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Designing a Health Education Booklet for Post Liver Transplant Clients

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Abstract: **Liver transplantation is often the most effective treatment for chronic, life-threatening liver diseases. Health education of liver transplant clients help in reducing anxiety and post-operative complications, increase their satisfaction and improve their quality of life. Since the booklet is used as health education tool. The aim of this study was to design health education booklet for post liver transplant clients. Methods: To conduct this study the researcher used a cross sectional descriptive study at homes of liver transplant clients through the follow up home visits. One hundred and five of liver transplant clients were systemic randomly selected to participate in the study. Two tools were used in this study; Structure interview to assess health profile, knowledge and daily living activities of-liver transplant clients. Based on this assessment the health education booklet was designed. Results: The majority of studied clients (85.7%) were males, more than half of them (53.3%) were above the age of 50 years, most of the studied clients (98.1%) were married, more than three quarters of them (76.2%) lived at rural areas, 22.9% of the studied clients were university graduate, 60%of them did not work and almost half of the studied clients (48.6%) belonged to low socioeconomic level. The majority of clients (79%) had poor score level of knowledge, and most of them (93.3%) had improper score of daily living activities. Conclusion and recommendation: The study concluded that the majority of the studied clients had poor score level of knowledge related to their daily living activities and improper practice. Health education programs should be applied in liver transplant centers to improve liver transplant clients' knowledge and practice of daily living activities and subsequently improve their quality of life.**

Keywords: **Design booklet, daily living activity, Health education, post- liver transplantation.**

I. INTRODUCTION

Advanced chronic liver failure is a pathological condition that has great impact on people's live. Liver transplant (LT) is the unique and best of choice curative therapy for patients with acute liver failure or end-stage liver disease and provides the only possibility for reversing the terminal situation, which affects the biological, psychological and social aspects.[1–2] The consequence post liver transplantation (LT) have shown consistent improvement in the recent years but the surgery put the clients at risk and may add more stress, anxiety, and complications than conventional surgery.[3-4]

Prevention, recognition, and management of medical as well as surgical complications post liver transplantation are the keys to improve long term outcomes and quality of life. Thus, it is important for liver transplant clients and their families or caregivers to perceive the basic process involved with liver transplant, to handle some of the challenges and complications facing them, and to understand symptoms that should be warning the recipients to seek medical advice. [5-7]

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Providing health education to liver transplantation clients is a primarily nursing responsibility that aims to improve the recovery phase, and reduce the postoperative complications. The complexity and comprehensive nature of the transplantation procedure require a regular provision of information. Moreover, the search for strategies to encourage the acceptance of behavioral changes and its practice is an ongoing challenge for the nurses responsible for the care of liver transplantation clients. [8] Liver transplant centers have dedicated nurses that provide specific information about the procedure and answer questions that clients and their families/ caregivers may possess. [9-10]

Studies have displayed that, clients teaching help in reducing anxiety and post-operative complications, increase their satisfaction with the surgical experience, and facilitate the patient's return to work and other activities of daily living. In addition, the clients' satisfaction and post-transplant outcome depend to some extent on their previous knowledge about care. Meanwhile, the recognition of knowledge gaps and identification of learning needs are essential for transplant team members. [11-13]

Compliance and self-care participation of the post-transplant clients is very critical point. So, the client will be instructed on how to take medications, routine visits, the potential risks and complications that associated with transplantation process. However, the health education booklets are proven as effective teaching tools with documentation for recording important client information utilized by the home care staff and nurses. Therefore, the booklet is used as a learning tool to assist liver transplant clients and provide the needed information that will enable them to reach optimal level of health. [14]

Moreover, the health education booklet will confirm the clients about adherence to medication schedule, following schedule of laboratory tests and transplant clinic visits, actively participating in self-care activities such as monitoring weight, blood pressure, and temperature, maintaining good communication with transplant team and other health care providers, adopting healthy lifestyle habits that will enable to achieve optimal level of wellness. [15]

1.1 AIM OF THE STUDY

This study aims to design a health education booklet for post liver transplant clients.

