28	43.8	5.424	6.672
	Independent	5	7.8	32	50.0	36	56.2	0.020*	0.010*
Stairs	Needs assistance	61	95.3	38	59.4	36	56.2	4.047	4.600
	Independent	3	4.7	22	34.4	28	43.8	0.044*	0.032*
Bathing	Needs assistance	57	89.1	32	50.0	25	39.1	4.010	5.038
	Independent	7	10.9	32	50.0	39	60.9	0.045*	0.025*

* Significant at p ‹0.05.
(1) Difference between pre and post one month of 5 A's model
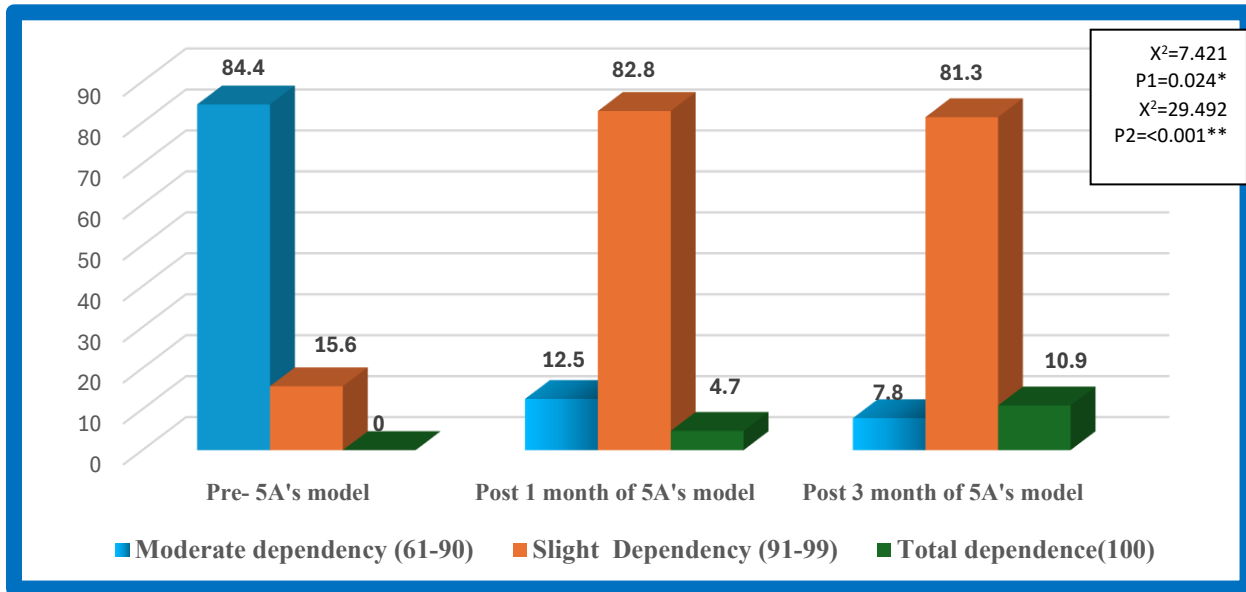(2) Difference between pre and post 3 months period of 5 A's model

Figure (4): Percentage distribution of studied patients according to their total dependency level of activity of daily living pre and post periods of 5 A's model implementation (n=64)

 * **Significant at p ‹0.05.**   ** **Highly Significant at p ‹0.001**
  (1) **Difference between pre and post one month of 5 A's model**
  (2) **Difference between pre and post 3 months of 5 A's model**

Table (8): Correlation coefficient between patients' total knowledge, total reported practices, total daily living activity and self-care efficacy pre and post periods of 5 A's model (n=64).

