

Received: 2016-09-10
Revised: 2016-11-12
Accepted: 2016-11-25

Study of Quality of Life Among Liver Transplant Candidates in Shiraz, Southwestern Iran

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Abstract

Background: Liver transplant candidates are under stress conditions which affect their Quality of life (QOL), a subject which is not well-understood and is worthy of evaluation. The aim of this study is to determine the socio-demographic variables about QOL of liver transplant candidates. **Materials and Methods:** This cross-sectional study was evaluated QOL among 210 liver transplant candidates in Shiraz, Iran. The questionnaire includes demographic and socioeconomic conditions of the patients, in addition to another questionnaire on QOL which comprised 6 dimensions. The statistical analyses used included independent sample t-test and one-way analysis of variance (ANOVA). A two-tailed P-value of less than 0.05 was considered statistically significant. **Results:** The results obtained showed that the score off emotion was significantly less than males (P=0.05). Patients aged lower than 30 years and patients with lower BMI had a higher score of QOL (P=0.05). Single patients had lower worries than married (P=0.05). Patients with Governmental Health Insurance were less distressed and had more emotions than patients with other insurances who had a more emotional function (P<0.01). Patients living in geographic location 3 in Iran had less QOL than others (P=0.04). Regarding the etiology of disease, patients with cirrhosis had less QOL than those with Wilson and hepatitis B (P<0.05). **Conclusion:** The QOL of liver transplant candidates is dependent on gender, age, habitat, marital status, BMI, health insurance, and cirrhosis diagnosis. Because QOL is related to the psychological problem, it is suggested to provide psychological consultations on these variables. [GMJ. 2016;5(4):180-87]

Keywords: Liver Transplant Candidate, Quality of Life, Psychological Problem, Iran

Introduction

The quality of life (QOL) is the territory of novelists and philosophers which is an elusive concept approachable at varying levels of generality from the assessment of societal or community wellbeing to the specific

evaluation of the situations of individuals or groups [1]. It can only be described by the individual and must take into account many aspects of life [2]. A model of QOL is proposed that integrates objective and subjective indicators, a broad range of life domains, and individual values [3]. It can be related to human

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being's ability to enjoy normal life activities as well as his/her psychological conditions. Thus subjectivity of QOL is best measured from the patient's perspective which in this context, QOL is best understood as representing the gap between one's actual functional level and one's ideal standard [4].

Illness is the main problem which affects the QOL of human beings [5, 6]. Decreasing the life expectation, limited activity, increasing pains, psychological problems, and increasing costs are the main problems affecting QOL. However, QOL is related to the type of disease and evaluating its effects on all dimensions of life. Chronic liver disease (CLD) results from a variety of disorders and is one of the main causes of morbidity and mortality worldwide [7]. Liver disease is a chronic problem which significantly affects QOL. Due to several disease-related problems, patients faced multiple difficulties, commonly depression and anxiety, which influence the quality of their lives [8,9]. However, the type and severity of CLD may have different effects on QOL [10]. Liver transplant is an important strategy used to solve such patients' problems. Liver transplant candidates faced several psychosocial and physical problems, leading to lower QOL of these patients. It is evidenced by a recent study which showed significantly high levels of burden, stress, and depression among these patients [11]. However, QOL of these patients needs to be explained more specifically with regard to their demographic and social characteristics. The main goal of this study was to evaluate the QOL among liver transplant candidates with an emphasis on their socio-demographic situations.

Materials and Methods

Subjects

This cross-sectional study examined QOL among waiting list patients, aged more than 15 years in Namazi Hospital, Shiraz, Iran, where 3191 liver transplantations were performed until December 31, 2015.

Ethical Issue

The study was performed according to Helsinki Declaration code of ethics and approved

by the Ethics Committee of Shiraz University of Medical Sciences.