II. MATERIALS AND METHOD

A cross sectional descriptive study design was used in this study. The study was conducted at homes of liver transplant clients' through follow up home visits. A sample size comprised of 105 liver transplant clients under the following criteria: both males and females were aged 30 to more than 50 years (the adulthood stage at which the operation was undergoing), different social classes and residence were included. The duration of data collection was approximately three months from August to November 2014. The researcher conducted home visits for clients and visited two clients per day, twice/week (Sunday and Tuesday), each visit ranged from 20 to 30 minutes for each client. The interview constructed in Arabic language.

2.1 SAMPLING

Systematic random sample was used as a sampling technique. The minimum required 105 patients when the population size= 285 who were registered on the records of the Gastrointestinal Tract Surgery Center , Mansoura University), the desired precision=5%, Expected prevalence of correct knowledge to be 50%, Design effect=1

2.2 TOOLS OF THE STUDY

Tool I

Structured interview to assess the personal and health profile of liver transplant clients; which consisted of two parts; **Part 1**, socio-demographic data sheet was adopted from modified version of Socio Economic Scale by El Gelany, El-Wehady and El-Wasify, (2012). [16] **Part 2**, clients' health history such as duration of liver disease, diagnosis, chronic diseases, previous surgeries, frequency of hospitalization post liver transplantation, recent hospitalization, and date of liver transplant surgery.

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Tool II:

Structured interview to assess knowledge and subjective practice of the liver transplant clients; this tool was developed by the researcher and included two parts; **Part 1:** Structure interview to assess clients' knowledge related liver transplant. It consisted of nine knowledge domains (liver features, medication compliance, permitted nutrition, permitted activities, stress management, women reproductive health, eye care, dental care and skin care). These domains are composed of (15) questions list. One mark awarded for each correct response.

Scoring system

The total scores of the knowledge ranged from 0 to 122, one point for each correct answer. The knowledge level was categorized into three levels; Poor< 50% of total scores, Fair = 50% to 65% of total scores, and Good>65% of total scores.

Part 2: Structured interview to assess liver transplant clients' subjective practices of daily living activities. This interview was developed by researcher to asses daily living activities of liver transplant clients. It included nine activity domains (medication compliance, prevention of rejection and infection, permitted nutrition, physical activities, stress management, family planning service utilization, eye care, dental care, and skin care). These domains are composed of (9) questions list. One mark awarded for each correct response.

Scoring system

The total activity score ranged from 0 to 69, one point award for each step. The activity level was categorized into two levels; Improper <60% of total scores, Proper ≥60% of total scores.

2.3 METHOD

- An official letter was issued from the Faculty of Nursing to the manager of Gastrointestinal Tract Hospital affiliated to Mansoura University for appointment permission with liver transplant clients and reviewed their records to obtain connection numbers.
- Reviewing of related literatures on the various aspects of the liver transplantation and post transplantation care using scientific published articles, internet search and textbooks. This review was a guide for developing the study tools.
- Developing of the study tools by the researcher based on reviewing the relevant literature except Part 1 of tool I was adopted from El Gelany et al., (2012). [16]
- Validity testing was done to the tools by submitting them to experts in the field of "community health nursing, nursing education and hepatology, in addition to statistics ". Their recommended modifications were done. Reliability of these tools was tested by using Cronbach's alpha test in spss v16.
- A Pilot study was conducted on (10) of liver transplant clients constituting 10% of study sample who were selected randomly and excluded from the studied sample to evaluate the clarity, applicability, and reliability of the research tools and to estimate the approximate time required for data collection. Accordingly the necessary modification was done, some questions were added and others were clarified or omitted.
- The duration of data collection was approximately three months from August to November 2014.
- The researcher systemic randomly selected the odd number from the liver transplant clients' list till complete the required sample size.
- Clients' verbal approval for home visits was obtained by phone.
- The researcher started by introducing herself to clients and gave them a brief orientation about the purpose and design of the study.
- For ethical consideration the liver transplant clients were informed about the purpose of the study and they were assured that their identities and responses to the interview would be confidential and used only for research purpose, answering was voluntary and participation (or not) would have no effect on their current or future health care.

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- The researcher conducted home visits for clients and visited two clients per day, twice/week, each visit ranged from 20 to 30 minutes for each client. The interview constructed in Arabic language. Initial data collection was carried out to assess socioeconomic level, knowledge and activities of daily living by using tools I and II. The interview questions were filled by the researcher. Then the content of health education booklet was prepared and designed based on clients' educational needs.