Variables	Study periods	Total knowledge	Total reported practice	Daily living activity
		r - P value	r - P value	r - P value
Total reported practice	Pre 5A's model	0.435 (<0.001**)	-	0.400 (0.001**)
	Post 1 month of 5A's model	0.346(0.005*)	-	0.300 (0.016*)
	post 3 months of 5A's model	0.585 (<0.001**)	-	0.298 (0.017*)
Daily living activity	Pre 5A's model	0.334 (<0.001**)	0.400 (0.001**)	-
	Post 1 month of 5A's model	0.280 (0.025*)	0.300 (0.016*)	-
	post 3 months of 5A's model	0.271(0.030*)	0.298 (0.017*)	-
Self-efficacy	Pre 5A's model	0.513 (<0.001**)	0.523 (<0.001**)	0.353 (0.004*)
	Post 1 month of 5A's model	0.283(0.023*)	0.272 (0.030*)	0.603(<0.001**)
	post 3 months of 5A's model	0.244(0.050*)	0.361 (0.003*)	0.906(<0.001**)

(*) Statistically Significant at ≤0.05   ** Highly statistically significant p ≤ 0.001

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Discussion

Liver transplantation is the only treatment that offers a possibility for long-term survival and cure for acute liver failure and irreversible liver disorders. In the 1970s, the success and survival rates were only 30%; today, they are around 80%. Liver transplantation is a type of the complicated surgeries in which a damaged or diseased liver must be removed and replaced with a healthy liver or a portion of a liver from a donor **(Mokbel et al., 2020).**

Regarding socio demographic characteristics of the studied patients, the current study showed that half of the studied patients aged from 40 to less than 50 years old with mean age was 44.71 ± 7.30, less than three fifths of the studied patients were males and married. These findings were in accordance with **Tamera & Yavab (2022),** who conducted a study on 103 patients in Turkey about quality of life post liver transplantation and concluded that 50.5% of participants aged ≤49 years with mean age was 45.75±14.75, 69.9% were males and 81.6% of them were married .

Also, the existing study illustrated that two fifths of studied patients had high education, less than two thirds of them were working, more than half were from urban areas, and half of them had just enough income while other half didn't have enough monthly income. These findings were congruent with **Cordoba-Alvarado et al. (2024),** who performed a study in Santa Fe de Bogotá, on 115 patients with advanced liver disease to assess quality of life, anxiety, and depression after liver transplantation and found that 20.0% of patients had Baccalaureate, 26.1% of them were working as housekeeper and 45.2% had low socioeconomic level .

Regarding studied patients' previous medical history, the current study showed that more than two thirds of the studied patients were diagnosed with liver failure since ≥10 years. This finding agreed with **Mohamed& Mostafa (2018),** who carried out a study in Egypt on 60 patients undergoing liver transplant to evaluate effects of educational intervention on self-care behavior, and reported that 53.3% of the recipients were suffering from liver diseases within 10 to 12 years .

Concerning causes of liver failure, the current study clarified that more than three quarters of studied patients had hepatitis B or C. This finding was inconsistent with **Cordoba-Alvarado et al. (2024),** who found that the most common reason for liver transplants was autoimmune diseases (30.4%), which were followed by alcoholic hepatitis (18.3%) and non-alcoholic fatty liver disease (28.7%). Also, this finding was contrasted with **Santos-Lin et al. (2021),** who performed a study on 189 patients pre and post liver transplantation in Brazil regarding poor oral health-related quality of life, and found that in the pre-liver transplantation group, most patients (49.2%) presented cirrhosis due to Alcoholic Liver Disease (ALD).

As regard studied patients' family history, the present study showed that three quarters of the studied patients didn't have family history of liver disease. This finding disagreed with **Mohamed& Mostafa (2018),** who found that 53.3% of the intended sample had family history of liver disease.

Regarding number of previous hospital admission due to previous liver disorders, the

current study showed that less than three quarters of studied patients admitted to the hospital three times or more. This result contradicted with the result of **Sheta & Abo El-Fadl (2023)**, in their study which was conducted in Egypt on patients with hepatocellular carcinoma to assess effect of self-care strategies on health outcomes and presented that 45% of the hepatocellular carcinoma patients had been hospitalized twice before.