Data Collection

The data gathering was done in transplantation coordination office of Namazi Hospital between November 2015 and March 2016. Target population of our study comprised 1213 patients aged more than 15 years registered in transplantation coordination center. Based on $\alpha=0.05$, $R=0.2$ and $\beta=0.2$ the sample size was 201 patients. Inclusion criteria were patients aged more than 15 years with full consciousness. The candidates referred to the foregoing office for preparation of transplantation were briefed by the researcher about the study. The questionnaire to be read were then given to those who consented to participate in the research and collected from them after 15 minutes. As for illiterate patients, the researcher read every item in the questionnaire to them and recorded their response.

Regarding the aims of our study, a questionnaire was designed which examined the psychosocial variables alongside demographic features. Demographic questionnaire consist of variables included age, gender, ethnicity (Fars province and other regions), marital status (single or married), education level, employment status, monthly income (Under 1, 1-2, 2-3 million Tomans), insurance coverage, housing, etiology of disease, and Model for End-stage Liver Disease (MELD). In addition, because these patients were from all provinces of Iran, the regional variables were also added to the questionnaire. According to the latest classification, which was based on the regional proximity, Iran was classified into 5 regions in Jun 2014. According to this classification, region 1, 2, 3, 4 and 5 included 7, 6, 6, 6 and 6 provinces, respectively, and the questionnaire asked the participants to state provinces of their residence.

Chronic Liver Disease Questionnaire (CLDQ) was used to evaluate the patients' QOL. This questionnaire is a useful option for measuring health-related quality of life (HRQL) of patients with CLD in different parts of the world [12,13]. The HRQOL of the patients with CLD has already been cross-culturally adapted and validated in some different languages [14].

Mahmoudi *et al.* translated the questionnaire into Persian and examined its validation in patients waiting for liver transplantation. The results obtained showed that convergent validity was 100% for all domains, and the success rate for item discriminant validity was 95.8%, and the internal consistency (Cronbach α) for the domains ranged from 0.65 to 0.89 [15]. This questionnaire includes abdominal symptoms (AB), fatigue (FA), systemic symptoms (SY), activity (AC), emotional function (EM), and worry (WO) dimensions.

Statistical Analysis

The SPSS version 21 was used for analysis. Data analyses were carried out using descriptive statistics of frequency, mean, standard deviation (SD) as well as inferential statistics such as ANOVA, correlation Pearson, t-test, and logistic regression with 95% confidence intervals (CIs).

Results

Results showed that 210 patients were studied, of whom 140 (66.7%) were males and 70 (33.7%) were females. The mean age of patients was 41.04 ± 13.54 years. The mean age of females and males were 45.19 ± 13.41 and 42.19 ± 13.56 years, respectively, which was not statistically significant. Thirty-five patients (16.7%) were younger than 30 years, 44 patients (21.0%) were aged between 30-40 years, 54 patients (25.7%) were aged between 40-50 years, and 77 patients (36.7%) were aged more than 50 years. Of participants, 171 (81.4%) patients were married, and 39 (18.6%) were single. The mean score of QOL was 3.59 ± 0.33 . The participants' characteristics are shown in Table-1.

Statistical analysis demonstrated that QOL of males regarding EM dimension was significantly higher than that of females ($P=0.05$). Patients with age lower than 30 years had a total score of CLDQ ($P=0.05$), and regarding dimensions of FA and SY had significantly higher scores than those aged more than 30 years ($P=0.01$). Also, single patients had lower WO than married subjects ($P=0.05$). Patients with lower body mass index (BMI) had a higher score in CLDQ ($P=0.04$), AB

($P=0.008$) and SY ($P=0.01$) dimensions compared with those having high BMI. Patients with medical insurance had more WO and EM ($P<0.01$) than those with other insurances. Patients living in geographical region 3rd in Iran had less CLDQ score than others ($P=0.04$). In addition, patients in geographical regions 4th had less WO and more CLDQ score than others ($P<0.01$). Regarding the etiology of disease patients with Wilson had more SY and CLDQ score than others ($P<0.05$). In addition, hepatitis B virus (HBV) patients had more score in EM and less WO than others ($P<0.05$). Generally, patients with cirrhosis etiology had less QOL compared with others (Table-2).