Statistical analysis

- Data were sorted, coded, organized, categorized and then transferred into especially designed formats.
- Data were analyzed using SPSS (Stands for Statistical Product and Service Solutions) version 16.
- Data were presented by using descriptive statistics in the form of frequencies and percentage.

III. RESULTS

Table 1 Represents the distribution of the studied subjects by their socio-demographic characteristics. It showed that, the majority of studied clients (85.7%) were males, more than half of them (53.3%) were above the age of 50 years, most of them (98.1%) were married, more than three quarters of them (76.2%) resident in rural areas, 22.9% of the studied clients had university graduate, 60%of them did not work and almost half of them (48.6%) are belonged to low socioeconomic level.

Table 1: Socio-demographic characteristics of post- liver transplant clients

Items	n =105	%
Gender		
Male	90	85.7
Female	15	14.3
Age (years)		
30 to less than 50	49	46.7
≥50	56	53.3
Mean ± SD	50.06± 6.49	
Marital status		
Married	103	98.1
Widow	2	1.9
Residence		
Urban	21	20
Rural	80	76.2
Urban slums	4	3.8
Education		
• Illiterate	8	7.6
• Reads and writes/ Primary &Preparatory education	42	40
• Secondary (general & technical of 3 or 5 years)/ Intermediate (2 years)institutes	31	29.5
• University graduate	24	22.9
Occupation:		
• Did not work/ house wife	63	60
• Manual skilled worker(farmer)	10	9.5
• Trades/business	4	3.8
• Semi-professional/clerk	4	3.8
• Professional	24	22.9

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Socioeconomic level		
• Very low	26	24.8
• Low	25	23.8
• Middle	28	26.7
• High	26	24.8

Table 2 illustrates the distribution of the studied subjects according to their past health history. It showed that, more than half of the studied clients (56.2%) suffered from liver diseases since less than five years, 90.6% of the studied clients had hepatitis C viral infection, and 53.3% of them had chronic diseases such as diabetes, hypertension and heart diseases. Additionally, 58.1%of them admitted to the hospital once after liver transplant surgery and 5.7% admitted to the hospital three times and more. Moreover, recent hospitalization of 59% of the clients ranged from 21 to 30 days and more than one third of the studied clients (41%) had liver transplant surgery since more than 12 month.

Table 2: Distribution of the post-liver transplant clients according to their past health history

Past health history	n=105	%
Duration of liver disease: by years		
<5	59	56.2
5-10	36	34.3
>10	10	9.5
Mean ± SD	5.21±3.73	
*** Diagnosis**		
• HBV	6	5.7
• HCV	95	90.6
• Bilharziasis	8	7.6
Chronic diseases		
• Diabetes mellitus	26	24.8
• Hypertension/ Heart disease	30	28.6
Previous surgeries:		
• Heart Surgery/ Orthopedic Appendectomy	11	10.5
Frequency of hospitalization post liver transplantation		
1	61	58.1
2	38	36.2
3 or more	6	5.7
Mean ± SD	1.55±0.84	
Recent hospitalization post liver transplantation / days		
<10	8	7.6
10-20	35	33.3
21-30 or more	62	59
Mean ± SD	21.76±6.67	
Liver transplant surgery date		
< 6 months	23	21.9
>6 to <12 month	39	37.1
≥12month	43	41

* More than one response

Table 3 represents the distribution of he studied subjects according to their level of knowledge. The majority of the studied clients (87.6%) had poor score level of knowledge about liver features, almost two thirds of them (64.8%) had poor score level of knowledge regarding to their medication compliance, while 28.6% of the studied clients had good

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score level of knowledge. Moreover, 75.2% and almost three quarters (74.3%) had poor score level of knowledge about permitted nutrition and allowed activities respectively. It was noticed that, 98.1%of the studied clients had poor score level of knowledge about stress management and skin care. Regarding women reproductive health, 86.7% of the female clients had poor score level of knowledge. In relation to their knowledge about dental and eye care, the majority of clients (81.9%) had poor score level. The total knowledge score of studied clients was poor (79%).