Concerning studied patients' current medical history, the existing study presented that more than two fifths of the studied patients performed liver transplantation surgery since one month. This finding was in contrast with **Fazekas et al. (2021),** who carried out a study in Graz on 150 patients after liver transplant about quality of life, workability, and return to work, and mentioned that 43.9% of patients had liver transplantation surgery since less than 5 years ago .

The results of the current study revealed that slightly more than three fifths of studied patients stayed 20 days or more at hospital after liver transplantation surgery. This result agreed with **Amorim et al. (2024),** who studied impact of educational intervention on 68 patients in Belo Horizonte after liver transplantation regarding understanding health recommendations, and mentioned that the average hospitalization time after the surgery was 20 days ($\pm$12.6).

Concerning the studied patients` knowledge about liver transplantation, there was a highly statistically significant difference between the studied patients knowledge items pre and post one month of 5A's model implementation(p$\leq$0.001), while there was a statistically significant difference between the studied patients

knowledge pre and post one month of 5 A's model implementation(p$\leq$0.05) related to (indications of liver transplantation, the concept of transplanted liver rejection, and measures to follow after liver transplantation). These findings agreed with **Sheta & Abo El-Fadl (2023),** who demonstrated a statistically significant improvement in patients' all knowledge items following the implementation of strategies for self-care than before. This enhancement might be due to theoretical sessions that were provided for the patients which covered different aspects of the disease and its management.

As regards to total knowledge level of the studied patients, the present study illustrated that minority of the studied patients had good total knowledge level regarding liver transplantation pre 5A's model implementation which enhanced to less than three quarters post one and 3 months of the model implementation respectively. These findings were in the same line with **Soultan et al. (2021),** who conducted a study in Egypt on 80 patients undergoing liver transplantation to assess the effect of an educational program on the quality of life and reported that before the program implementation; 43.7% of the liver transplant recipients have satisfactory total knowledge score, while after the program implementation and follow up 3 months; satisfactory total knowledge scores increased to 87.5% and 72.5% respectively. This might be due to effectiveness of 5A's model in changing patients' knowledge and the simplicity in presented information.

Concerning studied patients' reported practices post liver transplantation, there was a statistically significant difference between the studied patients reported practices pre and post one month of 5A's model implementation (p$\leq$0.05) and a statistically significant

difference between the studied patients reported practices pre and post 3 months of 5A's model implementation (p≤0.05) except for wound care. These findings were in agreement with **Shedeed et al. (2021),** who applied home health care model on 70 patients in Egypt to improve quality of life, and reported that 32.9% of the studied patients had satisfactory practices pre implementation of home health care model, and raised to 88.6% post implementation of home health care model.

Additionally, these results were in accordance with **Morad et al. (2018),** who performed a study in Egypt on 40 living donor liver transplantation to assess the predictors of infection and mortality and stated that 66% of living donor liver transplantation recipients had poor practice of chest exercise through irregular physiotherapy for breathing and coughing exercise. This improvement in practices might be relevant to demonstration, and practical content of the educational booklet which was distributed to the studied patients.

As regards patients' total reported practices level, the results of the present study demonstrated that more than one quarter of the studied patients had satisfactory total reported practices level toward liver transplantation pre 5A's model implementation which improved to majority and more than three quarters post one and 3 months of the 5A's model implementation respectively. While less than three quarters of them had unsatisfactory total reported practices level pre 5A's model implementation and decreased to minority and tenth post one and 3 months of the model implementation respectively.

These findings were consistent with **Morsy et al. (2024),** who conducted an

educational program on 50 patients in Egypt to study its effect on activities of daily living, and found that there were statistically significant differences regarding the overall practices pre implementing educational program, compared to post one implementing educational program and at discharge as p-value <0.001**. This might be relevant to the effectiveness of applying 5A's model and continuous follow up with patients with liver transplant.