Discussion

This study showed that QOL of liver transplant candidates is affected by gender, age, habitat, marital status, BMI, health insurance, and cirrhosis diagnosis. The results obtained indicate that men candidate had better EM compared to women. On the other hand, males had better QOL than females which can be related to their perspective and ability as well as their vulnerability to the diseases. It has frequently been shown that QOL is worse for females than for males [16]. This claim was shown with respect to different conditions such as couples with cancers [17], heart failure [18], elderly [19], and diabetic patients [20].

Regarding BMI and its effect on QOL, it was shown that maintaining weight loss and exercise results in sustained improvement in liver enzymes, serum insulin levels, and quality of life in overweight patients with liver disease [21]. Because the burden of obesity primarily imposes a physical problem [22], the liver transplant candidates with overweight have difficulties concerning physical exercise which affects their QOL.

In general, patients aged less than 30 years have better QOL. It was shown that hospitalized elderly have lower QOL compared to others [23]. A study has shown a weakly positive relationship between age and psychosocial status and QOL [24]. However, it seems that the relationship between age and QOL is affected by the type of disease.

Table 1: Demographic and Clinical Characteristics of the Study Population

Age (year)	41.04 ± 13.54	Educational level	
Men/ women	140 (66.7)/ 70 (33.3)	Illiterate	52 (24.8)
Ethnicity		Up to Diploma	100 (47.6)
Fars	119 (56.7)	University	58 (27.6)
Others	91 (43.3)	Blood group type	
Marital status		A/B/O/AB	78 (37.1)/ 41 (19.5)/ 77 (36.7)/ 14 (6.7)
Employee	39 (18.6)	Etiology of disease	
Self-employed	54 (25.7)	Cirrhosis	120 (57.1)
Housekeeper	44 (21.0)	Hepatitis B	32 (15.2)
Retired	34 (16.2)	PSC	14 (6.7)
Others	39 (18.6)	Wilson disease	11 (5.2)
Family head		Hepatitis C	7 (3.3)
Yes	129 (61.4)	Malignancy	7 (3.3)
No	81 (38.6)	Autoimmune Hepatitis	5 (2.4)
Monthly income (MT)		Cryptogenic	1 (0.5)
Under 1	127 (60.5)	Others	13 (6.2)
1 to 2	63 (30.0)	Depression/ Anxiety/ Stress	
2 to 3	20 (9.5)	Normal	69(32.9)/ 48(22.9)/ 74(35.2)
Housing		Mild	31(14.8)/ 14(6.7)/ 24(11.4)
Personal	148 (70.5)	Medium	52(24.8)/ 53(25.2)/ 42(20.0)
Rental	62 (29.5)	Sever	22(10.5)/ 25(11.9)/ 33(15.7)
Insurance type		Extremely severe	36 (17.1)/ 70(33.3)/ 37(17.6)
GHI	43 (20.5)	CLDQ score	3.59 ± 0.33
Medical insurance	49 (23.3)	Abdominal	4.01 ± 1.97
SSI	118 (56.2)	Fatigue	3.12 ± 1.66
Supplemental insurance		Systematic	3.96 ± 1.53
Yes	104 (49.5)	Activity	3.73 ± 1.78
No	106 (50.5)	Emotion	3.68 ± 1.58
Living place		Worry	3.02 ± 1.72
Urban	190 (90.5)	Region in Iran	
Rural	20 (9.5)	Region 1	54 (25.7)
Waiting list (day)	257.39±28.06	Region 2	73 (34.8)
Term illness (year)	5.98 ± 0.38	Region 3	34 (16.2)
MELD score	18.63 ± 6.36	Region 4	36 (17.1)
		Region 5	13 (6.2)

MT: Million Toman; **GHI:** Governmental Health Insurance; **SSI:** Social Security Insurance; **MELD:** Model for End-Stage Liver Disease; **HBV:** Hepatitis B Virus; **PSC:** Primary Sclerosing Cholangitis

Table 2. The Results of Based on Demographic and CLDQ in Patients of the Waiting List in Liver Transplantation. Data Expressed as Mean ± SD.