Table 3: Distribution of the post liver-transplant clients according to their level of knowledge

Main knowledge domains	Knowledge level					
	Poor		Fair		Good	
	N	%	N	%	n	%
▪ **Liver features**	92	87.6	13	12.4	0	
	Mean ± SD 7.68 ± 2.76					
▪ **Medication compliance**	68	64.8	7	6.7	30	28.6
	Mean ± SD 9.26± 2.43					
▪ **Permitted nutrition**	79	75.2	11	10.5	15	14.3
	Mean ± SD 3.51±3.69					
▪ **Allowed activities**	78	74.3	8	7.6	19	18.1
	Mean ± SD 2 ±1.39					
▪ **Stress management**	103	98.1	0		2	1.9
	Mean ± SD 1.76±2.11					
▪ **Women reproductive health**	13	86.7	2	13.3	0	
	Mean ± SD 0.9±0.49					
▪ **Skin care**	103	98.1	0		2	1.9
	Mean ± SD 1.1±0.69					
▪ **Dental and eye care**	86	81.9	12	11.4	7	6.7
	Mean ± SD 0.676±1.464					
Total knowledge score	83	79	15	14.3	7	6.7
	Mean ± SD 33.77±14..21					

Table 4 represents the distribution of the studied clients according to their daily living activities. Most of the studied clients had improper daily living activities related to the following; 70.5% medication compliance, 66.7% prevention of rejection, 83.3%prevention of infection, 81% Permitted nutrition and 60% physical activities. In addition to 98.1% related to stress management, 86.7% family planning service utilization& 98.1% eye, dental and skin care. Lastly, the improper total score of daily living activities was 93.3%.

Table 4: Distribution of the post-transplant clients according to their daily living activities

Main activity domains	Activity level			
	Improper		Proper	
	N	%	N	%
▪ Medication compliance	74	70.5	31	29.5
	Mean ± SD 7.99±1.5			
▪ Prevention of rejection	70	66.7	35	33.3
	Mean ± SD 4.21±3.01			
▪ Prevention of infection	88	83.8	17	16.2
	Mean ± SD 3.867±2.842			
▪ Permitted nutrition	85	81	20	19
	Mean ± SD4.75 ± 3.36			
▪ Physical activities	63	60	42	40
	Mean ± SD 0.4±0.49			
▪ Stress management	103	98.1	2	1.9
	Mean ± SD 0.63±1.4			

▪ Family planning services utilization	13	86.7	2	13.3
	Mean ± SD 0.04± 0.19			
▪ Eye and dental care	103	98.1	2	1.9
	Mean ± SD 0.02±0.14			
▪ Skin care	103	98.1	2	1.9
	Mean ± SD 2.02 ± 0.64			
Total activity score	98	93.3	7	6.7
	Mean ± SD 23.92 ±9.49			

IV. DISCUSSION

Liver transplantation (LT) has rapidly advanced from an experimental therapy to a mainstream treatment option for a wide range of acute and chronic liver diseases. LT is now considered as the gold standard for treatment of clients with end-stage liver diseases and have evolved to include previously contraindicated conditions such as hepatocellular carcinoma and alcohol-related liver disease. Cirrhosis from chronic hepatitis C infection remains the most common indication today. [17-19]

Health education process is considered as means by which the clients can acquire knowledge, skills, and be encouraged to participate in their treatment, making decisions and assuming responsibilities. With the knowledge developed, the client can change behaviors and influence attitudes that can improve health and life style through a variety of educational strategies. [8- 20] Therefore the aim of the present study was to design health education booklet for post liver transplant clients to be equipped with knowledge they need post transplantation.

Regarding to clients' socio-demographic characteristics and health history, the present study showed that, the majority of liver transplant clients were males. This result was in agreement with a study done in China on 256 liver transplant recipients by Chen et al., (2012) who found that 82.4% of participant clients were males. [21] Another study done in Egypt on liver transplant clients at El-Manial University Hospital by El-Gamal, (2013) who reported that 90.9% of participant clients were males. [7] This may be related to increasing prevalence of schistosomiasis among Egyptian males which considered as the major cause of liver diseases. [7- 22]