Regarding self-care efficacy of studied patients, the current study showed that there were highly statistically significant differences between the studied patients self-care efficacy pre, post one and 3 months of 5A's model implementation (p≤0.001). This finding was in agreement with **Guo et al. (2023),** who accomplished a study on 84 liver transplant patients in China about empowerment education on the self-management and self-efficacy and revealed that self-efficacy in the intervention group was higher than those in the control group at 3 and 6 months post the intervention (P < 0.001). This might be attributed to the patients were keen to improve their ability to perform their self-care and the 5A's model enhanced their self-care efficacy.

As regards studied patients' total self-care efficacy level, the current study revealed that all studied patients didn't have high total self-care efficacy level pre implementation of 5A's model, while post one and 3 months of the model implementation, three quarters and more than three quarters respectively had high level.

These finding were supported by **Mansouri et al. (2017),** who handled a study trial in Shiraz, Iran, on 74 cirrhotic patients entitled effect of self-management training on

self-efficacy and found that the total score and the scores of all the dimensions of self-efficacy positively affected by self-management training immediate and one month post the intervention. This might be relevant to the positivity of 5A's model in improving patients self-care efficacy and enhancing their ability to perform self-care through identifying obstacles and barriers facing them and assisting the patients to deal with these barriers and obstacles.

Regarding studied patients' activities of daily living, the current study showed that there were statistically significant differences between the studied patients, activity of daily living pre, post one and 3 months of 5A's model implementation (p≤0.05). These results were in agreement with **Magayar et al. (2024),** who accomplished a study in Switzerland on 40 patients on the liver transplant waiting list about physical activity and influences postoperative outcome, and approved that after week 40 of the liver transplant waiting list, there is a noticeable decline in moderate physical activity. Also, align with **Corriveau et al. (2018),** who studied ADL and IADL limitations in Nashville on 37 liver transplant recipients and noticed that ADL scores were low and the impairment disappeared by 3 and 12-month post-transplant. This might be attributed to, the studied patients had a strong desire to be completely dependent in performing daily living activities.

Concerning studied patients' total dependency level of activities of daily living, the present study clarified that majority of the studied patients had total moderate dependency level regarding activities of daily living pre 5A's model implementation which reduced to more than tenth post one month of 5A's model and to minority post 3 months of

5A's model implementation. While, none of the studied patients had total independence level pre 5A's model implementation and elevated to minority post one month of 5A's model and more than tenth post 3 months of 5A's model implementation. These findings were parallel with **Demir & Bulbuloglu (2021),** who conducted a study in Turkey on 148 patients after liver transplant about the immunosuppression therapy and its effect on activities of daily living and emphasized that the patients had a moderate degree of comfort and need assistance with daily activities. This might be related to, the majority of studied patients had a strong desire to lessen liver transplantation complications and was eager to assume daily living activities without assistance.

The current study revealed that there were a statistically significant correlation between the studied patients˒ daily living activities, total knowledge and total reported practices post one and post 3 months of 5 A˒s model. In addition, there was a statistically significant correlation between the studied patients, self-care efficacy, total knowledge and total reported practices post one and 3 months of 5A's model implementation. While there was a highly statistically significant correlation between the studied patients' self-care efficacy and daily living activities post one and 3 months of 5A's model implementation. These results were inconsistent with **Guo et al. (2023),** who mentioned that there was statistically significant correlation between self-care efficacy and self-management abilities .Also, these findings disagreed with **Morsy et al. (2024),** who found that there was no correlation between daily activity, total knowledge, and practice pre-program implementation and there was a negative statistical correlation between total

information and practice with the moving ability at $P \leq 0.05$ post 3 months. This might be due to patients becoming more knowledgeable about the disease and their self-care efficacy improvement reflected on their practices and their dependency level in performing daily living activities.

