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Knowledge and Daily Living Activities of Post Liver Transplant Clients

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Abstract
Background: *Liver transplantation (LT) is often the most effective treatment for chronic life-threatening liver diseases. The first step of the teaching-learning process for liver transplant clients is to asses what the clients already know and how they behave. The aim of the study was to asses the knowledge and daily living activities of post liver transplant clients.*
Design: *Cross sectional descriptive study was conducted at liver transplant clients' homes through home visits at Dakahlia governorate to clients received liver transplant at Gastrointestinal Tract Hospital affiliated of Mansoura University. 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.*
Results: *Almost half of the studied clients (48.6%) belonged to low socioeconomic level. The majority of the clients (79%) had poor score level of knowledge, and most of them (93.3%) had improper score of daily living activities.*
Conclusion: *The main conclusion drawn from the current study is that the majority of the studied clients had poor score level of knowledge related to their daily living activities and improper practices.*
Keywords: *Liver transplant clients, Knowledge, Daily living activities*

I. Introduction

End-stage liver failure is a pathological condition that has great impact on people's live. Liver transplant (LT) is the unique curative therapy for clients with acute liver failure or end-stage liver disease and provides the only possibility for reversing the terminal situation, which impacts the biological, psychological and social levels. [1–2]The outcomes after liver transplantation (LT) have shown consistent improvement in the recent years but the surgery put the clients at risk and often causes more stress, anxiety, and complications than conventional surgery. [3-4]

Liver transplant clients suffer from a chronic condition, which by itself entails risks and health problems, so they need to understand the transplantation process so as to change their living experience for better life post transplantation. Recognition, management, and prevention of medical as well as surgical complications after liver transplantation are the keys to improve long term outcomes and quality of life. Therefore, it is important for liver transplant clients and their families to have relevant knowledge concerning the basic process involved with liver transplant, to manage some of the challenges and complications facing them, and to recognize symptoms that should alert recipients to seek medical help. [5-7]

Liver transplant centers have dedicated nurses that provide specific information about the procedure and answer questions that clients and their families may have. [8-9]Moreover, nurses are the largest group of professional health care service providers in the home setting. Nurses perform home visits to assess clients' knowledge related to disease care, compliance of medication, early identification of health problems, preventive services, anticipatory guidance, and health education and provide an opportunity to assess environmental and social factors impacting on the clients' health. [10]Usually clients require information concerning their disease and related care, side effects, complications, health-related problems and life style practices. [20]Client's knowledge of symptoms, severity, monitoring and treatment options are essential for appropriate self care, adherence to follow up, early recognition of health problems and seeking timely treatment. [11-13]

Assessing the knowledge and lifestyle practices help to identify the educational needs of liver transplant clients and their families, better understand the illness and lead a healthy lifestyle as possible. In addition, modifying clients' attitudes and behaviors could promote the disease control and enhance adherence to

follow up and, in turn, result in early detection and treatment of disease reactivation and complications. What the patient needs to know help the nurse to plan the teaching-learning process in health services with LT programs based on realistic priorities. [14-15]

Aim of the study

This study aimed to asses the knowledge and daily living activities of post liver transplant clients.

II. Subjects and Method

This study was conducted at liver transplant clients' homes through home visits. Sample size comprised 105 liver transplant clients under the following criteria: both males and females were aged 30 to less than 60years (the adulthood stage at which the operation was undergoing), different social classes and resident at urban and rural areas. 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 15 to 30 minutes for each client. The interview constructed in Arabic language.

2.1Tools of the study

Tool 1

Structure interview to assess health profile of liver transplant clients consisted of two parts; Part 1, sociodemographic data adopted from Fahmy and El-Sherbini Socio Economic Scale, (1983) which was modified 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 liver transplant surgery date.

Tool II:

Structure interview to asses liver transplant clients' knowledge related liver transplantation and subjective practicing of daily living activities. This tool was developed by the researcher and included two parts; **Part 1:** Structure interview to asses clients' knowledge related liver transplant. It consisted of 9 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) list questions. 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; Structure 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 9 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) list questions. 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.

III. 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 national and international 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 except Part I of tool I was adopted from El Gelany et al., (2012).[16]
- Validity testing was done to the tools by submitting the tools to experts in the field of "community health nursing, nursing education and hepatology experts 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 (10 clients) 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 aim 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.
- The researcher conducted home visits for clients and visited two clients per day, twice/week (Sunday and Tuesday), each visit ranged from15 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.

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.

IV. Results

Table (1): Represents the distribution of the studied clients by their sociodemographic characteristics. It shows that, the majority of the 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.

Table (2): Represents the distribution of the studied subjects according to their past health history. It shows 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 the studied clients 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 months.

Table (3): represents the distribution of the studied subjects according to their knowledge level. 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 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 (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 (1) Socio-demographic characteristics of studied 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
Socioeconomic level		
• Very low	26	24.8
• Low	25	23.8
• Middle	28	26.7
• High	26	24.8

Table (2) Distribution of the studied 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) Distribution of the studied 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) Distribution of the studied 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			

V. 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. [17-1With 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 asses the knowledge and daily living activities of post liver transplant clients.