Variable	N(%)	AB	FA	SY	AC	EM	WO	CLDQ SCORE	
Gender	Female	70 (33.3)	3.8±2.02	3.12±1.78	3.68±1.51	3.86±1.88	3.39±1.5	2.88±1.59	3.46±1.31
	Male	140 (66.7)	4.12±1.95	3.13±1.6	4.10±1.53	3.66±1.73	3.83±1.61	3.08±1.79	3.65±1.34
P value		0.27	0.97	0.06	0.45	0.05	0.43	0.31	
Age	<30	35(16.7)	4.44±1.94	3.92±1.81	4.70±1.67	4.28±1.86	3.90±1.94	3.61±1.94	4.14±1.61
	30-40	44(21.0)	4.18±1.75	2.76±1.49	3.99±1.22	3.95±1.69	3.56±1.10	2.88±1.56	3.55±0.92
	40-50	54 (25.7)	3.75±1.98	3.04±1.68	3.71±1.58	3.47±1.74	3.68±1.67	2.76±1.6	3.40±1.31
	> 50	77 (36.7)	3.90±2.1	3.02±1.58	3.78±1.53	3.54±1.78	3.66±1.62	3.00±1.76	3.48±1.36
P value		0.37	0.01	0.01	0.10	0.81	0.13	0.05	
Marital status	Single	39 (18.6)	4.35±2.02	3.52±1.99	4.37±1.71	4.10±1.85	3.81±1.71	3.53±1.76	3.95±1.58
	Married	171 (81.4)	3.93±1.96	3.03±1.57	3.87±1.48	3.65±1.76	3.65±1.56	2.90±1.70	3.51±1.26
P value		0.24	0.15	0.06	0.15	0.57	0.03	0.06	
BMI	Below 18.5	19 (9.0)	5.15±1.60	3.62±2.06	4.88±1.60	4.47±1.75	4.26±1.62	3.61±1.57	4.33±1.39
	18.5-25	99 (47.1)	4.12±1.91	3.14±1.7	4.01±1.49	3.71±1.69	3.59±1.7	3.02±1.8	3.60±1.33
	25-30	63 (30.0)	3.87±2.01	2.93±1.55	3.82±1.59	3.66±1.79	3.77±1.37	2.90±1.64	3.49±1.29
	Above 30	29 (13.8)	3.21±2.01	3.15±1.48	3.48±1.34	3.49±2.02	3.42±1.57	2.88±1.72	3.27±1.29
P value		0.008	0.48	0.01	0.27	0.28	0.44	0.04	
Insurance type	Health insurance	43 (20.5)	3.79±2.12	2.92±1.49	3.82±1.26	3.41±1.56	3±1.33	2.51±1.32	3.24±1.01
	Medical insurance	49 (23.3)	4.26±2.14	2.94±1.68	3.84±1.7	3.8±1.84	4.19±1.71	3.53±1.8	3.76±1.49
	Social Security Insurance	118 (56.2)	3.99±1.85	3.27±1.71	4.06±1.56	3.82±1.83	3.72±1.54	2.99±1.77	3.64±1.35
P value		0.52	0.34	0.54	0.41	0.001	0.017	0.14	

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Continous of Table 2. The Results of Based on Demographic and CLDQ in Patients of the Waiting List in Liver Transplantation. Data Expressed as Mean ± SD.