Conclusion

5A's model application resulted in significant improvement in the studied patients' total levels of knowledge, reported practices, dependency in performing activities of daily living and self-care efficacy regarding liver transplantation. Therefore, the research's aim and hypotheses were confirmed.

Recommendations:

- Continuous application of 5A's model for patients with liver transplantation to enhance dependency level in performing daily living activities and self-care efficacy in different settings.
- Designing and implementing health promotion interventions for patients with liver transplantation to improve their knowledge, practices, behaviors and health outcomes.
- Further studies: Application of different care models and strategies for patients with liver transplantation on a large sample size to achieve more generalization.

Acknowledgments:

References:

Abd Elbaset, H., Sultan, A., Montasser, I., Soliman, H., Ela ashy, M., Makhlouf, N., and (2021). Egyptian protocol for living donor liver transplantation (LDLT) during SARS-CoV-2 pandemic, Egyptian Liver Journal, 11(14) (2021).

Abdelrahman, B., Abdelaziz, N., and Shedeed, W. (2023). Effect of health promotion intervention on daily living activities among older adults with frailty, Tanta scientific nursing journal; 31(4):374-393

Åberg, F. (2020). Quality of life after liver transplantation. Best Practice & Research Clinical Gastroenterology; 46–47, 101684

AL-Beashi, M., Almutairi, L., Albashi, K., Alharbi, L., Altowayan, D. and Mohammad, A. (2024). The Role of nursing in the multidisciplinary team approach to care of liver transplant patients: a comprehensive review, journal of international crisis and risk communication research; 7(8) , ISSN: 2576-0017 2024.

Ali, A., Abdelwahed, A., Nassar, A., Elshennawy, M., Massoud, M., Madkour, N., Awad, E., Aljalawy, F., Khalil, M., Youssef, M. and Alfishawy, M. (2023). Challenges and infectious complications in living donor liver transplantation in egypt: a comprehensive review. Clinical ASIDE Internal Medicine;1(3):22-27. doi:10.71079/ASIDE.IM.05112553

Amorim, J., Lima, A., and Soares, A. (2024). Impact of educational intervention on understanding health recommendations after liver transplantation. Rev Bras Enferm; 77(3): 20230132. Online Version ISSN: 1984-0446

Cordoba-Alvarado, R., Romero-Fonnegra, V., Cortes-Mejia, N., Bejarano-Ramirez, D., Maldonado-Hoyos, V., Sanchez-Garcia, S., & Vera-Torres, A. (2024). Quality of life, anxiety, and depression improve at one-year after liver transplantation in patients with

advanced liver disease. Front. Transplant; 3. https://doi.org/10.3389/frtra.2024.1476952

Corriveau, J., Chandrasekhar, R., and Geevarghese, S. (2018). ADL and IADL limitations resolve but new cognitive impairments develop in liver transplant recipients. Am J Transplant; 17 (3).

Demir, B. and Bulbuloglu, S. (2021). The effect of immunosuppression therapy on activities of daily living and comfort level after liver transplantation. Transplant Immunology;69: 101468. https://doi.org/10.1016/j.trim.2021.101468**.**

Farag, A., Abd-El-Aal, E., Mahmoud, A. & Abdelrahman, B. (2022). Coping strategies among patients with lumber disc herniation, master thesis, Faculty of Nursing, Benha University.

Fazekas, C., Kniepeiss, D., Arold, N., Matzer, F., Wagner-Skacel, J., and Schemme, P. (2021). Health-related quality of life, workability, and return to work of patients after liver transplantation. Langenbeck's Archives of Surgery; 406:1951–1961. https:// doi.org /10.1007/ s00423- 021-**02183-z.**

Fearon, E., Chabatas, S., Thompson, J., Cowan, F. and Hargreaves, J. (2017). Sample size calculation for population size estimation studies using multiplier method with respondent driven**.**