Concerning the age of liver transplant clients, the current study revealed that more than half of them were above the age of 50 years with the mean age 50.06± 6.49 years. This result was in consistent with other studies.[7- 24-25] And these may be attributed to the chronicity of the disease was attached to this age group. That is supported by Mohamadnejad et al., (2013) who emphasized that, cirrhosis is scaring of the liver tissues forms due to injury or long term disease. [26] In contrast, Ayoob, (2010) stated that the average age of liver transplant clients was 35 years.[27] The findings of Chen et al., (2012) and El- Gamal, (2013) who reported that most of liver transplant clients were married came with results of current study. [21- 7]

As a result of high prevalence rate of bilhariziasis in rural areas which is one of the most leading causes of liver transplantation and increasing numbers of liver transplant centers all over Egypt. The present study found that more than three quarters of LT clients were come from rural areas.

This result disagree with Mendes et al., (2013) who conducted a study at Brazil about; educational intervention for liver transplant candidates, they found that most of liver transplant clients were living in urban areas. [20] Also, other studies mentioned that, wait-list rates vary widely by place of residence and clients who live in rural areas have limited access to be on liver transplant waiting list. [28-30]

As regards to education, this study revealed that less than one quarter of LT clients had university education. This result was inconsistent with other studies which stated that, liver transplant clients were highly educated. [7-21-23]Evidence suggests that those who achieve a higher level of educational attainment are more likely to engage in healthy behaviors and less likely to adopt unhealthy habits. [31] From the researcher point of view, educational level is the first line that reflects level of knowledge about health and healthy practices.

However, the return to active and gainful life is a key goal of current liver transplantation. In spite of marked improvements in quality of life and functional status, a substantial proportion of LT recipients are unable to resume productive employment. Unemployment forms a threat to physical and psychosocial health, and impairs LT cost-utility through lost productivity and it is very important to help those clients to retain their productivity and self efficiency. Meanwhile, the current study finding showed two thirds of LT clients did not work.[19]

Similar finding revealed by a study done by Aberg et al., (2009) at the Helsinki University Central Hospital in Finland which found that more than two thirds of the studied subjects were not working.[19] Also, the study done by Saab et al., (2007) at University of California, who stated that, the ability of liver transplant clients to return to their daily activities, including employment, is controversial and the most important factors affecting employment include age at time of transplantation, duration of disability prior to transplantation, and physical/general health status. [32]

In relation to socioeconomic level, the result of this study revealed that half of the studied subjects were belonged to low socioeconomic level which may impacts on clients' behaviors, practices and attitudes that reflected on the whole health. This result comes in accordance with Serper et al., (2014) mentioned that lower income and limited literacy are associated with a greater number of post-transplant hospitalization. Also, Joel, Adler and Yeh, (2016) were stated that in both the developing and the developed world, social determinants likely have a greater effect on health and disease than medical care alone. That could be summarized as there is association between socioeconomic status and risk of acquiring diseases. [33-34]

According to WHO, (2015) HCV is the most common reason for adult liver transplantation.[35] The present study displayed that the majority of LT clients had hepatitis C as a main cause liver failure. The same finding were reported by other studies.[36- 37- 38]

Concerning the occurrence of the chronic diseases post liver transplant period, the results of the present study showed that, more than half of the studied subjects had chronic diseases such as diabetes mellitus and hypertention. This finding was in agreement with Laura et al., (2015) who stated that hypertension and diabetes mellitus increasingly recognized as a complication of organ transplantation. This result could be attributed to the effect of immunosuppressive medications. [39]

In order to design the health education booklet throughout the present study, it was necessary to assess health education needs of post liver transplant clients. This in agreement with The Centers for Disease Control and Prevention (CDC), (2010) reported that, clients should be engaged to determine their needs, beliefs/values, and interests, and assess their level of knowledge. [40]

Regarding to the level of knowledge, the present study showed poor score level of knowledge among the majority of LT clients. These findings were in accordance with El Gamal, (2013) who revealed that all of LT clients (100%) were having unsatisfactory level of knowledge prior implementation of health education program. [7] Also El shafee, (2016) who conducted a study about; The impact of an instructional scheme for patients undergoing liver transplantation surgery on their performance and health outcomes at GIT center at Mansoura University in Egypt and found the same result. [41] The rationale behind these results could be attributed to low educational level and lack of health education programs that improves health awareness and knowledge of liver transplant recipients.