Region in Iran	54 (25.7)	4.08±1.73	3.3±1.66	4.08±1.51	3.81±1.67	3.65±1.4	3.01±1.56	3.66±1.28
Region 1								
Region 2	73 (34.8)	4.02±2.10	3.09±1.72	3.94±1.62	3.58±1.79	3.81±1.7	3.14±1.79	3.60±1.38
Region 3	34 (16.2)	3.4±1.78	2.55±1.40	3.38±1.4	3.44±1.68	3.17±1.57	2.14±1.03	3.01±1.14
Region 4	36 (17.1)	4.48±2.04	3.3±1.57	4.33±1.4	4.23±1.81	4.05±1.51	3.55±1.94	3.99±1.31
Region 5	13 (6.2)	3.97±2.34	3.6±2.03	4.09±1.65	3.64±2.24	3.41±1.55	3.18±2.11	3.65±1.49
P value		0.25	0.19	0.11	0.35	0.17	0.01	0.04
Etiology of disease								
HBV	32 (15.2)	4.31±2.07	3.64±1.79	4.36±1.51	4.13±1.83	4.28±1.67	3.74±1.82	4.08±1.45
Cirrhosis	119 (56.7)	3.86±2	2.99±1.56	3.73±1.54	3.57±1.74	3.42±1.51	2.71±1.63	3.38±1.28
Wilson	11 (5.2)	4.75±2.1	3.76±1.95	5.05±1.38	4.3±1.87	4.22±1.98	3.29±2.11	4.23±1.61
Others	34 (16.2)	4.03±1.76	3.22±1.74	4.22±1.43	3.66±1.86	3.83±1.64	3.36±1.61	3.72±1.28
P value		0.56	0.06	0.01	0.44	0.05	0.02	0.03

AB: Abdominal Symptoms; **FA:** Fatigue; **SY:** Systemic Symptoms; **AC:** Activity; **EM:** Emotional Function; **WO:** Worry ; **BMI:** Body Mass Index.

For example, younger women with breast cancer are at high risk of having lower QOL due to their concern for having unhealthy breast [25]. Also, some qualitative studies showed how worried young patients were about their disease [26, 27].

Regarding the health insurance, people are divided into three categories as follow:

1. In general, social security insurance covers the workers in the context of Iranian labor law.
2. Medical insurance introduced by Iranian Health Sector Evolution Plan in 2014 covers people who have no health care.
3. Governmental health insurance that generally includes people with governmental jobs.

According to the results of this study, the second group had more WO and EM. We believe that this is directly related to their health insurance and indirectly to their jobs. Patients with medical insurance do not have a specific job, and many of them are self-employment. Thus they do not have a kind of job security, and this affects their WO and EM. In addition, this form of health insurance just covers the medical needs of hospitals admitted patients not more. About this finding, it was shown that health insurance status was associated with HRQOL over time, but not at baseline [28].

Regarding the geographical situation, the results revealed that third region of Iran (north and northwest provinces) had lowest QOL significantly. It was due to the long distance from the center of transplantation in Shiraz, which limits patients' access to liver transplantation services. As these patients have to stay in waiting list and travel at least 3 times to Shiraz, the rising cost of travel affects their QOL. Also, it seems that because of patients have poor access to such facilities, they lack a clear understanding of their turning for transplantation. It was consistent with the results of a similar study in the US. The study showed that the current geographic disparities in liver distribution are related to the distance among migrating liver transplantation candidate [29]. Furthermore, the worries of married patients

are attributed to their family commitments and concerns.

Regarding the MELD score, the results showed that it could not measure QOL in liver transplant candidates, a situation in line with the findings of another study [30]. Also, we found out that patients with cirrhosis had low QOL, while another study showed that QOL did not differ markedly with respect to the type of disease [10].

The main limitation of this study was difficult socioeconomic classification, a condition affecting QOL which was also the main problem in other studies. Also, this study could not explore the impact of waiting time that seemingly it could not be explained by quantitative research. Future qualitative investigations can explore this subject.

Conclusion

This study showed that gender, age, habitat, marital status, BMI, and health insurance impact on QOL of liver transplant candidates. Women, elderly patients with high BMI, married patient, and generally some candidates with health insurance had low QOL. The policies to be considered should focus on decreasing

stress and anxiety among these patients. In addition, policies assumed should have more consideration to solve the problems of the patients living in provinces of the third region of Iran (north and northwest provinces) because of their distance to the center of transplantation. Although recently other centers for liver transplantation have become available in Iran which reduces patient's problems, but those referred to Shiraz deserve due consideration.

Acknowledgment

This research was the result of the MPH thesis in Health Policy Research Center at Shiraz University of Medical Sciences, Shiraz, Iran. The authors would like to thank Professor Dr. Kamran Bagheri Lankarani, the director of the Center for supporting this study under grant No. 94-01-62-9393 of Shiraz University of Medical Sciences, Shiraz, Iran.

Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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