Guo, L., Li, L., Lu, Y. Chen. L., Jiang, L., Zhang, S., and Yuan, M., (2023). Effects of empowerment education on the self-management and self-efficacy of liver transplant patients: a randomized controlled trial. BMC Nursing; 22, (146). https:/ /doi.or g/10.1186 /s129 12-023 -01298-6**.**

Langarizadeh, M., Moghbeli, F., Ahmadi, SH., Langarizadeh, M., Sayadi, M., Sarpourian, F., and Aghda, S. (2023). Design and evaluation of an educational mobile program for liver transplant patients. BMC Health Services Research, 23:974. https://doi.org/10.1186/s12913-023-09989-1.

Lorig, K., Stewart, A., Ritter, P., González, V., Laurent, D. and Lynch, J. (1996). Outcome measures for health education and other health care interventions. Thousand Oaks CA: Sage Publications, 24-25,41-45.

Magyar, T., Bühlmann, L., Becchetti, C., Beekman, L., Candinas, D., Beldi, G. and Banz, V. (2024). Physical activity decreases in patients on the liver transplant waiting list and influences postoperative outcome—a prospective cohort study. Hepatobiliary Surgery and Nutrition; 13(2): 229.

Mabrok, B., Mohamed, E., & Dessouky, S., (2024). Needs and perception of patients undergoing liver transplantation, Egyptian journal of health care. September 2024 EJHC; 15(3).

Mansouri, P., Ghadami, M., Najafi, S. and Yektatalab, S. (2017). The effect of self-management training on self-efficacy of cirrhotic patients referring to transplantation center of Nema zee hospital: a randomized controlled clinical trial. IJCBNM; 5(3).

Marconcin, P., Tomé, G., Carnide, F., Yázigi, F., Campos, P., Pais, S. and Espanha, M. (2021). Translation, cultural adaptation and validation of the self-efficacy to manage chronic disease 6-Item scale for European Portuguese. Acta Rheumatologica Portuguesa, 2021; 46:15-22.

Mohamed, R., Gaber, H., El-Sayed, S. and Ali, R., (2024). Effect of patients (recipients) educational strategy on their health outcomes post liver transplantation, journal of nursing science - Benha University; 5(2) 2024, ISSN 2682 – 3934.

Effect of Applying 5A's Model on Self-Care Efficacy and Dependency Level among Patients with Liver Transplantation

Mohamed, S. and Mostafa, H. (2018). The effects of educational intervention on self-care behavior and expected clinical outcome in patients undergoing liver transplantation. Journal of Nursing Education and Practice; 8(9). ISSN 1925-4040 E-ISSN 1925-4059.

Mokbel, N., Mohamed, Y., and Elmotoly, R. (2020). Biopsychosocial needs of patient after liver transplantation during follow up period. Egyptian Journal of Health Care; 11(1): 136.

Morsy, R., Mohamed, H., Ghonaem, S. and Ibrahim, R. (2024). Effect of educational program on activities of daily living among post liver transplantation patients. Journal of Nursing Science - Benha University; 5(2). SSN 2682 – 3934.

Morad, W., Aziz, A. and El-Sharnoby, A. (2018). Predictors of infection and mortality in living donor liver transplantation. Med. J. Cairo Univ; 86(4): 035-2043.

Oliveira, M. (2023). Nursing care in liver transplantation. journal of quality in health care & economics (JQHE); 6(2): 000327, ISSN :2642-6250.

Perry, A., Potter, B. and Ostendorf, W. (2018). Skills performance checklists for clinical nursing skills & techniques, 9th ed., el sevier, united state of America, Pp. 132-199.

Rahgoi, A., Sobhanifar, F., Jirandeh, R. and Javanbakht, S., (2025). Effect of the 5A self-care model on chronic diseases in Iran: A systematic review, Journal of Nursing Advances in Clinical Sciences Department of Nursing, University Social Welfare and Rehabilitation Sciences, Tehran, Iran; 2(1): 46-52. 10.32598/JNACS.2411.1081

Shedeed, W., Abd El-Hameed. H., Abd El-Megeed. H. and Mahmoud. A., (2021). Home health care model to improve quality of life among post liver transplant recipients. Journal of Nursing Science Benha University.