Moreover, the analysis of correct answers to 17 questions in the knowledge assessment instrument on the transplantation process before and after the educational intervention, which done by Mendes et al., (2013), revealed a statistically significant difference is observed (P=0.0043). However, the current results reflect the importance of developing health education booklet as a mean for health education to raising knowledge and health awareness of LT clients concerning their life style post transplantation. Similarly was reported by Delair et al., (2010) at New York transplant centers as the clients exposed to educational intervention showed significantly greater knowledge, and increased self-efficacy in comparison with who are not exposed to the intervention. [42]

Regarding to the clients' knowledge about medication, the present study revealed that almost two thirds of LT clients had poor score level of knowledge. This result agreed with Mendes et al., (2013) who stated that the lowest correct answer rates were for questions on the immune-suppressants used after the liver transplantation. [20] In the same line a study

carried out in France by John Wiley and Sons, (2012) who confirmed that adherence with immunosuppressant treatment was low and lack of knowledge about importance of drug regimen is one of non-adherence causes. [43]

Concerning clients' knowledge about nutrition, the current study revealed that three quarter of LT clients had poor knowledge about proper nutrition. This result agreed with El shafee, (2016). [41] Therefore, nutritional interventions must be investigated and must include health literacy after liver transplantation. This reflects the importance of providing LT clients with knowledge related to healthy nutrition.

In relation to the clients' knowledge about physical activity, the present study revealed that LT clients had poor score level of knowledge about physical activity. In accordance with this result, the study conducted at Florida University on post liver transplant clients by Serotta, (2014) revealed that LT clients did not know about the importance of physical activity post liver transplantation and the positive association between physical activity and quality of life. [44] In addition, exercise plays an important role in improving client`s health, in this respect, Toma´s et al., (2013) mentioned that the exercise training programs improve body composition, weight, and walking capacity. [45] This finding reflects the importance of designing health education booklet to confirm the importance of exercise for LT clients.

Many of psychiatric disorders have been seen to be present subsequent to liver transplantation. [46] However, the study conducted by Chiu et al., (2009) reported that up to 70% of the clients had psychiatric disorders in the post transplantation period as well as anxiety, depression and delirium were the major reasons for referral to a psychiatrist/mental health professionals. [47] In the same line Russell et al., (2007) stated that, high levels of post-transplant anxiety resulted in reducing function of multiple life domains. [48] The finding of current study came with the same line where most of client did not have knowledge about stress management

Moreover, liver transplant recipients are at increased risk of stress due to pre-existing liver failure, functional impairment of graft, rejections and immunosuppression. [49] Based on these findings, it is important for clients to develop strategies to deal with their emotions and to manage stress. This emphasizes the importance of conducting a health message that provides the clients with information they need. From this point of view, Franciscus, (2015) stated that nurses would be better able to treat liver disease by helping their clients learn coping and relaxation skills. [50]

Unsound practices are common in liver transplant clients and have the potential for destructive consequences, including acute rejection, graft loss, decreased quality of life, and even death. [51] So it was necessary to assess daily living activities of post liver transplant clients.

As regards daily living activities, the present study illustrated that most of the studied clients had total score of improper subjective practice of daily living activities. These findings could be attributed to lack of knowledge that consequently affects the health practices. This result agreed with El shafee, (2016) who revealed that 96.7% of the studied subjects were having unsatisfactory level of practices score (<60%) before implementation of instructional scheme. [41] So, comprehensive education of LT clients and their families/caregivers can improve their understanding of post- transplant regimens and self-care techniques can increase adherence and improves outcomes.

Based on the previous findings of the current study which showed lack of knowledge and improper practice of daily living activities for post liver transplant clients, the educational booklet was designed to provide them with information they need for better post transplantation life. In the same line Hoffmann and Warrall, (2004) stated that printed educational materials have been used to improve knowledge, satisfaction, and adherence to treatment, as well as stimulate clients' self-care. [52]

V. CONCLUSION AND RECOMMENDATION

We can conclude from our study, that the majority of the studied clients had poor score level of knowledge related to their daily living activities and improper practice. Health education programs should be applied in liver transplant centers to improve liver transplant clients' knowledge and practice of daily living activities and subsequently improve their quality of life. Health education booklet must be distributed on all liver transplant recipients to increase their health awareness.

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