Regarding to clients' socio-demographic characteristics and health history, the present study revealed that, the majority of liver transplant clients were males. This result was in accordance 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 high prevalence of schistosomiasis which considered as the major cause of liver diseases during 1960s - 1980s among Egyptian males more than females. [7, 22]

Concerning the age of liver transplant clients, the present 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 El-Gamal, (2013) who found that the mean age of liver transplant clients was 50 +4.8 and more than half of the study sample age was between 40 and 50 years old and in accordance with the study conducted at Dar- Elfoad in Egypt by Hussein, (2012) who reported that the majority of the studied subjects aged between 40- 60 years old. [7, 23]

On the other hand, Kortob, (2012) reported that 87% of liver transplant clients were men, with a mean age 50.9 + 9.6 years. [24] Also Santos et al., (2010) mentioned that the average age in clients with liver

transplantation was 49 years (age range 18–72 years). [25] These results may be due to the chronicity of the disease which is contributed with these age groups. This 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) found that the average age of liver transplant clients was 35 years (ranged between 1 to 63). [27]

Regarding the marital status, the results of the present study revealed that, most of liver transplant clients were married. This finding was supported by the findings of Chen et al., (2012) and El- Gamal, (2013) who reported that, most of liver transplant clients were married. [21, 7]

Regarding to residence, this study revealed that more than three quarters of LT clients were living in 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 disagree with Mathur et al., (2014), Goldberg et al., (2014) and Adler et al., (2015)who 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]The cause of difference between the previous studies and the current study may be related to increased 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.

As regarding to education, this study revealed that less than one quarter of LT clients were university graduate. This result disagree with Hussein, (2012) who revealed that 77.5% of LT clients had university education and El- Gamal, (2013)who found that more than fifty percent had university education and also not similar to Chen et al., (2012) who found that about two thirds of liver transplant clients were highly educated. [23, 7, 21]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.

Regarding occupation, almost two thirds of LT clients did not work. This finding was similar to the study conducted at Finland on liver transplant clients at the Helsinki University Central Hospital by Aberg et al., (2009) who found that more than two thirds of the studied subjects were not working. The finding of the current study may be due to; the average age of the studied subjects was 50 years. [19]This was in the same line with 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 performance status.[32]From the researcher point of view return to active and productive life is a key goal of current liver transplantation. More over unemployment represent a threat to physical and psychosocial health, and impairs LT cost-utility through losing of productivity and it is very important to help those clients to retain their productivity and self efficiency.

In relation to socioeconomic level, the result of this study revealed that almost half of the studied subjects belonged to low socioeconomic level. From the researcher point of view, socioeconomic level of LT clients affects their behaviors, practices and attitudes that reflected on the whole health. This result comes in accordance with Joel, Adler and Yeh, (2016) who revealed that, in the developing and the developed world, social determinants likely have a greater effect on health and disease than medical care alone and also Serper et al., (2015) mentioned that lower income and limited literacy are also associated with a greater number of post transplant hospitalization. That could be summarized as there is association between socioeconomic status and risk of acquiring diseases. [33-34]

According to the causes of developing liver failure, the result of the current study clarified that the majority of LT clients had hepatitis C as the cause of developing liver failure. This finding was in accordance with Cuadros et al., (2014) who stated that Egypt has the highest hepatitis C virus (HCV) prevalence in the world (14.7%) and with the reports of WHO, (2015) HCV is the most common reason for adult liver transplantation. [35-36] In addition to Vinaixa et al., (2013) who mentioned that among liver transplant clients the most common causes of liver cirrhosis were hepatitis B and C viruses. [37] Moreover, Mabrouk et al., (2012) stated that, the most common indication for liver transplantation and causes for end stage liver disease was HCV. [38]

Concerning the presence of the chronic diseases post liver transplant, 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]

It was necessary to assess clients' knowledge and practices related to life style post liver transplantation to identify their health education needs. 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 before 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 improve health awareness and knowledge of liver transplant recipients.

Moreover, Mendes et al., (2013) stated that in the analysis of correct answers to 17 questions in the knowledge assessment instrument on the transplantation process was poor. [20]From the researcher point of view, the current results reflect the importance of health awareness of LT clients concerning their life style post transplantation. This was in the same line with the study done by Delair et al., (2010) at New York transplant centers and reported that the clients exposed to educational intervention reported 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 immunosuppressants 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 LT clients did not have knowledge about proper nutrition. This result agreed with El shafee, (2016) who revealed that liver transplant clients had poor knowledge about nutrition with mean score 1.33± 1.63. [41]Therefore, nutritional interventions must be investigated and must include health literacy after liver transplantation.

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) who revealed that LT clients did not know about the importance of physical activity post liver transplantation and the positive association of it with quality of life. [44] 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]

Regarding stress management, many psychiatric disorders have been seen to be present subsequent to liver transplantation. [46]The present study revealed that most of the LT clients did not have knowledge about stress management. This comes in accordance with a study conducted at Kaohsiung Chang Gung Memorial Hospital on 30 post liver transplant clients by Chiu et al., (2009) who 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]

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. In the same line, Franciscus, (2015) stated that nurses would be better able to help in treatment of liver disease by learning their clients coping and relaxation skills. [50]

Improper practices are common in liver transplant clients and have the potential for devastating 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 approved 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 can improve their understanding of post transplant regimens and self-care techniques can increase adherence and improves outcomes.

VI. Conclusion &recommendations

Based on our study findings, we can conclude that the majority of the studied clients had poor score level of knowledge related to their daily living activities and improper practices. The knowledge produced by this study supports the planning of the teaching-learning process in health services with LT programs. So, health education programs should be applied at liver transplant centers and during home visits to improve liver transplant clients' knowledge and encourage them to practice proper daily living activities in order to promote health and improve their quality of life.

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