Sheta, H. and Abo El-Fadl, N. (2023). Effect of self-care strategies on health outcomes of patients with hepatocellular carcinoma, evidence-based nursing research; 5 (3), 57-71. http:// doi. Org /10.47104/ebnrojs3.v5i3.313.

Soultan, A., Gab-Allha, H. and Mohamed, M. (2019). Effect of an educational program on the quality of life of patients undergoing liver transplantation. IOSR Journal of Nursing and Health Science; 8(6): PP 55-64. DOI: 10.9790/1959-0806045564.

Statistical Office at Shebin ELkoom, Menoufia University Hospital, (2023). Number of patients admitted to liver transplantation unit.

Tamera, M., and Yavab, A. (2022). The quality of life of patients after liver transplantation. Annals of Medical Research; 29(2):139–14. DOI:10. 5455/ annal smedres.2021.04.366.

Terrault, N., Francoz, C., Berenguer, M., Charlton, M. and Heimbach, J. (2023). Liver transplantation 2023: status report, current and future challenges, Clinical Gastroenterology and Hepatology; 21 (8): 2150-2166.

تأثير تطبيق نموذج 5A علي كفاءة الرعاية الذاتية ومستوى الاستقلالية لدي مرضي زراعة الكبد

بسمة محمد عبدالرحمن ـ وفاء عطا محمد ـ هدية فتحي محي الدين

تُعَدّ عملية زراعة الكبد مرحلةً بالغة الأهمية في حياة المريض، حيث تزداد فيها احتمالية سوء النتائج الصحية. لذلك، تُعتبر فعالية الرعاية الذاتية عاملاً حاسماً في إدارة صحته بنفسه. الهدف: هدفت هذه الدراسة إلى تقييم تأثير تطبيق نموذج 5A على كفاءة الرعاية الذاتية ومستوى الاستقلالية لدي مرضي زراعة الكبد. و تم استخدام تصميم شبه تجريبي في هذه الدراسة. وقد أجريت هذه الدراسة العيادة الخارجية بداخل وحدة زراعة الكبد بالمعهد القومي للكبد التابع لجامعة المنوفية، مصر على عينة غرضية من ٦٤ مريضًا خضعوا لزراعة الكبد. و تم استخدام ثلاث أدوات I: استبيان لتقييم الخصائص الديموغرافية للمرضى والتاريخ الطبي السابق والحالي ومعلومات المرضى والممارسات المذكورة حول زراعة الكبد. II: مقياس بارثيل لتقييم مستوى اعتماد المرضى في أداء أنشطة الحياة اليومية. III: مقياس كفاءة الرعاية الذاتية لتقييم كفاءة الرعاية الذاتية لدي مرضى زراعة الكبد. واظهرت النتائج انه لوحظ وجود فرق ذو دلالة إحصائية في المستويات الإجمالية للمعلومات والممارسات المذكورة والاستقلالية في أنشطة الحياة اليومية كفاءة الرعاية الذاتية لدى المرضى بعد شهر وبعد ثلاثة أشهر من تطبيق نموذج 5A. كما أدى تطبيق نموذج 5A إلى رفع المستوى الإجمالي للمعلومات، والممارسات المذكورة، ومدى استقلالية المرضى تجاه أنشطة الحياة اليومية، ومستوى كفاءة الرعاية الذاتية فيما يتعلق بزراعة الكبد. واوصت الدراسة بالتطبيق المستمر لنموذج 5A لمرضى زراعة الكبد لتعزيز مستوى الاستقلالية في أداء أنشطة الحياة اليومية وكفاءة الرعاية الذاتية في اماكن مختلفة.